

SIEMENS

SIMOCRANE

Crane Management System (CMS)

Operating Instructions

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Legal information

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This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

 DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.
 WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.
 CAUTION
indicates that minor personal injury can result if proper precautions are not taken.
NOTICE
indicates that property damage can result if proper precautions are not taken.


If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

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 WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Foreword

Foreword

This document is part of the SIMOCRANE CMS (Crane Management System) product package. It describes the crane-specific functions based on SIMATIC WinCC.

These operating instructions are intended primarily as a reference manual and are aimed chiefly at people responsible for configuring, maintaining, and commissioning the CMS.

A knowledge of WinCC and the general tasks and requirements associated with a CMS system are a basic prerequisite for understanding these instructions. Please see also the documents listed below:

- SIMOCRANE CMS System Manual
A description of the SIMOCRANE CMS crane management system based on SIMATIC WinCC, the SIMOCRANE CMS AddOn package for WinCC, and the CMS/RMCS sample applications.
- Interface Document SIMATIC Step7 to SIMOCRANE CMS
A description of the interface with the crane controller.

Differentiation

SIMOCRANE CMS provides various tools for implementing the required CMS functionality for all types of crane applications. It is not a ready-to-run crane management system. The functional scope must be configured and planned specifically for the system using the CMS system configuration.

Field of applications

The system is designed for use on cranes and for harbor and industrial environments. SIMOCRANE CMS, as a SCADA product, enables adaptation to the most varied applications. Scalability permits the setup of simple CMS single-user systems up to and including complex CMS/RCMS configurations (multi-user systems) in IT infrastructures.

Target groups and level of knowledge

This document addresses the following target groups:

- Sales
- Engineering
- Commissioning engineers

The target groups "Engineering" and "Commissioning engineers" require sound knowledge of SIMATIC WinCC.

Content

In this manual, you will find the following contents:

- CMS Runtime
- CMS Editor
- The Replay function
- ActiveX Library
- Installation

Additional information

Siemens product support

You can find the latest information about SIMATIC WinCC products, product support, and FAQs on the Internet here (<http://support.automation.siemens.com/WW/view/en/78468936>)

You will find information on WinCC as a SCADA system here (<http://support.automation.siemens.com/WW/view/en/10805583/133200>).

You will find the latest information on SIMOCRANE products, product support, and FAQs on the Internet here (<http://support.automation.siemens.com/WW/view/en/10807397/130000>).

Crane application notes can be found on the Internet here (<http://support.automation.siemens.com/WW/view/en/48342008/136000>).

Siemens product support for SIMOCRANE

The following addresses provide support for your SIMOCRANE products:

- Support request on the Internet:
 - <http://support.automation.siemens.com>
- Europe hotline
 - Telephone: +49 (0) 911 895 7 222
 - Fax: +49 (0) 911 895 7 223
 - Email: support.automation@siemens.com
- America hotline
 - Telephone: +1 423 262 5710
 - Fax: +1 423 262 2231
 - Email: support.america.automation@siemens.com
- Asia/Pacific hotline
 - Telephone: +86 10 6475 7575
 - Fax: +86 10 6474 7474
 - Email: support.asia.automation@siemens.com

Application support for SIMOCRANE

For additional customer-specific requirements and applications, please contact the following e-mail address:
applications.cranes.aud@siemens.com

Further assistance

We also offer courses to help you familiarize yourself with SIMOCRANE CMS and its principle operation. You will find further information here:
applications.cranes.aud@siemens.com

If you have any additional questions, please contact your local Siemens sales office.

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Basic safety instructions

1.1 General safety instructions

 WARNING
Danger to life if the safety instructions and residual risks are not carefully observed If the safety instructions and residual risks are not observed in the associated hardware documentation, accidents can occur involving severe injuries or death. <ul style="list-style-type: none">• Observe the safety instructions given in the hardware documentation.• When assessing the risk, take into account residual risks.

 WARNING
Danger to life as a result of incorrect or modified parameterization As a result of incorrect parameterization, machines can malfunction, which in turn can lead to injuries or death. <ul style="list-style-type: none">• Protect the parameterization (parameter assignments) against unauthorized access.• Respond to possible malfunctions by applying suitable measures (e.g. EMERGENCY STOP or EMERGENCY OFF).

 WARNING
Danger to life posed by uncontrolled changeover between operating states Uncontrolled changeover between operating states can cause machines to malfunction, which in turn can lead to injuries or death. <ul style="list-style-type: none">• Include the effects of changeover between operating states in the risk analysis.• Implement suitable safety measures, e.g. EMERGENCY OFF.

1.2 Industrial security

Note

Industrial security

Siemens provides products and solution with industrial security functions that support the secure operation of plants, solutions, machines, devices, and/or networks. They are important components of a holistic industrial security concept. The products and solutions from Siemens are continuously developed with this aspect in mind. Siemens recommends that you inform yourself regularly about product updates.

To ensure the secure operation of Siemens products and solutions, it is necessary to take suitable preventive measures (e.g. cell protection concept) and integrate each component into a state-of-the-art holistic industrial security concept. Any third-party products used must also be taken into account. You will find further information about Industrial Security at <http://www.siemens.com/industrialsecurity>.

To receive information about product updates on a regular basis, register for our product-related newsletter. For more information on this topic, go to: <http://support.automation.siemens.com>.

WARNING

Danger as a result of unsafe operating states resulting from software manipulation

Software manipulation (e.g. by viruses, Trojan horses, malware, worms) can cause unsafe operating states to develop in your installation which can result in death, severe injuries and/or material damage.

- Keep the software up to date.
Information and newsletters can be found at:
<http://support.automation.siemens.com>
- Incorporate the automation and drive components into a state-of-the-art, integrated industrial security concept for the installation or machine.
For more detailed information, go to:
<http://www.siemens.com/industrialsecurity>
- Make sure that you include all installed products into the integrated industrial security concept.

System requirements

2.1 System requirements

- **SIMATIC WinCC V7.2 Update 7:** Installation of SIMOCRANE CMS requires SIMATIC WinCC. The license and the installation program of WinCC are contained in the SIMOCRANE CMS V 4.3 product package.

Note

WinCC V7.2 Update 7 must not be updated with service packs.

- **CMS station:** Windows 7 SP1 (64-bit) Professional, Enterprise, Ultimate; Multilingual User Interface (MUI)

Note

During installation of the Windows 7 operating system on the CMS station, make sure that English is chosen as the system language.

- **RCMS server:** Windows Server 2008 R2 SP1 (64-bit) en/us

Note

When installing the Windows Server 2008 R2 SP1 operating system on the RCMS server, make sure that the English version of the operating system is installed.

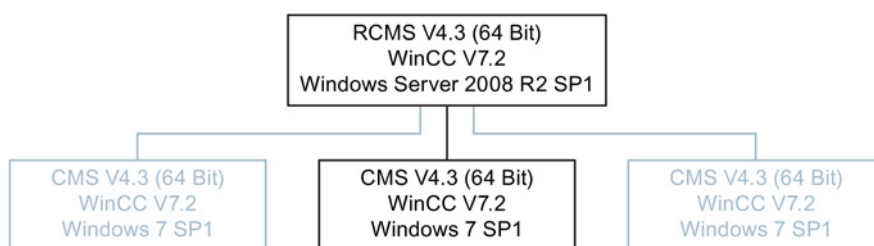


Figure 2-1 System requirements for SIMOCRANE CMS V4.3

Note

Installation

You will find more information on installing the SIMOCRANE CMS product in Chapter Installation (Page 157).

Introduction

The product SIMOCRANE CMS extends the functional scope of WinCC with crane-specific functions.

- WinCC Alarm Logging is expanded with the option of saving additional information about messages and displaying them in runtime in the graphic controls.
- The "PLC reference" function enables users to jump to the Step 7 editor (provided Step 7 is installed).
- Event-controlled recording of operational data (cargo handling data, counters) from the crane controller
- Data transfer (operating data, messages and values from WinCC tags) between cranes (CMS stations) and a central station (RCMS server). As well as runtime data, configuration data is also exchanged here to make configuring an RCMS server easier.
- Acquiring the complete system topology with the possibility for mapping the topology in the form of a graphic control in runtime. Individual cranes can be selected in the control.
- Import/export functions for bulk data handling
- Trace Viewer for displaying fast Trace data (acquisition cycle < 500 ms)
- With the Replay function (Page 111), past events on cranes can be analyzed. The relevant crane data is stored in the WinCC archive and can be replayed in Replay mode if necessary.

SIMOCRANE CMS essentially comprises five components:

- SIMOCRANE CMS Runtime:
A program capable of running on all stations. The parameterization is performed by the CMS Editor. The most important functions of Runtime are described in Chapter CMS Runtime (Page 25).
- CMS Editor:
The Editor is integrated in WinCC Explorer. It is used for managing master data. Chapter CMS Editor (Page 41) describes the functions of the CMS Editor in detail.
- SIMOCRANE CMS ActiveX Control Library:
The SIMOCRANE CMS ActiveX Control Library has two ActiveX Controls for integration into the WinCC Graphics Designer:
 - CMSFaults Control for displaying additional message information
 - CMSNodeTree Control for displaying the operating states of all connected cranes (CMS stations) on the RCMS serverChapter ActiveX Library (Page 139) describes the controls of the CMS ActiveX Library for use in the WinCC Graphics Designer. This includes a description of how each individual control is configured and its runtime characteristics.

- Trace Viewer:

The Trace Viewer is a stand-alone WinCC Control, which is installed with SIMOCRANE CMS. This document will not discuss this in detail. You can find a detailed description in the SIMOCRANE CMS System Manual, especially in the Chapters. 2.9.4 and 4.2.

- Replay function

The "Replay" function comprises the components "Replay Configuration Editor" and "Replay Runtime". With the Replay Configuration Editor, you can prepare, check, and repair pictures from a WinCC application for Replay. Replay Runtime is responsible for preparing and replaying the historical Replay data while WinCC Runtime and the Replay mode of the WinCC application are active.

Chapter Installation (Page 157) describes installation of SIMOCRANE CMS.

In the Appendix: XML import formats (Page 169), you will find the XML formats in the import/export files.

The following chapter first provides an introductory system overview and describes the interrelationship between the components of SIMOCRANE CMS.

A CMS and an RCMS example applications are provided with SIMOCRANE CMS. These can be used as a basis for configuring your own projects. The "SIMOCRANE CMS System Manual" describes how to integrate SIMOCRANE CMS into the CMS/RCMS example applications.

Overview

The diagram below illustrates the interrelationship and the communication between components of the SIMOCRANE CMS. These components expand the functional scope of SIMATIC WinCC and are described in detail in the following sections.

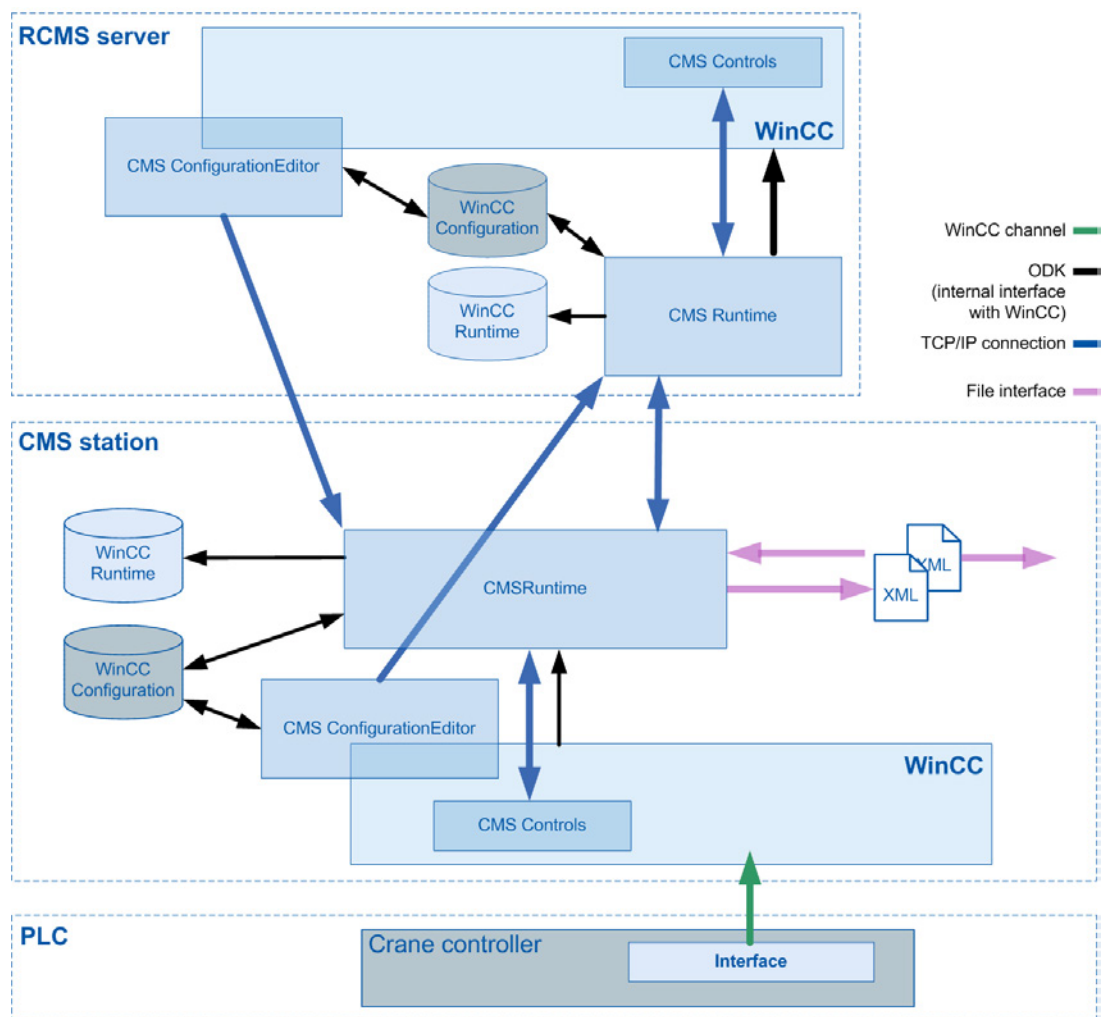


Figure 4-1 Overview of the components of SIMOCRANE CMS

4.1 CMS Runtime

CMS Runtime is a stand-alone program without user interface. An icon in the Windows system tray indicates that CMS Runtime is running. Changes in the color of this icon indicate the current status of the CMS Runtime.

CMS Runtime can be launched in various ways:

- Manually
- On Startup when the computer boots
- Automatically from the WinCC Runtime startup list when it is launched

Note

For normal operation, it is recommended that CMS Runtime is started via the WinCC startup list.

CMS Runtime can be terminated via a context menu command (right-click the icon displayed in the system tray). If WinCC Explorer is started or the WinCC Runtime routine is running, the CMS log files can also be opened via this shortcut menu.

The CMS Editor can be opened and master data processed without the CMS Runtime being started. CMS Runtime must be started in order to transfer configuration data. WinCC Runtime must also be started in order to acquire and transfer runtime data.

CMS Runtime runs on the CMS station and also on the RCMS server and handles various tasks depending on the system configuration.

Tasks of the CMS Runtime on the CMS station with and without connected RCMS server:

- Provides the required data for the CMS ActiveX objects
- Monitors trigger tags for acquiring move and MMBF data in WinCC (MMBF =Mean Moves Between Failure)
- Acquires operating data and stores this data in WinCC Tag Logging archives
- Monitors and restores counter values (if the new value of a counter is less than the previous value, then this previous value is written back.)
- Generates system tags in the WinCC tag management as an interface for information in the WinCC Graphics Designer
- Generates system messages in the WinCC Alarm Logging for diagnostic functions

Additional tasks of the CMS Runtime on the CMS station with connected RCMS server:

- Uploads configuration data to an RCMS server
- Transfers tag values to the RCMS server
- Creates XML files for the runtime data transfer (acquired operating data, WinCC messages) to an RCMS server (data buffer)
- Transfers XML files to the RCMS server
- Monitors the used volume of the XML files on the PC and provides a disk clean up function.

Tasks of CMS Runtime on the RCMS server:

- Provides the required data for the CMS ActiveX objects
- Uploads configuration data from one or more cranes
- Downloads configuration data to align configuration data of identical cranes
- Writes the received tag values to the associated structure tags of the crane
- Receives XML files for the runtime data transfer and stores the data to the corresponding WinCC archives of the crane (Alarm Logging, Tag Logging)
- Monitors the status of all configured cranes to display this status in the CMSNodeTree Control
- Generates system tags in the WinCC tag management as an interface for information in the WinCC Graphics Designer
- Generates system messages in the WinCC Alarm Logging for diagnostic functions

4.2 CMS Editor

The CMS Editor is integrated in the WinCC Explorer. The CMS Editor is used for managing the CMS master data which are stored in separate tables in the WinCC configuration database.

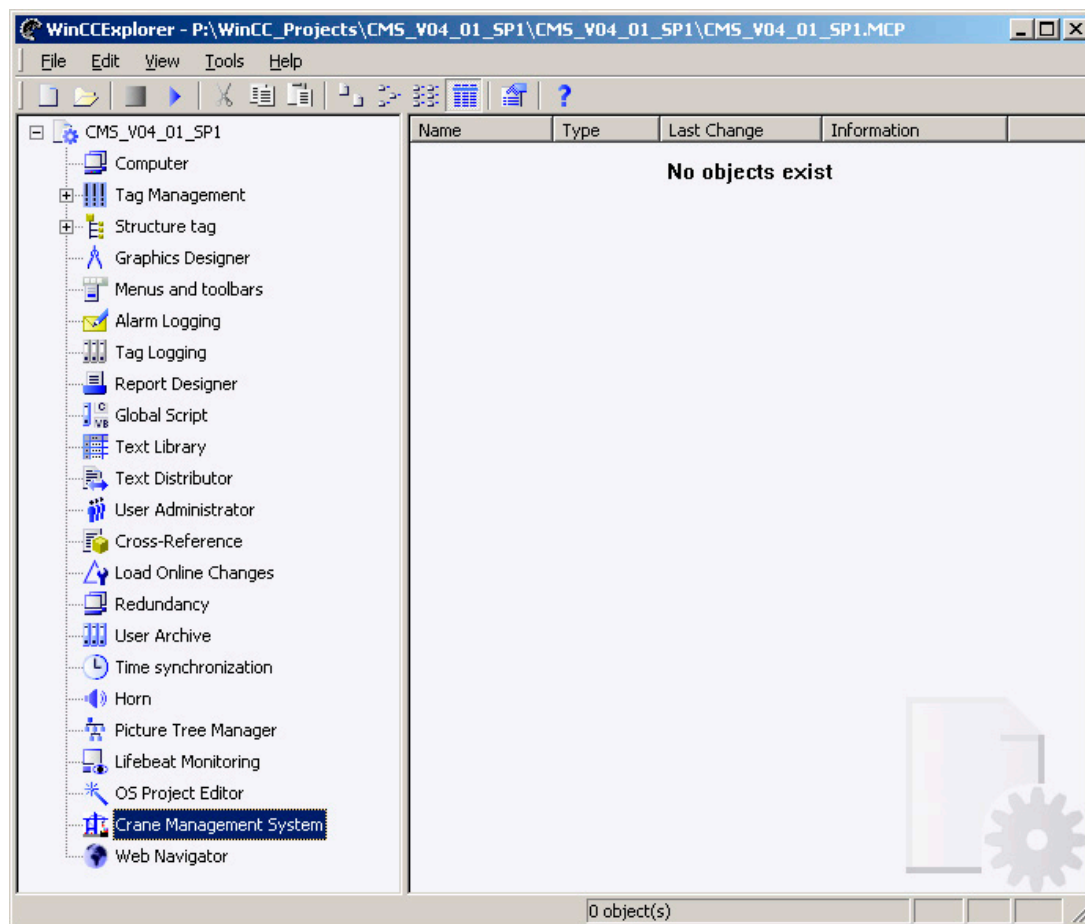


Figure 4-2 Integration in WinCC Explorer

In principle, the Editor always has the same structure, regardless of the system topology that has been set. The following topologies can be set:

- CMS without RCMS server
- CMS with RCMS server
- One RCMS server

The system topology is initially configured in the basic settings of the editor (see Chapter System: Basic settings (Page 103)). Some master data is only recorded for certain system topologies. These are marked in the following list.

Furthermore, some master data are only local crane data, and are therefore not transferred to an RCMS server. This data is also marked in the following list.

The following dialogs are used in the CMS Editor to maintain master data:

- Terminals (One RCMS server)
"Terminal" refers to a unit comprising an interrelated group of cranes (container terminal). Terminals are used to group data for the purpose of evaluation or as a criterion for selecting cranes.
- Equipment types
Equipment types are managed in the table of equipment types. Like terminals, equipment types are used to group data for evaluation. In addition, messages can be directly assigned to an equipment type. Messages assigned to a specific equipment type are "inherited" by all cranes of this type and do not need to be acquired separately for each crane.
- Cranes
Information about various cranes that CMS requires is managed in this table.
- Maintenance instructions
Information and instructions designed to help the maintenance engineer to diagnose and eliminate faults are stored in this table. These include both information about possible causes of failures as well as instructions on how to eliminate them.
- Logbook (locally on the crane, CMS without RCMS Server, CMS with RCMS server)
Remarks on the maintenance instructions are provided in this table.
- References
Additional information relating to equipment types, cranes and messages can be collected for access by maintenance engineers requiring troubleshooting support. However, information of this type is not stored in the database itself, the table provides references to a document containing the information.

Which documents can be displayed is determined by the display programs installed on the computer. The name of the program with which the relevant information can be displayed is therefore stored with the reference.

For the purpose of simplicity, the terms "reference" and "referenced information" will be used synonymously in the remainder of this document.
- Cargo handling data (CMS without RCMS server + CMS with RCMS server)
The data to acquire cargo handling operations is configured in this dialog. For every cargo handling operation that the crane makes, a data set is entered into a WinCC Tag Logging archive prepared for this purpose.
- MMBF data (CMS without RCMS server + CMS with RCMS Server)
(Mean Moves Between Failures)
The MMBF acquisition data is configured in this dialog. On a trigger event from the PLC, a data set is entered into a WinCC Tag Logging archive prepared for this purpose.
- Counter (CMS without RCMS server + CMS with RCMS server)
In this dialog, the counters are defined. For each counter, a difference value is written to a WinCC Tag Logging archive prepared for this purpose at constant time intervals. The difference value is obtained from the actual value of the counter to the value of the same counter at the last acquisition. All counters that are defined here are monitored simultaneously by the CMSRuntime in order to avoid that the counters are undesirably reset (for example, when reloading the control program).

- Transferring messages

In this dialog, all messages are selected whose configuration and runtime data are transferred to the RCMS server. The selection can be made according to message classes.

- Transferring a tag list

In this dialog, all tags are defined whose values are to be transferred to the RCMS server, either when a value changes or cyclically.

- Transferring operating data

In this dialog, all operating data archives are defined (cargo handling data, counters, MMBF data), whose configuration and runtime data are transferred to the RCMS server.

- Icons

Terminals, equipment types and cranes are generally selected in a "tree" for editing in the respective acquisition dialogs. The icons by which the corresponding objects are represented in the tree are stored in this table.

- Macros

This table defines text blocks used as place holder in references.

- Programs

This table is used to register the programs available for displaying references with the CMS.

- Reference types

The information in this table is used to clearly group the references for display in the CMSFaults control. This is the sole function of the data in this table.

- User texts

Texts, which should be displayed in the runtime for different languages, are configured in this dialog.

The topology of the system is defined by the data for terminals, equipment types and cranes. They are used to display the tree structure in the CMSNodeTree Control.

The data for maintenance instructions and references are used to display supplementary message information in the CMSFaults control.

The data in the help table for the icons is used to visualize individual objects in the tree structure to display the system topology.

The data in the auxiliary tables for reference types, macros, and programs is needed to display supplementary message information in the CMSFaults control.

4.3 CMS ActiveX controls

As an open system, WinCC features an interface via which user-defined functions can be added to WinCC by means of ActiveX objects. CMS ActiveX objects allow access to CMS-specific content from WinCC displays.

In order to ensure that these CMS ActiveX objects can still work, even when the WinCC Web Navigator is used to visualize the WinCC displays on other computers for example, the CMS ActiveX components do not themselves access WinCC data, but instead establish the connection to WinCC using CMS Runtime.

With the CMSFaults control, extended error information is output for the messages from the WinCC Alarm Logging. The CMSFaults Control can either be used at the CMS or also at the RCMS.

CMSNodeTree Control is used to display the current statuses of all the cranes in a system on the RCMS server. The NodeTree Control can only be used on the RCMS server.

CMS Runtime

5.1 General information about operation

5.1.1 Starting the CMS Runtime

CMS Runtime has no user interface. The program can either be manually started or it can be started using an entry in Windows or WinCC Startup.

Note

For normal operation, it is recommended that CMS Runtime is started via the Windows Startup.

An icon in the Windows system tray indicates that CMS Runtime has been started. Changes in the color of this icon indicate the current status of the connection between CMS Runtime and WinCC:

- Blue (CMS station / RCMS server):
When starting CMS Runtime no critical errors occurred. All local functions are active. There is no connection to the RCMS server.
- Green (CMS station / RCMS server):
When starting CMS Runtime no critical errors occurred. All local functions are active. The connection to the RCMS server / to all CMS stations is active.
- Yellow (RCMS server):
When starting CMS Runtime no critical errors occurred. All local functions are active. The connection to at least one CMS station is not active.
- Black on a red background (CMS station / RCMS server):
CMS Runtime cannot run. When starting CMS Runtime, an error has occurred that prevents CMS Runtime from being executed (a crane has not been defined in the CMS Editor, an incorrect computer name has been entered into the CMS Editor, ...). Additional information on this error is provided in the CMS error file in the folder ...\\CMS of the WinCC project directory.

In addition, there is a CMS system tag "@CMSConnectionState", to which the status of CMS Runtime is mapped (see Chapter System variables (Page 38)).

5.1.2 Exiting CMS Runtime

CMS Runtime can be terminated via a context menu command (right-click the icon displayed in the system tray).

5.2 Acquiring cargo handling data on the CMS station

5.2.1 Overview

Certain operating data in the controller are identified in the CMS for the purpose of acquiring information about the utilization of a crane or for performing other statistical analyses. These data are then transferred to the CMS on the computer for storage in the database.

While some of these values are continuously saved, there is a set of data assigned to the movement of a container load. These values are only saved after the movement has been completed. These values will be referred to as cargo handling data from now on.

Cargo handling data includes, e.g. values such as:

- Starting time, finishing time and/or duration of a cargo handling operation
- Container size
- Weight
- Direction of motion
- Specification of a mode or status (for example: Automatic mode, heavy-duty operation, dual-spreader operation ...)

Cargo handling data is stored in WinCC Tag Logging archives. When process values are stored in Tag Logging archives, the tags to be archived are normally acquired by WinCC and stored in archive tags. However, since cargo handling data must fulfill special requirements, it is entered into the archive tags of the Tag Logging archives by CMS Runtime rather than by WinCC.

5.2.2 Definition of archives

CMS Runtime can acquire cargo handling data in two ways:

- Direct acquisition:
The time stamp for the data set is set by CMS Runtime based on the system time on the computer. A start and stop event define the time frame of the data set.
- Buffered acquisition:
The time stamp for the data set is set on the controller and transferred to the CMS with the data set.

External tags must be created in the WinCC tag management in order to be able to manage cargo handling data. The process values are part of the controller interface (e.g. direction of movement, weight, container size, duration of the cargo handling operation, etc.).

The interface also contains two bits which can be controlled by the controller at the beginning and end of a cargo handling operation (trigger bits). The start trigger is not essential for the buffered acquisition. If data buffering is required, the time stamp will also need to be specified in this interface. The time stamp is always transferred from the controller to WinCC split up into individual time components (year, month, day, hour (24 hours), minute, second) as decimal value.

At least one archive must be created in the WinCC Tag Logging for long-term storage of cargo handling data. This archive must be registered with the CMS in the CMS Editor. Further, the two bits to signal start or stop and/or the tags for time acquisition must also be specified in this function.

The archive tags in the Tag Logging archives are not written by WinCC (if this were the case, the timing of the write operations of individual archive tags would not be synchronous); instead they are triggered by the stop bit. They are then read from the crane controller using the external tags and are written by CMS Runtime to the archives with a common time stamp. The start or end time of the cargo handling operation can be selected as time stamp.

The archive tags in the Tag Logging archives for managing cargo handling data must have the following settings – this is mandatory:

Property	Value	Meaning
Name	Name of the archive tag	Mandatory field in WinCC; required when displaying cargo handling data via the WinCC Report function
Name of the process variable	External tags in the WinCC tag management system	The value of the specified tag is read by CMS Runtime from the controller and entered in the archive.
Tag supply	System	Manually input values are not currently supported by WinCC
Archiving	Disabled	As the values are written from CMS Runtime by a program, the writing of values from WinCC must be disabled.
Acquisition type	Acyclic	Values can be entered at times chosen by the user.

Note

The length of the archive name is limited to 32 characters, the length of the process tag name is limited to 64 characters.

Note at this point that when transferring configuration data to the RCMS server, the archive names and the process tag names must contain the crane name followed by "_", as prefix (for instance "STSCrane1_MoveData"). In total, the maximum number of characters specified above must not be exceeded.

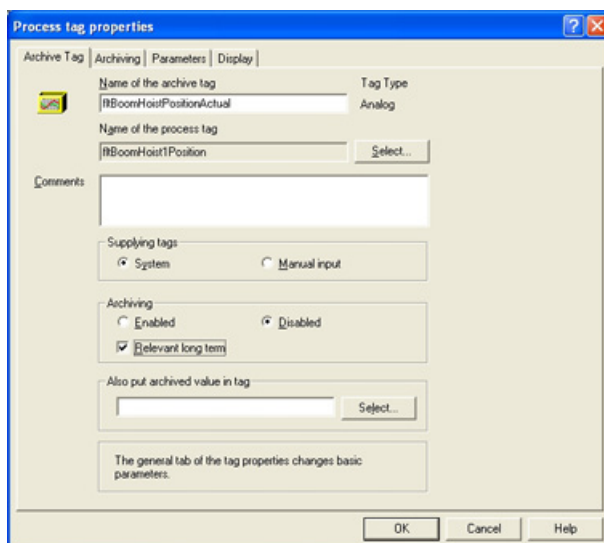


Figure 5-1 Properties of an archive tag, archive tag tab

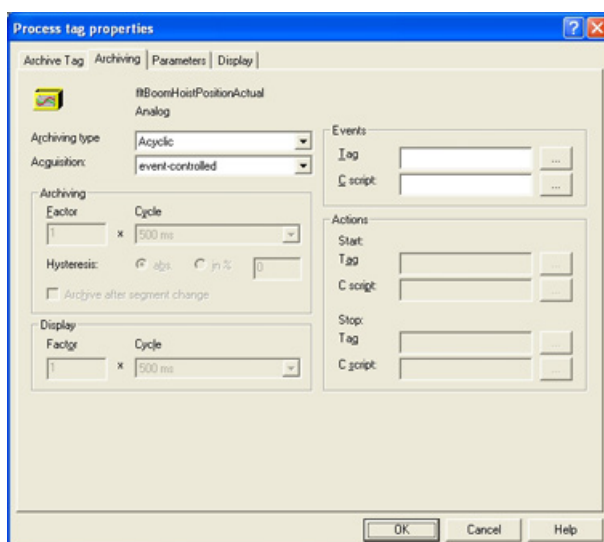


Figure 5-2 Properties of an archive tag, archive tab

5.2.3 Execution in runtime

When CMS Runtime starts up, it reads the names of the archives and trigger tags from the configuration file and initializes processing of the cargo handling data. In this case, all archive tags of the relevant archive are read out for each parameterized archive and the external tag linked to the archive tag is determined. Furthermore, an information function is activated; this can activate a CMS Runtime function every time the status of one of the trigger tags changes.

If the information function detects an incoming edge for one of the two monitored trigger tags, one of the two processing functions is activated:

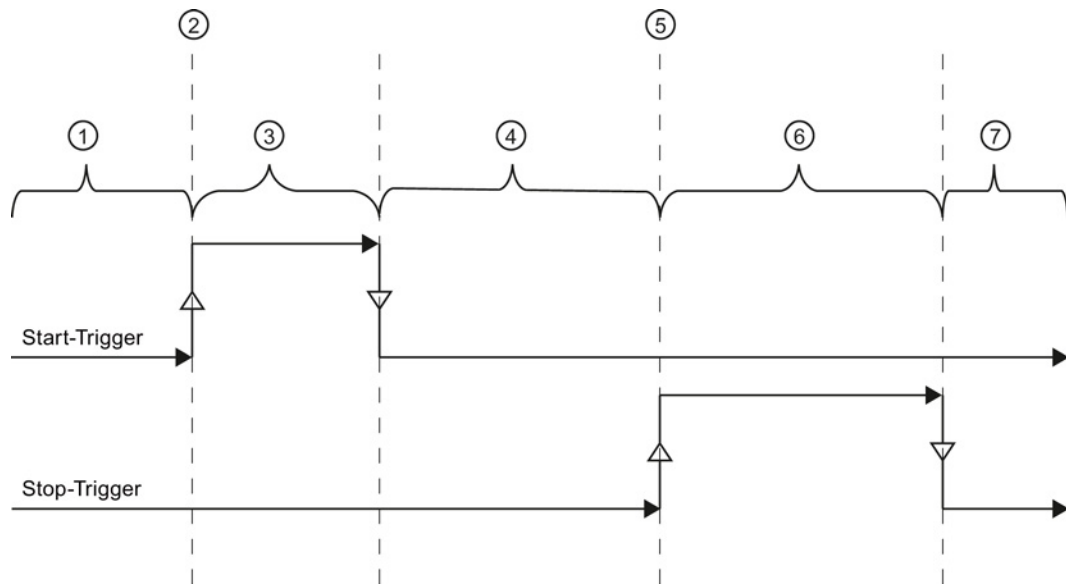
- Start of the cargo handling sequence

When the cargo handling sequence starts, only the time stamp at which the start was detected is stored. The bit for signaling the start of cargo handling is then reset again by CMS Runtime. The start may not be required. In this case, the time stamp tags for the start time are also acquired at the end of cargo handling sequence.

- End of the cargo handling operation

When the cargo handling operation ends, the time stamp, at which the status change in the trigger tag was detected, is initially saved. With a synchronous read task, all external tags of the individual archive tags are read from the controller. After the actual values have been acquired from the controller, they are written with the same time stamp to the Tag Logging archives by CMS Runtime. Archive entries are usually written to the archives with the time stamp recorded at the movement start. The time stamp to be used for writing archive data, i.e. the one for the start or end event, can be configured separately for each archive in the CMS Editor. If necessary, an XML file is created for transferring data to the RCMS server (topology: "CMS with RCMS server").

The trigger bit is reset to complete the writing of cargo handling data. Once this has happened, the process of writing cargo handling data on the interface is reenabled on the controller.



- ① Writing of data enabled by the controller.
Reading of data disabled by CMS Runtime
- ② Start of the cargo handling operation
- ③ Reading of start time stamp by CMS Runtime.
Writing of data disabled by the controller
- ④ Writing of data enabled by the controller.
Reading of data disabled by CMS Runtime
- ⑤ End of the cargo handling operation
- ⑥ Reading of stop time stamp and cargo handling data by CMS Runtime.
Writing of data disabled by the controller
- ⑦ Writing of data enabled by the controller.
Reading of data disabled by CMS Runtime

Figure 5-3 Protocol for acquisition of cargo handling data

The controller disables the writing of data when one of the two trigger bits is set. This ensures that the data set acquired is always consistent. Conversely, CMS Runtime disables the reading of values when the trigger bits are not set.

The CMS sample application provided contains predefined archives for storing cargo handling data with a basic set of archive tags. The user can adapt these archives to meet his own requirements if necessary. For a more detailed description of the predefined archives in the CMS sample application, please refer to the "SIMOCRANE CMS – System Manual".

5.3 Acquiring counter differences at the CMS station

5.3.1 Overview

The counters are located in the controller. The CMS only manages the counters' process values. The counter values are part of the controller interface (e.g. counts for the number of cargo handling operations, the total weight, etc.).

CMS Runtime distinguishes between two types of counters:

- Total counter: Counters which are valid for the crane's life cycle (equivalent to an odometer in a car)
- Section counter: Counter which can be reset from the CMS user interface (trip odometer in a car)

Both counters must count in parallel.

Use the following naming convention in the WinCC tag management to make an assignment between a total counter and a section counter:

- Total counter: → "Counter name"
- Section counter to "Counter name": → "Counter nameRes"

This means you will not be able to create a total counter with the ending "Res".

The actual values of the total counters are monitored by CMS Runtime. The actual values of a counter can only be monitored if the total counter is a part of an archive used to record counter differences in the CMS Editor. The section counter must not be part of the archive. When the value of a total counter changes, the actual value is compared with the last counter value stored. If the actual value is less than the value last stored, the CMS writes the old value back to the controller. This prevents information from being lost, something which may occur if the control program is reloaded to the CPU after a certain operating time.

Note

A configuration file is created in the WinCC project directory under "...\\CMS\\Counter" and under "...\\CMS\\Accumulates" to monitor the counter values and to calculate the difference. If the counter values are to be completely reset, then these two configuration files must be removed.

5.3.2 Definition of archives

Long-term storage of counter differences is only possible if at least one archive has been created in the WinCC Tag Logging and this has been registered with the CMS in the CMS Editor via the dialog for counter acquisition. The time slice for the counter differences must also be defined in the same dialog.

The archive values are written to the Tag Logging archives by CMS Runtime. The time that the counter differences are acquired is used as time stamp. The time of acquisition is

obtained from the acquisition cycle, which is set in the CMS Editor. It is essential that the archive tags in the Tag Logging archives for managing the counters have the same settings as the archive tags of the cargo handling data archives (see Chapter Definition of archives (Page 26)).

5.3.3 Execution in runtime

The CMS Runtime handles two tasks for the counter values:

- Calculating the differential values of a total counter in defined time slices
- Monitoring actual counter values. The CMS Runtime monitors all total counter values and their assigned section counters for consistency (please note the naming convention).

When CMS Runtime starts up, it reads the names of the archives and acquisition cycles from the configuration file and initializes processing of counter data. The archive tag values from each parameterized archive are fetched and the external tag linked to the archive tag is determined. This gives users the freedom to adapt the type and scope of the stored data to suit their own requirements by creating new, individual archive tags or amending/deleting existing ones. If users want to exclude entire archives from processing (or include them), they can make the necessary changes in the CMS Editor.

A cyclic function is started in the CMS Runtime which monitors the acquisition cycles for the counter archives. Once an acquisition cycle for an archive is complete, all the process tags of this archive are read. The difference between the current count and the count for the previous cycle is established. Finally, the difference is entered in the Tag Logging archive and, if necessary, an XML file is created for transferring data to the RCMS server (topology: "CMS with RCMS server").

An information function is also started, which is triggered whenever a counter changes. This function compares the current value with the last value. If the current value is less than the old value, CMS Runtime writes the old value back to the controller

5.4 Acquiring MMBF data at the CMS station

5.4.1 Overview

Like the acquisition of cargo handling data, the acquisition of MMBF data supports both direct acquisition and burred acquisition. The controller has to specify the time stamp under which the data set is to be stored in the Tag Logging archive.

When the controller has to specify the time stamp, the relevant WinCC process tags for reading the time stamp must be specified in the function for defining MMBF data in the CMS Editor.

External tags must be configured in the WinCC tag management system before MMBF data can be managed. MMBF data is part of the controller interface (e.g. number of cargo handling operations, number of errors, calculated MMBF value, etc.).

The interface also has a bit which is set by the controller after a specific period (e.g. one month) has passed (trigger).

5.4.2 Definition of archives

At least one archive must be created in the WinCC Tag Logging for long-term storage of MMBF data. This archive must be registered in the CMS Editor. The trigger bit and, if necessary, the time stamp tags also need to be defined in the dialog.

Here too, data is written to the archives by CMS Runtime. The time at which WinCC detected the change in the trigger bit is used as time stamp, or the time stamp, transferred from the controller to the data set. It is essential that the archive tags in the Tag Logging archives for managing the MMBF data have the same settings as the archive tags of the cargo handling data archives (see Chapter Definition of archives (Page 26)).

5.4.3 Execution in runtime

When CMS Runtime starts up, it reads the names of the archives and trigger tags from the configuration file and initializes processing of MMBF data. The archive tags from each parameterized archive are fetched and the external tag linked to the archive tag is determined. Furthermore, an information function is activated; this can activate a CMS Runtime function every time the status of the trigger tag changes. This gives users the freedom to adapt the type and scope of the stored data to suit their own requirements by creating new, individual archive tags or amending/deleting existing ones. If users want to exclude entire archives from processing (or include them for processing), they can make the necessary changes in the CMS Editor.

If the information function detects an incoming edge of the monitored trigger tag, then for further processing the MMBF event is started.

First, the time stamp at which the status change in the trigger tag was detected is stored. With a synchronous read task, all external tags of the individual archive tags are read from the control. If these values on the controller are only written when the trigger bit is reset and provided the trigger bit is only set when all values have been successfully written, it can be ensured that only those values relating to the current MMBF data set are read from the controller and transferred to internal tags.

After the actual values have been acquired from the controller, they are written with the same time stamp to the Tag Logging archives by CMS Runtime and, if necessary, an XML file is created for transferring data to the RCMS server (topology: "CMS with RCMS server").

The trigger bit is reset to complete the writing of MMBF data. Once this has happened, writing MMBF data on the interface is re-enabled on the controller.

5.5 Transfer of configuration data between the CMS station and the RCMS server

5.5.1 Overview

Configuration data is configured data in the WinCC and CMS editors. This configuration data is initially part of the WinCC project of the CMS stations. Configuration of the RCMS server is simplified by transferring this configuration data between the CMS stations and the RCMS server. Transfer is possible in two directions:

- Upload: Transfer of the configuration data from the CMS stations to the RCMS server; can be initiated from the CMS side or the RCMS side. The configuration data of the CMS station are automatically generated at the RCMS server.
- Download: Transfer of the configuration data from the RCMS server to the CMS stations; download can only be initiated from the RCMS.

These upload and download operations are always executed between cranes of the same type. Cranes of the same design and therefore the same data management are combined to form one equipment type.

The following configuration data is transferred:

- Topology data
- WinCC messages (including message classes, message types, message blocks and group messages).
- Maintenance instructions, which are assigned to one message
- References, which are assigned to an equipment type, a crane or a message
- WinCC Tag Logging archives that are defined for the acquisition of cargo handling data
- WinCC Tag Logging archives that are defined for the acquisition of counter differences
- WinCC Tag Logging archives that are defined for the acquisition of MMBF data

WinCC tags, which are defined in the tag list, are only transferred at upload.

Note

WinCC tags, which are used in messages and Tag Logging archives, are not created at download. They must be available in the CMS projects before the download starts.

At upload, the process tags of the Tag Logging archives are created as internal tags.

5.5.2 Sequence of an upload

Initiation of an upload always requires a user interaction in the CMS Editor. Configuration data is never automatically transferred in the background.

An upload can be started at the CMS station or at the RCMS server. It cannot be started simultaneously at several stations. However, upload to several cranes can be simultaneously started at the RCMS server. The data of the first crane in the topology tree is transferred first, and then the data of the last crane in the topology tree. In this case, deviating data of the previously uploaded crane is deleted.

Using the color-coded marking in the CMS Editor, you can identify whether data have been changed, which must be transferred to the RCMS server using an upload.

If configuration data was changed, then the upload executes the following operations:

- At the RCMS, messages are generated for each equipment type in the WinCC Alarm Logging. In so doing, an offset is added to the WinCC message numbers. This offset is defined in the CMS Editor for each existing equipment type (see Chapter Topology: Equipment types (Page 53)). Message classes, message types, message blocks and group messages, which are not yet available, are automatically created. Existing messages are overwritten, new messages are created.
- Existing maintenance instructions, references and assignments are overwritten at the RCMS and are created again.
- The operating data archives in WinCC Tag Logging are generated at the RCMS. The crane name followed by "_" is placed as a prefix in front of the archive name of the CMS station. The process tags used are created in the tag group "Crane name" (e.g. "STSCrane1"). If this group does not yet exist, then it is created.
- A structure type is created at the RCMS with the tags defined in the tag list of the CMS station. A structure type is created for each equipment type. The name of the structure is the equipment type with the prefix "@CMS" (e.g. @CMSSTSCrane). In addition, a WinCC structure tag is generated with the crane name as tag prefix from this type (e.g. "STSCrane1.tag1", ...). The tag is created in the tag group "Crane name" (e.g. "STSCrane1"). If this group does not yet exist, then it is created.

5.5.3 Sequence of a download

A download is always initiated by a user interaction in the CMS Editor. Configuration data is never automatically transferred in the background.

A download can only be started at the RCMS server. It can be started for several cranes simultaneously. Data are first transferred to the first crane in the topology tree, and finally the data to the last crane in the topology tree.

Using the marking in the CMS Editor you can identify whether data has been changed, which has to be transferred to the CMS station(s) using a download.

If configuration data was changed, then the download executes the following operations:

- Messages are generated in the WinCC Alarm Logging on the CMS station. In this case, the offset of the WinCC message numbers at the RCMS is subtracted. Message classes, message types, message blocks and group messages, which are not yet available, are automatically created. Existing messages are overwritten, new messages are created.

5.6 Transfer of runtime data from the CMS station to the RCMS server

WinCC tags that are used must be available, otherwise the download is canceled with an error.

- Existing maintenance instructions, references and assignments are overwritten at the CMS station and then created again.
- At the CMS station, the operating data archives are created in WinCC Tag Logging. If there is already an archive with the same name, then this will be overwritten. The crane name prefix followed by "_" is removed.
- The process tags that are being used must already exist in the tag management.

5.6 Transfer of runtime data from the CMS station to the RCMS server

5.6.1 Overview

When transferring runtime data, in parallel to the entry in the WinCC archives on the CMS station, data is also transferred to the RCMS server.

Already archived data cannot be transferred.

The transfer of runtime data includes:

- WinCC messages
- Operating data (move data, counter differences, MMBF data)
- Tag values

All the operating data, tags and messages belonging to a CMS station are identified using the crane name. The crane name is defined in the topology of the CMS editor.

WinCC messages and operating data are transferred in the form of XML files, which serve as an interface and data buffer.

Note

You will find more information on data transmission in the CMS System Manual in Chapter 5.2 "CMS-RCMS data transmission."

5.6.2 Sequence

At the CMS station, messages and operating data are entered into the WinCC archives in parallel to generating XML interface files in the transfer directories in the folder ... \CMS of the WinCC project directory on the CMS station:

- Accumulates: Contains files for transferring differences in counter values.
- MMBF: Contains files for transferring MMBF data.
- Moves: Contains files for transferring cargo handling data.
- Messages: Contains files for transferring WinCC error messages.

Each joint transfer directory has the following directory structure:

- The files to be transferred are located in the "Files" folder.
- Files, where errors occurred while being transferred, are located in the "Errors" folder.
- For Accumulates, there is also the "Init" folder. It has a bin file, which is internally used to calculate the difference of counter values.
- In the "Files" and "Errors" directories, the files of a day are listed in a subdirectory. The subdirectory name is formed from the ISO date (yyyy-mm-dd).

Using the XML files in the transfer directories, you can check

- whether data for transfer has been written.
- whether the data has actually been transferred → deleted from the transfer directory

The XML files act as a data buffer if the connection between the CMS and the RCMS is interrupted.

Note

Please note that this buffer is limited. It is not recommended to buffer large data quantities. In the CMS editor of the CMS station, you can define after how many hours the old XML files are to be deleted (see Chapter System: Basic settings (Page 103)).

Tag values are directly transferred to the tag management of the RCMS server and not buffered.

5.7 System variables

CMS Runtime produces a series of system variables with the prefix "@CMS". The tags in the group "CMS" are created at the CMS station. If this tag group does not yet exist, it is generated automatically. At the RCMS, the system variables are part of the crane-specific structure, or they are also created automatically in the CMS tag group (e.g. @CMSConnectionState, @CMSProgramVersion, @CMSDatabaseVersion).

Table 5- 1 CMS system variables

Tag name	Data type	Bit	Description
@CMSProgramVersion	Text tag 16-bit character set	-	Version of the CMS Runtime
@CMSDatabaseVersion	Text tag 16-bit character set	-	Version of the CMS database
@CMSCraneName	Text tag 16-bit character set	-	Topology variable: Name of the crane
@CMSEquipment	Text tag 16-bit character set	-	Topology variable: Equipment type to which the crane belongs
@CMSIPAddress	Text tag 16-bit character set	-	Topology variable: IP address of the CMS station
@CMSConnectionState	Unsigned 16-bit value	0	(CMS station / RCMS server) When starting the CMS Runtime, no critical errors occurred. All local functions are active. There is no connection to the RCMS server.
		1	(CMS station / RCMS server) When starting the CMS Runtime, no critical errors occurred. All local functions are active. The connection to the RCMS server / to all CMS stations is active.
		2	(RCMS server) When starting the CMS Runtime, no critical errors occurred. All local functions are active. The connection to at least one CMS station is not active.
		7	(CMS station / RCMS server) CMS Runtime cannot run. When starting CMS Runtime an error has occurred that prevents CMS Runtime from being executed (e.g. WinCC Runtime has not been started, a crane has not been defined in the CMS Editor, an incorrect computer name has been entered into the CMS Editor, ...). Additional information on this error is provided in the CMS error file in the folder ...\\CMS of the WinCC project directory.

5.8 System messages

CMS Runtime displays general execution and error information in the CMS system messages. These system messages use a separate reserved message class "CMS" (message class 16; created in the WinCC Alarm Logging). The messages of this class only use the status "came in". The message class contains three message types:

- CMS_Fault: Message type 241
- CMS_Warning: Message type 242
- CMS_Info: Message type 243

The system messages have an offset of 50000 in the WinCC Alarm Logging.

Table 5- 2 CMS system messages

Message number	Message type	Message text (user text block 5)
Messages at the CMS station and at the RCMS server		
50000	CMS_Info	<i>Crane name:</i> Configuration data upload has been started.
50001	CMS_Fault	<i>Crane name:</i> Configuration data upload completed with errors.
50002	CMS_Info	<i>Crane name:</i> Configuration data upload successfully completed.
Additional messages at the CMS station		
50200	CMS_Info	<i>n</i> XML files were deleted from the transfer directories.
50201	CMS_Info	<i>n</i> XML files were deleted from the error directories.
50210	CMS_Info	Connection to the RCMS server established.
50211	CMS_Info	Connection to the RCMS server disconnected.
50212	CMS_Info	Connection to WinCC Runtime established.
50213	CMS_Info	Connection to WinCC Runtime disconnected.
50220	CMS_Info	<i>Crane name:</i> Configuration data download started.
50221	CMS_Fault	<i>Crane name:</i> Configuration data download completed with errors.
50222	CMS_Info	<i>Crane name:</i> Configuration data download successfully completed.
Additional messages at the RCMS server		
50510	CMS_Info	<i>Crane name:</i> Connection established
50511	CMS_Info	<i>Crane name:</i> Connection disconnected
50512	CMS_Info	Connection to WinCC Runtime established.
50513	CMS_Info	Connection to WinCC Runtime disconnected.

CMS Editor

6.1 General information about operation

6.1.1 User roles

When starting the CMS Editor, a distinction is made between two user roles with different rights. These roles are controlled on the basis of Windows user groups.

- User

User is the role automatically assigned to anyone who starts the CMS Editor. A user has only restricted access to the functions in the CMS Editor.

- CMS Administrator

A CMS Administrator has to be a member of the Windows user group "CMSAdmin". CMS administrators have unrestricted access to the functions of the CMS Editor.

6.1.2 Launching from WinCC Explorer

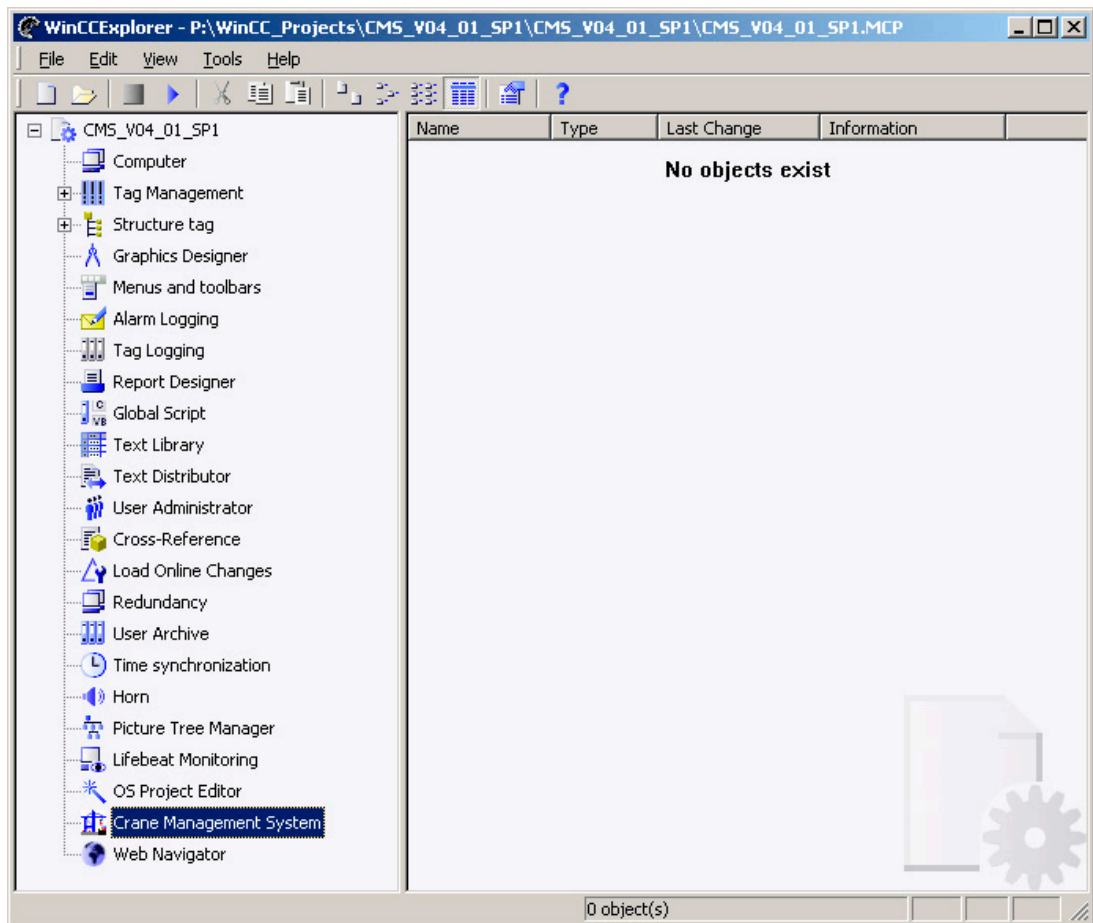


Figure 6-1 Integration in WinCC Explorer

The functions for acquiring CMS master data are launched either directly by a double click on the "Crane Management System" entry or in the WinCC Explorer following a right click on the corresponding command in the context menu.

6.1.3 Function selection

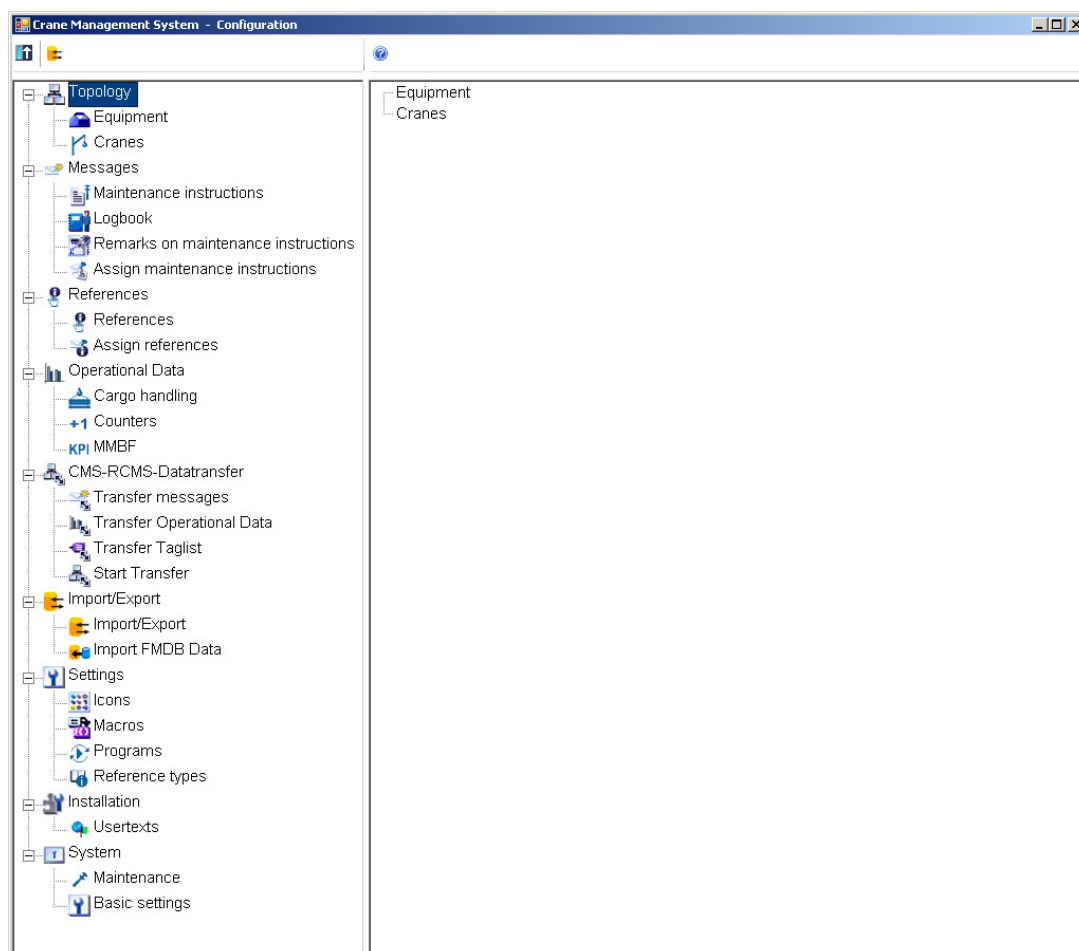


Figure 6-2 Functions in the CMS Editor (CMS administrator, CMS with RCMS server)

All available parameterization functions can be accessed via the tree display in the left-hand window of the CMS Editor (function tree). The parameterization functions are grouped together using a number of categories.

When a parameterization function is selected in the tree display, the associated dialog will appear in the right-hand window of the Editor.

When a category is selected in the tree display, all parameterization functions belonging to this category are displayed in the right-hand window. The associated dialog can then be called by double-clicking the parameterization function in the right-hand window.

Note

You must first define the topology in the dialogs Terminal, Equipment type and Cranes, to enable all additional configuration functions.

The structure of the tree display for the available parameterization functions makes a distinction between two modes, depending on the user role: Administrator and users

In the administrator mode, in addition to the parameterization functions of the user mode, the parameterization functions for creating and maintaining of reference types, changing symbols and adapting displayed message details in the CMSFaults Control are also available.

In addition, the structure of the tree display for the available parameterization functions also makes a distinction based on the topology selected. For example, the functions for assigning parameters for the acquisition of operational data are not available on RCMS.

If a function in the tree is marked in color, then this means that the configuration data recorded by the editor has been changed – and it is necessary to transfer configuration data (upload/download) between the RCMS server and the CMS station. You can adapt the color of the marking in the input dialog for basic settings, under the colors tab (see System: Basic settings (Page 103)).

The toolbar of the function selection contains, depending on the selected topology, 1-3 elements, which offer a link to certain dialogs:

- Upload:

The button is only visible for the topologies "CMS with RCMS server" and "One RCMS server". It can only be used if data is available for upload. When pressed, the "Upload" dialog is opened.




- Download:

The button is only visible for the topology "One RCMS server". It can only be used if data is available for download. When pressed, the "Download" dialog is opened.

- Import/export:

The button is permanently visible. When pressed, the "Import/Export" dialog is opened.

Table 6- 1 Toolbar of the function selection

Icon	Meaning	Input dialog	Assignment dialog	Starts functions
	Upload	Yes	No	No
	Download	Yes	No	No
	Import/Export	Yes	No	No

6.1.4 Context menu

All dialogs in the CMS Editor are basically identical in terms of functional structure. They differ only in the scope of the editor functions offered by the dialog.










All available functions can be called by means of a context menu. Alternatively, most functions can also be called via a toolbar in the header of the acquisition dialog. Very frequently used functions can be called via a button menu. The footer of the dialog contains a status bar which shows, for example, the current text entry mode (insert or overwrite mode).

There are three different dialog types in the CMS Editor:

- Dialogs for acquiring basic data (acquisition dialogs)
- Dialogs for linking different sets of basic data (assignment dialogs)
- Dialogs for activating functions

Each of these dialog types has its own scope of functions, but only the data acquisition dialogs feature the entire range of functions. The assignment dialogs do not include the functions "New" or "Edit" as these are always executed directly in these dialogs. The dialogs for activating functions contain only the help function.

Table 6- 2 Context menu toolbar

Icon	Meaning	Acquisition dialog	Assignment dialog	Starts functions
	New	yes	no	no
	Save	yes	no	no
	Copy	yes	no	no
	Delete	yes	no	no
	Filter	yes	yes	no
	Remove filter	yes	yes	no
	Abort	yes	no	no
	Import/export	yes	yes	no
	Help	yes	yes	yes

6.1.5 Button menu

The button menu contains the following buttons:

- Overwrite

In insert mode, a new data record with the displayed data is created; in overwrite mode, the displayed data record with the displayed data is overwritten.

- Copy

The currently displayed data record is saved under the new name.

- New

All fields in the acquisition screen are deleted, insert mode is activated.

6.1 General information about operation

- Delete

The displayed data record is deleted.

- Abort

In insert mode, all input fields are deleted again; in overwrite mode, the currently displayed data record is imported from the database again. This resets all changes which have already been made.

6.1.6 Status bar

The status bar shows the current status of the insert or overwrite mode during editing. After a button has been pressed, a message (e.g. "Data set deleted") will be briefly displayed (10 seconds) confirming that the action triggered has been successfully completed.

6.1.7 Validity checks



Validity checks are performed on every user input. An input error icon is displayed next to the line containing an input error.

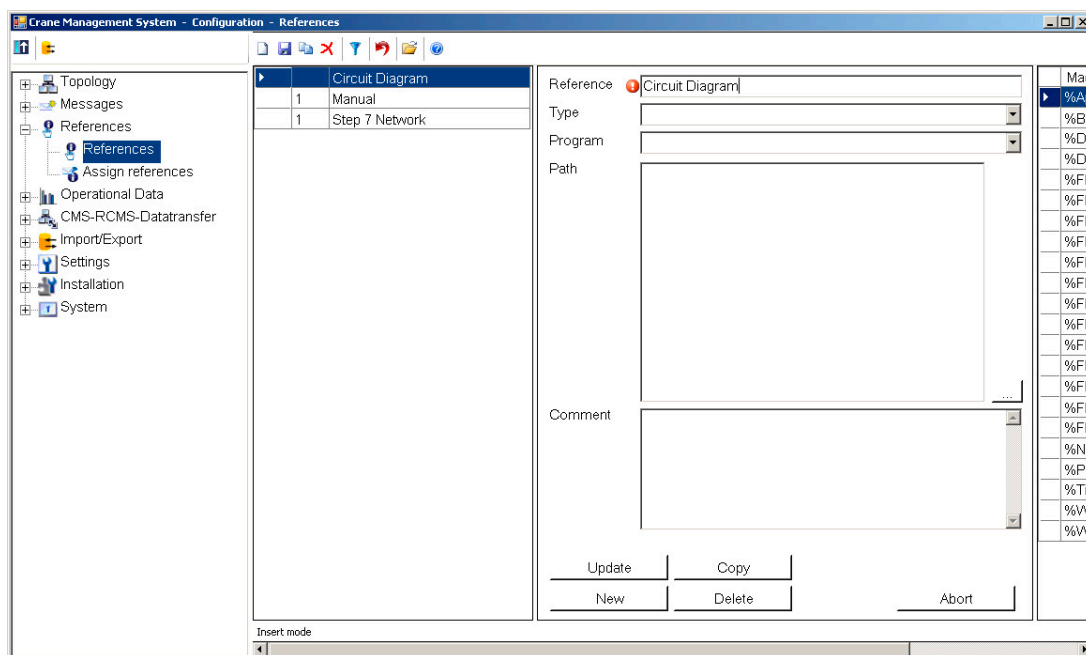


Figure 6-3 Signaling of input errors

The appropriate error message is displayed in the tool tip text for the input error icon. The icon continues to be displayed until no further errors are detected.

A data record which contains an error cannot be stored.

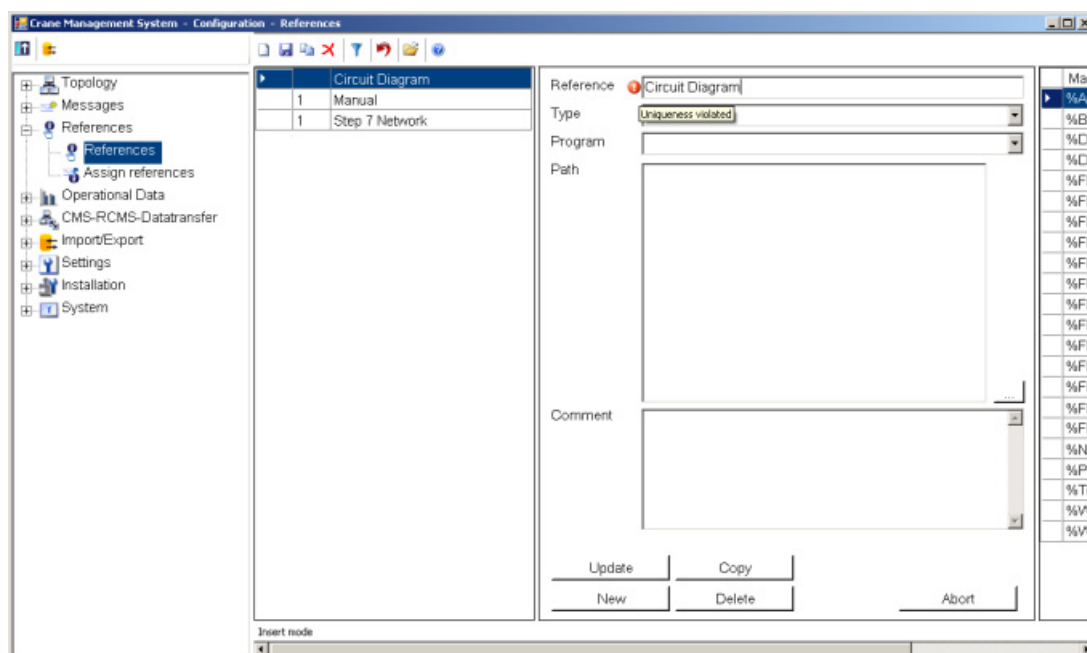


Figure 6-4 Signaling of input errors (tool tip)

6.1.8 Filtering

The acquisition dialog opens in a separate window for the specification of filter criteria. The list of data records displayed for acquisition is filtered by the inputs in the search window. The filter icon in the toolbar changes to indicate that the filter is activated. To indicate that the filter can be disabled, the filter icon is displayed with a line through it.

The wildcards "*" (any sequence of any characters) and "?" (exactly 1 character of choice) may be used in the filter criteria input fields. However, only one of these characters in each case may be specified at the beginning and/or end of the search string. These wildcard characters must not be specified within the search string.

Search strings must also not contain any of the following characters:

#, [,], ~, (,), \, /, =, >, <, +, -, %, _, &, |, ^, ', "

Searches for wildcards cannot be executed in selection fields. Selection fields can either remain empty, or a search can be executed for an exact value in the selection field.

As long as the filter is selected, all other functions in the relevant acquisition dialog are performed on the filtered data records. This mechanism can be used, for example, to export a data extract.

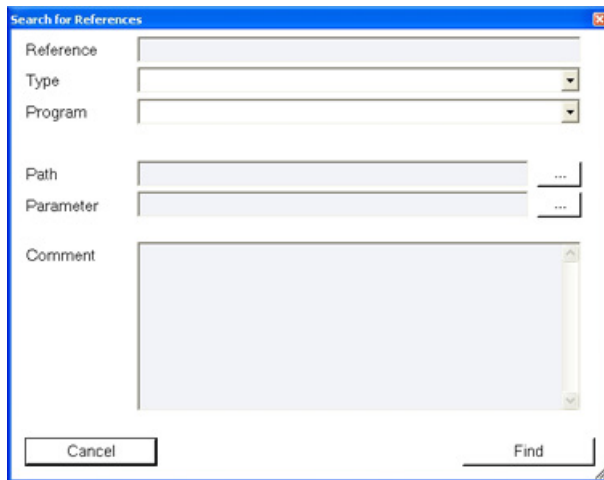


Figure 6-5 Dialog for entering filter criteria

The filter dialog is structured differently in the dialogs for assigning maintenance instructions or references or in the dialog for managing the comments on maintenance instructions. While search criteria can be entered in a standardized dialog in the data-input dialogs, additional input fields are provided in the assignment dialogs and the dialog for comment management.

Each of these dialogs basically consists of the tree for navigating around the system topology on the left-hand side of the acquisition dialog and, on the right-hand side, of the list of assignable information or the dialog for editing the acquired data.

The dialogs for acquiring filter criteria are also structured in two halves. The selection criteria for the data displayed in the navigation tree can be entered in the top half. The acquisition dialog is displayed again in the bottom half; the criteria for searching for assignable information can be entered in this dialog.

Search for Assign maintenance instructions

Terminal

Equipment

Crane

WinCC message number From

To

Description

Possible cause

Possible remedy

Comment

Cancel Find

Figure 6-6 Dialog for entering filter criteria (assignment dialogs)

6.1.9 Import/export

Import and export functions are provided for all CMS data. These functions can be called from two locations.

On one hand, a dialog can be called to start the export functions from the function tree or the function can be selected from the toolbar. This dialog offers the full range of import and export functions and is therefore suitable as a direct access point from which multiple import and/or export operations can be started at the same time.

However, if the user wishes to import or export the data of one particular type only, this can be done from the relevant acquisition dialog. A dialog for selecting an import or export function and for entering the path to the import or export file can be called via the toolbar or the context menu.

From the central import or export dialog, it is only possible to export all the data from the selected table. If an export operation is started from the relevant acquisition dialog, the data to be exported can be filtered.

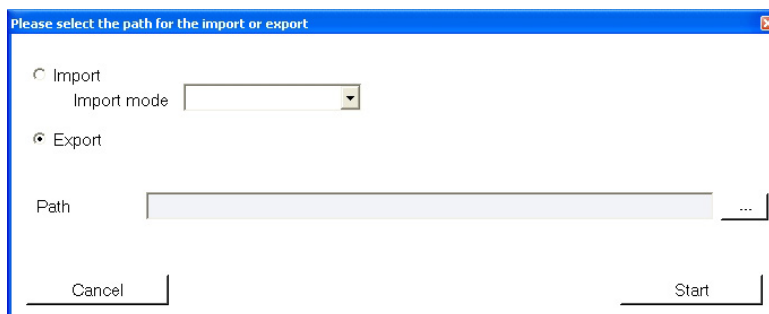


Figure 6-7 Starting an import / export operation from the acquisition dialog



Figure 6-8 Starting an import / export operation from the acquisition dialog (languages)

6.1.10 Data transfer (upload / download)

Functions for data transfer are available for those configuration data (messages, operating data, tag list) that are entered in the Editor at the CMS station (topology: CMS with RCMS server). The upload function transfers data from the CMS to the RCMS. The download function transfers data from RCMS server to the CMS station. The download function can only be started at the RCMS. The upload function can be started at the CMS station and at the RCMS server.

The data transfer functions are called using a separate dialog. You can also open the transfer functions via a link in the toolbar of the function selection. The elements of the toolbar are only visible if data is available for upload/download.

As soon as the stored configuration data have changed, these data are marked in color in the editor tree and in the corresponding dialog to indicate that an upload or download is required.

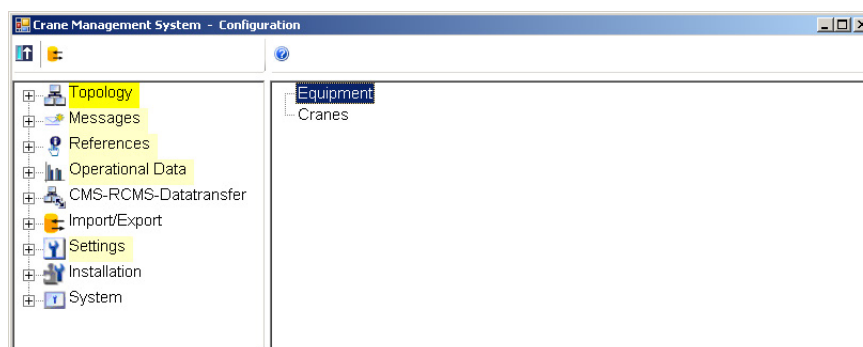


Figure 6-9 Changed data in the CMS Editor at the CMS station

You can adapt the color of the marking in the input dialog for basic settings, under the colors tab (see System: Basic settings (Page 103)).

More than one crane can be selected in the tree in the dialog at the RCMS. In this case, the data of the first crane in the tree are transferred first, the data of the last crane in the tree are transferred last. The color marking indicates for which station a data transfer is required. The symbol indicates whether the connection to the relevant crane has been established.

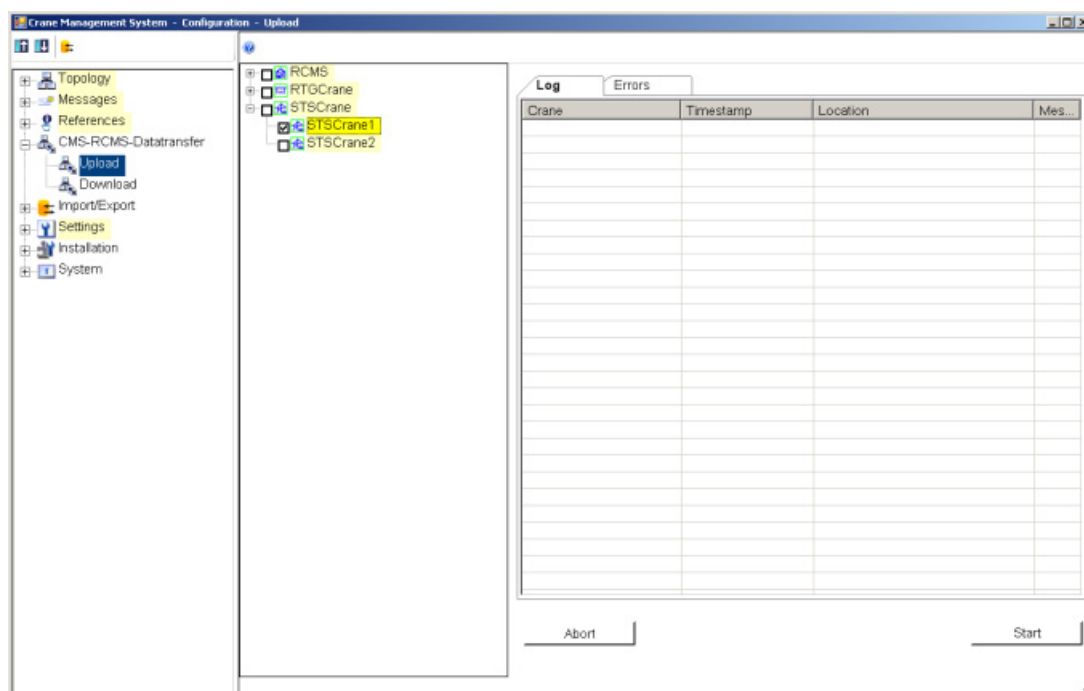






Figure 6-10 Tree display for upload/download at the RCMS server

Icon	Meaning
	Crane online
	Crane offline
 STSCrane1	Data changed
 STSCrane2	Data are consistent

6.2 Configuration

This chapter describes individual parameterization functions. The individual parameterization functions are listed in the order in which they are displayed for selection in the function tree.

6.2.1 Topology: Terminals

"Terminal" refers to an interrelated group of cranes (container terminal). Terminals are used to group data for the purpose of evaluation or as a criterion for selecting cranes.

Table 6- 3 Terminals

Input field	Meaning	Unique	Mandatory field
Name	Name of the terminal	yes	yes
Icon	Identifier of icon assigned to the terminal	no	yes
Comment	Optional comment	no	no

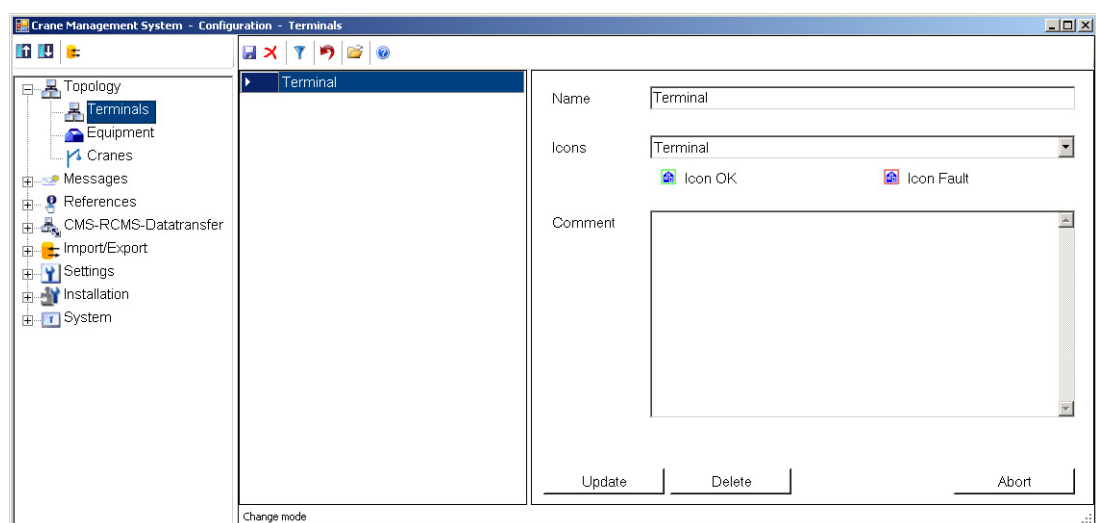


Figure 6-11 Acquisition of terminals

The terminal is acquired in this dialog. This dialog is only available for selection if the topology "One RCMS server" is selected in the dialog "System" → "Basic Settings", under the "Topology" tab. To modify the topology, see Chapter System: Basic settings (Page 103) , Section, Topology.

A terminal which still has cranes assigned to it cannot be deleted. The references to the terminal to be deleted must first be deleted in the acquisition dialog for the cranes.

The icon defined in this dialog is used to represent this terminal in the crane selection tree of the CMS Editor and in the CMSNodeTree control in the CMS Runtime application. The icons first need to be entered in a separate dialog; (see Settings: Icons (Page 94)).

6.2.2 Topology: Equipment types

Equipment types are the central objects of the CMS to classify cranes. Similar cranes with the same configuration data (messages, operational data) are assigned to one equipment type. At the RCMS server, the data management for all cranes of a equipment type is identical. This equipment type-specific data management can be aligned with the crane configuration data via the configuration data transfer. Data recorded in the CMS Editor are always assigned to the equipment type.

Note

It is not allowed that the name of the equipment type is exactly "CMS". Further, it may only comprise letters and numbers. The first character of the name must be a letter.

Status values can be defined for each equipment type. These can be used to control the display of a crane in the CMSNodeTree control on the RCMS server.

A WinCC tag can also be specified for each equipment type. During startup, this tag will be preassigned the value set in this dialog. This function can be used, for example, to display an accompanying equipment-specific comment in a WinCC screen on the RCMS server for each crane.

Table 6- 4 Equipment types

Input field	Meaning	Unique	Mandatory field
Name	Name of the equipment type	yes	yes
Icon	Identifier of icons assigned to the equipment type	no	yes
OK status value	Range of numbers for "OK" status	no	no
Idle status value	Range of numbers for "Idle" status	no	no
Warning status value	Range of numbers for "Warning" status	no	no
Fault status value	Range of numbers for "Fault" status	no	no
Offset message number	Numerical value added to instance messages of the relevant crane during synchronization.	yes	yes
WinCC tag	Name of a WinCC tag for displaying an equipment-specific comment	no	no
Tag content	Equipment-specific comment to be displayed in a WinCC screen	no	no
Comment	Optional comment	no	no

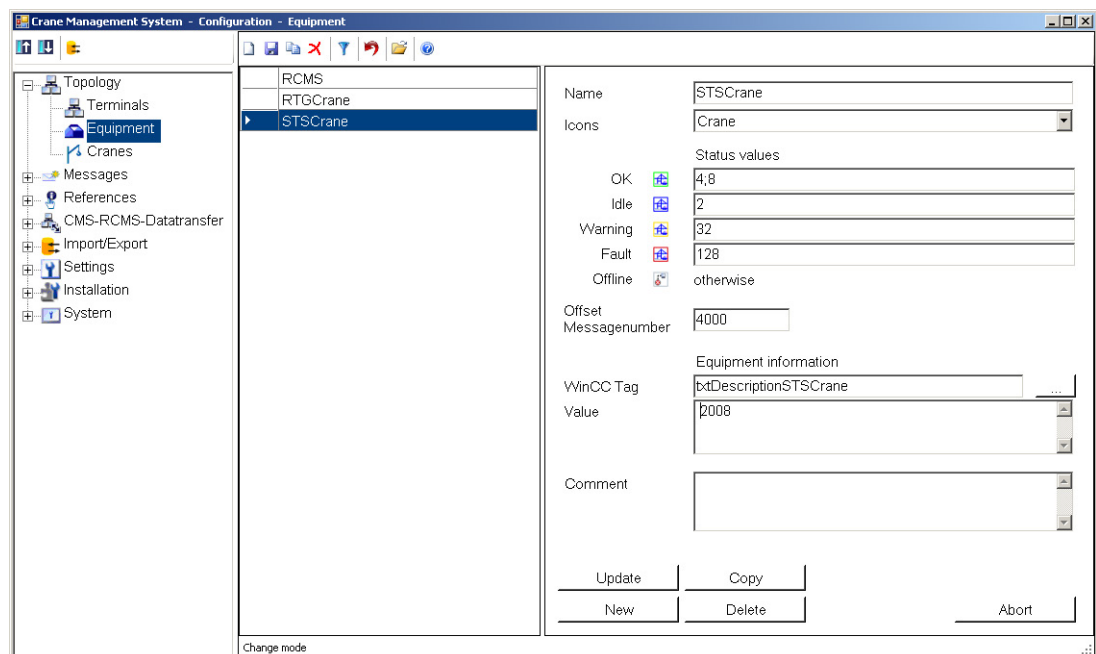


Figure 6-12 Acquisition of equipment types

An equipment type which still has cranes assigned to it cannot be deleted. The references to the equipment type to be deleted must first be deleted in the acquisition dialog for the cranes.

The icons defined in this dialog are used to represent the operating state of this equipment type and all associated cranes of this equipment type in the crane selection tree of the CMS Editor and in the CMSNodeTree control in the CMS Runtime application. The icons must first be entered in a separate dialog; (see Settings: Icons (Page 94)).

In the CMSNodeTree control, the current operating status of the crane shown will determine which of the icons for displaying cranes, equipment types, and terminals appears in the tree. The value of a WinCC tag acquired in the acquisition dialog for the crane data is used to determine the operating status of a crane; see Chapter Topology: Cranes (Page 55). The fields for acquiring the number ranges for the status values in this dialog are used to assign the value of this tag to the various operating states. Individual digits or ranges can be entered in these fields. Each should be separated from the next by a semicolon. The two numbers that mark the end of each range are linked by a minus sign. Each range is inclusive of the start and stop value. Spaces are allowed and the length of the number range is limited to 255 characters.

The WinCC messages of each equipment type must be available in the WinCC Alarm Logging of the RCMS server. When uploading configuration data, the messages are automatically generated in the WinCC Alarm Logging. In this case, the set offset is added to the message numbers. Non-existent message classes, message types, message blocks, and group messages are created. For each equipment type, such a set of messages is created in the WinCC Alarm Logging of the RCMS server. For the runtime transfer of messages from the CMS station, the offset defined in this dialog is automatically added to the message number as well as the crane name in process value 1 and the equipment type in process value 2 of the message. Using the crane name in process value 1, the assignment of the configured instance message to the crane is established on which this message was initiated.

Note

At the CMS (topologies "CMS without RCMS server", "CMS with RCMS server") only one (1) equipment type can be created.

6.2.3 Topology: Cranes

A crane corresponds to a CMS station, at which messages and operational data are recorded. A crane must always be assigned to an equipment type. The communication parameters between CMS station and RCMS server are defined at the crane. The crane also has access to the data of the WinCC tag management.

Using the crane name, the acquired runtime data are assigned at the RCMS server.

Note

It is not allowed that the name of the crane is exactly "CMS". Further, it may only comprise letters and numbers. The first character of the name must be a letter.

The type of data acquired will depend on the topology set. A distinction is made between:

- CMS without RCMS server
- CMS with RCMS server
- RCMS server

Table 6- 5 General crane parameters

Input field	Meaning	Unique	Mandatory field
Name	Name of the crane	yes (per terminal)	yes
Equipment type	Identifier of the equipment type to which the crane is assigned	no	yes
Computer name	Name of the computer on which the CMS is running	yes	yes
Comment	Optional comment	no	no

A crane's name must be unique.

The entries for the terminal or equipment must be created beforehand in the corresponding dialogs.

6.2.3.1 CMS without RCMS server

For a CMS without RCMS server no additional parameters can be acquired.

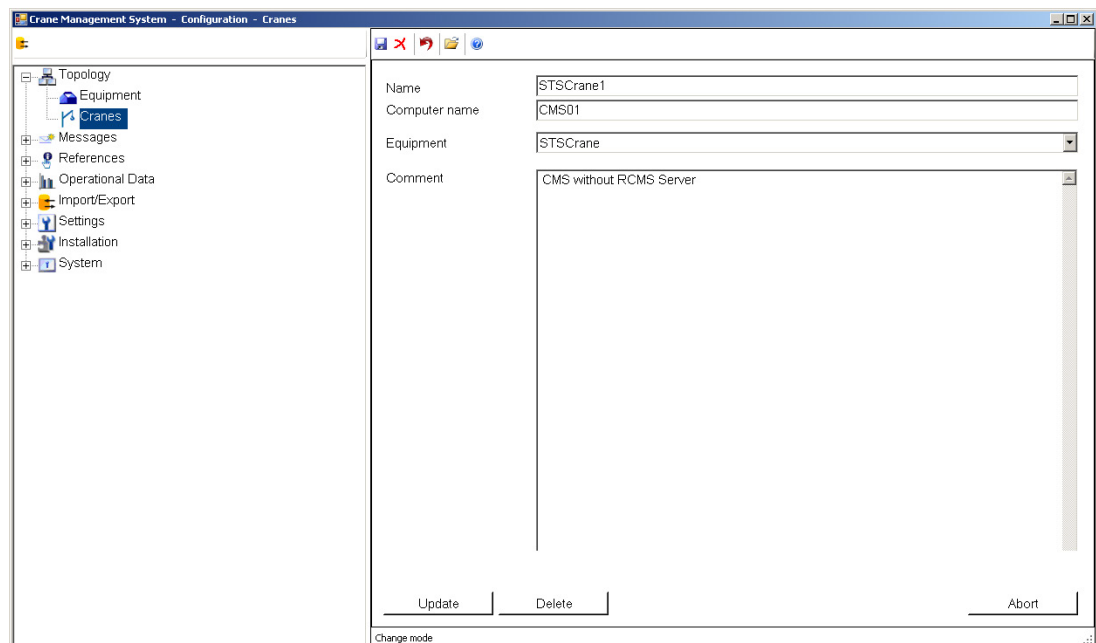


Figure 6-13 Acquisition of cranes (CMS without RCMS server)

6.2.3.2 CMS with RCMS server

If the CMS station is defined as CMS with RCMS server, then it is assigned to an RCMS server. The following parameters can also be acquired for this topology:

Table 6- 6 General parameters (CMS with RCMS server)

Input field	Meaning	Unique	Mandatory field
Crane status tag	Name of a WinCC tag that can be used to read the crane status for controlling the display of the crane in the CMSNodeTree control.	yes	no
IP address RCMS	IP address of the RCMS server	yes	yes
IP address crane	This setting is only required if the PC of the CMS station has multiple network cards. The IP address of the network adapter via which communication is established to the RCMS server is then in this setting.	yes	no
Port number	Number of the port used for communication with the RCMS server The port number must be the same on the RCMS server and all connected CMS stations.	no	yes
Synchronization interval for messages	Interval during which messages are transferred to the RCMS server; specified in seconds	no	yes
Synchronization interval for operational data	Interval during which operational data (such as cargo handling data, MMBF data, etc.) is transferred to the RCMS server; specified in seconds	no	yes
Crane is synchronized with RCMS.	Synchronization with the RCMS server is active.	no	no

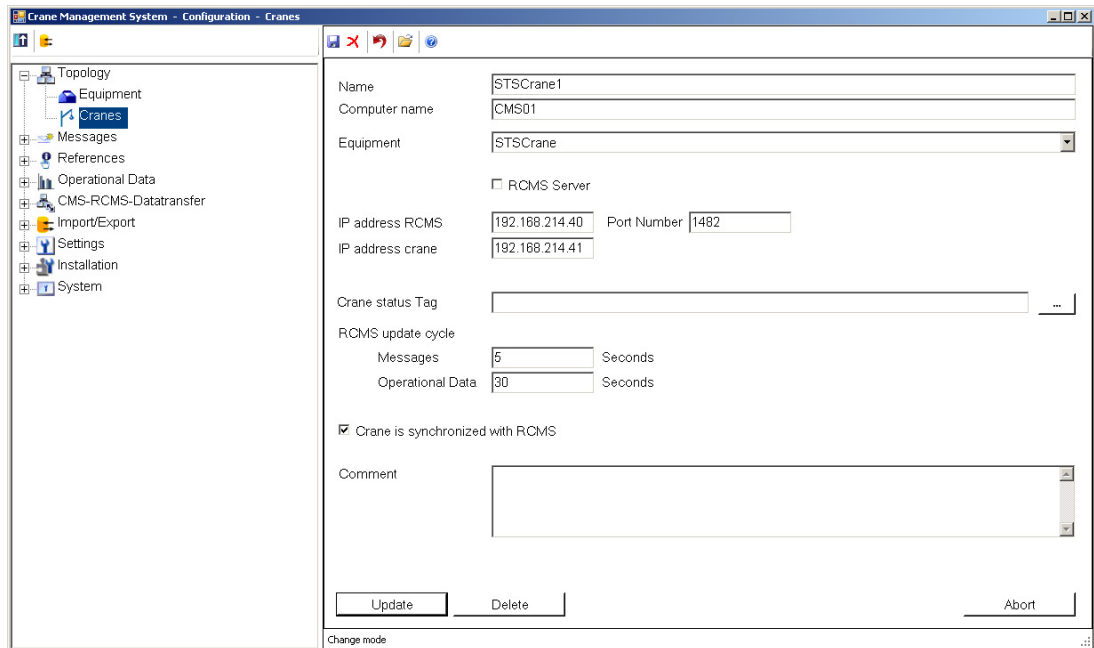


Figure 6-14 Acquisition of cranes (CMS with RCMS server) at the CMS station

In the CMSNodeTree Control at the RCMS server, the acquired cranes can be displayed depending on their actual status. To enable this status to be evaluated in the CMSNodeTree control, the name of a WinCC tag in which the current crane status is encrypted is acquired in this dialog. How the values of this tag are assigned to the various crane states is defined for the equipment type; see Chapter.Topology: Equipment types (Page 53) The tag acquired here is automatically transferred to the RCMS server.

Short synchronization intervals may decrease system performance especially at a high synchronization data amount. Particularly for messages, depending on the acquisition cycle or the message frequency, it must be weighed up just how short these synchronization intervals must be selected for an individual case.

In terms of synchronizing operational data, it is important to note that writing values to the WinCC Tag Logging archives requires quite a lot of effort. Having said this, there is little impact on performance if more than one value is written simultaneously. Therefore, it is better, for example, to transfer as many data sets as possible to the RCMS at the same time.

Note

If the communication settings are changed, CMS Runtime will need to be exited and restarted in order that these modified settings become effective.

6.2.3.3 One RCMS server

All parameters of the connected cranes are acquired at the RCMS server. The RCMS server itself must also be acquired as a crane. Unlike the acquisition dialogs on the CMS stations, it is possible to select the crane in a tree display on the left-hand side of the dialog when acquiring the parameters of the cranes as a component of a terminal.

The type of data acquired will depend on whether parameters are to be acquired for the RCMS server itself or for a connected crane (CMS station). No unnecessary fields are displayed in the dialog.

Table 6- 7 Crane parameters on the RCMS server

Input field	Meaning	Unique	Mandatory field
Terminal	Identifier of terminal to which the crane is assigned	no	yes
RCMS server	Identifier indicating whether the RCMS server is involved	no	no
Crane status tag	Name of a WinCC tag that can be used to read the crane status for controlling the display of the crane in the CMSNodeTree control.	yes	no
IP address RCMS	IP address of the RCMS server This setting must be made for the RCMS server. For an individual crane, this IP address must be entered if the RCMS server PC has two network cards.	yes	yes (for RCMS server)
IP address crane	IP address of the crane (CMS station) This setting is only available for the cranes ("RCMS Server" identifier is not set).	yes	yes (for CMS station)
Port number	Number of the port via which communication between the stations is established. The port number must be the same on the RCMS server and all connected CMS stations.	no	yes
Synchronization interval for messages	Interval during which messages are transferred to the RCMS server; specified in seconds. This setting is only available for the cranes ("RCMS Server" identifier is not set).	no	yes (for CMS station)
Synchronization interval for operational data	Interval during which operational data (such as cargo handling data, MMBF data, etc.) is transferred to the RCMS server; specified in seconds. This setting is only available for the cranes ("RCMS Server" identifier is not set).	no	yes (for CMS station)
Crane is synchronized with RCMS	Synchronization with the RCMS server is active. This setting is only available for the cranes ("RCMS Server" identifier is not set).	no	no (for CMS station)

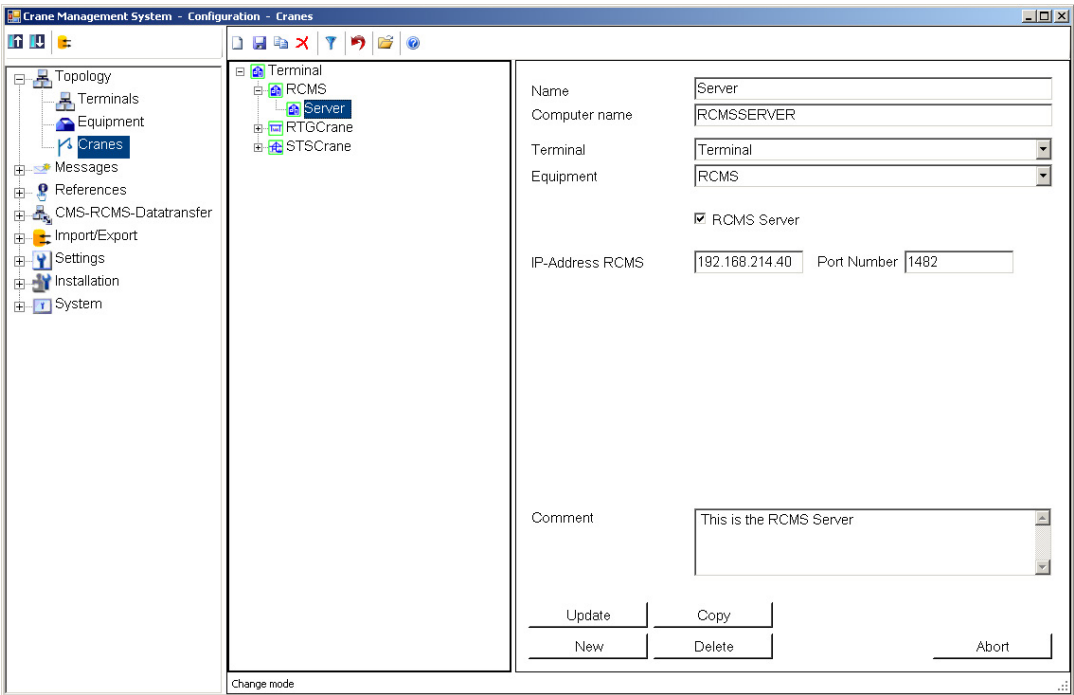


Figure 6-15 Acquisition of cranes (RCMS server)

Only its own IP address and the port number must be entered for an RCMS server. If there is more than one RCMS server in a terminal, then these RCMS servers must have different port numbers. The assignment of the CMS stations to the associated RCMS server is exclusively realized using the port numbers.

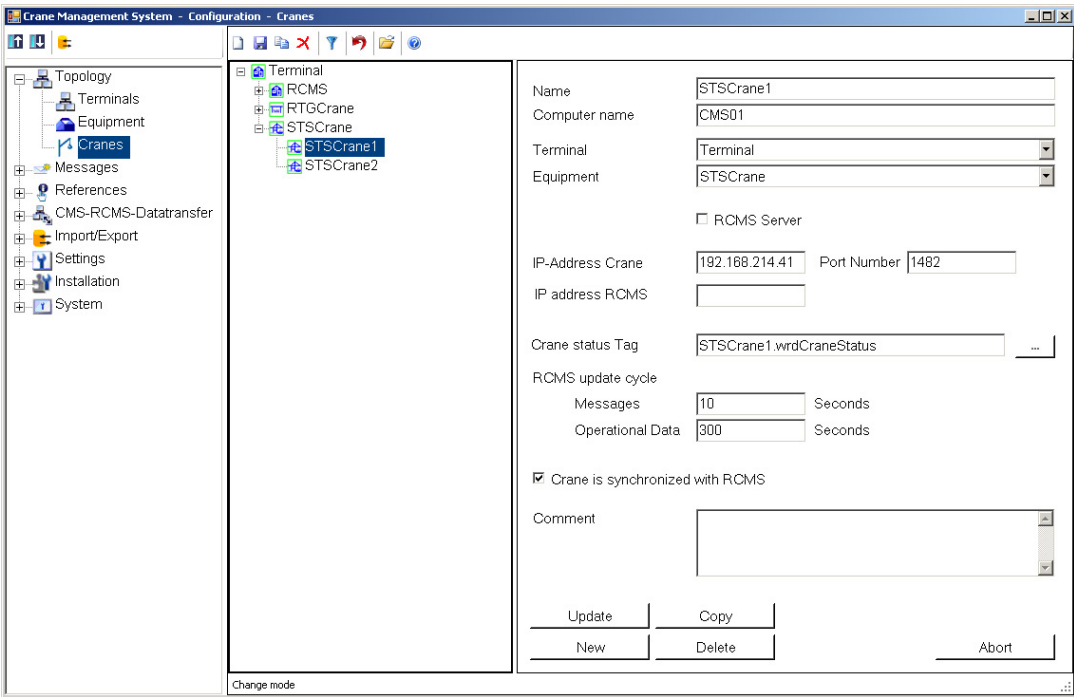


Figure 6-16 Acquisition of cranes (crane – CMS station)

This dialog is used for acquiring the parameters of a connected CMS station in the RCMS. These values consist of parameters which must be available on the CMS station itself.

For messages and operating data to be transferred to the RCMS server, the transfer must be activated in a dialog box specifically for this purpose (see Chapter CMS-RCMS data transfer: Transferring messages (Page 78) and CMS-RCMS data transfer: Transferring operating data (Page 80)).

Note

If the communication settings are changed, CMS Runtime will need to be restarted in order that these modified settings become effective.

6.2.4 Messages: Maintenance instructions

Maintenance instruction texts are descriptions which can be displayed in conjunction with a message in the CMSFaults control for the purpose of assisting maintenance staff with diagnostics and fault elimination.

These can include both information about possible causes as well as instructions on how to eliminate faults.

Table 6- 8 Maintenance instructions

Input field	Meaning	Unique	Mandatory field
Description	Maintenance instruction text	yes	yes
Possible cause	Description of the possible cause of the fault	no	no
Possible remedy	Description of a possible repair measure	no	no
Comment	Comment on the maintenance instruction, is also displayed in CMSFaults.	no	no

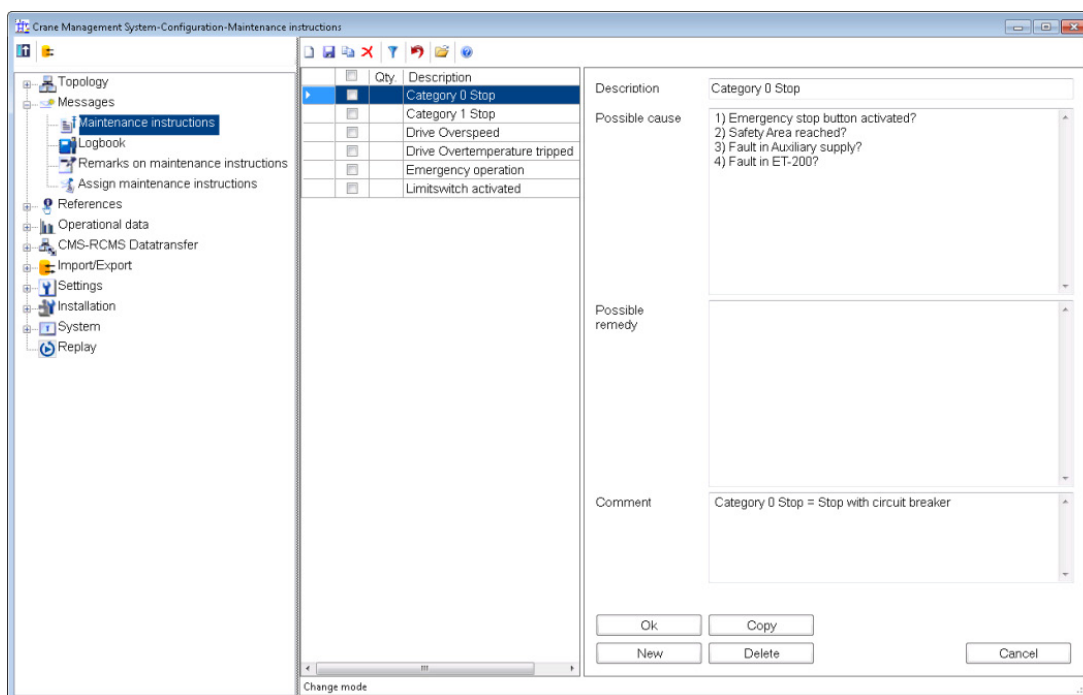


Figure 6-17 Acquisition of maintenance instructions

The available maintenance instructions are listed in a table on the left-hand side of the dialog. The numeric value in the center table column indicates how often the maintenance instruction is assigned to a message.

Maintenance instructions, which are assigned to a message or an equipment type, cannot be deleted directly. If an attempt is made to delete an instruction text which is already assigned, a message stating the number of existing assignments is displayed. The user then has the option of aborting the delete operation, or of deleting the maintenance instruction including all assignments and logbook entries if any exist.

6.2.5 Messages: Logbook

The remarks on maintenance instructions can be maintained/updated in this dialog.

Table 6- 9 Logbook

Input field	Meaning	Unique	Mandatory field
Author	Name of the author	yes, with date	yes
Entry date	Date of acquisition; is preset to the current date for new entries	yes, with author	yes
Assignment	Indicates whether the comment is assigned to a message or a maintenance instruction text.	no	yes
Entry	Comment text or logbook entry text	no	no

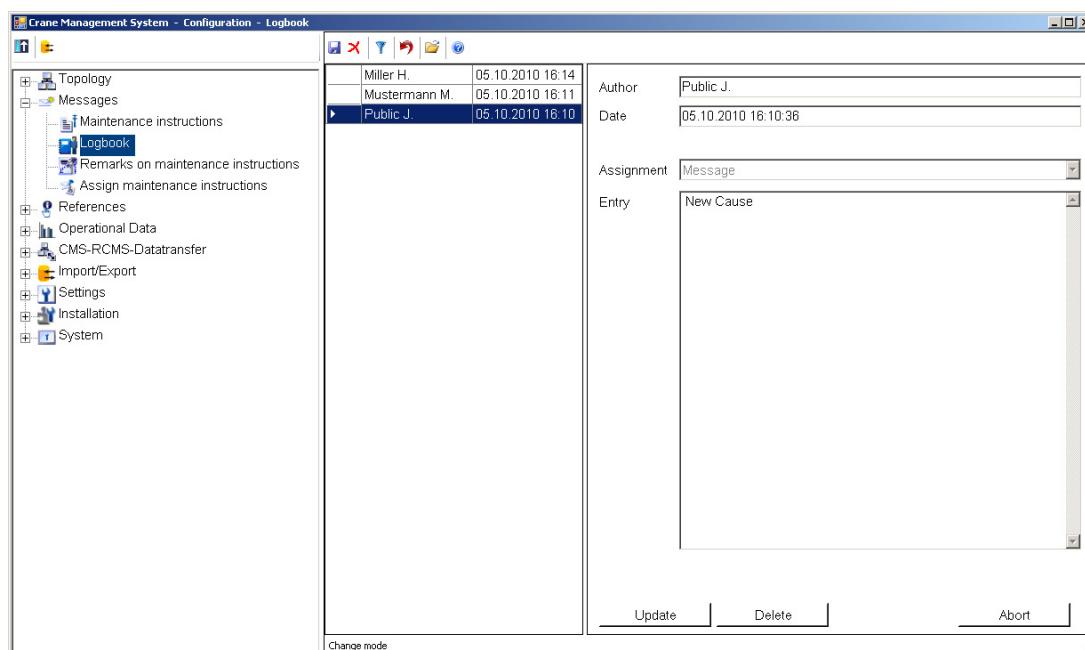


Figure 6-18 Editing / acquisition of individual logbook entries

Entries that come from the CMSFaults Control are identified under "Assignment" with "Message". The assignment cannot be edited.

No new remarks on maintenance instructions (assignment "Message") can be generated in this dialog.

Note

The difference between this and the function for maintaining remarks on maintenance instructions (see Chapter Messages: Remarks on maintenance instructions (Page 64)) is that this function displays all existing remarks in a list which is sorted according to author and date. With the function for maintaining remarks on maintenance instructions, the remarks are selected via the objects to which the remarks are assigned.

6.2.6 Messages: Remarks on maintenance instructions

Maintenance instructions relating to a specific message can be displayed in the CMSFaults control. These instruction texts cannot be modified in the CMSFaults control, but this control can be used to acquire remarks on the instructions, such as information about maintenance work performed, unforeseen difficulties or feedback as to whether the instruction was useful, etc.

Table 6- 10 Adaptation of remarks on maintenance instructions

Input field	Meaning	Unique	Mandatory field
Author	Name of the author	yes, with date	yes
Date	Date of acquisition; displays the current date per default for new entries.	yes, with author	yes
Field	Specifies the field in the CMSFaults control for which the displayed remark was acquired (cannot be edited).		
Remark	Remark text	no	no

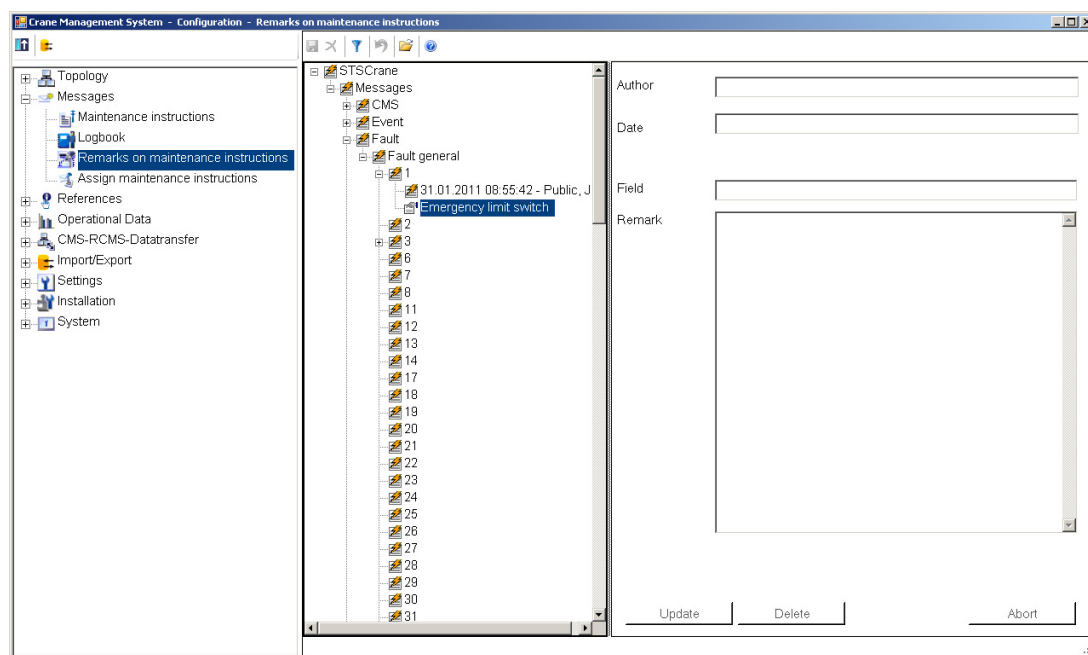


Figure 6-19 Editing of remarks on maintenance instructions in systems with multiple terminals

If remarks on maintenance instructions are acquired in the CMSFaults control, they cannot be subsequently edited in this control. This measure has been taken so that the complete history of such entries can be traced.

However, this dialog can be used to edit unnecessary or inaccurate remarks on maintenance instructions.

To allow the selection of remarks that require editing, a tree is created which displays terminals, equipment types and cranes as well as the assigned maintenance instructions and






messages. The two nodes for maintenance instructions and messages, which are directly assigned to an equipment type, are listed below the relevant equipment type.

The instruction texts or messages are inserted below the nodes for maintenance instructions. If remarks have been acquired for these instructions or messages, they will be displayed directly below the corresponding node. Remarks are displayed in a chronological order, with the latest entry listed right at the top.

To edit or delete a remark, it must be selected in the tree. The data of the remark is then shown in the detail view on the right of the dialog window.

Meaning of individual icons in the remark selection tree:

Table 6- 11 Icons in assignment dialogs

Icon	Meaning
	Maintenance instruction
	Reference
	Remark on a maintenance instruction
	Message
	Message class

6.2.7 Messages: Assignment of maintenance instructions

In this menu, the created maintenance instructions can be assigned to the messages in WinCC Alarm Logging. The maintenance instructions can then be displayed during WinCC Runtime via the CMSFaults Control.

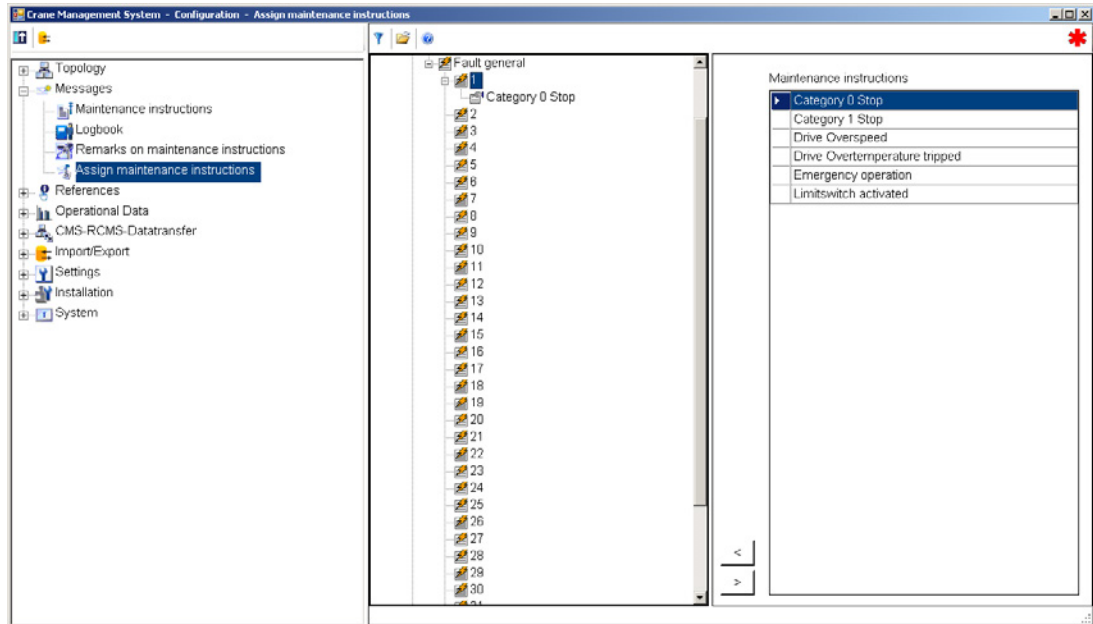


Figure 6-20 Assignment of maintenance instructions to messages or cranes

A tree for assigning maintenance instruction texts is displayed on the left-hand side of the dialog. This contains nodes for the messages in addition to terminals, equipment types and cranes. The existing maintenance instructions are displayed in a table on the right-hand side. The numeric value in the center table column indicates how often the maintenance instruction is assigned to a message.

Maintenance instruction texts can be dragged and dropped at the required message in the tree. Alternatively, the required message in the tree can be selected and the maintenance instruction assigned to it by means of a button. The messages are assigned to the equipment type in the tree.

With the drag and drop assignment method, closed nodes in the tree automatically expand when the cursor is positioned either on the icon or the label of the closed node.



The icon on the left is displayed whenever the cursor is positioned over a node to which maintenance instructions cannot be assigned. For example, a maximum of one maintenance instruction text can be assigned to a message. If an attempt is made to drag and drop an instruction text onto a message which already has an assignment, this icon is displayed to signal that no further text can be allocated to this particular message.



At all nodes which are free for the assignment of a maintenance instruction text, the icon on the left is displayed whenever a text is dragged and dropped on them.

There are three different methods by which maintenance instruction assignments can be canceled again, i.e.

- by selecting the maintenance instruction and then deleting it with the Del key.
- Click on the appropriate button in the dialog.
- by using drag and drop to remove the instruction from the tree.

This function does not require any special command buttons for saving changes to assignments. Instead, assignment changes are entered directly in the database.

6.2.8 References: References

Supplementary information for display in the CMSFaults control can be acquired for equipment types, cranes, and messages. This information can be accessed by maintenance personnel when they require troubleshooting guidance.

However, only references to this troubleshooting guidance information are stored in the database, rather than the information itself.

In order to offer the option, for example to globally change the path to several references, macros can be used to define these references. In this context, a macro is a wildcard character entered during parameter assignment and subsequently replaced by a stored value during runtime.

Table 6- 12 References

Input field	Meaning	Unique	Mandatory field
Reference	Description of the reference	yes	yes
Reference type	Type of reference	no	yes
Program	Program with which the reference can be displayed.	no	yes
Path	Path for accessing the reference	no	no
Parameters	Name of the reference with any parameters which may be needed to open the reference	no	yes
Comment	Optional comment	no	no

In contrast to maintenance instructions, which can only be assigned to a message, a reference can also be assigned to a crane and an equipment type.

- References, which are assigned to one message, are displayed for this message, for all cranes of the same equipment type.
- References, which are assigned to an equipment type, are displayed for each message, for all cranes of the relevant equipment type.
- References, which are assigned to a crane, are displayed for each message, for this crane.

The references that have been created are listed in a table on the left-hand side of the dialog. The numeric value in the center table column indicates how often the reference is assigned to one message.

References which are still assigned to messages, equipment types or cranes cannot be deleted directly. If an attempt is made to do so, a message is displayed indicating the number of active assignments. The user then has the option of aborting the delete operation, or of deleting the reference and all its assignments.

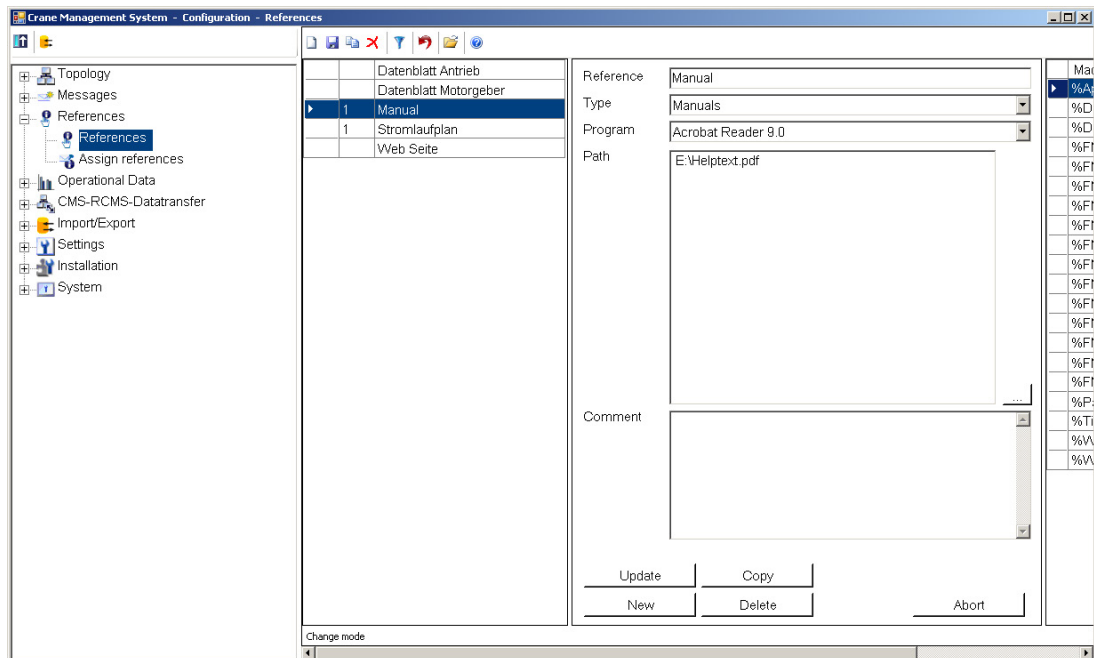


Figure 6-21 Acquisition of references

Each individual reference is assigned to a specific reference type. This reference type is displayed as additional information in the CMSFaults control. Otherwise, this parameter has no further significance.

To acquire a reference, it is necessary either to directly select a program, which has been specified in the program acquisition dialog, or enter the predefined input <empty> in this field to indicate that no program is to be specified for this particular reference. When a program is specified, the relevant program is launched to display the reference.

If the field "Program" is left empty (entry: <empty> because a value has to be selected), the information required to display the reference is determined from the CMSFaults control using the file extension of the reference file and the associated Windows link. In this case as well, a program with the reference file as the launch parameter is ultimately called.

When specifying paths, it is important to ensure that the reference file to be opened can be accessed even if the relevant directory is stored on another computer. Furthermore, the programs for displaying the references must be installed on the computer on which the relevant reference file is to be displayed.

Macros can be selected from a list and inserted via drag & drop. Alternatively, they can be inserted manually into the reference. Where a manually entered macro is not yet available in the macro table, it can be entered into the database directly once you have responded to the relevant prompt. A macro is defined using the following notation: %Macroname%

Macros can be edited, as required, as part of the function for managing macros.

Note

If spaces are used in the reference, please note that spaces in a command are interpreted as separators. Where necessary, the reference should be enclosed within inverted commas.

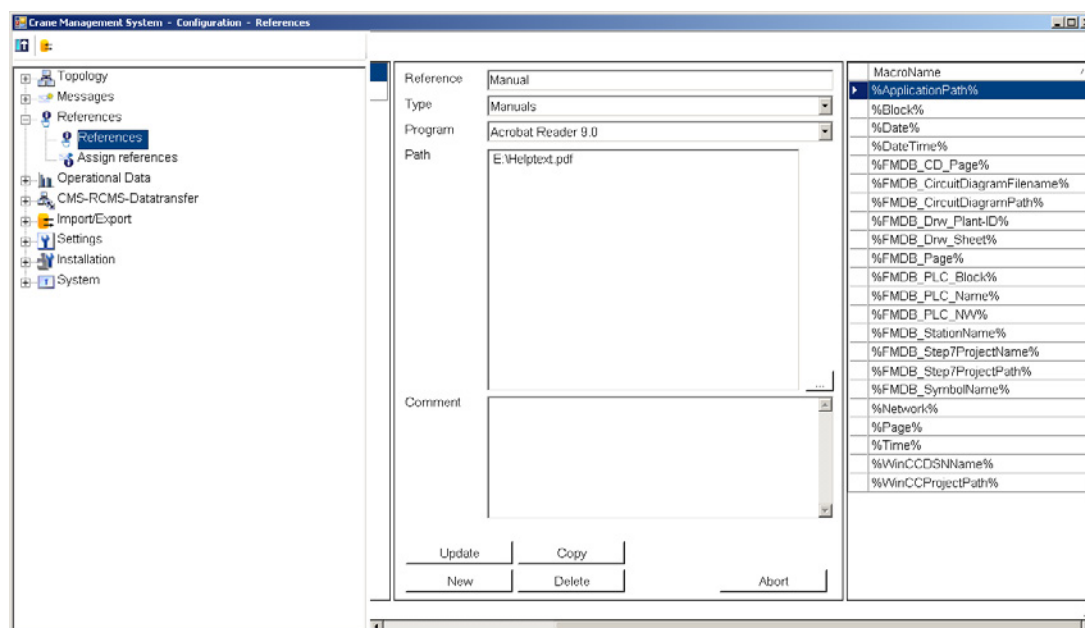


Figure 6-22 Acquisition of references (macros)

The diagram above shows the acquisition dialog for references with macro table. The macro selected in the table can be dragged and dropped to the required location.

6.2.9 References: Assignment of references

In this dialog assign the references to one or more messages, a crane or an equipment type.

If macros have been used to define references or the program needed to display the reference, the actual values of the macros to be used when displaying the reference must also be acquired. These actual values are then stored along with the assignment. This means, for example, that a single reference can be called for each message with a different parameter in each case.

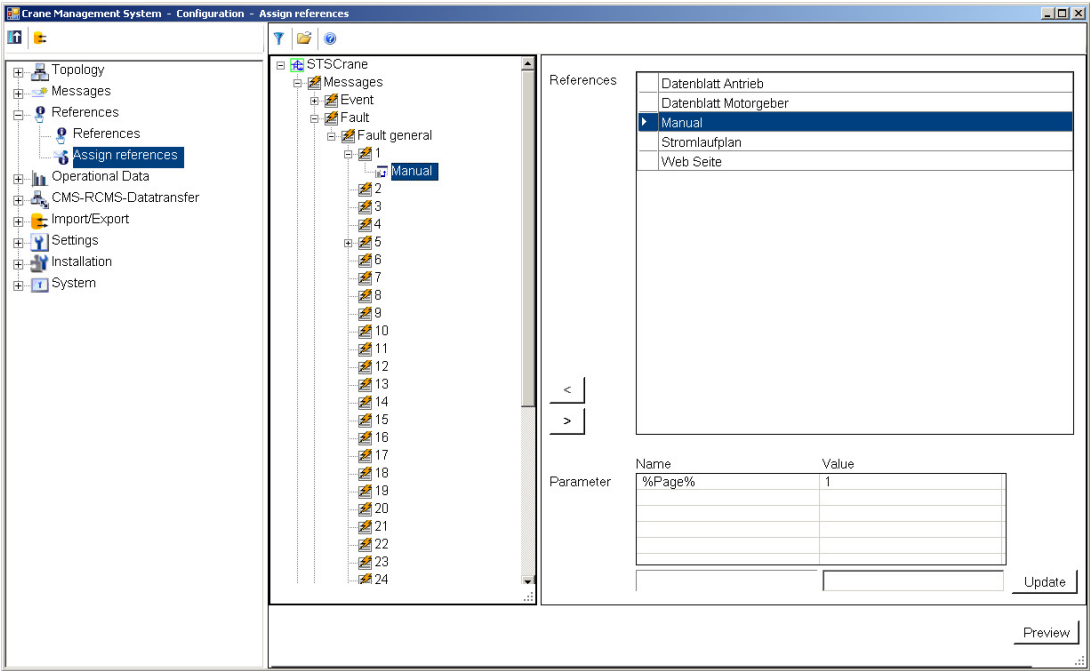


Figure 6-23 Assignment of references to messages, equipment types or cranes

References can be assigned to cranes, equipment types or WinCC messages. Unlike maintenance instruction texts, however, there is no restriction on the number of references which can be assigned.

A tree for assigning references is displayed on the left-hand side of the dialog. This contains nodes for the references and messages in addition to terminals, equipment types and cranes. The existing references are displayed in a table on the right-hand side.

To assign references, they can be dragged and dropped at the required position in the tree. Alternatively, the required position in the tree can be selected and the reference assigned to it by means of a button.

With the drag and drop assignment method, closed nodes in the tree automatically expand when the cursor is positioned either on the icon or on the label of the closed node.

The icon on the left is displayed whenever the cursor is positioned over a node to which a reference cannot be assigned.

At all nodes where a maintenance instruction can be assigned, this is displayed with the adjacent icon when making the assignment by dragging and dropping.

Reference assignments can be canceled in three different ways, i.e. by selecting the reference and deleting it with the Del key, by clicking on the Delete button in the dialog or by dragging the reference out of the tree.

The following algorithm is used to acquire the actual macro parameters:

- Clicking a reference in the table containing all the available references will cause those macros used for display to appear. At this stage, it is not yet possible to enter the actual parameters in the table containing the available references. The sole purpose of this macro list is to provide the user with an overview of which macros were specified when the reference was being defined. However, it also displays the macros used for defining the program.
- Once a reference has been assigned to a terminal, equipment type, or crane, the available macros for the current assignment are displayed along with any values which may have already been specified. The macro details can also be displayed for a preexisting assignment. Clicking the macro name in the parameter list copies the contents of the line in the list to the line for acquiring the macro value. Once the value has been changed, it can be saved by clicking "Update".

Whenever an actual parameter of a macro has been changed, the resulting command used to display the reference appears in a field at the bottom of the dialog. Clicking "Preview" shows whether the reference can be displayed after all the macro values have been substituted or, if no macros are being used, whether the reference will be displayed correctly.

This function does not require any special command buttons for saving changes to assignments. Instead, assignment changes are entered directly in the database. Changes only need to be confirmed during acquisition of actual macro values.

6.2.10 Operational data: Cargo handling data

Note

This dialog is only available in the topologies "CMS without RCMS server" and "CMS with RCMS server".

On the CMS station (topology: "CMS without RCMS server" or "CMS with RCMS server") operational data can be configured. This includes data such as cargo handling data, MMBF data, as well as basic data acquired to evaluate counters (also see Chapter Acquiring cargo handling data on the CMS station (Page 26)

This dialog is used to acquire the parameters required to control the acquisition of cargo handling data by CMS Runtime.

Table 6- 13 Cargo handling data

Input field	Meaning	Unique	Mandatory field
Archive	Name of the WinCC Tag Logging archive for acquisition of cargo handling data	yes	yes
Start trigger	Binary WinCC tag for starting acquisition of cargo handling data	no	no
Stop trigger	Binary WinCC tag for ending acquisition of cargo handling data	no	yes
Start time stamp	WinCC tags for acquisition of the time stamp for starting a cargo handling operation from WinCC	no	no
Stop time stamp	WinCC tags for acquisition of the time stamp for ending a cargo handling operation from WinCC	no	no
Start Location	WinCC tag for acquisition of a character string at the start of a cargo handling operation	no	no
Stop Location	WinCC tag for acquisition of a character string at the end of a cargo handling operation	no	no
Duration	WinCC tag for managing the duration of a cargo handling operation	no	no
Definition time stamp	Used to select whether the start or stop time is stored as the time stamp	no	yes

Figure 6-24 Acquisition of cargo handling data

When this dialog is opened, all existing Tag Logging archives are read out of the active WinCC project and displayed in the selection field for the archives. Unlike all the other

selection fields in the CMS, the user can also enter names in this selection field. This means that archives which do not yet exist can be defined.

Furthermore, the binary WinCC tags, which the CMS monitors so that it can detect the point at which a cargo handling operation starts or stops, must also be defined as part of the acquisition process for cargo handling data. These names can be entered via the keyboard; alternatively, the "..." button can be used to open the WinCC dialog for selecting WinCC tags. In this case, the display is automatically restricted to binary tags.

The start trigger is not required where WinCC tags are specified for reading the WinCC time stamp. In this case, the start time stamp is read if the stop trigger has been detected by CMS Runtime.

It is also possible to specify the time stamp which will be stored with the cargo handling data. This can be selected as either the start time or end time of a cargo handling operation.

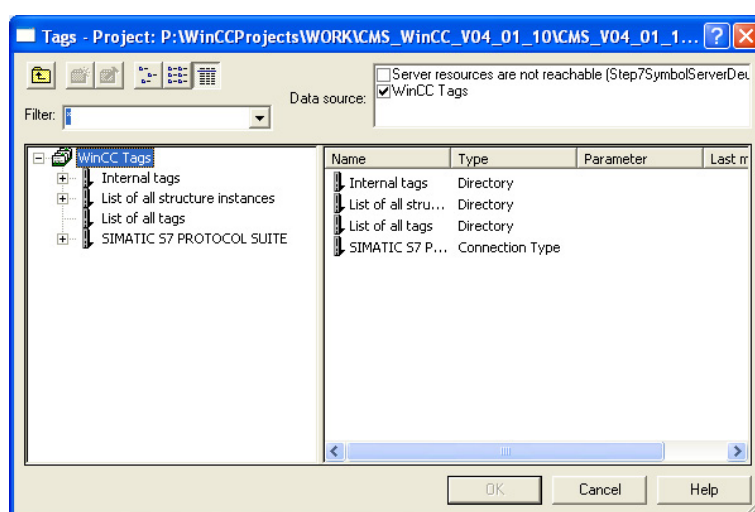


Figure 6-25 Acquisition of cargo handling data (acquisition of WinCC tags)

- Time stamp

On the controller, the time stamp for transfer must be split into its constituent parts (year, month, day, etc.). WinCC tags can then be specified in the fields for the time stamps. These tags are used to transfer the start and stop time stamps for a cargo handling operation to the PC. CMS Runtime expects and interprets a time stamp with decimal coding on a time basis of 24 hours.

If no tags are specified, the time stamps are determined from the system time on the PC as soon as the relevant trigger bit has been read.

- Duration

It is not possible to store two time stamps in WinCC Tag Logging archives. In view of this, a time stamp and the duration of a cargo handling operation are stored in the Tag Logging archives in the CMS. This field is used to store the name of the tag that enables the duration of a cargo handling operation to be read from the controller.

Pay particular attention to the following aspect: If both the start and stop time stamps for a cargo handling operation are read from the controller, it is possible to calculate the duration of a cargo handling operation from the time stamps and enter the duration thus calculated into the Tag Logging archive.

As soon as you have selected the topology "CMS with RCMS server", you can transfer configuration data and runtime data for this archive. You can make the settings for the transfer operations in a separate dialog; see Chapter Acquiring cargo handling data on the CMS station (Page 26).

6.2.11 Operational data: Counters

Note

This dialog is only available in the "CMS without RCMS server" or "CMS with RCMS server" topology.

During acquisition of basic data for counter analysis, differences between the counter values, read from the controller, are calculated cyclically and stored in WinCC Tag Logging archives (also see Chapter Acquiring counter differences at the CMS station (Page 31)).

Table 6- 14 Counters

Input field	Meaning	Unique	Mandatory field
Archive	Name of the WinCC Tag Logging archive for storing counter differences	yes (archive, first start)	yes
Cycle	Used to select the cycle for acquiring differences	no	yes
First start	Used to specify the part of the cycle when initial analysis begins	yes (archive, first start)	yes
Acquire data	Select whether data acquisition is activated.	no	no

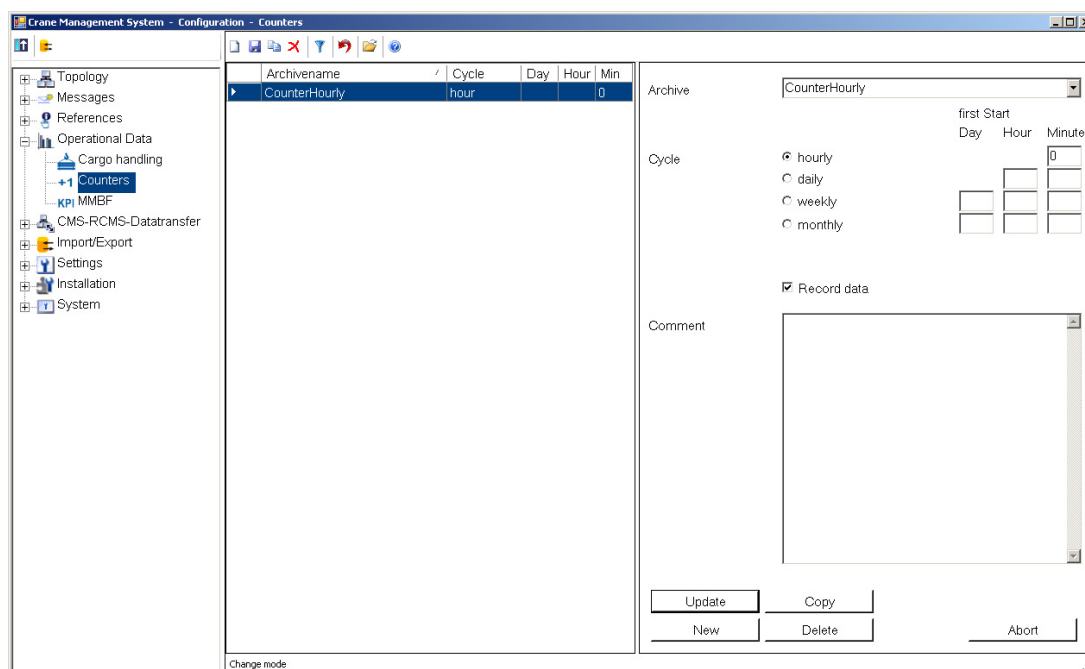


Figure 6-26 Acquisition of counters

When this dialog is opened, all existing Tag Logging archives are read out of the active WinCC project and displayed in the selection field for the archives. Unlike all the other selection fields in the CMS, the user can also enter names in this selection field. This means that archives which do not yet exist can be defined.

To have the additional option of performing an analysis outside the current clearly defined intervals (e.g. a shift analysis to be performed every 8 hours as opposed to hourly, daily, weekly, or monthly), archives can also be entered more than once with the same cycle but different start times. In these cases, the system calculates the difference between the actual PLC value and the last processed counter value from the previous start-time (shift). In the following diagram, a "CounterShift" Tag Logging archive parameterization illustrates this point. This archive is specified three times with a daily cycle and start times of 06:00, 14:00, and 22:00. If the analysis is started at 22:00, the difference in counter values at 22:00 (value currently read) and 14:00 (value of this archive when last evaluated) is formed.

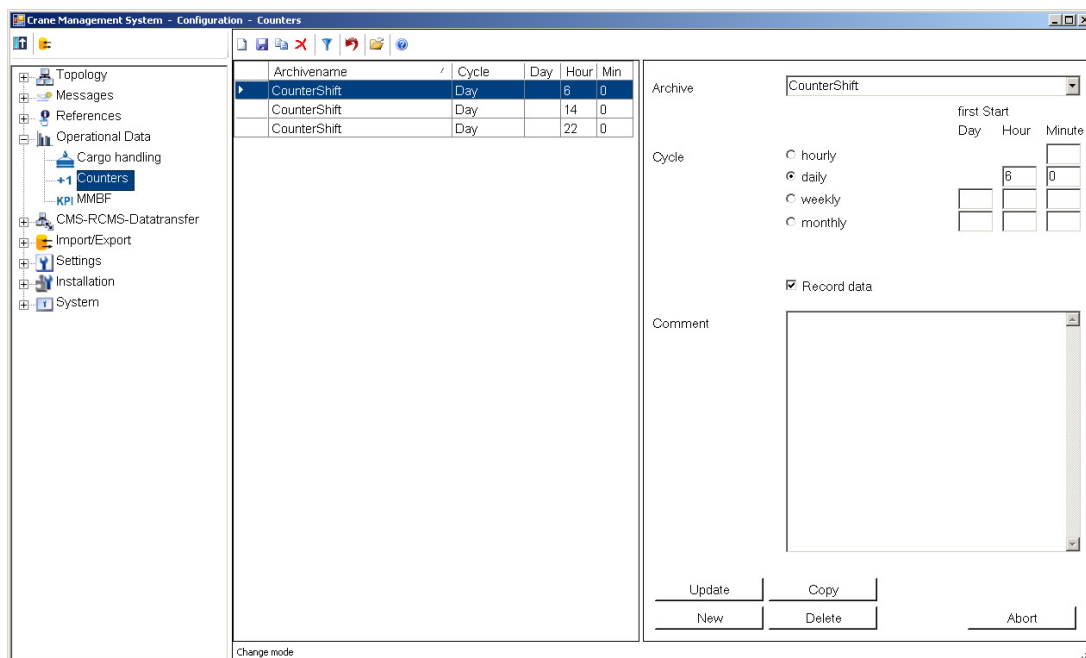


Figure 6-27 Shift evaluation

The counters run on the controller. The raw counter values are acquired as WinCC tags. The values of all WinCC tags that are defined in these archives are also monitored each time a value changes, regardless of the evaluation time. If the new value of a tag is less than the previous value, then this previous value is written back.

As soon as you have selected the topology "CMS with RCMS server", you can transfer configuration data and runtime data for this archive. You can make the settings for the transfer operations in a separate dialog; see Chapter CMS-RCMS data transfer: Transferring operating data (Page 80).

Note

With a weekly cycle, the first start is calculated from the first day of the week stored in the operating system and the value specified.

With a monthly cycle, the analysis is always performed on the same day of the month concerned. Cycle lengths will vary, depending on how many days there are in a month. Similarly, a monthly cycle due to begin on the 30th of each month will never be performed in February.

6.2.12 Operational data: MMBF

Note

This dialog is only available in the "CMS without RCMS server" or "CMS with RCMS server" topology.

This dialog is used to acquire the parameters required to control the acquisition of MMBF data by CMS Runtime (MMBF = Mean Moves Between Failure, average cargo handling operations between failures); also see Acquiring MMBF data at the CMS station (Page 32).

Table 6- 15 MMBF data

Input field	Meaning	Unique	Mandatory field
Archive	Name of the WinCC Tag Logging archive for acquisition of MMBF data	yes	yes
Trigger	Binary WinCC tag for starting acquisition of MMBF data	no	no
Time stamp	WinCC tags for acquisition of the WinCC time stamp	no	no
Acquire data	Select whether data acquisition is activated.	no	no

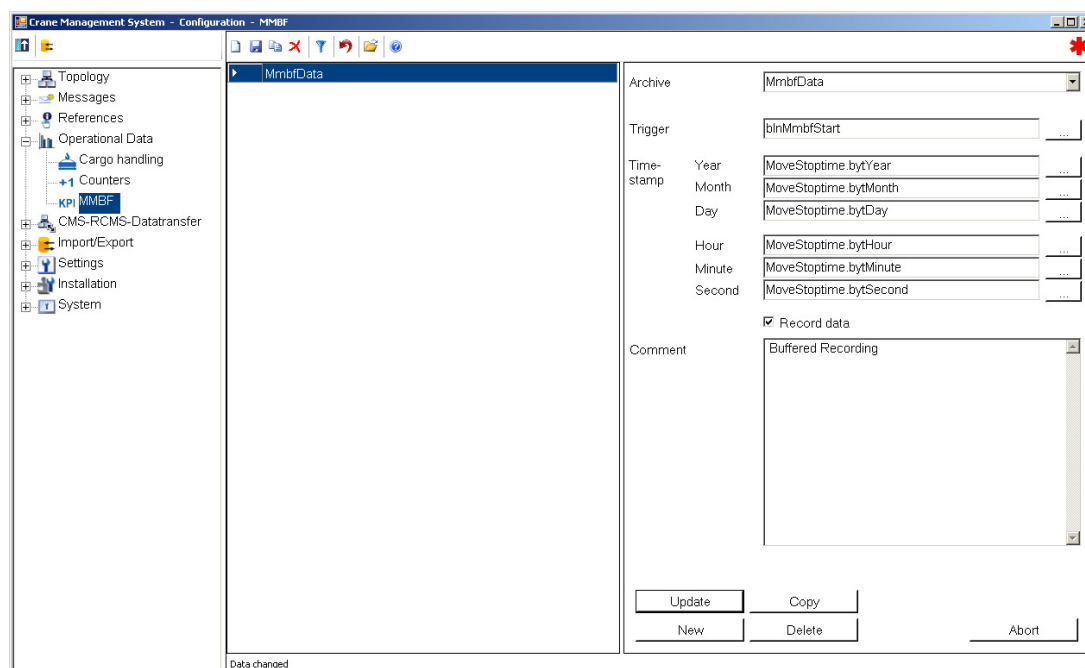


Figure 6-28 Acquisition of MMBF data

When this dialog is opened, all existing Tag Logging archives are read out of the active WinCC project and displayed in the selection field for the archives. Contrary to all of the

selection fields in the CMS Editor, the user can also enter names in this selection field. This means that archives which do not yet exist can be defined.

The following values can be acquired in this dialog:

- Trigger

This WinCC tag is set by the controller in order to signal to the CMS that an MMBF data set is to be written. The tag is reset by CMS Runtime once the data set has been written.

- Time stamp

If the time stamp for the MMBF data set is calculated on the controller, the WinCC tags can be specified in the fields for the time stamp. These tags are used to transfer the time stamp to the PC, as a WinCC time stamp cannot be read directly from the controller.

If no tags are specified, the time stamp is calculated from the system time on the PC.

As soon as you have selected the topology "CMS with RCMS server", you can transfer configuration data and runtime data for this archive. You can make the settings for the transfer operations in a separate dialog; see Chapter CMS-RCMS data transfer: Transferring operating data (Page 80).

6.2.13 CMS-RCMS data transfer: Transferring messages

Note

This dialog is only available in the topology "CMS with RCMS server".

In this dialog you can activate or deactivate the transfer of configuration and runtime data for the messages that exist in WinCC. In so doing, you can activate or deactivate entire message classes or individual messages.

Table 6- 16 Transferring messages

Input field	Meaning	Unique	Mandatory field
Configuration	The setting determines whether the configuration data should be transferred to the RCMS server (only for message classes).	yes	no
Runtime	The setting determines whether the runtime data should be transferred to the RCMS server.	yes	no

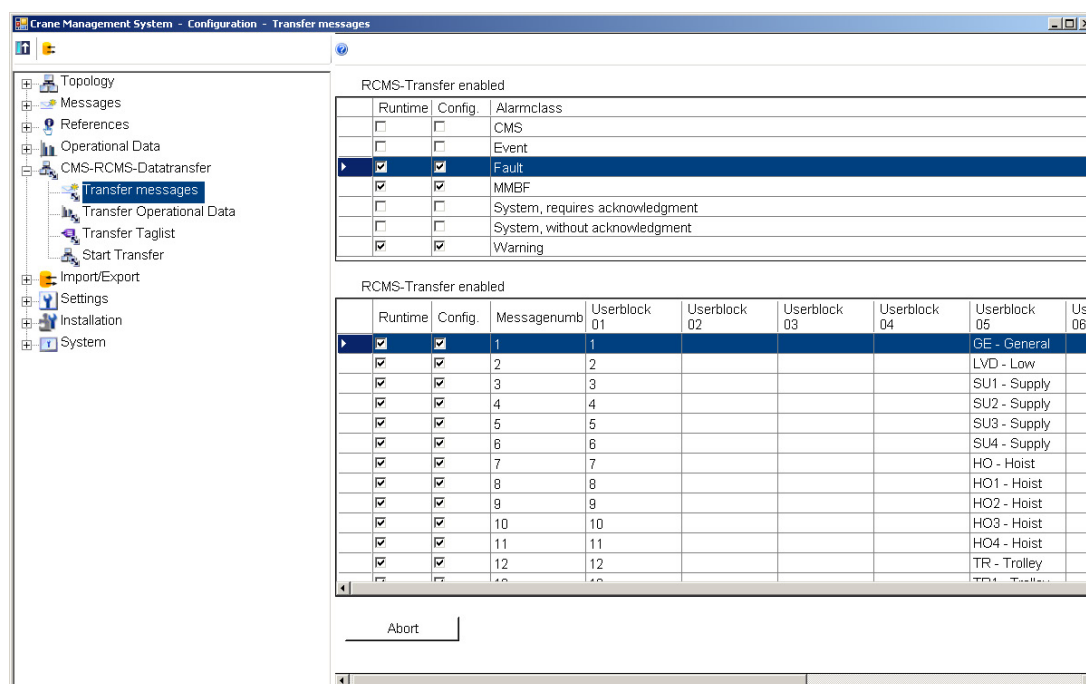


Figure 6-29 Settings for the transfer of messages

The list of all message classes, for which messages are available in WinCC Alarm Logging, are shown in the table above. If you select a message class in the list, then the associated messages are shown in the table below.

You can deactivate the transfer of configuration and runtime data, either for an entire message class or for individual messages. If the transfer of the class is deactivated, then the transfer of all messages within the class is also deactivated.

As soon as you have activated the configuration data transfer for a message class, you can generate this archive on the RCMS server with an upload. There you can overwrite the instance messages for the equipment type to which this crane is assigned. The message offset that you defined in the CMS Editor for the equipment type under topology (see Chapter Topology: Equipment types (Page 53)) is added to the message number. A download from the RCMS server is also possible.

As soon as you have activated the runtime data transfer for the messages, an XML file is written for each message that is acquired. The file is stored in the WinCC project directory under ...\\CMS\\Messages\\Files\\yyyy-mm-dd. Once the file has been transferred, it is deleted from the directory. If an error occurs during the transfer, the file is moved to the folder ...\\CMS\\Messages\\Errors\\yyyy-mm-dd. At transfer, the crane name defined in the topology is transferred in process value 1 in order to assign the message to the crane at the RCMS.

In the directories ...\\Files and ...\\Errors, a new subdirectory is generated every day with the current date to limit the data volume in a directory. You can define a disk clean-up in a dedicated dialog to delete old XML files (see System: Basic settings (Page 103)).

6.2.14 CMS-RCMS data transfer: Transferring operating data

Note

This dialog is only available in the topology "CMS with RCMS server".

In this dialog, you can activate or deactivate the transfer of configuration and runtime data for the acquired operational data archives (cargo handling data, counters, MMBF data).

Table 6- 17 Transfer of operational data

Input field	Meaning	Unique	Mandatory field
Configuration	The setting determines whether configuration data should be transferred to the RCMS server.	yes	no
Runtime	The setting determines whether runtime data should be transferred to the RCMS server.	yes	no

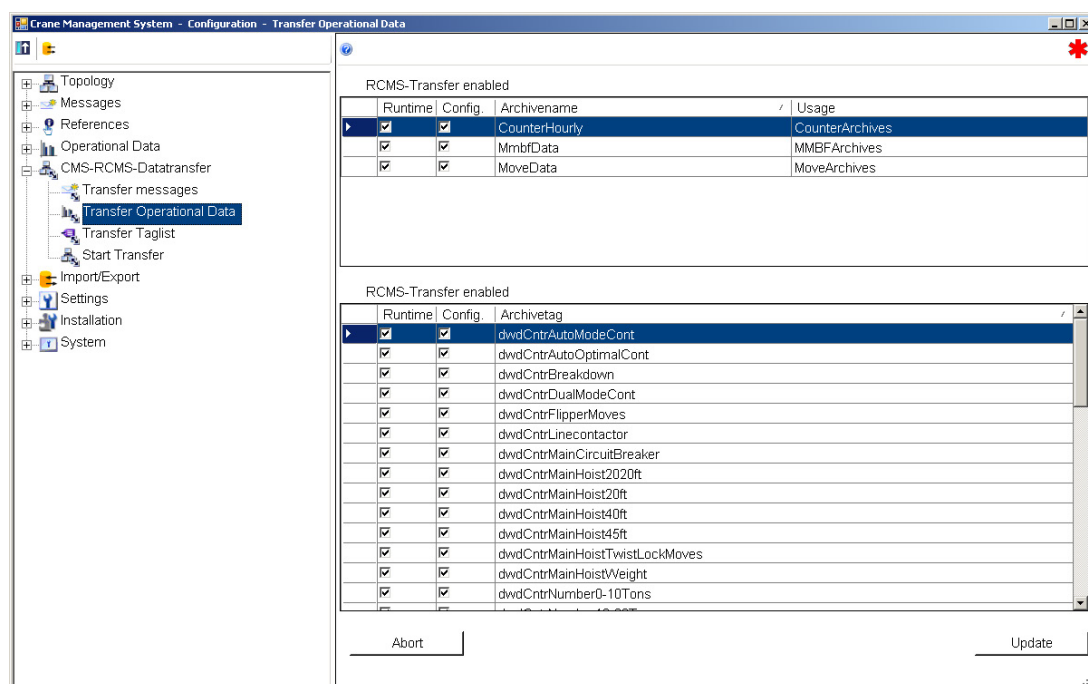


Figure 6-30 Settings for the transfer of operating data

The list of all operational data archives is shown in the table above. If you select an archive in the list, then the associated tags are shown in the table below.

You can deactivate the transfer of the complete archive as well as the transfer of individual tags of an archive. If the transfer of the archive is deactivated, then the transfer of all tags within the archive is also deactivated.

As soon as you have activated the configuration data transfer for an archive, you can generate this archive on the RCMS server with an upload. There, the archive is created with the crane name, followed by "_", as prefix (crane name_archive name). The names of the

archive tags remain unchanged. The process tags are generated as internal tags in the tag group "Crane name" and have the crane name, followed by "_", as prefix. A download from the RCMS server is not possible.

As soon as you have activated the runtime data transfer for the archive / the archives for acquiring cargo handling operations, an XML file is written for each cargo handling operation that is acquired. The file is stored in the WinCC project directory under

...\CMS\Moves\Files\yyyy-mm-dd.

Once the file has been transferred, it is deleted from the directory. If an error occurs during the transfer, the file is moved to the folder ...\\CMS\Moves\Errors\yyyy-mm-dd .

As soon as you have activated the runtime data transfer for the archive / the archives for acquiring counter differences, an XML file is written for each time slice that is acquired. The file is stored in the WinCC project directory under ...\\CMS\Accumulates\Files\yyyy-mm-dd.

Once the file has been transferred, it is deleted from the directory. If an error occurs during the transfer, the file is moved to the folder ...\\CMS\Accumulates\Errors\yyyy-mm-dd .

As soon as you have activated the runtime data transfer for the archive / the archives for acquiring MMBF data, an XML file is written for each MMBF data set that is acquired. This XML file is stored in the WinCC project directory under ...\\CMS\MMBFs\Files\yyyy-mm-dd.

Once the file has been transferred, it is deleted from the directory. If an error occurs during the transfer, the file is moved to the folder ...\\CMS\MMBFs\Errors\yyyy-mm-dd .

In the directories ...\\Files and ...\\Errors , a new subdirectory is generated every day with the current date to limit the data volume in a directory. You can define a disk clean-up in a dedicated dialog to delete old XML files (see System: Basic settings (Page 103)).

6.2.15 CMS-RCMS data transfer: Transfer Taglists

Note

This dialog is only available in the topology "CMS with RCMS server".

The "Taglist" is used to transfer the values of individual WinCC tags. The transfer of the WinCC tags to the RCMS server can either be triggered cyclically or when changes are made.

Table 6- 18 Transfer of the tag list

Input field	Meaning	Unique	Mandatory field
Tag	Name of the WinCC tag to be transferred	yes	yes
Acquisition	Selects in which cycle the tag should be read	no	yes
First start	Specifies when the tag should be read for the first time	no	yes
Add to structure tag on RCMS	Selects whether the tag is part of the structure instance at the RCMS	no	no
Transferring data	Selects whether runtime data is to be transferred	no	no

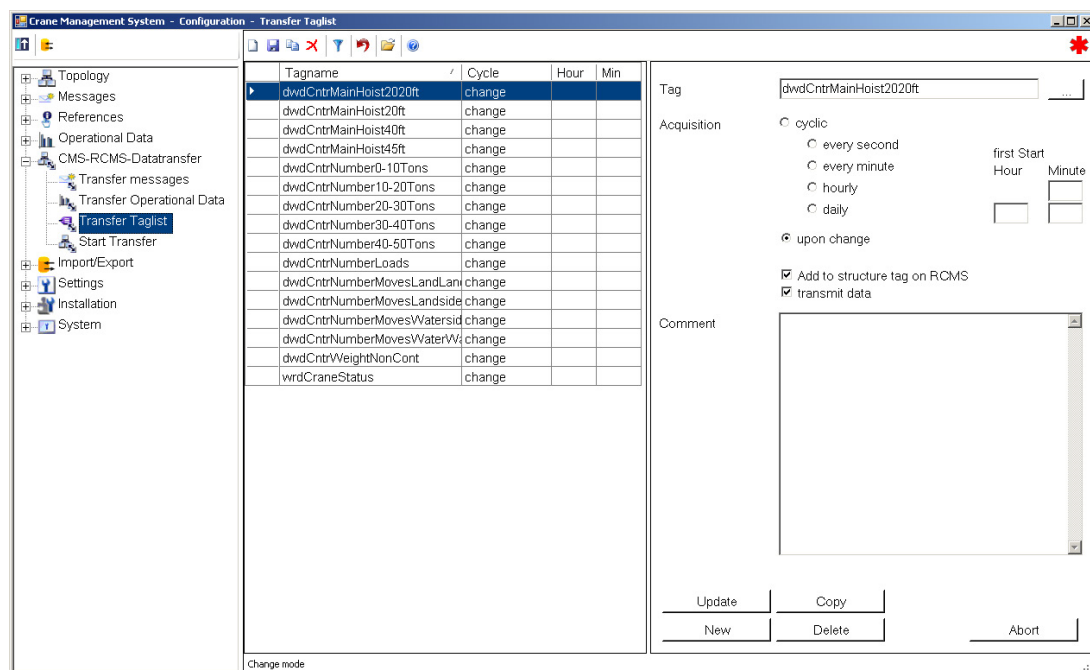


Figure 6-31 Acquisition of tag lists

- WinCC tag
Name of the WinCC tag to be transferred.

- Acquisition

- Cyclic

With cyclic processing, all the values specified in the cycle are read and transferred to the RCMS server. With hourly or daily transfers, the start of the cycle can also be specified with greater precision. With hourly acquisition, it is possible to specify the minute when the cycle will start; with daily acquisition, it is possible to specify both the hour and the minute when the cycle will start.

- Upon change

For every change exactly the changed values are transferred.

As soon as you have tags defined in the list and set the check mark "Add to structure tag on RCMS", you can generate these tags on the RCMS server by performing an upload. There, a structure type with "@CMS" and the equipment type defined under topology as prefix is generated (@CMSEquipment type). Existing structures are overwritten. In addition, a structure instance with the crane name as a prefix is generated in the crane name tag group.

As soon as you have set the check mark "Transfer data", the values of these tags are transferred to the RCMS server according to the selected acquisition type. Tag values are not buffered on the CMS.

6.2.16 CMS-RCMS data transfer: Upload

Note

This dialog is only available in the topologies "CMS with RCMS server" and "One RCMS server".

6.2.16.1 Crane (CMS station)

In the Upload dialog on the CMS station (topology: "CMS with RCMS Server") you can start an upload.

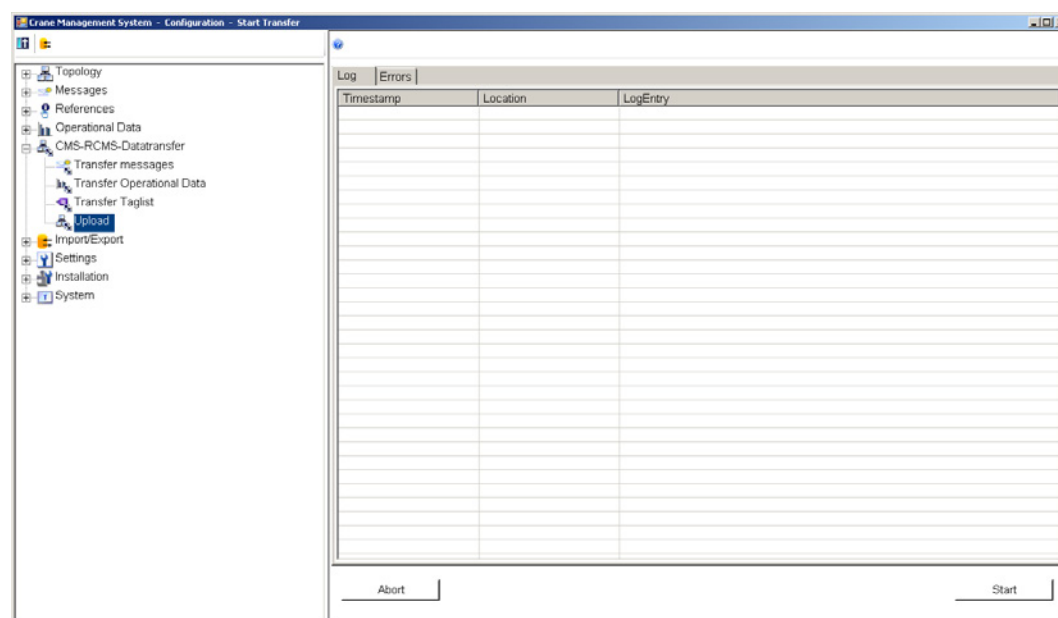


Figure 6-32 Upload of configuration data (CMS station)

During the upload, the data from one crane or multiple cranes is transferred to the RCMS server. There is always only one data set per equipment type. The upload overwrites the data of the equipment type at the RCMS with that of the crane, whose data are transferred. If

the upload is initiated from a CMS station, then no second upload is possible in parallel from another CMS station.

Note

After data has been uploaded to the RCMS server, at the RCMS you must check as to whether the data of the other cranes of this equipment type are still consistent. You can initiate a download at the RCMS server to adapt data of cranes that are not consistent.

In the editor function tree, using the markings of the functions, you can identify whether data at the CMS station have been changed, which must be uploaded to the RCMS server for data alignment.

To perform an upload, the following preconditions must first be available:

- It must be possible to access the RCMS server via TCP/IP
- Setting up the communication parameters in the dialog (Topology → Crane) on the CMS station
- Setting up the communication parameters in the dialog (Topology → Crane) on the RCMS server
- CMS Runtime active on the CMS station
- CMS Runtime active on the RCMS server
- WinCC Runtime has been exited on the RCMS server!
- WinCC editors on the RCMS server are closed!

When the dialog is opened and there is no connection to the RCMS server, then you receive a corresponding message.

The upload dialog has two tabs. Outputs (information) for the current upload processes are listed under the "Log" tab. Errors during the upload are listed under the "Errors" tab.

Start the upload using the Start button at the lower right edge of the screen.

Note

All of the data for this equipment type available in the RCMS server will be overwritten.

Note

Do not interrupt the upload. This can result in loss of data.

Note

If there is a large number of messages in the WinCC Alarm Logging, the upload/download process can take several minutes.

If the upload is finished with errors, then you must start a new upload after resolving these errors. An error description can be found under the "Errors" tab.

You receive a message as soon as the upload has been successfully completed. The marking of the changed data in the function tree disappears.

6.2.16.2 RCMS server

In the upload dialog on the RCMS server (topology: "One RCMS Server") you can start a configuration data upload.

During the upload, the data from one or multiple cranes is transferred to the RCMS server. The upload overwrites the data of the equipment type at the RCMS with that of the crane, which are transferred.

As soon as it is necessary to upload data of a crane to the RCMS server, the Upload button becomes visible in the Toolbar function selection. You can reach the upload dialog by pressing this button.

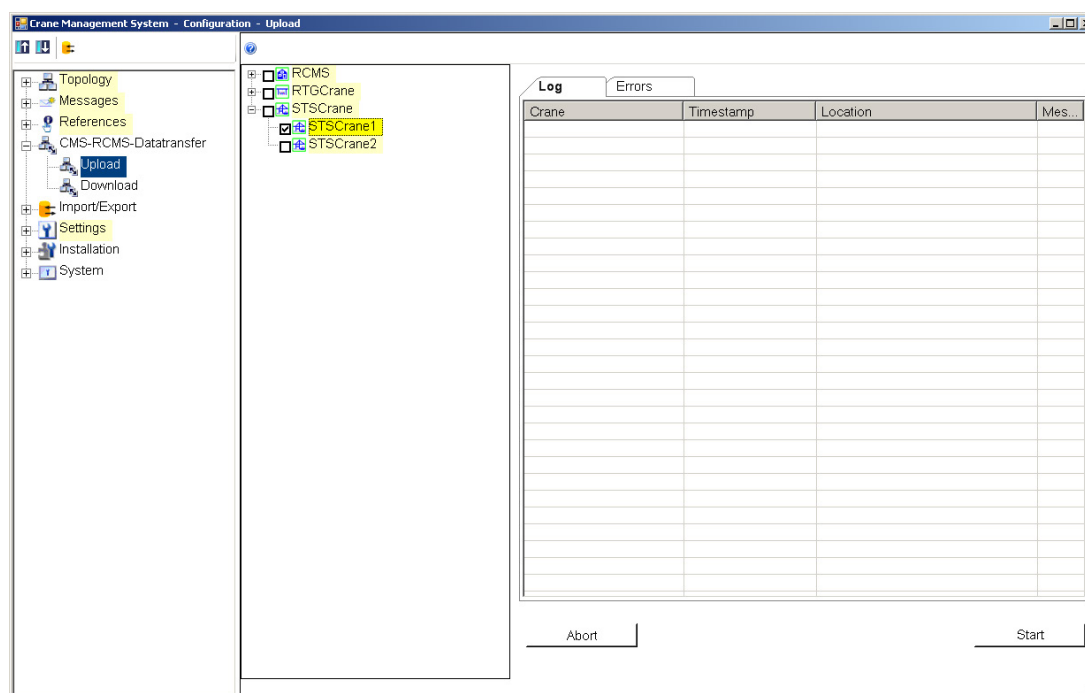




Figure 6-33 Uploading configuration data (RCMS server)

To perform an upload, the following preconditions must first be available:

- It must be possible to access the CMS station via TCP/IP
- Setting up the communication parameters in the dialog Topology → Cranes on the CMS station
- Setting up the communication parameters in the dialog Topology → Cranes on the RCMS server
- CMS Runtime active on the CMS station
- CMS Runtime active on the RCMS server
- WinCC Runtime has been exited on the RCMS server!
- WinCC editors on the RCMS server are closed!



On the left-hand side of the upload dialog, the tree display of the terminal is shown, which contains the nodes terminals, equipment types and cranes. Using the crane icon, you can identify whether a crane is connected with the RCMS server, i.e. is online or not.

Table 6- 19 Status of the cranes in the tree of the CMS Editor

Icon	Meaning
	Crane offline
	Crane online

The color marking of the cranes indicates whether an upload for the associated crane is necessary, i.e. whether the configuration data of the crane differ from the configuration data of the associated equipment type at the RCMS server. You can adapt the color of the marking in the input dialog for basic settings, under the "Colors" tab (see System: Basic settings (Page 103)).

Table 6- 20 Data consistency

Icon	Meaning
 STSCrane1	Changes available (data is not consistent)
 STSCrane2	No changes available (data is consistent)

In the tree display, you can select several cranes and start an upload simultaneously for all of these cranes. Such a multiple upload is not simultaneously executed. Initially, the data of the first crane in the tree are uploaded, and at the end, the data of the last crane are uploaded to the RCMS server.

Note

You can only select a crane when the connection to this crane has been established ("Crane online").

You start the upload using the Start button at the lower edge of the screen. A note is first displayed that the upload procedure can take several minutes. The upload starts after confirmation.

The upload dialog has two tabs on the right-hand side. The outputs of the individual functions are listed under the "Log" tab. Errors during the transfer are listed under the "Errors" tab.

Note

Never interrupt the upload. This can result in loss of data.

If the upload is finished with errors, then you must start a new upload after resolving these errors. An error description can be found under the "Errors" tab.

You receive a message as soon as the upload has been successfully completed. The marking of the changed data in the tree on the left side of the dialog disappears.

6.2.17 CMS-RCMS data transfer: Download

You can only download configuration data at the RCMS server (topology: "One RCMS server"). The data of an equipment type, available at the RCMS server, is downloaded to one or several cranes of this equipment type.

The download overwrites the data of the crane with those of the equipment type on the RCMS server. As soon as a download is required to one of the cranes available on the RCMS Server, the Download button becomes visible in the Toolbar function selection. You can reach the download dialog by pressing this button.

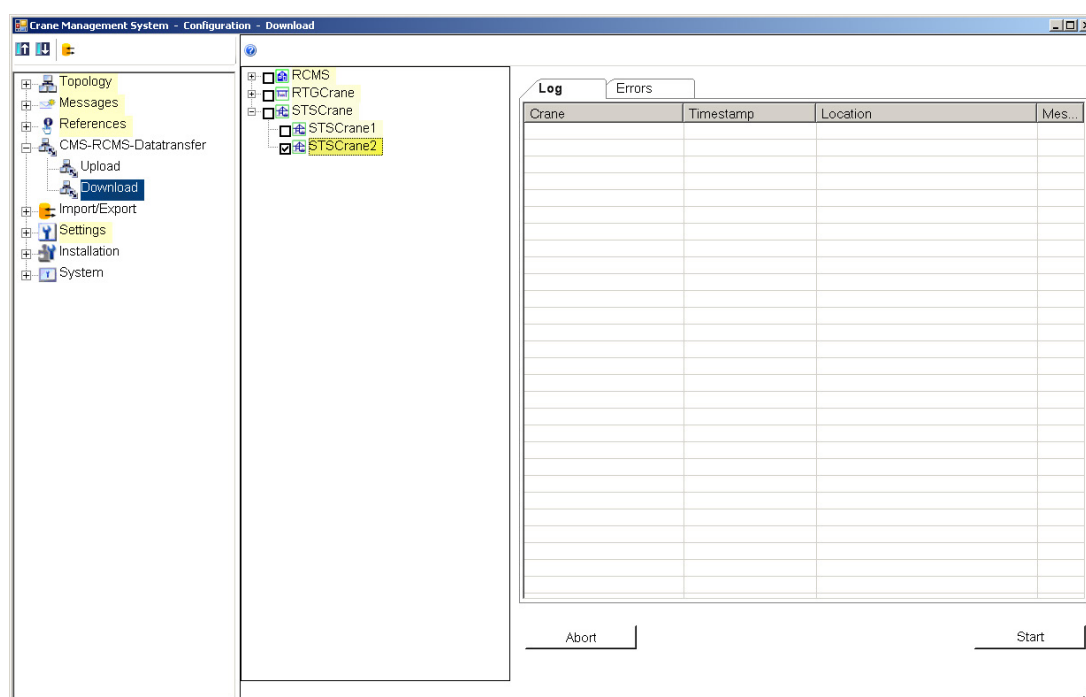




Figure 6-34 Downloading configuration data (RCMS server)

In order to perform a download to a CMS station, the following preconditions must be available:

- It must be possible to access the CMS station via TCP/IP
- Setting up the communication parameters in the dialog Topology → Cranes on the CMS station
- Setting up the communication parameters in the dialog Topology → Cranes on the RCMS server
- CMS Runtime active on the CMS station
- CMS Runtime active on the RCMS server
- WinCC Runtime has been exited on the CMS station!
- WinCC editors on the CMS station are closed!



On the left-hand side of the download dialog, the tree display of the terminal is shown, which contains the nodes terminals, equipment types and cranes. From the crane icon you can identify whether a crane is online or not.

Table 6- 21 Status of the cranes in the tree of the CMS Editor

Icon	Meaning
	Crane offline
	Crane online

The color marking of the cranes indicates whether a download for the associated crane is necessary, i.e. whether the configuration data of the crane differ from the configuration data of the associated equipment type on the RCMS server. You can adapt the color of the marking in the dialog for basic settings, under the "Colors" tab; see Chapter System: Basic settings (Page 103)).

Table 6- 22 Data consistency

Icon	Meaning
 STSCrane1	Changes available (data is not consistent)
 STSCrane2	No changes available (data is consistent)

In the tree display you can select several cranes and start a download simultaneously for all of these cranes. Such a multiple download is not simultaneously executed. To start, data of the RCMS server are downloaded to the first crane in the tree, and finally the data of the last crane in the tree.

Note

You can only select a crane in the tree display when the connection to this crane has been established ("Crane online").

You start the download using the Start button at the lower edge of the screen. A note is first displayed that the download procedure can take several minutes. The download starts after confirmation.

The download dialog has two tabs on the right-hand side. The outputs of the individual functions during download are listed under the "Log" tab. Errors during the download are listed under the "Errors" tab.

Note

Never interrupt the download. This can result in loss of data.

If the download is finished with errors, then you must start a new download after resolving these errors. An error description can be found under the "Errors" tab.

You receive a message as soon as the download has been successfully completed. The marking of the changed data in the tree on the left side disappears.

6.2.18 Import/export: Import/Export

A rough distinction is made between user and system data in relation to imports and exports.

User data include data which are generally acquired or changed in normal operation, such as

- Terminals
- Equipment
- Cranes
- Maintenance instructions
- Assignments between messages of an equipment type and maintenance instructions
- Log (remarks on maintenance instructions)
- Assignments between messages of an equipment type, maintenance instructions and logs (remarks on maintenance instructions)
- References
- Assignments between equipment types, cranes, messages and references
- Settings for the cargo handling data
- Settings for acquiring MMBF data
- Settings for acquiring counter differences
- Tag list

System data basically include data that are provided as defaults during installation, or data that are acquired during commissioning and seldom changed once the system is running, such as:

- Icons
- Programs
- Macros
- Reference types

Two different import and export functions are provided under "Setup" for language-specific information in the CMS:

- Transfer
- Translation

The transfer functions are used to exchange language-specific information between different installations. In this case, all the information such as installed languages, component names etc. are processed. The translation functions handle only data that is required for translation purposes. Furthermore, only the data for one language at a time can be displayed for translation.

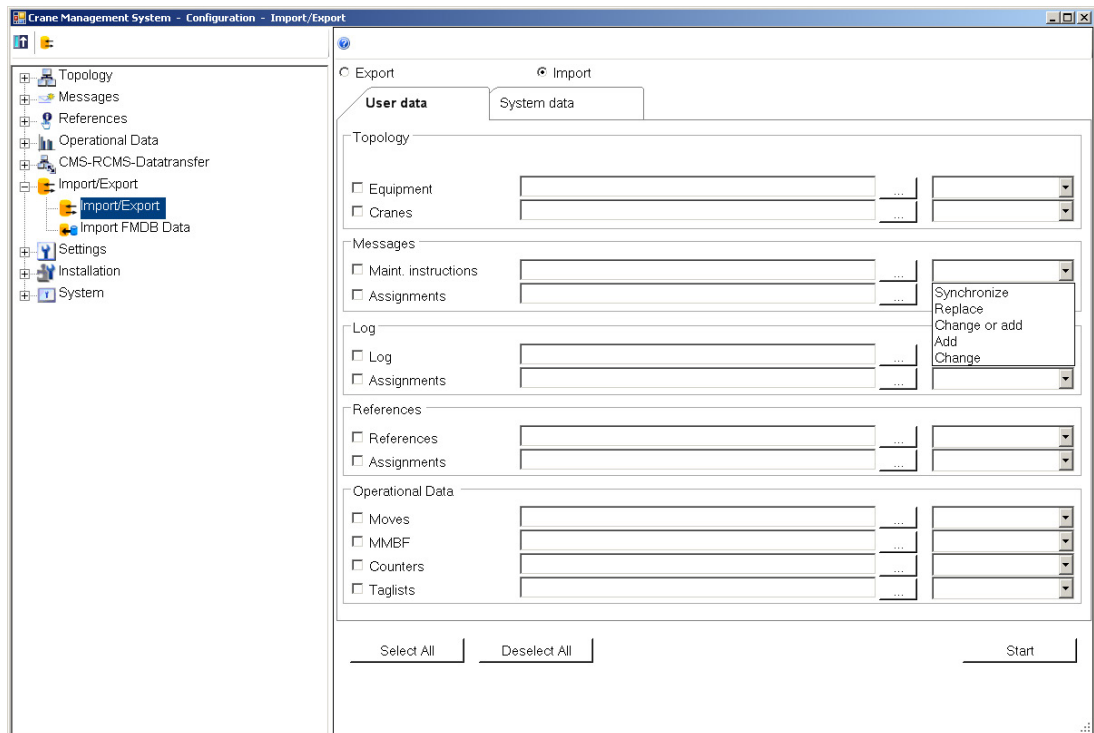


Figure 6-35 Import / export of user data

The "Select All" button can be used to activate all the check boxes for the import/export function at the same time. If necessary, the selection can be changed again at a later time. Once the import has been started, all the successfully processed data types are deselected by the system. If errors or warnings occurred when data was being imported or exported, the data concerned will not be deselected. This enables data export or import to recommence as soon as the necessary corrections have been made. The "Deselect All" button can be used to deactivate all the check boxes at the same time.

Note

The checkmarks to select the individual options cannot be used if you have still not defined an equipment type in the dialog used to acquire equipment types.

Before user data are imported, it must be considered whether system data need to be adapted first. If, for example, new terminal or equipment type data are to be imported which contain symbols that do not yet exist in the CMS, these icons would need to be imported first or entered in the icon acquisition dialog before the topology data import can be started. The same applies to the import of references. In this case, it may be necessary to specify additional reference types or programs first.

Data is imported and exported in an XML format. A complete description of the format can be found in the appendix.

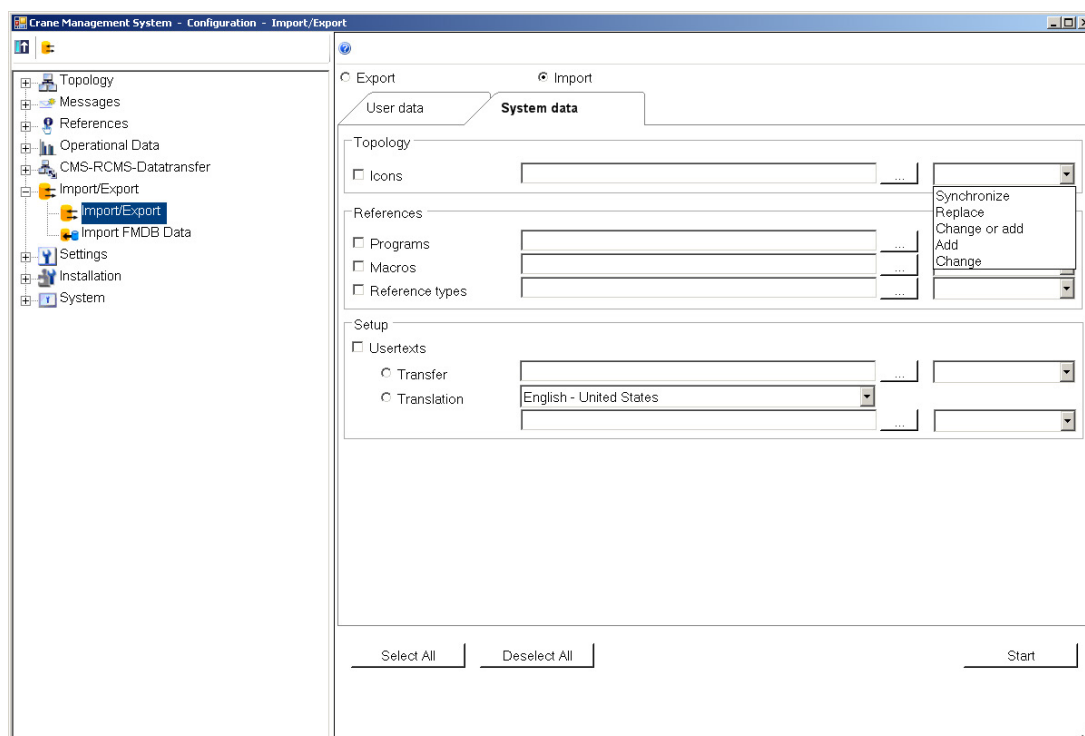


Figure 6-36 Import / export of system data

Two different functions are used to import and export languages. The import/export transfer function is used primarily to transfer the complete, language-specific database. With an export transfer operation, all information about the implemented languages, the available dialog or message components and the acquired language-specific information are bundled together in an export file or are expected in a file for import.

When language-specific information is imported / exported for translation, only the data pertaining to one language is exported. Furthermore, only the information which is required for translation purposes is exported. This data includes

- identification of the component
- text to be translated
- comment on the component (if stored)

The following import functions are provided:

- **Replace**
All existing data are deleted and replaced by the imported data.
- **Change**
Only existing data are changed. Newly imported data are ignored.
- **Add**
Existing data are not changed. Only new data are accepted.

- **Change or add**

Existing data are changed. New data are accepted.

- **Synchronize**

Existing data are changed and new data are accepted. Data which are not found in the import file are deleted.

Data import with "Replace" or "Synchronize"?

In "Replace" mode, all data are first deleted from the table. However, data with assigned references cannot be deleted. In this case, the import operation will be aborted with an error message. In "Synchronize" mode, the existing data are matched to the data to be imported. As long as this operation does not cause any entries in the existing database with assigned references to be changed or deleted, the import operation will proceed successfully. The import process will be aborted with an error message only if the existing database contains entries with assigned references which will be changed or deleted by the synchronize operation.

If no references are assigned to the import data, the "Replace" import mode should be used as the computer resources used by this function are significantly lower.

For data which do not contain references to other tables, the functions "Replace" and "Synchronize" are identical. The functions differ only in relation to data which are referenced by other tables. An example of this data type are the entries in the icons table which are references, for example, from the tables for terminals or equipment types.

Data is imported and exported in an XML format. A complete description of the format can be found in the appendix.

6.2.19 Import/export: Importing FMDB data

Importing FMDB data (FMDB: Fault Message Database) is available for bulk data handling of the additional error information.

When importing using this function, several operations are combined:

- Creating maintenance instructions and assigning these to the existing messages.
- Creating assignments to references containing special macros (see below). In this case, these references must have already been created. Here, only assignments are created, whereby the actual values of the macros, acquired in the import file, are saved in the assignment sets.

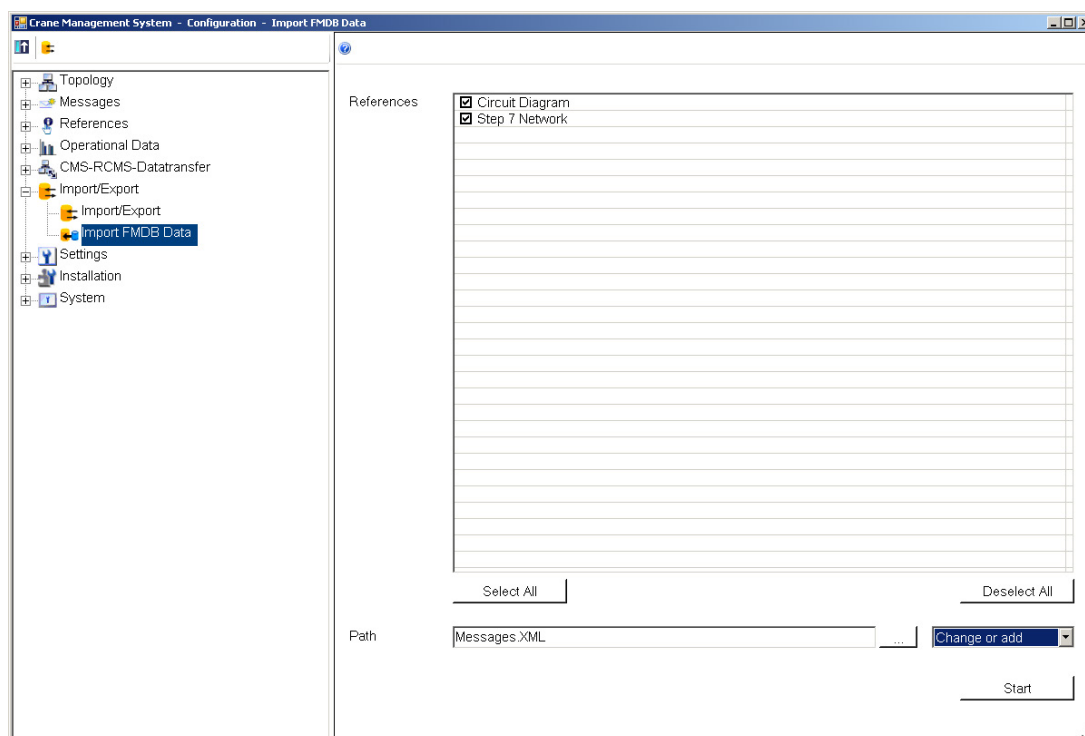


Figure 6-37 Import/export of FMDB data

An XML file is used to import data into the CMS Editor. The table below shows all the XML tags with a fixed meaning in the CMS:

Table 6- 23 XML tags in FMDB data

Name	Description	Application in the CMS	Length in the CMS, type
IFNo	Error number	Key	Long integer
InstructionText	Instruction text 1, possible cause	Maintenance instruction	2,000 characters
TestText	Instruction text 2, possible remedy, test instruction	Maintenance instruction	2,000 characters

Special macros are used for the automatic assignment of references during the import of FMDB data. At the start of the import, all the references in which this type of special macro is used directly (via the reference entry) or indirectly (via the program entry) are brought together in a list. Before the import starts, the user can select from this list the references for which assignment sets are to be created as part of the import process.

A selection of these special macros is preinstalled along with the CMS. The user can supplement these with additional special macros.

This type of special macro always begins with the character string "%FMDB_", followed by the name of the XML tag whose contents are to be used as a macro value when the reference is displayed.

Table 6- 24 Predefined macros for FMDB import

Macro name	Meaning
%FMDB_CircuitDiagramFilename%	File name of the circuit diagram
%FMDB_CircuitDiagramPath%	Path to the file for the circuit diagram
%FMDB_Drw_Plant-ID%	Higher level designation in the circuit diagram
%FMDB_Drw_Sheet%	Page in a circuit diagram sheet
%FMDB_CD_Page%	Absolute page in the circuit diagram
%FMDB_PLC_Block%	Block of a program in the STEP 7 project
%FMDB_PLC_NW%	Network of a block in the STEP 7 project
%FMDB_Step7ProjectName%	File name of the STEP 7 project
%FMDB_Step7ProjectPath%	Path to the file of the STEP 7 project

6.2.20 Settings: Icons

Note

This dialog is accessible only to users who belong to the Windows user group "CMSAdmin".

Terminals, equipment types and cranes are generally selected in a tree display. For this purpose, individual terminals and equipment types can be represented by different icons. The icons, with which the corresponding objects are represented in the tree, are stored in this dialog.

Table 6- 25 Icons

Input field	Meaning	Unique	Mandatory field
Name	Name of the icon	yes	yes
"OK" icon	Path to the icon for displaying the "OK" status.	no	yes
"Idle" icon	Path to the icon for displaying the "Idle" status	no	yes
"Offline" icon	Path to the icon for displaying the "Offline" status	no	yes
"Warning" icon	Path to the icon for displaying the "Warning" status	no	yes
"Fault" icon	Path to the icon for displaying the "Fault" status	no	yes
"CMSRuntime down" icon	Path to the icon for displaying the "CMS Runtime down" status	no	yes
"WinCC Runtime down" icon	Path to the icon for displaying the "Win Runtime down" status	no	yes
"PLC cannot be accessed" icon	Path to the icon for displaying the "PLC cannot be accessed" status	no	yes
"Undefined" icon	Path to the icon for displaying the status if none of the other options apply	no	yes
Comment	Optional comment	no	yes

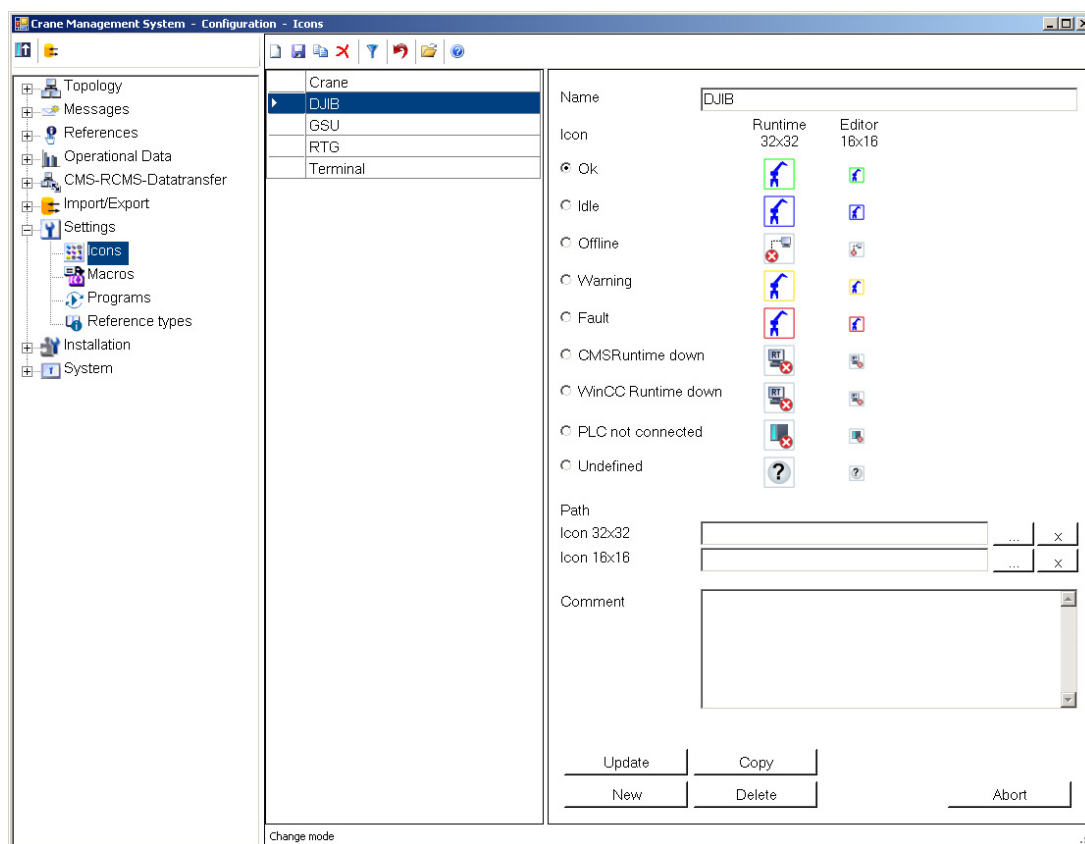


Figure 6-38 Acquisition of icons

It is important to note that graphic symbols of any size can be specified in the icon acquisition dialog, but that the graphics will be either scaled or truncated depending on format if they are too large. The size for displaying icons in the control elements is optimized for 16 x 16 or 32 x 32 pixels. All popular graphics formats such as bmp, jpg, gif, png, ico, emf, etc. can be selected as file formats.

The displayed icon path is the same as the path used to load the icons. Since the graphics themselves are also stored in the database, this path information is later merely a comment indicating the load path of the icons.

The appropriate "x" button can be used to delete an icon from the acquisition dialog.

6.2.21 Settings: Macros

In the CMS macros are named text blocks. The names of these macros can be used as wildcards in the functions for managing programs and references. Special macros are used in the function for importing FMDB data to automatically create links to references.

When references are displayed, these wildcard characters are replaced by the relevant macro values.

Macros are acquired in this dialog:

- Macro name

The macro name must start and end with the % character.

Example: %Page%

- Macro text

Here, you can assign a fixed value to a macro, which is then applicable to all locations where it is used. An example is the path to certain documents.

In the other case, only assign the macro with a value if the reference or a program that uses it is assigned a message or equipment type. An example for a macro of this type is the page in a circuit diagram.

In the CMS Editor, there are also special FMDB macros as well as some predefined macros that contain system information such as, e.g. the installation path of the CMS.

You can use the macros for system information. You cannot change the value. This is the reason that they do not appear in this dialog, but only in the dialog to acquire references and to acquire programs. Special FMDB macros are used for FMDB import (see Chapter Import/export: Importing FMDB data (Page 92)).

In the CMSFaults control, as part of the function for displaying the information referred to in the reference entries, the macro names in the reference and program entries are replaced by the contents of the text blocks (current values of the macros). The resulting command is then sent to the operating system in order to display the information.

Table 6- 26 Macros

Input field	Meaning	Unique	Mandatory field
Macro name	Name of the macro	yes	yes
Macro text	Text to be used instead of the name when the placeholder is replaced	no	no
Comment	Comment on the macro	no	no

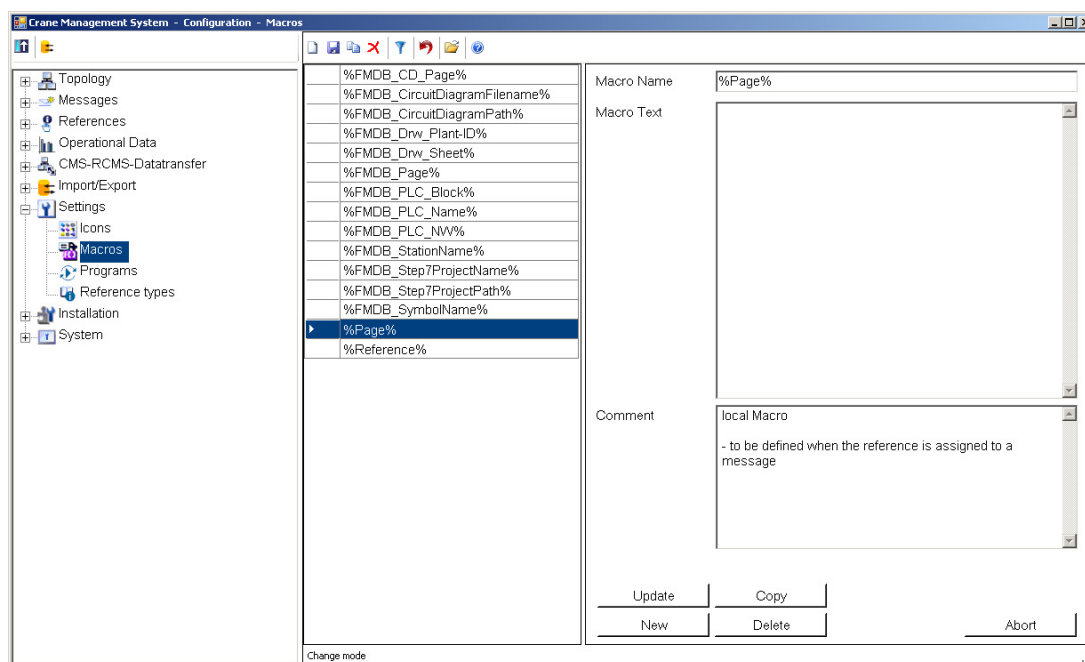


Figure 6-39 Acquisition of macros

Macros are acquired in this dialog, although system-defined macros are not displayed here.

Note

If spaces are used in macro texts, please note that spaces may be interpreted as separators in commands when the Windows program is called.

6.2.22 Settings: Programs

In this dialog, the CMS is notified about the programs with their special parameters, which are used to display referenced information ("References").

Table 6- 27 Programs

Input field	Meaning	Unique	Mandatory field
Description	Name of the program as it is displayed in the selection fields	yes	yes
Program	Text of the command to be used to start the program.	no	yes
Comment	Optional comment	no	no

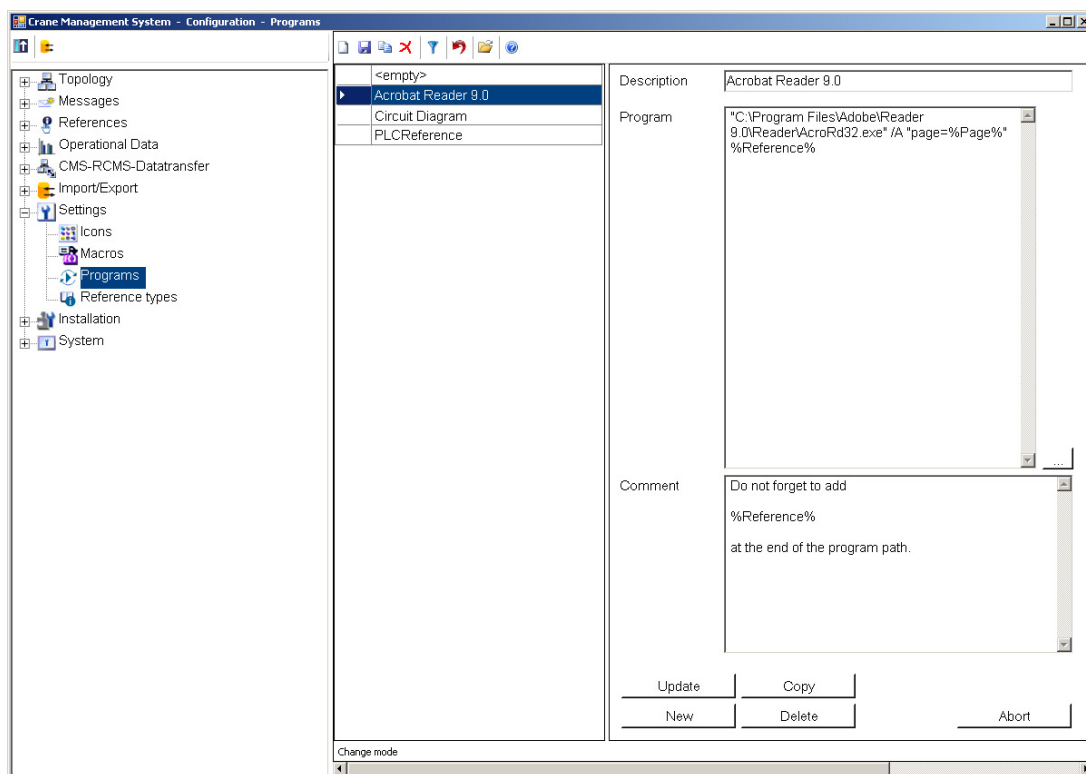


Figure 6-40 Acquisition of programs

As long as the referenced file is of a type known to Windows and no additional parameters are required to display the information, no entries need to be made in this dialog. In this case, the reference can be launched directly via the Windows link.

In the case of programs which can be launched via the Windows search path, no path needs to be specified.

The part of the command where the reference is to be subsequently inserted needs to be identified by means of the symbolic name "%Reference%".

Additional macros can also be manually entered in the command string to call a program. If a manually entered macro is not yet available in the macro table, it can be entered into the database directly after a corresponding dialog.

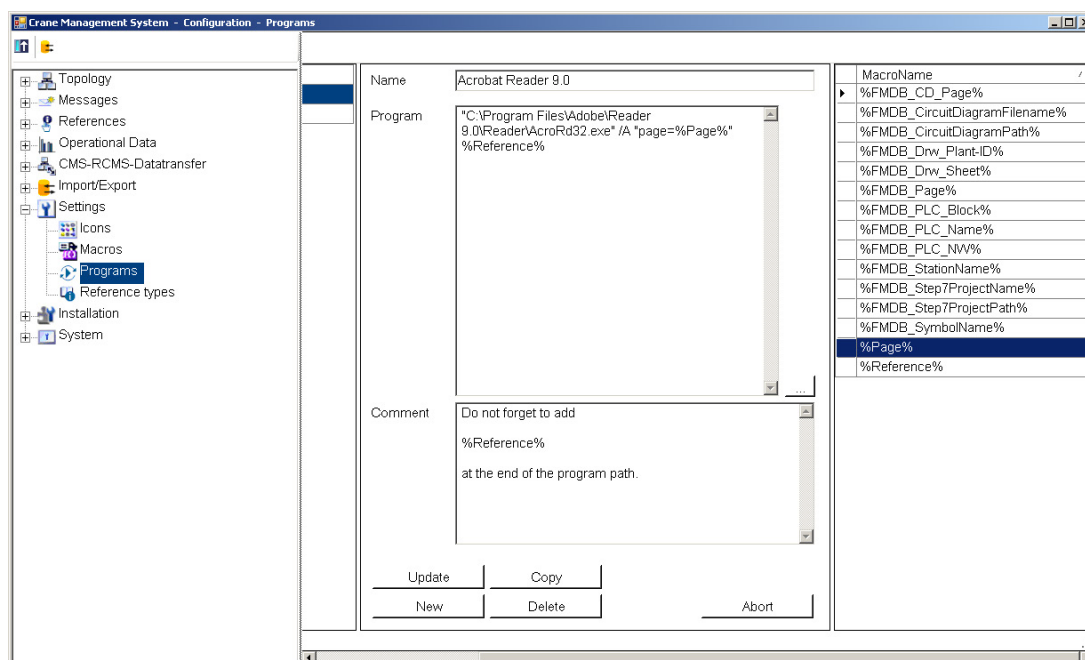


Figure 6-41 Acquisition of programs (macros)

In the dialogs, the existing macros are displayed in a table on the right-hand side. The macro selected in the table can be dragged and dropped to the required location.

Note

If spaces are used in the command string, please note that spaces are interpreted as separators. Where necessary, the command should be enclosed within inverted commas.

Note

It is possible to use the same program more than once with different parameters, but a unique name must then be assigned for each program invocation. Alternatively, macros can also be used here.

6.2.23 Settings: Reference types

Note

This dialog is accessible only to users who belong to the Windows user group "CMSAdmin".

The information acquired in this dialog is used to create clear groups of references for display in the CMSFaults control. These reference types are displayed in the CMSFaults control as supplementary information to the reference name in the reference list. This dialog can also be used to define the order in which reference types are displayed in the CMSFaults control. A certain basic inventory of reference types is installed with the CMS

package. This basic inventory, which is listed in the screen below, can be adapted or extended in this dialog.

Table 6- 28 Reference types

Input field	Meaning	Unique	Mandatory field
Reference type	Language code for the reference type	yes	yes
Sequence	Sort identifier	no	yes
Comment	Optional comment	no	no

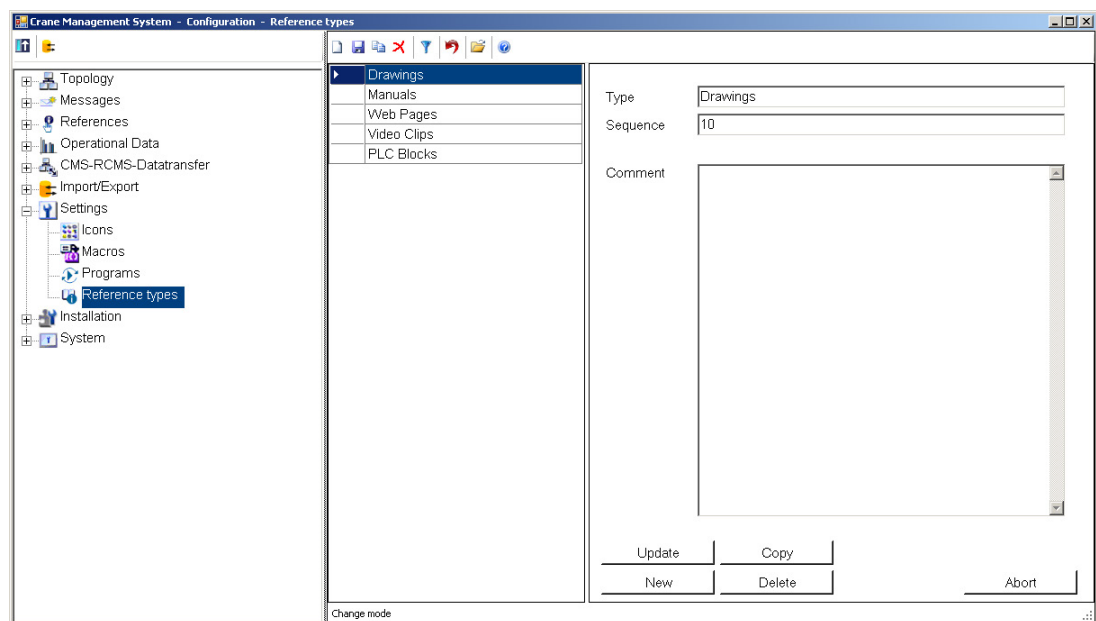


Figure 6-42 Acquisition of reference types

If a new reference type is set up in this dialog, an entry in the table for language-specific texts is automatically created for each language implemented. The code identifier entered in this dialog is the default entry for the text.

The display texts can be modified under the dialog name "ReferenceTypes" in the language table.

6.2.24 Installation: Usertexts

Note

This dialog is accessible only to users who belong to the Windows user group "CMSAdmin".

None of the texts used in the CMS controls and none of the messages output from the CMS are stored in the dialogs themselves, nor are they an integral component of the program. Instead, they are loaded from the database.

As this information is automatically loaded when the CMS is installed, normally you don't have to make any entries in this dialog. However, if there are additional application-specific reference types, then manual postprocessing is required.

Table 6- 29 Usertexts

Input field	Meaning	Unique	Mandatory field
Dialog name	Name of the dialog, data type or message group	yes + component name	yes
Component name	Name of the dialog component, language code value or message identifier	yes + component name	yes
Dialog/message	Switch defining whether the text for a field is acquired in a dialog or a message	no	yes
Comment	Optional comment	no	no
Text	Language-specific text	no	yes
Font	Display font for the language-specific text (for dialog fields only)	no	yes (only for dialogs)
Length	Dynamic length in pixels (read only) of the input text plus the length of dialog fields, also in pixels	no	yes (only for dialogs)
Tooltip	Language-specific tooltip text (implemented only for context menu entries in the current version.)	no	no
Icon	Language-specific icon (for messages only)	no	no

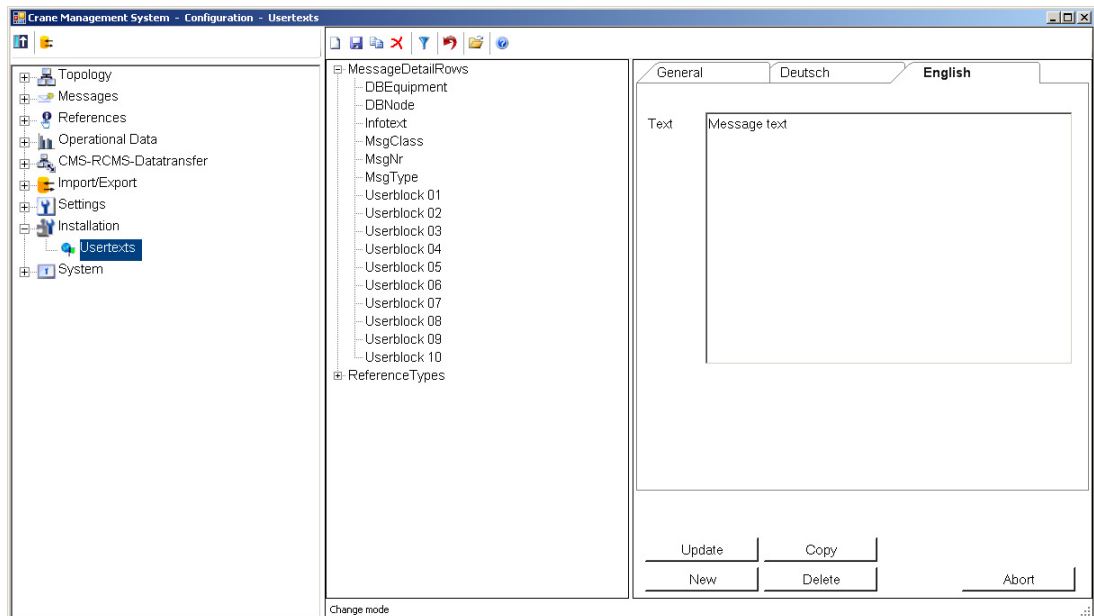


Figure 6-43 Acquisition of user texts

6.2.25 System: Maintenance

The primary purpose of this function is to prevent data loss caused by hard disk failures, parameterization errors, etc. It can also be used to copy the entire master database of a CMS between different computers. It is also capable of restoring the database to its original installation state.

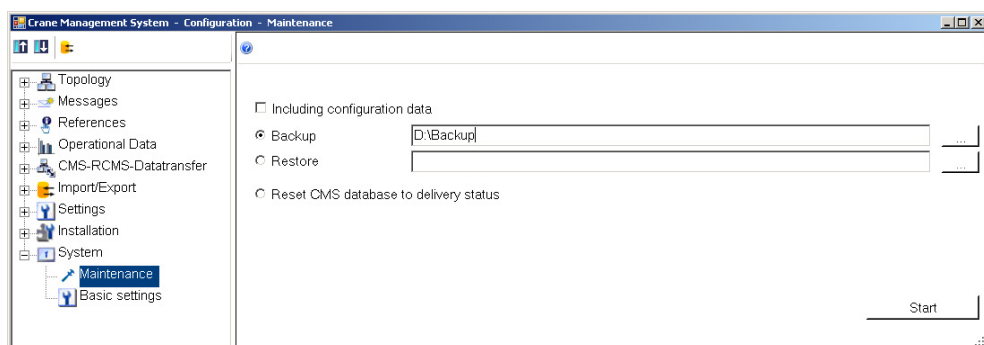


Figure 6-44 Maintenance (backup / restore)

This dialog contains the functions for database maintenance. For all functions, a parameter can be used to determine whether the configuration file should be included in the function as well (see Chapter System: Basic settings (Page 103)).

When a backup is performed, the contents of all tables are always copied to the target directory. Data cannot be selected more specifically. In order to ensure that data of different database dates are not mixed, all data from a previous backup operation are deleted from the target directory before the next backup is performed.

The function for resetting the database to its delivery state is used to empty all tables of their contents and fill them up again with the data provided during installation.

6.2.26 System: Basic settings

In the acquisition dialog for modifying basic settings, the contents of the CMS configuration file can be adapted to meet specific requirements. A template for this configuration file is installed with the CMS software.

When the CMS Editor is launched for the first time, this template is copied to the CMS directory within the WinCC project directory. This means that these settings can be adapted specifically for each WinCC project. However, no provision is made for user-specific settings.

"Colors" tab

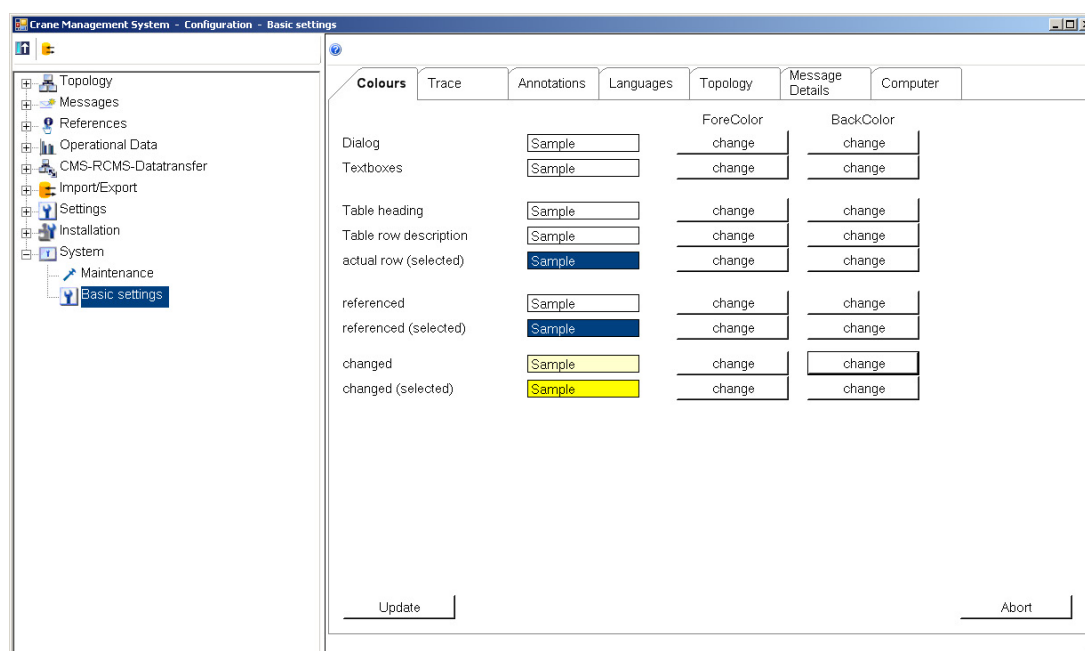


Figure 6-45 Changing the basic settings: Colors

All relevant colors for displaying CMS objects can be set on the "Colors" tab. Before the colors for all objects are accepted, they can be viewed in the example fields.

- Dialog: The colors of the dialogs for acquisition of data
- Textboxes: The colors of all input fields
- Table heading: The color of the table captions
- Table row description: The color of the row labeling in the tables
- actual row(selected): Marking a selected element
- referenced: Color of an element if there are references for this element

- referenced(selected): Marking of a selected element if there are assignments to this element
- changed: Color of an element if something has been changed
- changed(selected): Marking of a selected element if this element has been changed

"Logs" tab

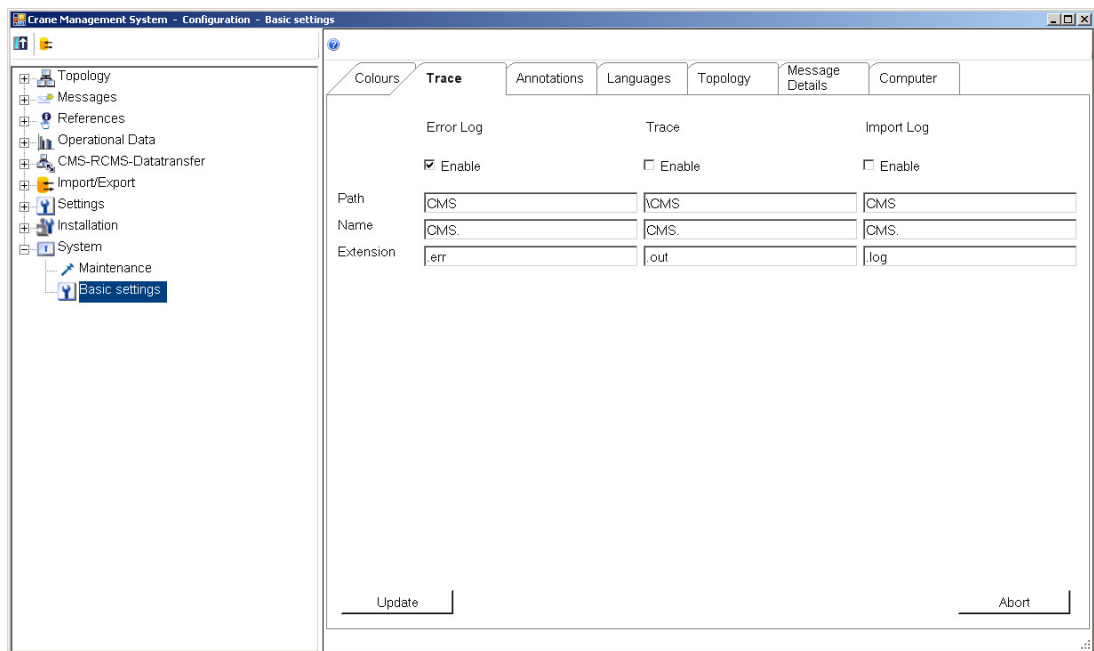


Figure 6-46 Changing the basic settings: Trace

The settings for the CMS Trace functions are selected under the "Trace" tab. The format of log file names is generally as follows:

```
<path>\<name>.<year>.<month>.<extension>
```

This means that a new log file is created every month. Log files are always extended. They must be deleted by the user as no function has been implemented to delete them automatically.

As soon as a log file has reached a certain size, the logged status up until then is backed up with a consecutive number as a supplement. The current file is deleted and then continued with the actual outputs.

The following log files can be provided by the system:

- Error log

The error log records all internal errors which occur in the CMS system. If no WinCC project is open or if the function is not enabled, then these entries are written to the Windows event log.

- Execution log

The execution log stores a large quantity of internal information about the CMS execution history. The primary purpose of this file is to provide detailed troubleshooting information when required. However, as it can become very long over a relatively short period and a considerable amount of time is required to write the log, this log should be activated only if its diagnostic functions are really needed.

- Import log

All errors and warnings relating to imports are always displayed in a dialog. In addition to this dialog, errors and warnings relating to imports can also be logged in a file.

"Comments" tab

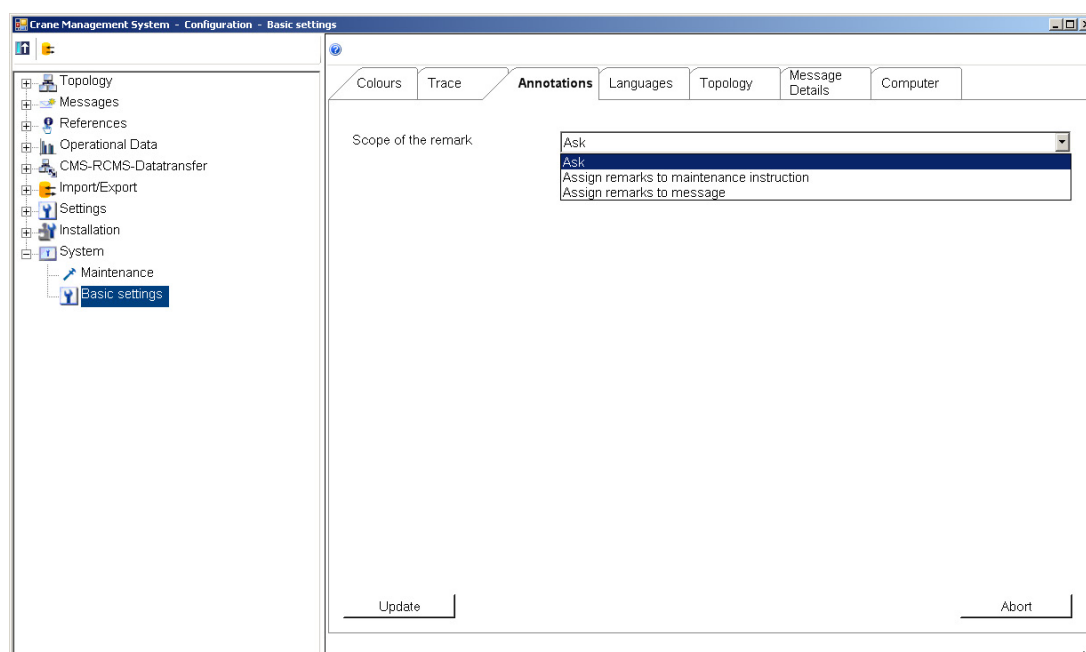


Figure 6-47 Changing the basic settings: Validity of remarks

The response of the CMSFaults control to the input of remarks on maintenance instructions can be defined on the "Annotations" tab.

- Ask

Every time a remark is stored, a dialog is displayed in which the user can define the validity of the entered remark.

- Global

All entered remarks are assigned to the maintenance instruction itself. Since a maintenance instruction text can be assigned to multiple WinCC messages as well as multiple cranes or equipment types, an assigned remark is displayed at every location at which the instruction text is used.

- Local

All entered remarks are assigned to the WinCC message.

"Languages" tab

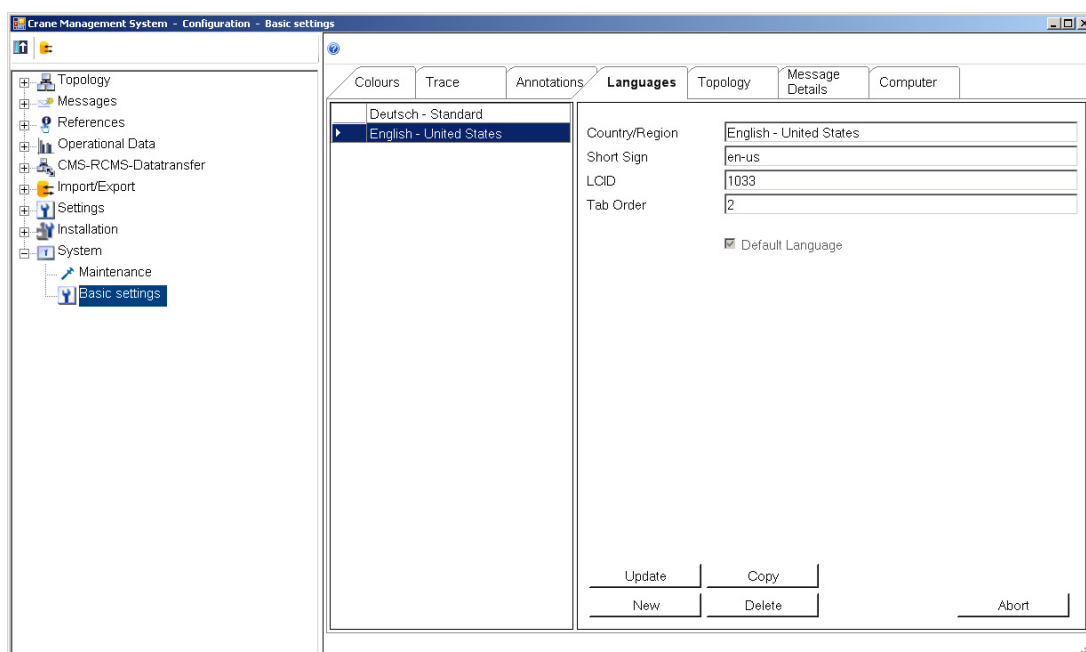


Figure 6-48 Changing the basic settings: Acquisition of languages

The languages which are available for use in the CMS can be maintained on the "Languages" tab. If a new language is set up here, the language-specific information of the default language is copied for the new one. Using the export functions, this information can then be exported for translation and finally imported again.

In order to ensure that one language is always designated as the default, the tick next to the default language can never be removed directly. To define a different language as the default, the new default language must be selected and ticked as the default. The system then automatically removes the tick from the default language checkbox on the other language.

The language-specific texts to be loaded from the database for displaying CMS objects are defined by the LCID and the code. The LCID is determined by WinCC ODK functions and the language-specific texts are then selected on the basis of the code. For a description of

these data, please refer to WinCC Help, Description of VBS Fundamentals, item "Local ID (LCID) Chart".

The tab sequence merely controls the sequence in which the tabs for individual languages are displayed in the dialog for maintaining language-specific texts.

Mandatory fields:

- Country / Region
- Code
- LCID
- Tab sequence

The changes on this tab are stored only with the buttons which are displayed on the tab itself. The buttons at the bottom of the dialog have no function in this tab.

"Topology" tab

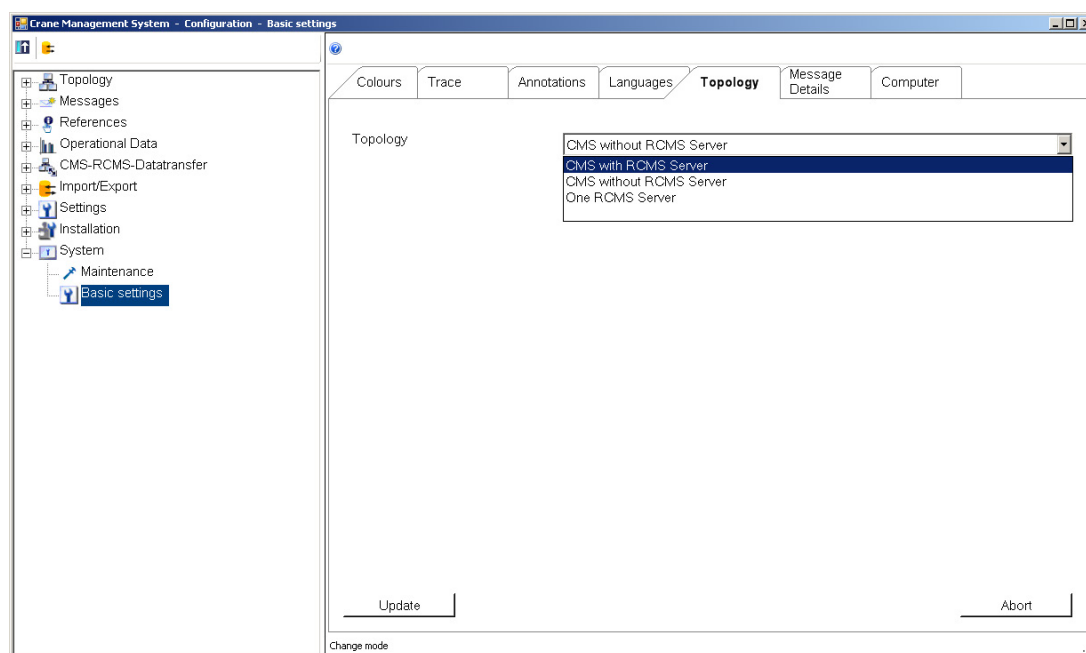


Figure 6-49 Changing the basic settings: Topology

The topology of the system can be defined on the "Topology" tab. The following settings can be selected:

- One RCMS server
- CMS without RCMS server
- CMS with RCMS server

Note

Every time the topology settings are changed, the CMS Editor must be closed. These changes do not take effect until the Editor is opened again.

The following applies for topology settings:

- One RCMS server
 - There must be precisely one terminal available. There is no limit on the number of equipment types and cranes.
 - A changeover to a topology with only one crane is only possible if there is a maximum of one equipment type and one crane. When this topology option is selected, all information relating to the previously configured terminal is automatically deleted.
 - It is only possible to changeover to the topology for a CMS with RCMS server if there is a maximum of one terminal, one equipment type and one crane.
- CMS without RCMS server, CMS with RCMS server
 - There must be precisely one equipment type and one crane.
 - A changeover to the topology with one RCMS server is possible without any restrictions. A default terminal will be set up, if necessary, when the selection is made. The user will need to complete this terminal's parameters.
 - A changeover between the topology "CMS without RCMS server" and "CMS with RCMS server" is possible at any time.

Note

If the topology is changed, the CMS Editor and CMS Runtime will need to be restarted in order for the modified settings to take effect.

"Message Details" tab

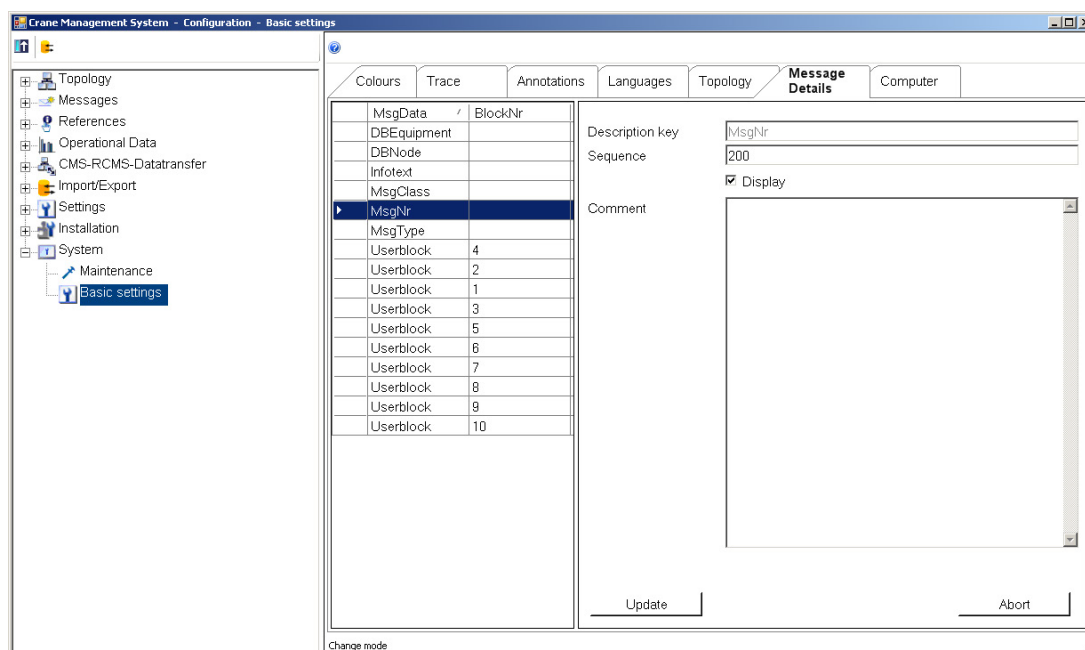


Figure 6-50 Changing the basic settings: Message details

In the "Message details" tab, the display of message details (message text blocks) from the WinCC Alarm Logging can be controlled in the CMSFaults Control.

Table 6- 30 Basic settings: Message details

Input field	Meaning	Unique	Mandatory field
Sequence	Numeric value to control the sequence in the display in the CMSFaults Control. The block with the lowest value is displayed first.	no	yes
Display	Select whether data acquisition is activated.	no	no
Comment	Optional comment	no	no

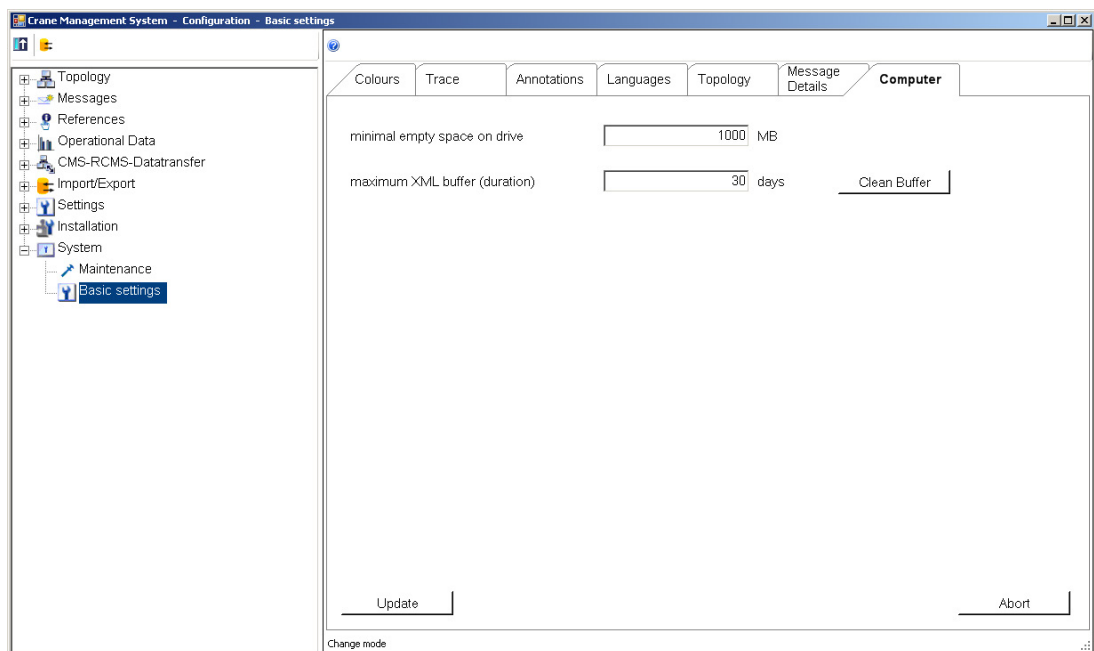
"Computer" tab

Figure 6-51 Changing the basic settings: Computer

You can specify the following settings under the "Computer" tab:

- Minimum free hard disk space on the CMS station:
If the free disk space falls below this lower limit when an XML file is written (data transferred to the RCMS server), the function for writing XML files will be stopped. From this point, data will only be entered in the crane's Tag Logging archives.
- Maximum buffer time for XML files:
Once XML files become older than a certain number of days, these files, including the date-based folder, are deleted.

The Replay function

7.1 Brief description

With the Replay function, SIMOCRANE CMS can also replay data from the past. This makes it easier to analyze past incidents on cranes. The crane data are stored in the WinCC archive and can be replayed in Replay mode if necessary.

The Replay function comprises two components:

- **Replay Configuration Editor:**

With the Replay Configuration Editor, you can prepare, check, and repair pictures from a WinCC application for Replay.

- **Replay Runtime:**

If the required WinCC pictures were prepared with the Replay Configuration Editor, they can be used to replay previous events while WinCC Runtime is active. With Replay Runtime, the data from the WinCC TagLogging that are relevant for Replay are prepared and visualized in the relevant WinCC pictures.

7.2 The Replay Configuration Editor

7.2.1 Calling the editor

The Replay Configuration Editor can be called via the configuration editor of the Crane Management System. Clicking the "Replay" menu item opens the Replay Configuration Editor.

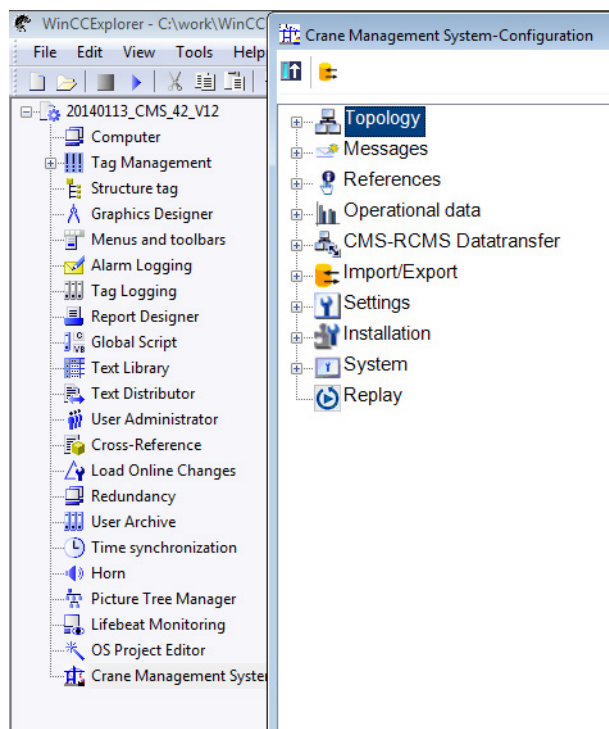


Figure 7-1 Calling the Replay Configuration Editor

7.2.2 The user interface of the Replay Configuration Editor

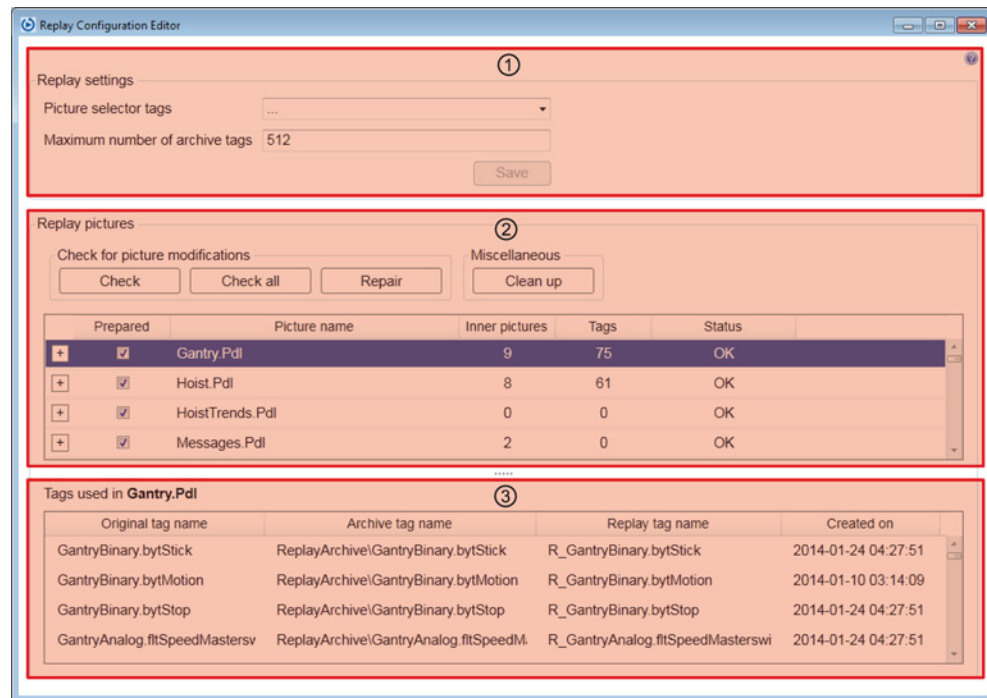


Figure 7-2 User interface of the Replay Configuration Editor

① The "Replay Settings" area

You can make the general settings in this area:

- "Picture selector tags" – contains the tags via which the picture names of the pictures to be replayed in Replay mode when "Play" is clicked are transferred to Replay Runtime after WinCC Runtime has started. These tags are automatically created when the first picture is prepared for Replay; see Picture selector tags (Page 116).
- The "Maximum number of archive tags" menu item must be filled with the number of archive tags that are available according to the WinCC license. This enables the Replay Configuration Editor to output a warning when the maximum number of archive tags has been reached; see Maximum number of archive tags (Page 117).

② The "Replay Pictures" area

In this area, you will find all Replay-specific information that belongs to the pictures in the WinCC project. This area comprises the following parts:

- Buttons:
 - "Check" button: A picture prepared for Replay can be checked for integrity and compatibility (for details, see Chapter Checking modifications in a picture (Page 125)).
 - With the "Check All" button, you can have all images checked at once.
 - Repair: On subsequent changes to a picture, the Replay-specific information for the picture can be updated with the "Repair" button; see Chapter Repairing Replay information (Page 126).
 - Clean Up: superfluous Replay-specific information can be removed; see Chapter Deleting unused tags with the "Clean Up" function (Page 127).
- List of the pictures available in the WinCC project:

If a picture has not been prepared for Replay, only the name of the picture will be displayed. The checkbox in the "Prepared" column has not been selected.

If a picture has been prepared for Replay ("Prepared" checkbox selected), the number of inner pictures and the number of its successfully processed tags will be displayed. Status information is displayed, see Chapter Preparing pictures for Replay (Page 121).

③ The "Tags used in ..." area

In this area, you will find a table of the tags of a picture prepared for Replay:

- Original Tag Name
- Name of the archive tag in which the historical data required for Replay are stored.
- Replay Tag Name, originated from the original tag name. Instead of the original tag, an object of a picture is supplied via this tag in Replay mode.
- Creation date

7.2.3 Replay settings

7.2.3.1 General

Note

The functions in the Replay Configuration Editor are only available if WinCC Runtime is deactivated. If the Replay Configuration Editor is opened while WinCC Runtime is activated, a red bar with a corresponding message will appear on the configuration user interface.

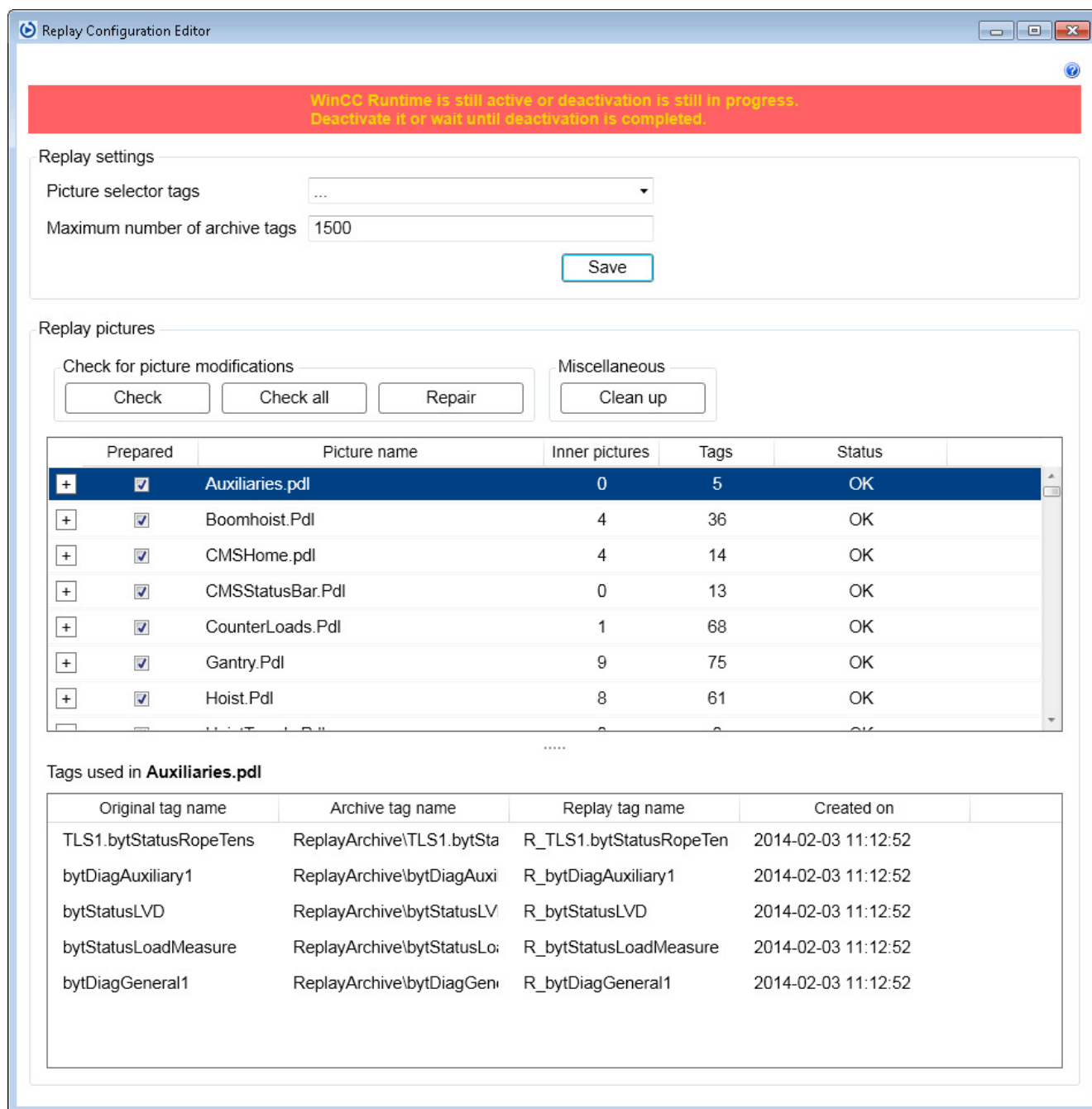


Figure 7-3 Red bar with message on the configuration user interface

SIMATIC WinCC makes a distinction between four different conditions of WinCC Runtime:

- Activating – starting the WinCC Runtime has been initiated with the Play button in the WinCC Explorer.
- Activated – WinCC Runtime has started.

- Deactivating – deactivation of WinCC Runtime has been initiated with the Stop button in the WinCC Explorer.
- Deactivated – WinCC Runtime has been deactivated.

The transition between the statuses "Activating" and "Activated" or "Deactivating" and "Deactivated" may take a long time, depending on the size of the project. For a large project, it may take several minutes.

SIMATIC WinCC can only signal the transitions between the states "Activating" to "Activated" and "Activated" to "Deactivating" to the Replay Configuration Editor. For that reason the red bar described above is not shown during the states "Activating" and "Deactivating". However, the configuration of Replay can only ever be changed if WinCC Runtime is in the "Deactivated" state. If an attempt is made to change the configuration of Replay during the states "Activating" and "Deactivating", the following message will be displayed instead:

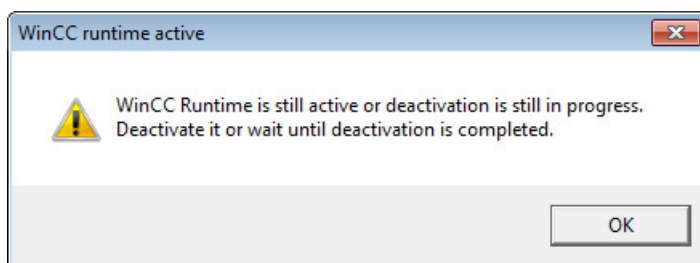


Figure 7-4 "WinCC runtime active" message

7.2.3.2 Picture selector tags

Clicking on the arrow next to "Picture selector tags" will list the defined picture selector tags. This list is for information purposes only.

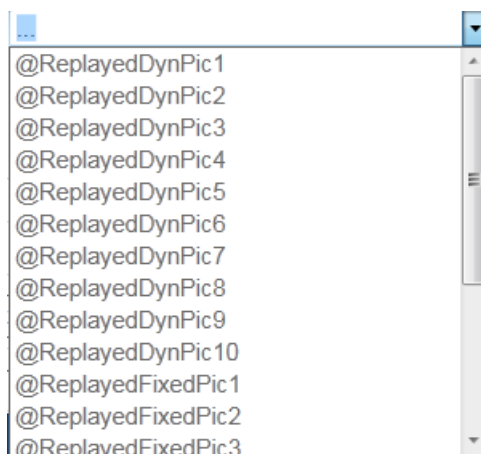


Figure 7-5 Picture selector tags drop-down list

The picture selector tags are required by Replay Runtime. They are automatically created when a picture is prepared or repaired in the Replay Configuration Editor if they do not yet exist. From these picture selector tags, Replay Runtime reads which tags are to be loaded into the Replay buffer from which pictures.

- In the CMS example application supplied, the tag "@ReplayedDynPic1" always has the name of the picture currently selected in Replay mode. To extend the Replay functionality, the tags "@ReplayedDynPic2" to "@ReplayedDynPic10" can be used in addition.
- The picture selector tags "@ReplayedFixedPic1" to "@ReplayedFixedPic10" contain the names of the permanently defined pictures that always have to be loaded into the Replay buffer.

Note

You will find detailed information on the picture selector tags and the script with which these tags are filled in the system manual CMS in Chapter "Picture selector tags and their values".

7.2.3.3 Maximum number of archive tags

A different number of archive tags will be available to you depending on your WinCC license. You must enter this license-dependent number of archive tags manually in the Replay Configuration Editor in the input field of the "Maximum number of archive tags" menu.

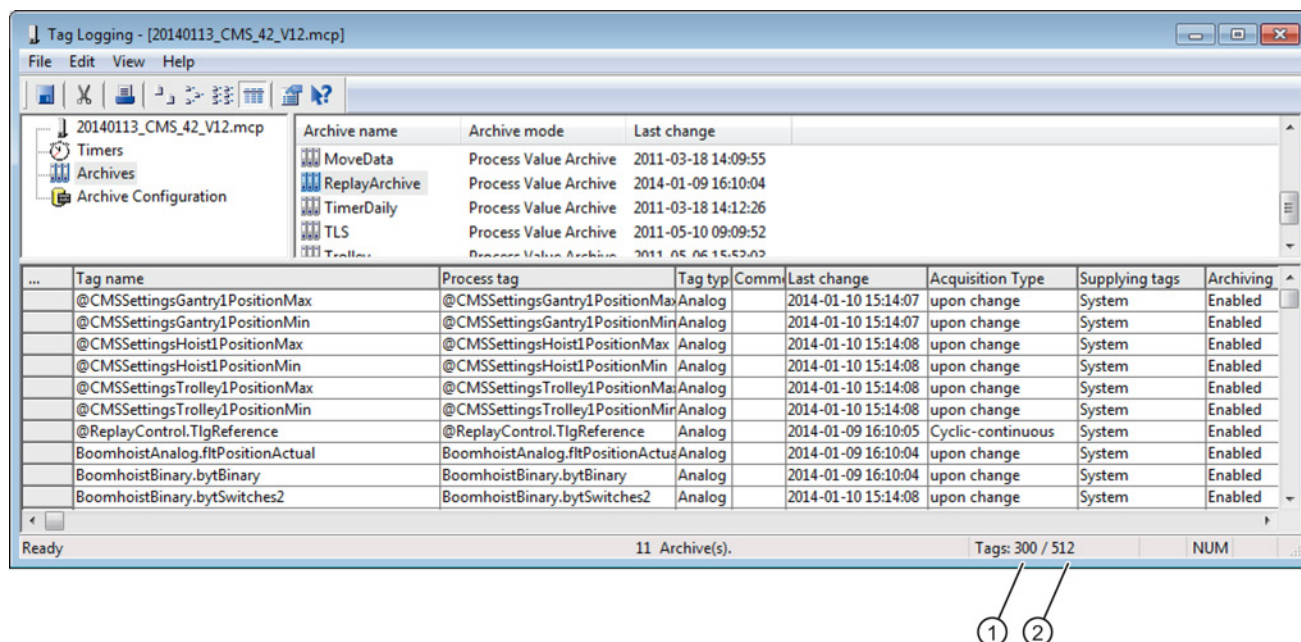
Various WinCC license with different archive tag volumes are available; see Product Catalog SIMATIC HMI/PC-based, Catalog ST80/ST PC, Edition 2013, Chapter "SCADA System Simatic WinCC".

Depending on the maximum number of available archive tags and the archive tags already being used, a certain number of archive tags remain for the Replay function (see example below).

Depending on the complexity of the project, the number of necessary archive tags and the corresponding WinCC license must be determined in advance. 1500 archive tags are supplied by default. For higher requirements, other WinCC licenses with a greater number of archive tags can be provided as a license upgrade.

You must enter this license-dependent number of archive tags manually in the Replay Configuration Editor in the input field of the "Maximum number of archive tags" menu.

Note that a number of different functions use archive tags, for example, Counter, Moves, and MMBF.



- ① The number of archive tags currently used
- ② The number of archive tags available in total

Figure 7-6 WinCC Tag Logging, number of archive tags

You can find out the maximum number of available archive tags from the Tag Logging Editor of WinCC:

- The total number of available tags (e.g. "512")
- The number of tags currently used (e.g. "300"); the archive tags already in use are no longer available for the "Replay" function.

In our example, 212 archive tags are therefore still available ($512 - 300 = 212$).

What can you do if all archive tags are being used?

With the "Clean Up" function, you can delete the tags in the Replay Configuration Editor that were created in the Replay function, but are currently not used in any Replay picture. See Chapter Deleting unused tags with the "Clean Up" function (Page 127)

- Use the "Clean up" function to make sure that you do not block your Replay Configuration with tags that have been created in WinCC Logging but are not used in any of your Replay pictures.
- Check the configuration of your Tag Logging to see whether you no longer need and can delete certain archive tags that are no longer used for the Replay function. In this way, you can make a larger number of archive tags available to the Replay function.
- If the measures described above are not sufficient, you need a larger WinCC license for archive tags.

7.2.4 Description of the Replay window (in which the pictures are displayed)

7.2.4.1 General

This chapter describes the "Replay Pictures" window area of the configuration editor. In addition to the buttons that have already been described, you are provided here with an overview of all pictures available in the Graphics Designer. You can prepare these for Replay or deselect them.

In addition to the overview of how many inner pictures and tags the prepared main picture contains, you can view additional information here about the inner pictures used in the main picture and the status of the main picture.

Prepared	Picture name	Inner pictures	Tags	Status
<input checked="" type="checkbox"/>	Motions.Pdl	0	34	OK
<input checked="" type="checkbox"/>	MoveData.Pdl	0	0	OK
<input type="checkbox"/>	@CMSAlarmBar.Pdl	N/A	N/A	N/A
<input type="checkbox"/>	@CMSAlarmBar_Operator.pdl	N/A	N/A	N/A
<input type="checkbox"/>	@CMSExitWinCC.Pdl	N/A	N/A	N/A

Figure 7-7 Replay Configuration Editor, picture list

7.2.4.2 Sub-pictures and their tag prefixes

If a picture has been prepared for Replay (checkmark set in the "Prepared" column) and you click the "+" in front of the picture name, an overview will be displayed of the sub-pictures used in the main picture. There you will find the name of the sub-picture, followed by the tag prefix of the sub-picture set in the "Tag prefix" sub-picture property in parentheses.

Note

Detailed information on tag prefixes can be found in the WinCC online help under "TagPrefix".

Replay pictures				
Check for picture modifications		Miscellaneous		
<input type="button" value="Check"/>	<input type="button" value="Check all"/>	<input type="button" value="Repair"/>	<input type="button" value="Clean up"/>	
Prepared	Picture name	Inner pictures	Tags	Status
<input checked="" type="checkbox"/>	CounterLoads.Pdl	1	68	OK
<input checked="" type="checkbox"/>	Gantry.Pdl	9	75	OK
	<ul style="list-style-type: none"> FPLDrive.Pdl (TagPrefix: GantryDrive1.) FPLDrive.Pdl (TagPrefix: GantryDrive2.) FPLDriveControl.PDL (TagPrefix: GantryDrive2.) FPLDriveControl.PDL (TagPrefix: GantryDrive1.) 			

Figure 7-8 Picture list in the Replay Configuration Editor, opening the overview of inner pictures

7.2.4.3 The various picture statuses

In the list of pictures in the Replay Configuration Editor, the status of each picture is shown in the "Status" column. The pictures can have one of the following statuses:

- N/A (grayed) – the status of the picture is not known. If a picture has not been prepared for Replay, it has this status.
- OK – the picture was prepared for Replay. The picture can be used for Replay.
- Changed (yellow background) – the picture has been changed after the last Replay preparation in the Graphics Designer
- Conflict (red background) – the assignment of tags to the picture has been changed since the last Replay preparation. A picture can only have this status if it has first been checked for picture changes.

Transitions of the picture statuses

The following overview shows the possible transitions between picture statuses:

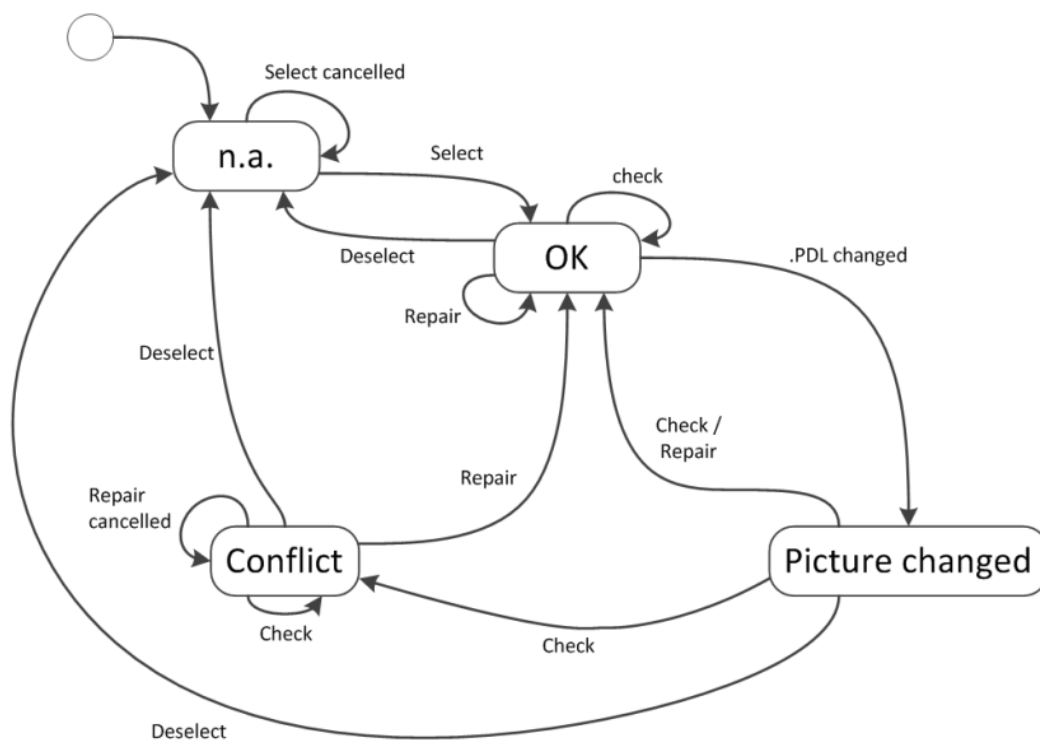


Figure 7-9 Transitions

The following table provides further information on the possible transitions shown above:

Table 7- 1 Transitions between picture statuses

Transition	Description
Select	The operation in which a picture is prepared for Replay. To start this operation, a picture must be selected in the picture list in the Replay Configuration Editor and its "Prepared" checkbox must be selected.
Select cancelled	Preparation can be canceled.
Deselect	The operation in which a picture is deselected for Replay. In this case, all replay tags and archive tags are deleted that are not used by any further pictures prepared for Replay.
Check	The current pictures is checked for integrity and validity.
Repair	If a picture prepared for Replay does not have the state "OK", it can be put back into the "OK" state with the Repair operation.
Repair cancelled	Repair can be canceled.
.PDL changed	The picture has been modified since the last Replay preparation or since the last Repair operation in the Graphics Designer.

7.2.5 Preparing pictures for Replay

You initiate preparation of a picture by selecting the checkbox in the "Prepared" column in the list of Replay pictures.

Note

This operation can be canceled.

The preparation of a picture for Replay comprises the following steps:

- The selected PDL file is read in and checked for Replay compatibility.
- If unsupported objects or scripts are found, the user will be notified about these objects and scripts in a warning window. The user can decide whether to continue or cancel the operation.

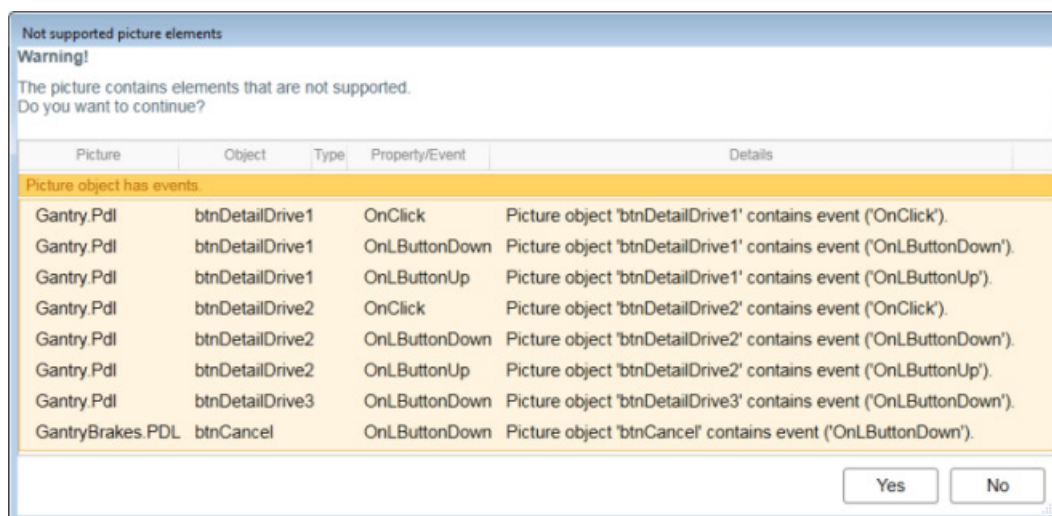


Figure 7-10 Warnings about unsupported objects in the picture

Note

Detailed information on the warning window shown can be found in the Chapter "Preparing pictures with the Replay Configuration Editor" of the "Crane Management System (CMS)" System Manual.

- If the user decides to continue the operation, a check is made to see whether the general conditions have been met:
 - The structure tag type with the name "ReplayControl" must exist in the WinCC Structure tag with all necessary tags. If that is not the case, the structure tag type and its tags will be created.
 - The instance of the structure tag type "ReplayControl" with the name "ReplayControl" must exist in the WinCC Tag Management. If this is not the case, it will be created.
 - The tag group with the name "ReplayTags" must exist in the WinCC Tag Management. If this is not the case, it will be created.
 - The archive with the name "ReplayArchive" must exist in the TagLogging. If this is not the case, it will be created.
- For each picture, a descriptor file is created (picture name e.g. "Hoist.pdl"; name of the descriptor file: "Hoist.xml").
- All tag-related information is stored in the descriptor file.
- The Replay Tags that do not yet exist are created new in the WinCC Tag Management in the "ReplayTags" tag group.
- For new Replay Tags that have been created, the associated Archive Tags are created in the WinCC Tag Management in the Replay archive. For this purpose, the number of archive tags still available according to the WinCC license is checked. If an insufficient number of archive tags is available, preparation of this picture will be canceled and the user notified if this with a message.

- The picture is marked as "Prepared".
- A report is displayed about this operation, which can be exported as required. See Chapter Reports (Page 131) for details on the report.

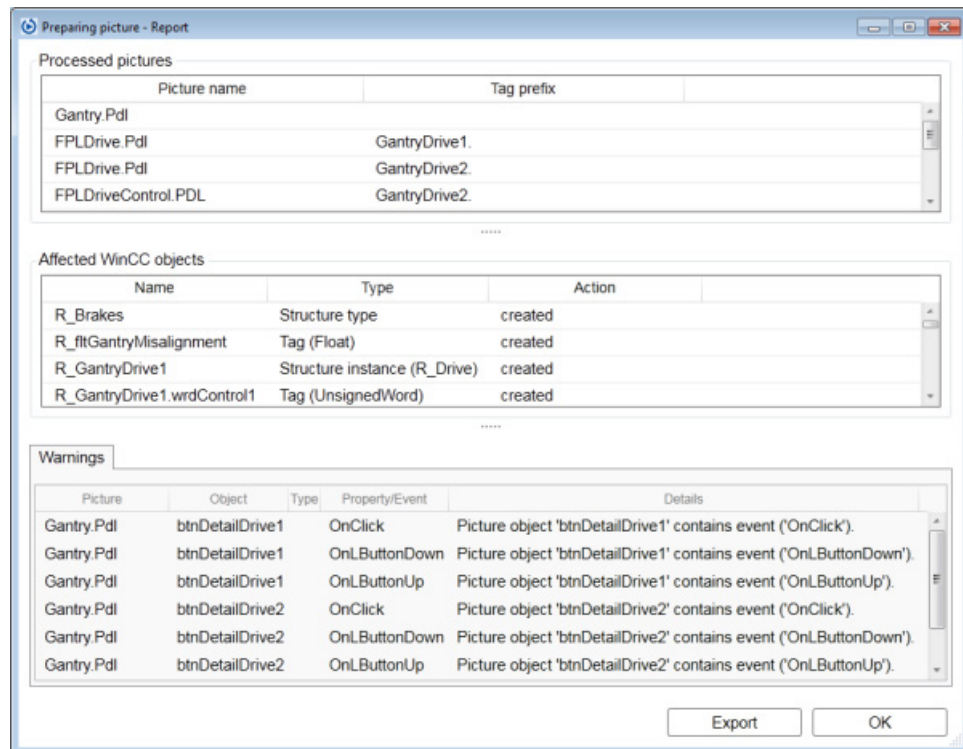


Figure 7-11 Report on picture preparation

If you select the Replay picture in the Replay Configuration Editor after that, all its Replay-specific information will be displayed:

- The names of the original tags that were found in the picture and successfully processed
- The names of the replay tags and archive tags that were created for the successfully processed tags.
- The names of the original tags that were found in the inner pictures of this main picture and successfully processed
- The names of the replay tags and archive tags that were created for the tags found in the inner pictures.
- The number of sub-pictures of the current main picture; the list of these inner pictures can be displayed with the '+' sign in the picture list.
- The total number of tags that were found in the picture and its inner pictures and successfully processed.
- Status information about the current status of the picture (for details, see The various picture statuses (Page 120))

The following figure provides an overview of the information listed above.

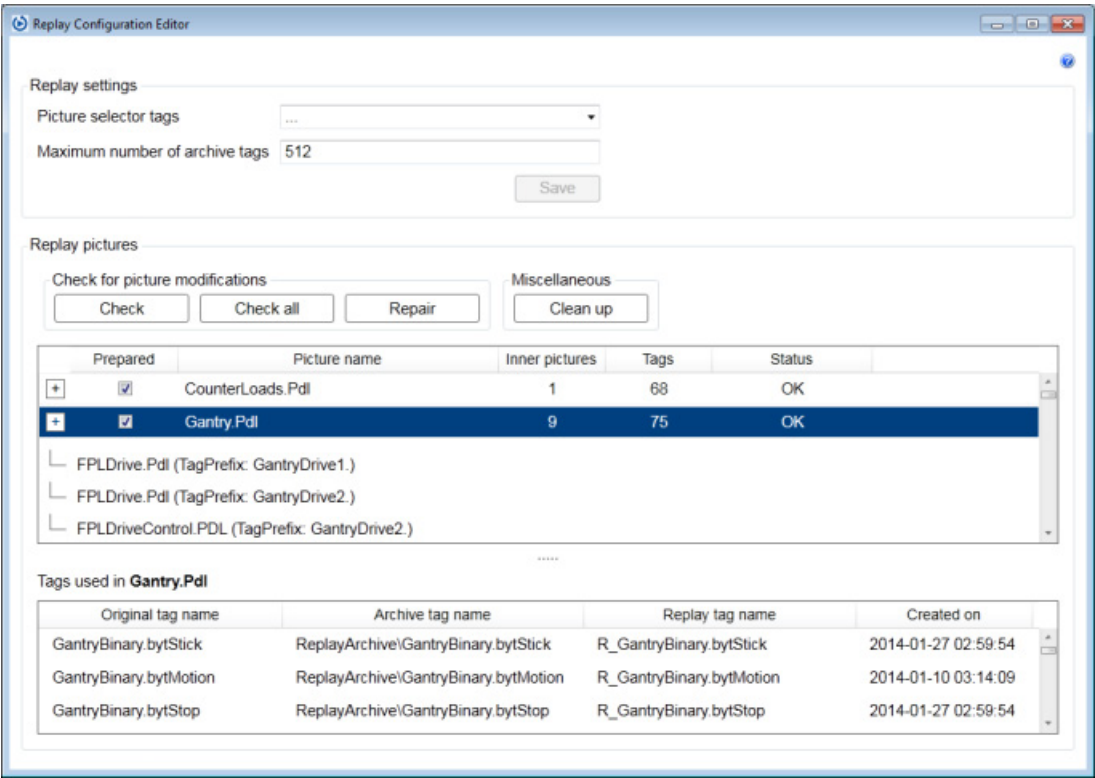


Figure 7-12 Detailed information about a picture prepared for Replay

Note

Depending on the number of tags used in the picture (incl. the tags used in the inner pictures), this operation may take a few seconds or even several minutes.

Note

All Replay tags are created as internal tags in the WinCC Tag Management. On creating the Replay tags, a prefix mechanism is used that ensures that normal operation can continue while historical data is replayed because the original tags still exist with their original names.

7.2.6 Checking modifications in a picture

Changes in a picture are indicated in the Replay Configuration Editor by a yellow background behind the picture name and the "Changed" status is assigned. A picture will be marked as "Changed" if it is opened in the Graphics Designer and saved again.

- **Check**

The "Check" function detects the type of change in a picture and assigns the appropriate status. For example, if the test shows that a tag has been added to the picture, the "Conflict" status will be assigned.

- **Check All**

The "Check All" function detects the type of change in all Replay pictures and assigns the appropriate status.

Note

The "Check" and "Check All" functions can be canceled.

A report is displayed about this operation, which can be exported as required. See Chapter Reports (Page 131) for details on the report.

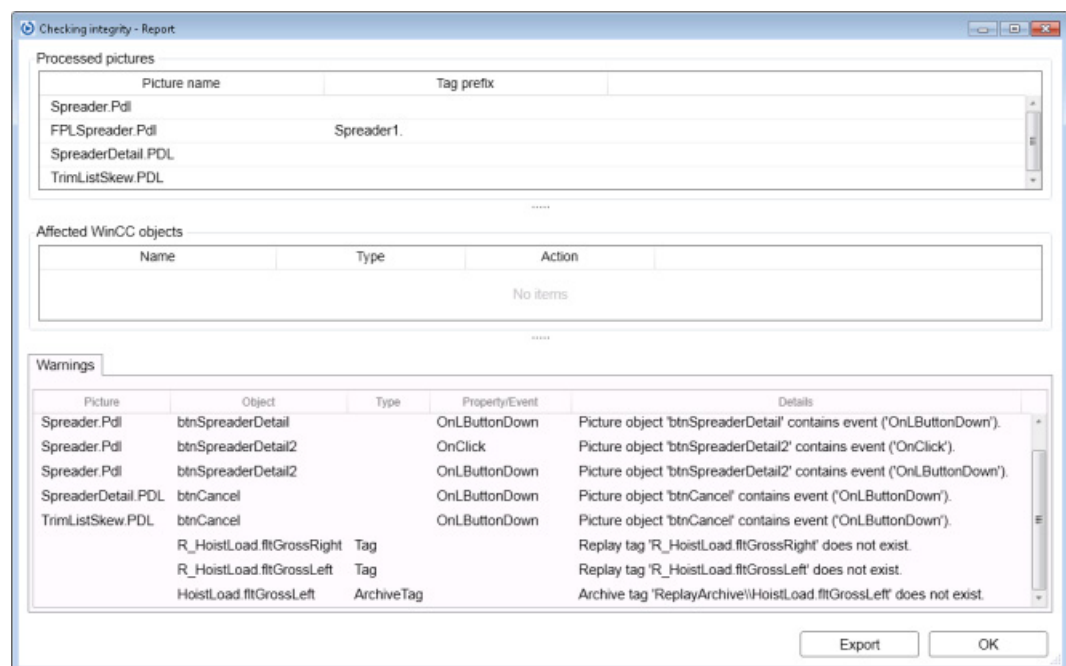


Figure 7-13 Report on the "Check" action

7.2.7 Repairing Replay information

An existing picture that has been modified or has "Conflict" status can be repaired with the "Repair" button so that it can be replayed in Replay. A repair includes the following actions:

- If a process tag has been added to the selected picture (e.g. by tag connection of an object property), a corresponding new internal Replay tag and a new associated archive tag will be created in the Replay archive.
- If tags have been deleted from a picture, these tags will be skipped. Superfluous Replay tags and their associated archive tags are removed with the "Clean Up" button (see Chapter Deleting unused tags with the "Clean Up" function (Page 127)).
- If a Replay tag or an associated archive tag was deleted manually, it will be created new.

Note

The "Repair" function can be canceled.

A report is displayed about this operation, which can be exported as required. See Chapter Reports (Page 131) for details on the report.

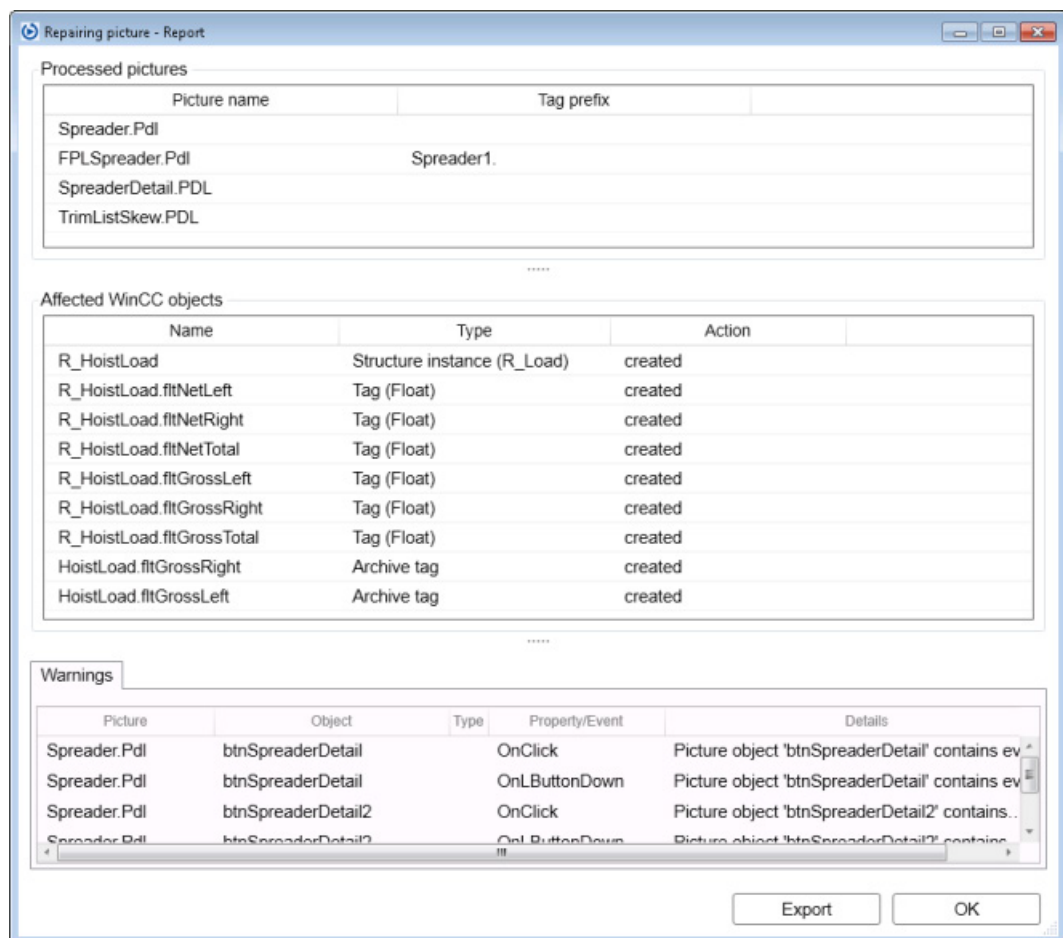


Figure 7-14 Report on the "Repair" action

7.2.8 Deleting unused tags with the "Clean Up" function

If tags are deleted in a picture and this modified picture is prepared for Replay again with "Repair", the associated internal Replay tags and the archive tag are not automatically deleted. This means that more and more unused tags accumulate over time.

It is possible that the historical data of the tag deleted from the picture may be retained in the archive or be recorded so that they can possibly subsequently be integrated into the picture again without any loss of data. Furthermore, the affected Replay tags and archive tags may also be used in other pictures.

The "Clean Up" functions checks if internal or archive tags created for Replay are still used in the pictures. Tags that are not used in any picture are deleted.

Note

The "Clean Up" function can be canceled.

Note**Potential loss of data**

Historical data for Replay tags that are no longer used in any picture are permanently deleted by the "Clean Up" function.

A report is displayed about this operation, which can be exported as required. See Chapter Reports (Page 131) for details on the report.

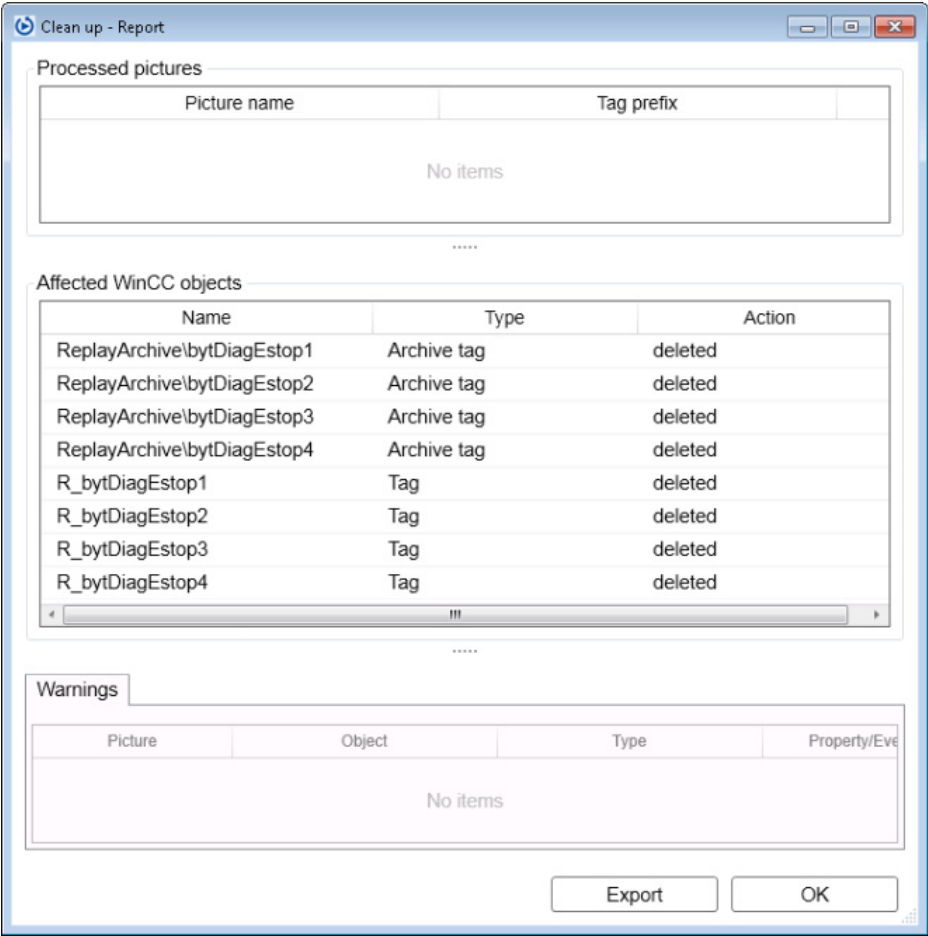


Figure 7-15 Report on the "Clean Up" action

7.2.9 Deselecting a picture

A picture prepared for Replay can be deselected by clearing the checkmark in the "Prepared" column. The following window then opens:

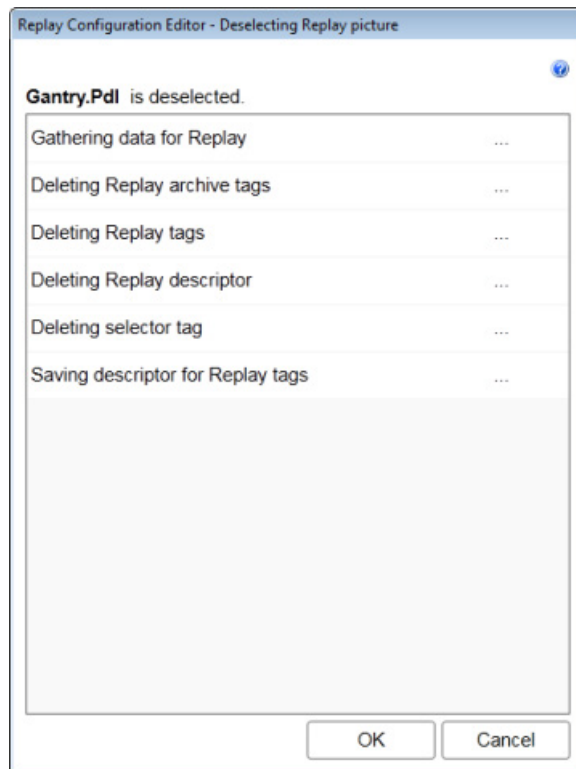


Figure 7-16 "Deselecting Picture" window

Deselecting a picture comprises the following steps:

- The picture information that is specific to Replay is collected.
- A check is made to see which of the tags used in the picture are used by no other picture.
 - If a Replay tag is not used in any other picture, it is deleted from the "ReplayTags" tag group in the WinCC Tag Management.

Note

Deleting a Replay tag in the WinCC Tag Management also irrevocably deletes the associated historical data.

- If an archive tag is not used in any other picture, it is deleted from the WinCC TagLogging.
- The descriptor file for this picture is deleted.
- The deselected picture is grayed out and is assigned "N/A" status (not prepared for Replay).
- A report about this operation is displayed. See Chapter Reports (Page 131) for details on the report.

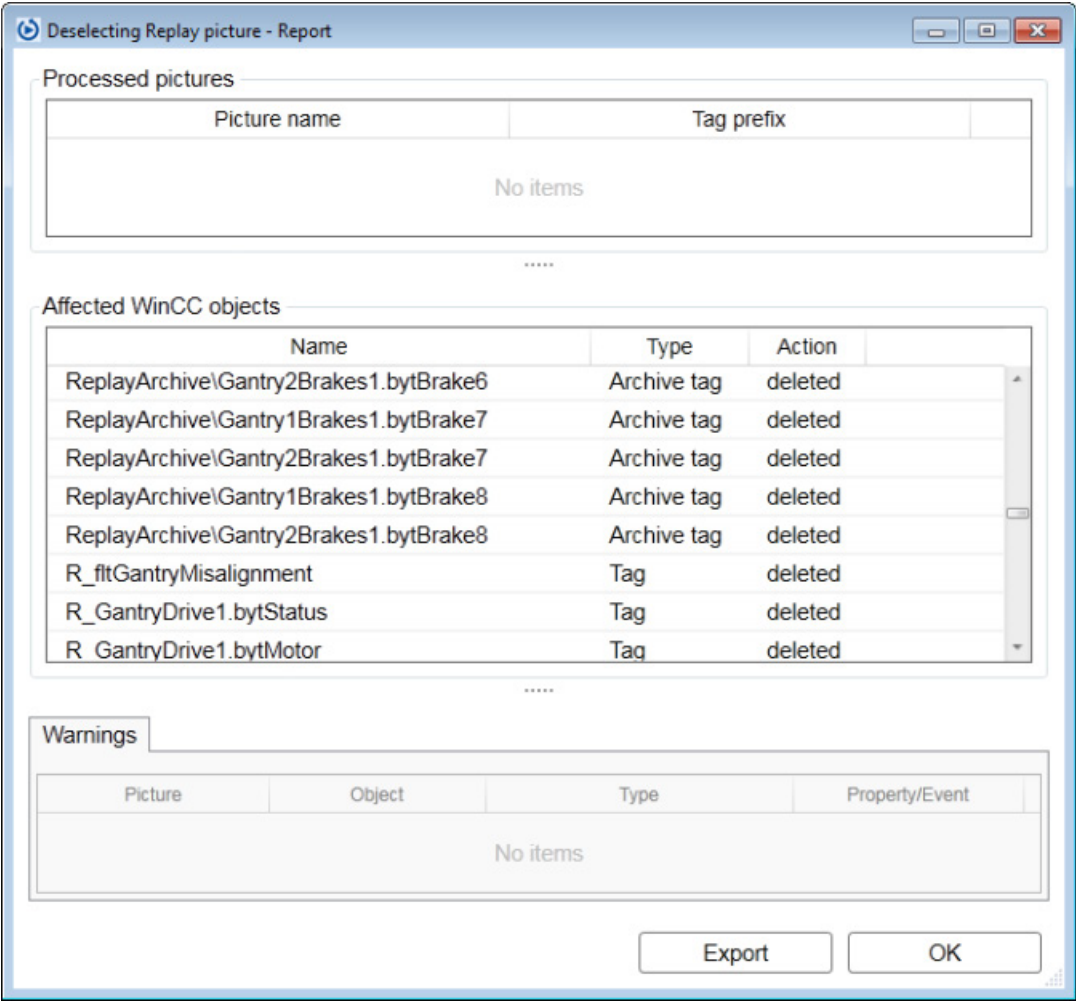


Figure 7-17 Report for deselecting a picture

7.2.10 Reports

After preparation, checking, or deselection of a picture, a report is displayed. The report window is divided into three parts:

- **Processed Pictures:** In the case of main pictures, the picture names and in the case of inner pictures, picture names and tag prefixes are displayed.
- **Affected WinCC Objects:** Name of the tags, type of tags, and action detected / processed by the configuration editor (missing, created, deleted)
- **Warnings:** contain information about the picture affected, the object affected, or the action affected.

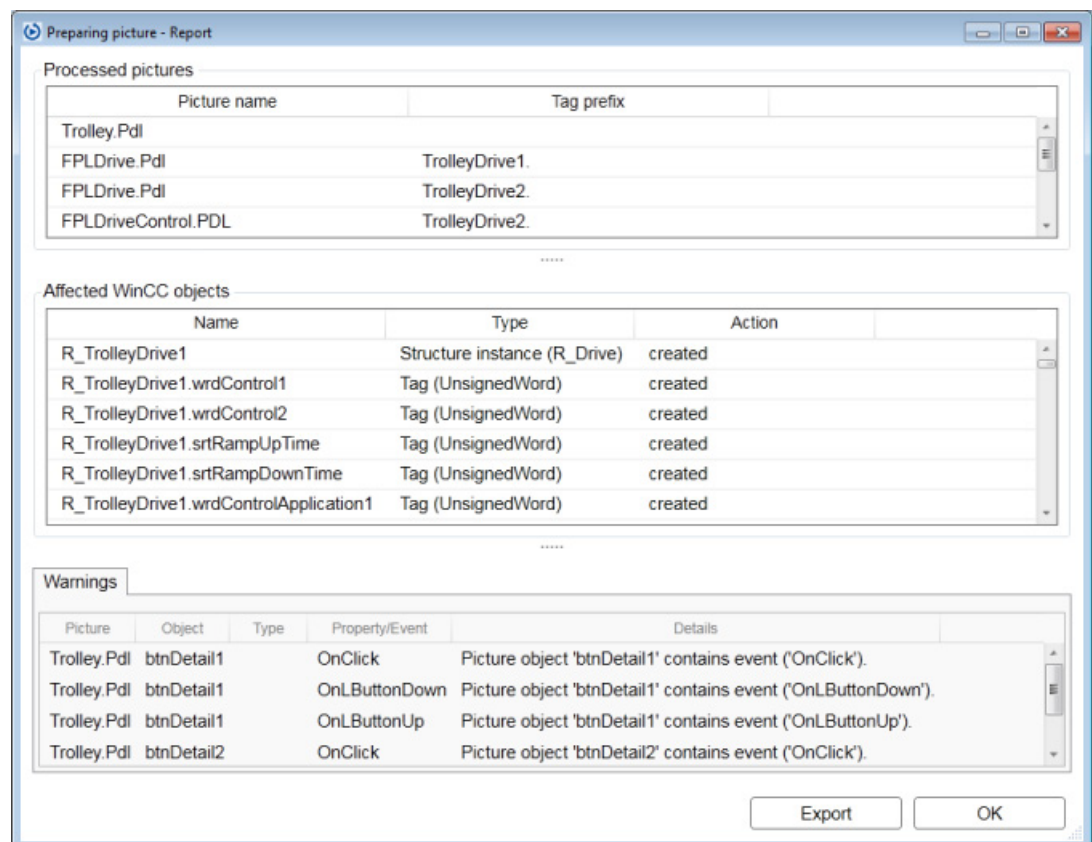
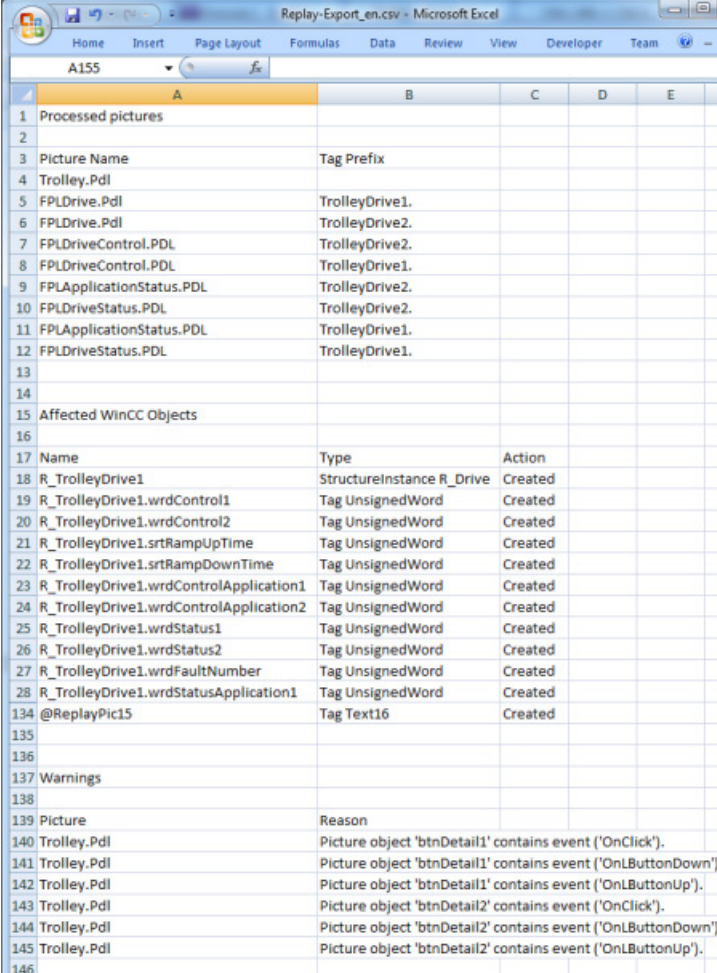


Figure 7-18 "Picture preparation" report

Export

The report can be exported to Excel with the "Export" button. The exported report contains all information from the report:



	A	B	C	D	E
1	Processed pictures				
2					
3	Picture Name	Tag Prefix			
4	Trolley.Pdl				
5	FPLDrive.Pdl	TrolleyDrive1.			
6	FPLDrive.Pdl	TrolleyDrive2.			
7	FPLDriveControl.PDL	TrolleyDrive2.			
8	FPLDriveControl.PDL	TrolleyDrive1.			
9	FPLApplicationStatus.PDL	TrolleyDrive2.			
10	FPLDriveStatus.PDL	TrolleyDrive2.			
11	FPLApplicationStatus.PDL	TrolleyDrive1.			
12	FPLDriveStatus.PDL	TrolleyDrive1.			
13					
14					
15	Affected WinCC Objects				
16					
17	Name	Type	Action		
18	R_TrolleyDrive1	StructureInstance R_Drive	Created		
19	R_TrolleyDrive1.wrdControl1	Tag UnsignedWord	Created		
20	R_TrolleyDrive1.wrdControl2	Tag UnsignedWord	Created		
21	R_TrolleyDrive1.srtRampUpTime	Tag UnsignedWord	Created		
22	R_TrolleyDrive1.srtRampDownTime	Tag UnsignedWord	Created		
23	R_TrolleyDrive1.wrdControlApplication1	Tag UnsignedWord	Created		
24	R_TrolleyDrive1.wrdControlApplication2	Tag UnsignedWord	Created		
25	R_TrolleyDrive1.wrdStatus1	Tag UnsignedWord	Created		
26	R_TrolleyDrive1.wrdStatus2	Tag UnsignedWord	Created		
27	R_TrolleyDrive1.wrdFaultNumber	Tag UnsignedWord	Created		
28	R_TrolleyDrive1.wrdStatusApplication1	Tag UnsignedWord	Created		
134	@ReplayPic15	Tag Text16	Created		
135					
136					
137	Warnings				
138					
139	Picture	Reason			
140	Trolley.Pdl	Picture object 'btnDetail1' contains event ('OnClick').			
141	Trolley.Pdl	Picture object 'btnDetail1' contains event ('OnLButtonDown').			
142	Trolley.Pdl	Picture object 'btnDetail1' contains event ('OnLButtonUp').			
143	Trolley.Pdl	Picture object 'btnDetail2' contains event ('OnClick').			
144	Trolley.Pdl	Picture object 'btnDetail2' contains event ('OnLButtonDown').			
145	Trolley.Pdl	Picture object 'btnDetail2' contains event ('OnLButtonUp').			
146					

Figure 7-19 Exporting a report

7.3 Replay Runtime

7.3.1 Functions of Replay Runtime

Replay Runtime is responsible for preparing and replaying the historical Replay data while WinCC Runtime and the Replay mode of the WinCC application are active. In the WinCC tag management, certain internal tags are used as a communication interface between the WinCC application and Replay Runtime. They ensure that the Replay function runs correctly.

Note

A detailed description of interfaces is provided in the System Manual "Crane Management System (CMS)", Chapter "Internal Tags".

Replay Runtime runs in the background if automatic activation of Replay Runtime has been entered in the WinCC start list. You can see whether Replay Runtime is running by the Replay icon in the right-hand part of the Windows task bar.



Figure 7-20 Windows task bar, Replay icon

On request, Replay Runtime will load the data from the WinCC archive into the Replay tags, which are used in the WinCC application to visualize the Replay data.

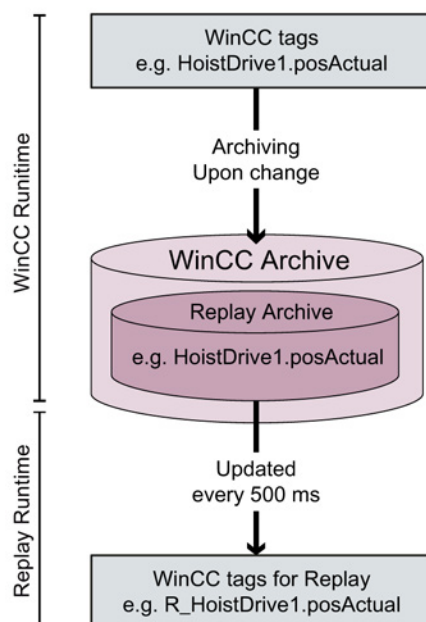


Figure 7-21 Overview of Replay Runtime communication

In the WinCC project directory under CMS → Replay, a log file is created. Events from Replay Runtime and the Replay Configuration Editor are entered here.

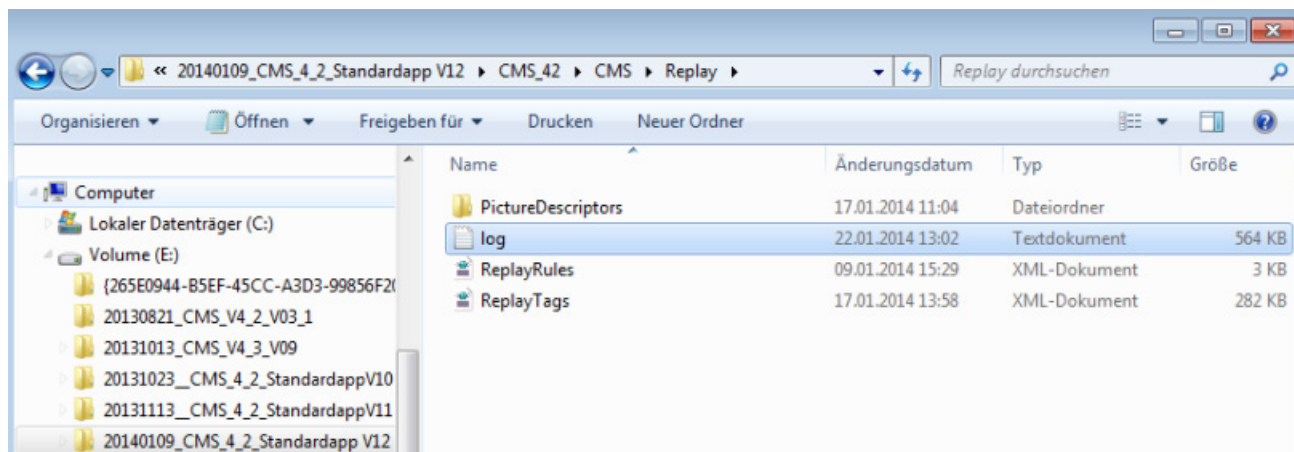


Figure 7-22 Replay Log File

7.3.2 Handling the Replay data

7.3.2.1 Data archiving

The Replay archive is part of the WinCC TagLogging database. This Replay archive is created the first time a picture is prepared for Replay in the current project if it does not already exist.

The screenshot shows the 'Tag Logging' window for project '[20140113_CMS_42_V12.mcp]'. The left pane shows the 'Archive Configuration' tree with 'Archives' expanded. The right pane displays a list of archive tags with columns: Tag name, Process tag, Tag type, Comm, Last change, Acquisition Type, Supplying tags, and Archiving.

Tag name	Process tag	Tag type	Comm	Last change	Acquisition Type	Supplying tags	Archiving
@CMSSettingsGantry1PositionMax	@CMSSettingsGantry1PositionMax	Analog		2014-01-10 15:14:07	upon change	System	Enabled
@CMSSettingsGantry1PositionMin	@CMSSettingsGantry1PositionMin	Analog		2014-01-10 15:14:07	upon change	System	Enabled
@CMSSettingsHoist1PositionMax	@CMSSettingsHoist1PositionMax	Analog		2014-01-10 15:14:08	upon change	System	Enabled
@CMSSettingsHoist1PositionMin	@CMSSettingsHoist1PositionMin	Analog		2014-01-10 15:14:08	upon change	System	Enabled
@CMSSettingsTrolley1PositionMax	@CMSSettingsTrolley1PositionMax	Analog		2014-01-10 15:14:08	upon change	System	Enabled
@CMSSettingsTrolley1PositionMin	@CMSSettingsTrolley1PositionMin	Analog		2014-01-10 15:14:08	upon change	System	Enabled
@ReplayControl.TlgReference	@ReplayControl.TlgReference	Analog		2014-01-09 16:10:05	Cyclic-continuous	System	Enabled
BoomhoistAnalog.fltPositionActual	BoomhoistAnalog.fltPositionActual	Analog		2014-01-09 16:10:04	upon change	System	Enabled
BoomhoistBinary.bytfBinary	BoomhoistBinary.bytfBinary	Analog		2014-01-09 16:10:04	upon change	System	Enabled
BoomhoistBinary.bytfSwitches2	BoomhoistBinary.bytfSwitches2	Analog		2014-01-10 15:14:08	upon change	System	Enabled
bytLane1Status	bytLane1Status	Analog		2014-01-10 15:14:08	upon change	System	Enabled
bytLane2Status	bytLane2Status	Analog		2014-01-10 15:14:08	upon change	System	Enabled
bytVehicle1Status	bytVehicle1Status	Analog		2014-01-10 15:14:08	upon change	System	Enabled
bytVehicle2Status	bytVehicle2Status	Analog		2014-01-10 15:14:08	upon change	System	Enabled
dwdCntrAutoModeCont	dwdCntrAutoModeCont	Analog		2014-01-27 14:23:56	upon change	System	Enabled
dwdCntrAutoModeContRes	dwdCntrAutoModeContRes	Analog		2014-01-27 14:23:56	upon change	System	Enabled

At the bottom of the window, it shows '11 Archive(s)', 'Tags: 352 / 512', and 'NUM'.

Figure 7-23 TagLogging database

The data of all archive tags configured in Tag Logging are recorded when WinCC Runtime is activated and therefore Tag Logging Runtime is started ("Activate" button in the WinCC Explorer). If WinCC Runtime has not started, historical data cannot be recorded.

The process values to be archived, including those required for the Replay function, are stored in a cyclic archive in the archive database. The cyclic archive consists of a configurable number of segments. A maximum size in MB and a maximum period (e.g. one day) is defined for the segments. The process values are continuously written into the data buffer. If the configured size of a segment is reached or the time period is exceeded, a transition to the next segment is made. If all segments are full, the process data in the first segment is overwritten. This is the same principle as a ring buffer. To protect process data from being overwritten process, they can be exported to an external medium. You will find more information on this topic in the WinCC documentation.

The extent to which pictures of a WinCC project can be prepared for the Replay function depends mainly on the installed license for the archive tags. Generally you should consider that not every archive tag can be used for the Replay function because a certain number of archive tags is already reserved for archiving operating data such as move data, counters, or

MMBFs. The following applies: The more archive tags can be used in total, the more pictures can be prepared for Replay.

See also Maximum number of archive tags (Page 117). To keep the archive small, the Replay data are only stored if their value has changed.

Note

For more details on WinCC TagLogging functionality and on Replay archive settings, see the WinCC documentation.

7.3.2.2 Replaying the data

To speed up reading data from the Replay archive, a data buffer is additionally used by Replay Runtime. If replay of the data is started on the Replay operating bar, the Replay data will first be transferred into this buffer in the background and the buffer status will be displayed on the operating bar.

Note

You will find more information on the Replay operating bar in the CMS System Manual.

7.3.2.3 Interface between Replay Runtime and WinCC Runtime

Replay Runtime is controlled by certain tags created in the WinCC tag management. These tags must be supplied with values after WinCC Runtime and Replay mode have been started. Generally it is possible to control Replay Runtime with any WinCC application after suitable adaptation. Control is already implemented by way of example in the CMS example application supplied and can be used in other WinCC applications.

Before you can use Replay Runtime, the following conditions must be met:

- WinCC Runtime of the CMS application has been activated.
- CMS Runtime has been activated.
- Replay Runtime has been activated.
- Crane data is present in the Replay archive for the period to be replayed with Replay.

Note

You will find instructions on handling the Replay function with WinCC in the CMS System Manual.

7.3.3 Restrictions

The following restrictions apply to the "Replay" function:

- Only object types are supported by Replay that are marked as "replayable." You will find more information on this in the CMS System Manual.
- The maximum settable duration for replaying with Replay is limited to 60 minutes.
- The maximum number of pictures that can be prepared for Replay is limited to 100.
- The maximum number of pictures whose historic data can be loaded and kept simultaneously for Replay is limited to 20; see also the description of picture selector tags in Chapter The user interface of the Replay Configuration Editor (Page 113).
- Picture windows with dynamic name or tag prefixes are not supported.
- The inner pictures of a main pictures are supported up to the first level. Multiple inner pictures can be processed side by side in different picture windows in addition to the main picture. However, if one of the inner pictures contains further inner pictures (nested), they will no longer be processed for preparation of the main picture. Then a warning is output during the attempt to prepare the main picture for Replay.
- Events are not supported (e.g. a script that is run when a button is clicked).
- The resolution of Replay Runtime is limited to 500 ms, according to the relevant WinCC TagLogging setting.

8.1 CMSFaults

8.1.1 General information

The CMSFaults control is an ActiveX object for displaying extended crane-specific information relating to WinCC messages. To select this information, the control requires the associated WinCC message number.

The three tabs on the CMSFaults Control interface display information about message details, maintenance instructions and a list with references.

The message details tab basically shows information acquired from the WinCC Alarm Logging application.

The tab with maintenance instructions allows remarks for individual instruction text fields to be stored. The remarks for initializing these fields and storing the values are normally issued by means of buttons in the CMSFaults control. If desired, these buttons can be disabled in the CMSFaults control and the remarks issued instead by writing properties of the CMSFaults control.

In order to facilitate operation of the CMSFaults control on touch panels (activating functions with a double click on touch panels, for example, can be problematic), it is possible to execute all commands, such as scrolling through tabs, navigating round tables or opening reference files, by buttons in the WinCC application. In this case, commands are written to properties of the CMSFaults control.

Note

The function for determining the message number via the WinCC Alarm control is not available on the Webnavigator client!

8.1.2 Configuration

The CMSFaults control can be integrated in the WinCC object palette either via the "Standard" tab ("Smart objects", item "Control") or, more easily after the control has been added to the list, via the "Controls" tab.

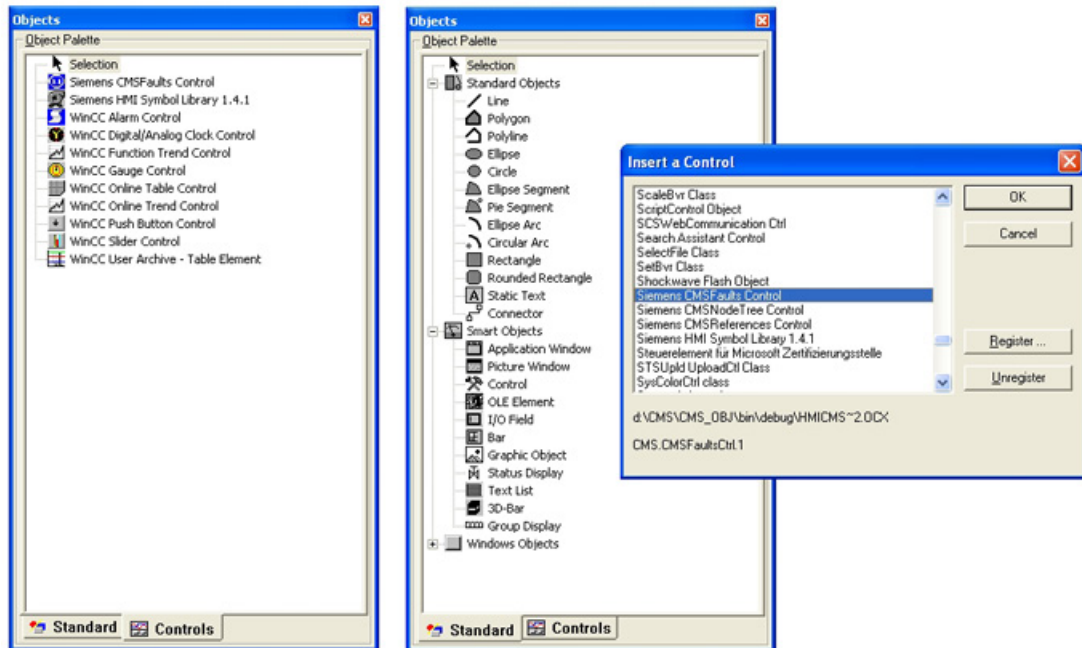


Figure 8-1 CMSFaults selection

If CMS Runtime is started when integrating the control, then the colors from the CMS configuration file are applied automatically. If CMS Runtime is not active when the control is integrated, the colors must be manually adapted; no function for subsequent automatic matching of colors is provided.

When integrating the CMSFaults Control into a WinCC screen

- all tabs implemented in the CMSFaults Control are activated.
- Input of logbook entries activated.
- button control activated.

All these settings can be adjusted later by means of property pages.

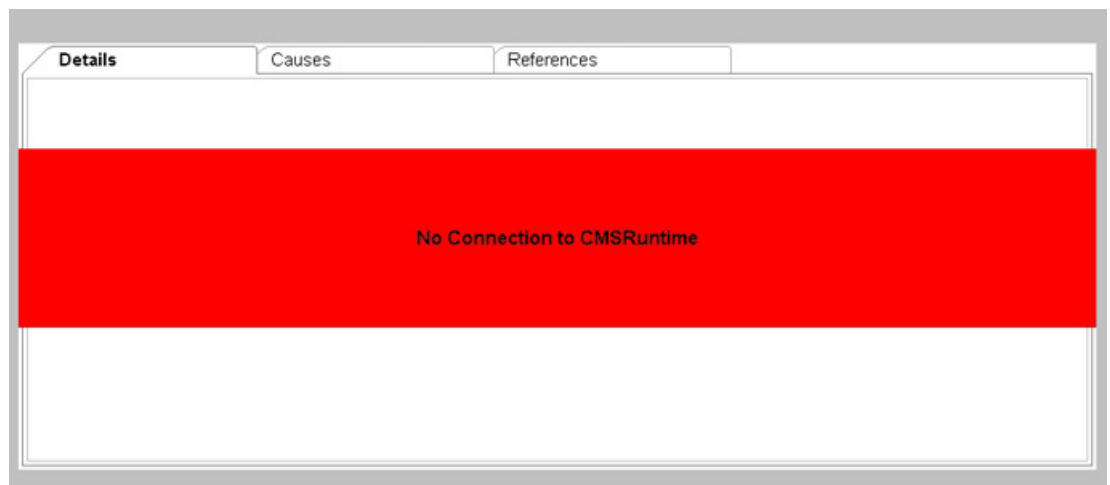


Figure 8-2 CMSFaults error

The ActiveX control CMSFaults has no direct access to WinCC, the database or the data in the configuration file. All data are read by the CMS Runtime application. An appropriate message is therefore displayed if CMS Runtime is not running. This message is permanently stored in English in the program and cannot be altered. Since the language-specific texts of the property pages cannot be accessed, it is possible that also the property pages for parameter assignment cannot be started in the selected configuring language. If the language-specific texts cannot be determined, then predefined English designations are output.

In addition to the option of setting object properties via property pages, it is also possible to enter some of them in the WinCC properties dialog. The names of object properties in the WinCC properties dialog are identical in all languages.

The values of all object properties are stored in the WinCC screen according to ActiveX control.

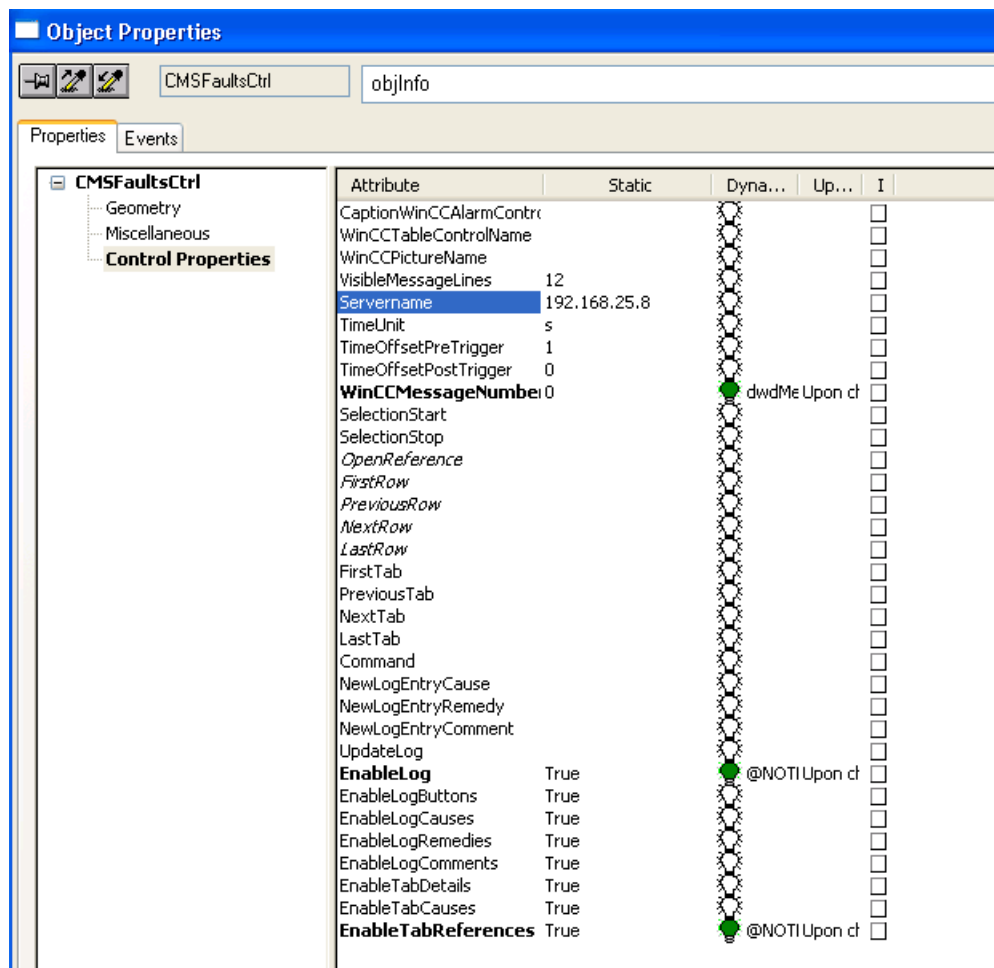


Figure 8-3 WinCC properties dialog for CMSFaults

The object properties which can be edited in the WinCC properties dialog can be roughly organized into two groups:

- Commands
- Settings

Commands can be issued by writing any value to the properties listed below:

Command	Function
WinCCMessageNumber	WinCC message number
OpenReference	Open the currently selected reference
FirstRow	Position on the first row in the reference table
PreviousRow	Position on the previous row in the reference table
NextRow	Position on the next row in the reference table
LastRow	Position on the last row in the reference table
FirstTab	Position on the first tab in the CMSFaults control
PreviousTab	Position on the previous tab in the CMSFaults control

Command	Function
NextTab	Position on the next tab in the CMSFaults control
LastTab	Position on the last tab in the CMSFaults control
Command	Find the information for the message currently selected in the WinCC Alarm control
NewLogEntryCause	Clear the window for entering a new comment for the displayed maintenance instruction text (possible fault cause)
NewLogEntryRemedy	Clear the window for entering a new comment for the displayed maintenance instruction text (possible remedy)
NewLogEntryComment	Clear the window for entering a new comment for the displayed maintenance instruction text (comment)
UpdateLog	Save the entered comments

Setting	Function
CaptionWinCCAlarmControl	Window caption of the WinCC Alarm Control
Server name	Name or IP address of the computer on which the WinCC project is running.
WinCCTableControlName	Name of an optional WinCC online table or online trend control (no longer evaluated)
WinCCPictureName	Name of the WinCC screen containing an optional WinCC Online Table or WinCC Online Trend control (no longer analyzed)
TimeUnit	Unit of time interval
TimeOffsetPreTrigger	Time interval before trigger
TimeOffsetPostTrigger	Time interval after trigger
SelectionStart (ReadOnly)	Time stamp of the displayed message, offset by the pretrigger time interval
SelectionStart (ReadOnly)	Time stamp of the displayed message, offset by the posttrigger time interval
EnableLog	True: Entering comments on maintenance instructions has been released.
EnableLogButtons	True: Buttons for entering comments on maintenance instructions are visible.
EnableLogCauses	True: Field for entering causes is visible.
EnableLogRemedies	True: Field for entering countermeasures/remedies is visible.
EnableLogComments	True: Field for entering comments is visible.
EnableTabDetails	True: The "Message details" tab is visible.
EnableTabCauses	True: The "Maintenance instructions" tab is visible.
EnableTabReferences	True: The "References" tab is visible.

Note

See also the description for screen "CMSFaults Propertypage WinCC connection" below.

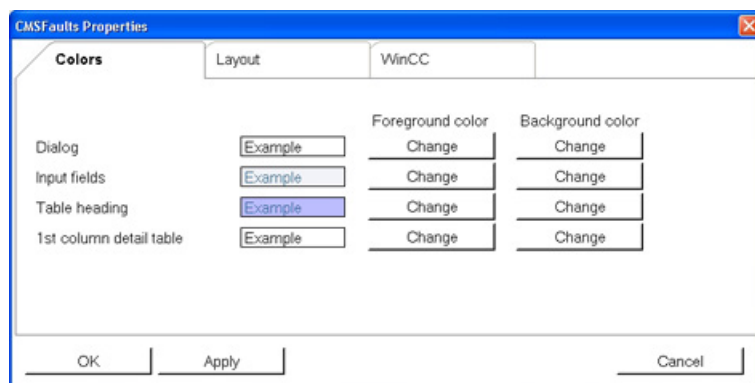


Figure 8-4 CMSFaults Properties, Colors

The color settings can be changed in this property page. Similar to the procedure when setting colors in the CMS Editor, also here, selected colors are first displayed in the example fields.

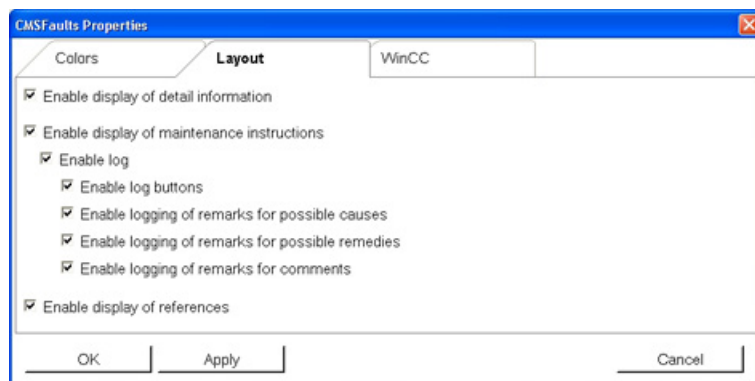


Figure 8-5 CMSFaults Properties, Layout

The display features of the CMSFaults ActiveX can be adjusted on this property page. In this case, each of the three tabs can be completely enabled or disabled. At least one tab, however, must always be visible. The following additional maintenance instructions settings can be entered on the maintenance instruction display tab:

- Enable log

This checkbox can enable or disable all input fields for acquiring comments for maintenance instructions together with associated control buttons. If the log is disabled, all subordinate checkboxes are also disabled.

In this case, only the information stored in the CMS is displayed in CMSFaults Control.

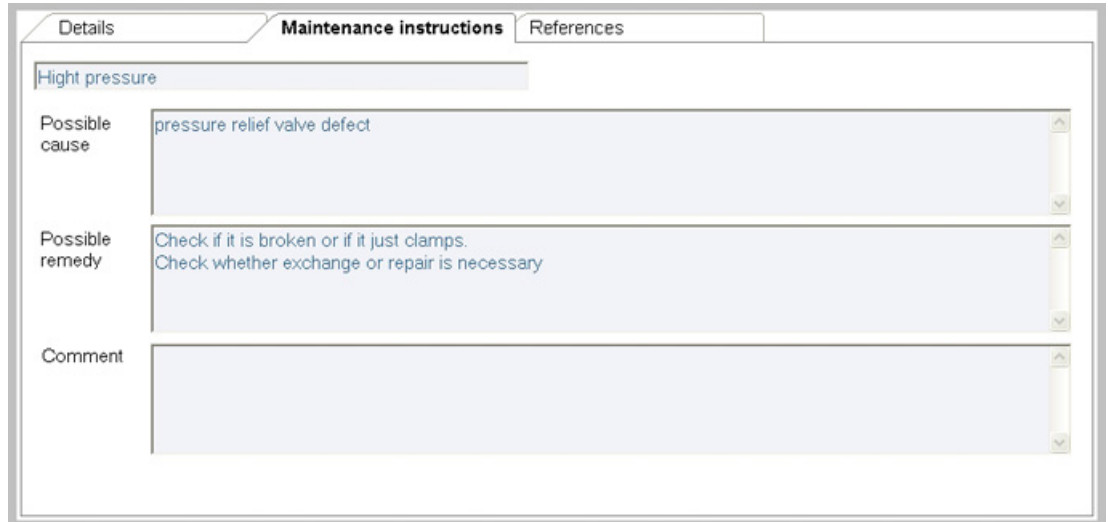


Figure 8-6 Example of CMSFaults, acquisition of comments for maintenance instructions disabled

- Enable log buttons

The standard layout of the tab for displaying maintenance instructions features a button next to every input field in the CMSFaults control. This button deletes the contents of the relevant field for a new input. This tab also includes the button to save the changes.

For example to save space, or if there is a requirement to use a different layout for the buttons, then the buttons can be disabled using this property. The actions which are normally linked to these buttons can then be executed by writing particular properties of the CMSFaults control.

- Enable the field for acquiring possible causes

- Enable the field for acquiring possible remedies
- Enable the field for acquiring comments

All three input fields are displayed with the standard layout. However, the input fields can be disabled individually via these three checkboxes to inhibit the input of comments.

The screenshot shows a dialog box titled 'Maintenance instructions' with three tabs: 'Details', 'Maintenance instructions', and 'References'. The 'Maintenance instructions' tab is active. It contains a text field for 'High pressure' and an 'Author' field. Below these are three sections: 'Possible cause', 'Possible remedy', and 'Comment'. Each section has a text area with a list of items and a 'New' button. The 'Possible cause' section contains 'pressure relief valve defect'. The 'Possible remedy' section contains 'Check if it is broken or if it just clamps.' and 'Check whether exchange or repair is necessary'. The 'Comment' section is empty. At the bottom right, there are 'New' and 'Update' buttons.

Figure 8-7 Example of CMSFaults, input of comments about possible causes disabled

If these entries are made in the WinCC properties dialog, the relevant setting can be deactivated by inputting "0" or "false". Any other input will activate the corresponding setting.

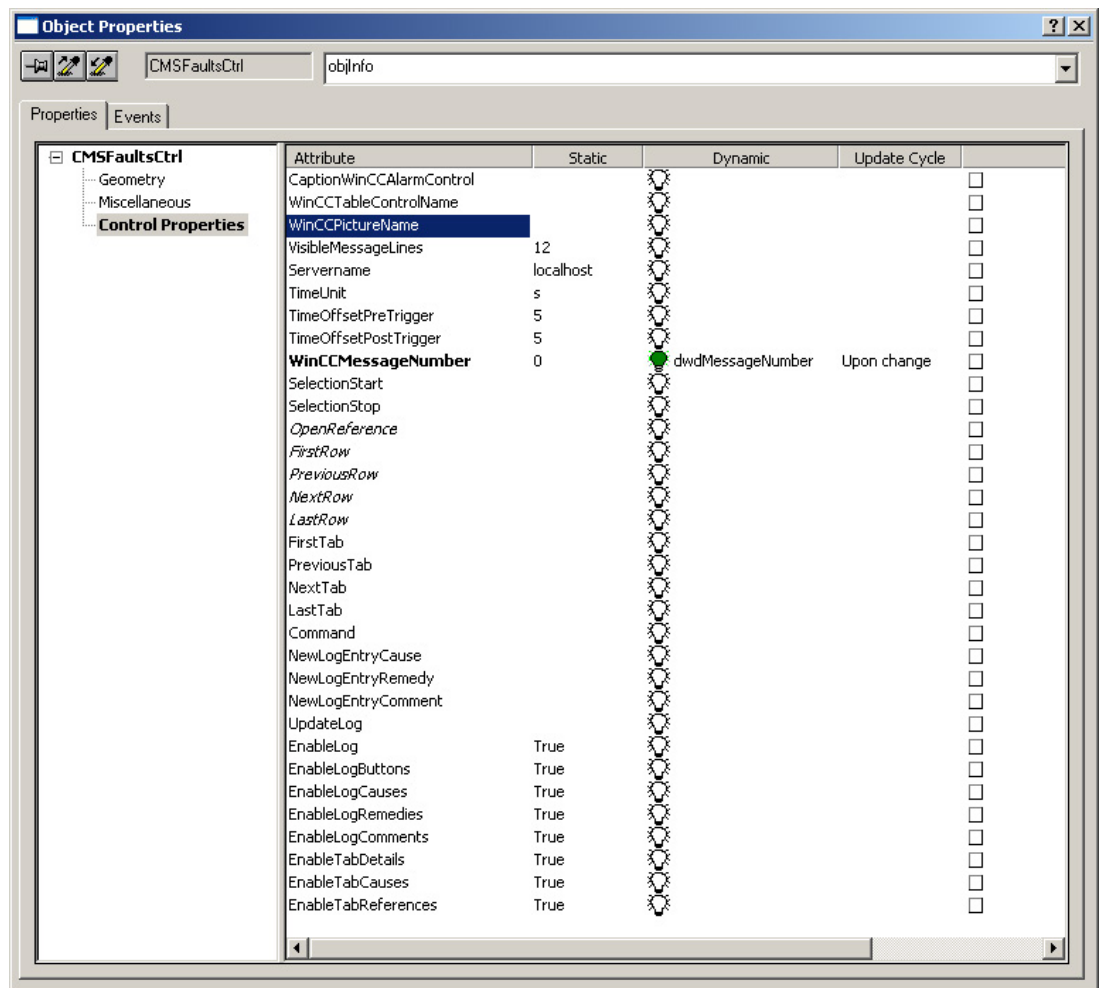


Figure 8-8 CMSFaults Properties, WinCC connection

The connection to WinCC can be configured on this property page as well as a message selection with the display of trend values in a Trend Control on the same screen.

Note

These functions have not been released for Web Navigator clients.

The following settings can be entered:

- Window caption of the WinCC Alarm Control

Title of the WinCC message window, in which the message is selected.

Note

This setting does not involve the name of the Alarm Control, but the window caption that can be entered as a property.

Note

The WinCC function for determining messages via the window caption of the Alarm Control is case sensitive.

- Name of the WinCC screen

Name of the WinCC screen in which Alarm Control and Trend Control are located

- Name of the WinCC Table Control

Name of the Trend or Table Control, in which the curve values are to be displayed.

Note

WinCC Alarm Control and WinCC Table / Trend Control must be in the same WinCC screen.

- Pretrigger or posttrigger time interval

Number of time units before the trigger instant (time before the event) as well as number of time units after the trigger instant (time after the event). This results in start and finish times for the display of the archived measured values in the WinCC Table / Trend Control.

- Unit of time interval

Unit of the time by which the start or finish time is corrected. Options are:

- h: hours
- m: Minutes
- s: seconds

- Server name

Name or IP address of the server on which the WinCC project is running. This server name is used to establish communication with CMS Runtime if you wish to use the control on a Web Client.

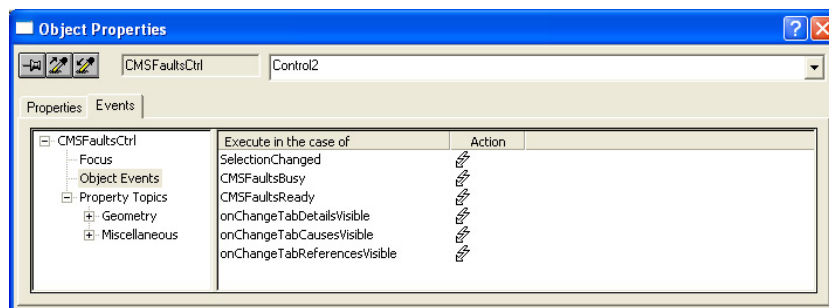


Figure 8-9 WinCC events of CMSFaults

Table 8- 1 Events of CMSFaults

Event	Function	Parameters
SelectionChanged	Triggered if the message selected changes	SelectionStart: Time stamp of the selected message, minus the interval before the trigger, expressed as yyyy-MM-dd HH:mm:ss SelectionStop: Time stamp of the selected message, plus the interval after the trigger, expressed as yyyy-MM-dd HH:mm:ss
CMSFaultsBusy	Triggered if an action is performed	-
CMSFaultsReady	Triggered if the action is ended	-
onChangeTabDetailsVisible	Triggered if the "Details" tab becomes (in)visible	0: Tab is invisible. Anything else: Tab is visible.
onChangeTabCausesVisible	Triggered if the "Maintenance instructions" tab becomes (in)visible	0: Tab is invisible. Anything else: Tab is visible.
onChangeTabReferencesVisible	Triggered if the "References" tab becomes (in)visible	0: Tab is invisible. Anything else: Tab is visible.

8.1.3 Runtime

The following screens show the appearance of the CMSFaults control when it is integrated in a WinCC screen in a WinCC project at runtime.

Figure 8-10 CMSFaults Runtime (message details)

The detailed data about the message read by WinCC are displayed on this tab. Apart from "Equipment type" and "Crane name", all this information is obtained from the WinCC Alarm Logging application.

Details		Maintenance instructions		References	
High pressure		Author			
Possible cause	pressure relief valve defect			New	
Possible remedy	Check if it is broken or if it just clamps. Check whether exchange or repair is necessary			New	
Comment				New	
				Update	

Figure 8-11 CMSFaults Runtime (maintenance instruction)

The maintenance instruction stored for the relevant message is displayed on this tab. The CMSFaults control just displays the maintenance instruction which is assigned to the WinCC message. Maintenance instructions assigned to the equipment type or crane are not shown on this tab.

Comments on the displayed maintenance instruction can be acquired on this tab. Existing comments are displayed under the relevant field for the maintenance entry, the latest input appears at the top of the list. Comments on maintenance instruction cannot be edited in these fields.

The last entry in each case is also displayed in the dialog field for entering comments. As long as it is displayed in this field, the entry can still be edited if necessary.

To improve the legibility of the tab content, the fields on this tab can be resized line by line with the mouse. The width of the two fields on each line can also be resized.

Details		Maintenance instructions		References	
ET-200 Fault		Author Maintenance			
Possible cause	io-device is not connected to communication			New	
Possible remedy	check connection to device			New	
Comment				New	
				Update	

Figure 8-12 CMSFaults Runtime (resizing)

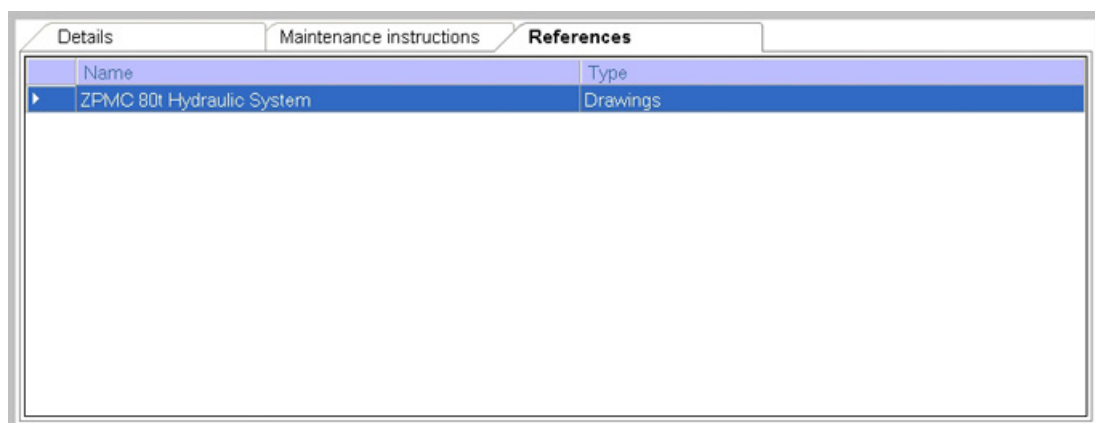


Figure 8-13 CMSFaults Runtime (references)

Supplementary references can be opened and viewed on this tab. In this case, all references which are assigned to the equipment type, the crane itself and the displayed message are selected.

References can be opened with a double click on this tab. The application linked to the reference is opened in a separate window to display the reference.

8.2 CMSNodeTree

The CMSNodeTree control is an ActiveX object for displaying a tree on the RCMS containing all the cranes belonging to a terminal along with their actual operating states.

Since, as far as the RCMS is concerned, no assumption is made about the control being operated via a touch panel as well, the control is designed to be operated with a mouse. Like the CMSFaults control, the CMSNodeTree control communicates with WinCC via properties and events.

8.2.1 Configuration

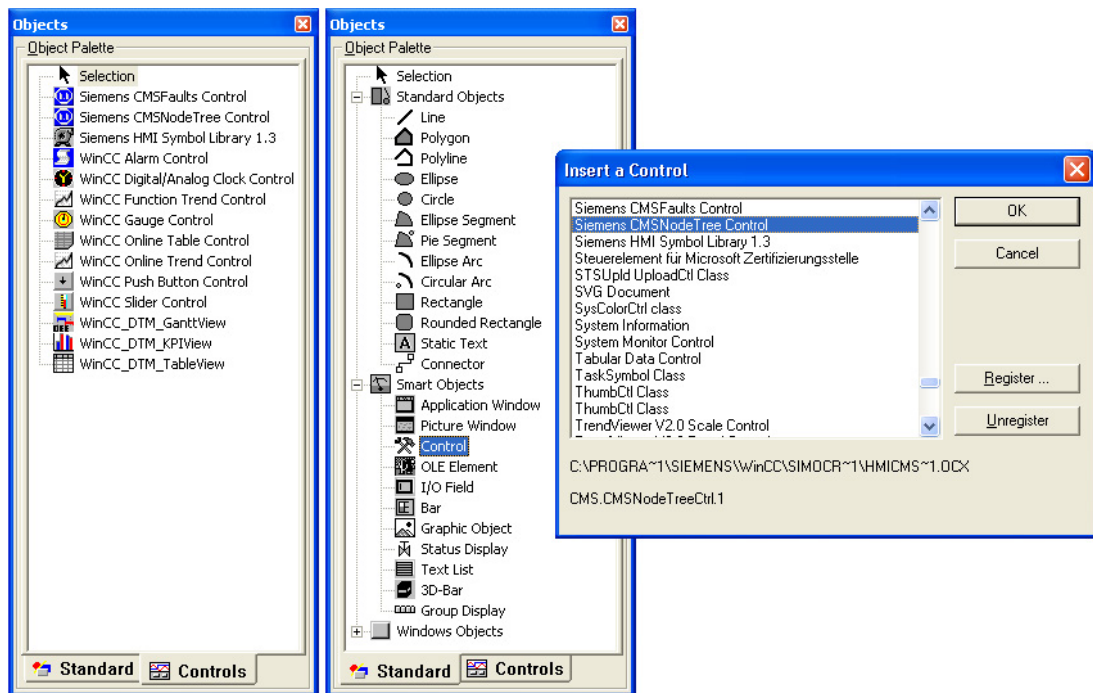


Figure 8-14 CMSNodeTree selection

The control can either be integrated into the WinCC object palette via the "Standard" tab, "Control" entry under the name "Siemens CMSNodeTree Control" or, more easily once the control has been added to the list, using the "Controls" tab.

The ActiveX control CMSNodeTree has no direct access to WinCC, the database, or the data in the configuration file. All data is read by the CMS Runtime application. As with the CMSFaults control, an appropriate message is therefore displayed if CMS Runtime is not running. This message is permanently stored in English in the program and cannot be altered.

The properties of the CMSNodeTree control are entered in the WinCC properties dialog. The values of all properties are stored in the WinCC screen for each ActiveX control.

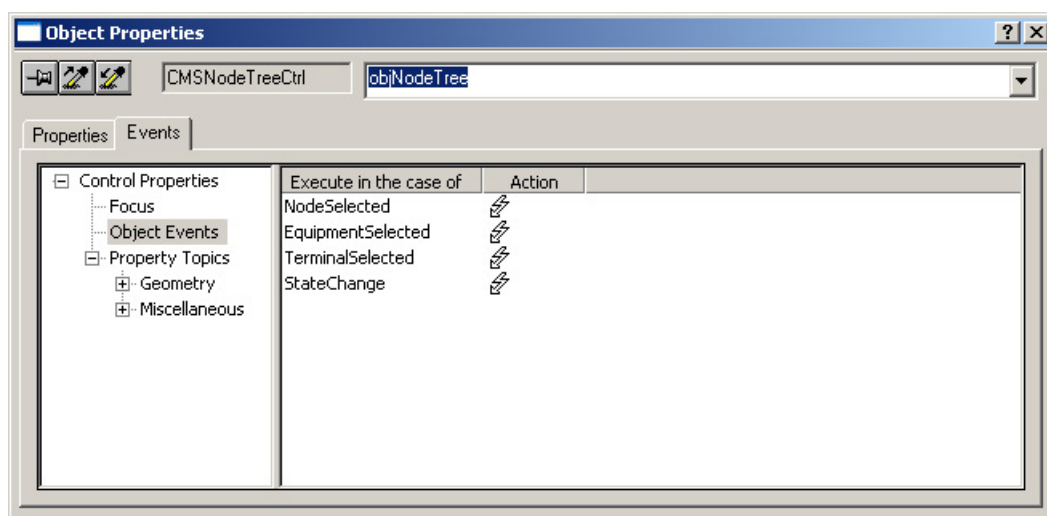


Figure 8-15 WinCC properties dialog, CMSNodeTree

The properties that can be edited in the WinCC properties dialog can be roughly organized into two groups:

- Commands
- Settings

When making settings, you need to take the "Server name" property into account if you want to use the control on a Web client:

Setting	Function
Server name	Name or IP address of the computer on which the WinCC project is running.

Commands can be issued by writing any value to the properties listed below:

Command	Function
SelectedNode	Opens the branch in the tree view where the node is located and selects a node
SelectedEquipment	Opens the branch in the tree display where the equipment type is located and selects an equipment type.
SelectedTerminal	Selects a terminal

The WinCC properties dialog also contains information that you can access by reading the following properties:

Information	Function
CountTerminals	Contains the total number of available terminals
CountEquipments	Contains the total number of equipment types in the terminal selected
CountNodes	Contains the total number of nodes for the terminal or equipment type selected The RCMS server is not counted.
CountCranesOffline	Contains the number of nodes for the terminal or equipment type selected with the status "Offline"
CountCranesOk	Contains the number of nodes for the terminal or equipment type selected with the status "Ok"
CountCranesStandby	Contains the number of nodes for the terminal or equipment type selected with the "Idle" status.
CountCranesWarning	Contains the number of nodes for the terminal or equipment type selected with the status "Warning"
CountCranesAlarm	Contains the number of nodes for the terminal or equipment type selected with the status "Fault"

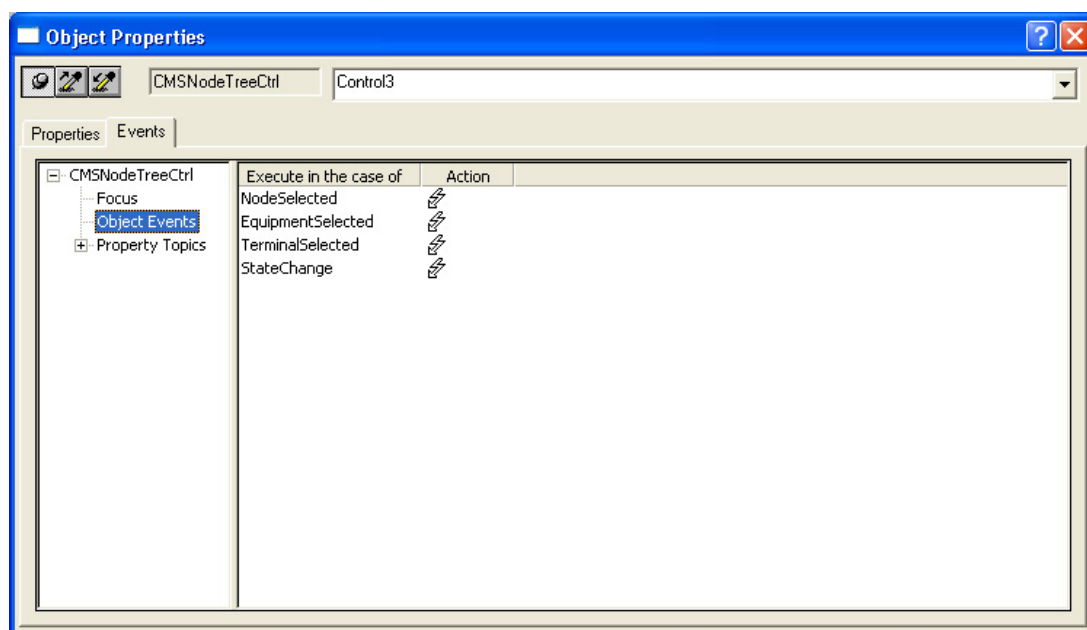


Figure 8-16 WinCC event dialog, CMSNodeTree

You can use the following events in the WinCC event dialog:

Command	Function
NodeSelected	The event is triggered once a node has been selected. The formal parameters provide the name of the node selected, the name of the equipment type to which the node is assigned, and the name of the terminal to which the node is assigned.
EquipmentSelected	The event is triggered once a node has been selected. The formal parameters provide the name of the equipment type selected and the name of the terminal to which the equipment type is assigned.
TerminalSelected	The event is triggered once a node has been selected. The formal parameters provide the name of the terminal selected.
StateChanged	The event is initiated as soon as the state of the terminal, an equipment type or a crane has changed.

8.2.2 Runtime

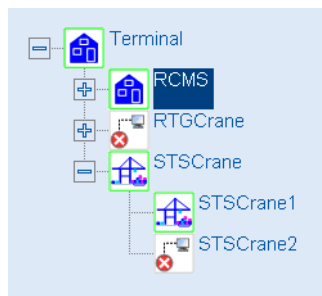
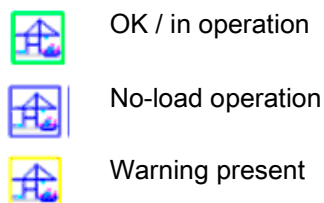







Figure 8-17 CMSNodeTree Runtime

The CMSNodeTree control shows the tree view for all the available cranes, equipment types, and terminals. Both the operating state and the name of the cranes are displayed, along with the equipment types, and terminals.









- Click a crane, equipment type, or terminal to select it.
- "+" opens the associated branch in the tree.
- "-" closes the associated branch in the tree.

The states of the tree components are shown using icons. Icons are used to show the status of each crane:



	Error present
	No connection to the crane
	WinCC / CMS Runtime stopped
	No connection to the PLC
	State cannot be determined

Icons are used to show the collective status of the assigned cranes for each equipment type:

	Associated cranes in OK / operation state
	All associated cranes in the idle state
	At least one associated crane in the warning state
	At least one associated crane in the fault state
	All associated cranes offline
	For all associated cranes, WinCC / CMS Runtime stopped
	For all associated cranes no connection to the PLC
	For all associated cranes undefined state

The group state of the associated cranes is symbolically displayed for the terminal.

- The "OK" icon is shown if the status of all the assigned cranes is "OK".
- The "Fault" icon is shown if at least one assigned crane is in the "Fault" state.

The icon data set is assigned to the terminal, equipment types and cranes in the CMS Editor when defining the topology (see Chapter Topology: Terminals (Page 52) , Topology: Equipment types (Page 53) , Topology: Cranes (Page 55)).

You can generate your own icon data set in the CMS Editor (see Chapter Settings: Icons (Page 94)).

Installation

9.1 General Information

NOTICE

Prior to installation: export CMS-specific data with CMS V4.2

Note that you must migrate projects used under CMS V4.2 (WinCC 7.0) if you wish to continue to use them under CMS V4.3. First back up the data relevant to CMS using CMS V4.2; see Chapter Migration of an existing project (CMS V4.2) (Page 161).

The SIMOCRANE CMS scope of supply contains three installation files:

- **CMSSetup:**
Install the CMS Setup on all stations at the crane that are to acquire the data from the PLC and may transfer this data to an RCMS server.
- **RCMSSetup:**
Install the RCMS Setup on all central stations (RCMS server) that are to receive and archive the data from the cranes (CMS stations).
- **CMSClientSetup:**
Install the CMS Client Setup on all clients of a CMS station or RCMS server. This can involve WinCC or Web Navigator Clients that display screens from the connected CMS station or the RCMS server.

Only one installation is necessary and possible for each computer.

9.2 Preconditions

Before you can install SIMOCRANE CMS, the following software must be installed:

- SIMATIC WinCC V7.2 Update 7. Service packs must not be installed.
- For further requirements regarding the operating system, service packs, hardware, etc., see also Chapter System requirements (Page 13).

Local administrator rights are needed both to install and use the SIMOCRANE CMS software.

Administrator functions can be enabled in SIMOCRANE CMS only for users who already belong to the Windows user group "CMSAdmin." This user group is not set up automatically when the software is installed, but must be created subsequently by a Windows administrator.

9.3 Installation procedure

Setup is a two-step process.

- First, the Visual C++ 2010 runtime component is automatically installed if the system does not detect that it is already installed.

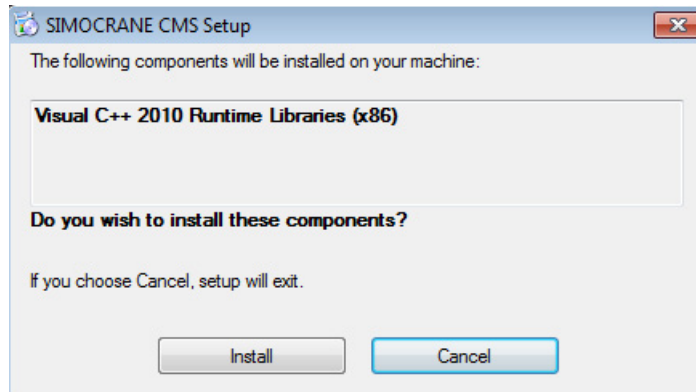


Figure 9-1 Installation of the Visual C++ 2010 runtime component

- The setup for SIMOCRANE CMS is then started. After this, the three components CMS, RCMS, and CMSClient are installed.

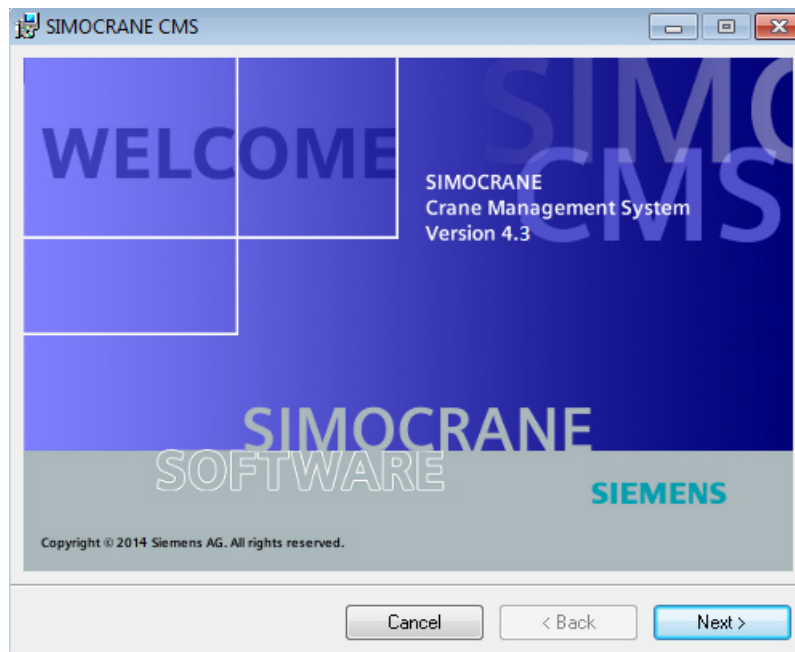


Figure 9-2 SIMOCRANE, window: 1. welcome page

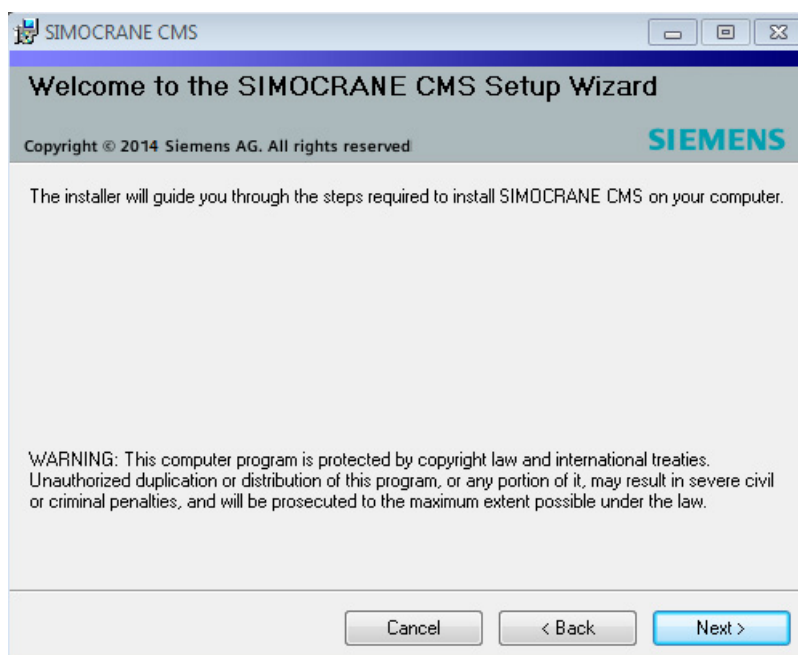


Figure 9-3 Setup, 2nd welcome page

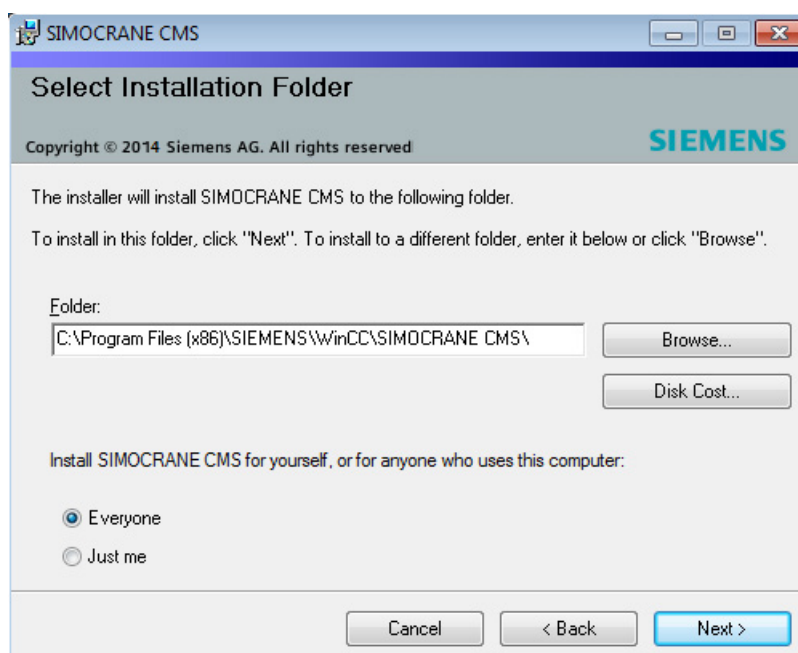


Figure 9-4 Setup, selection of the installation path

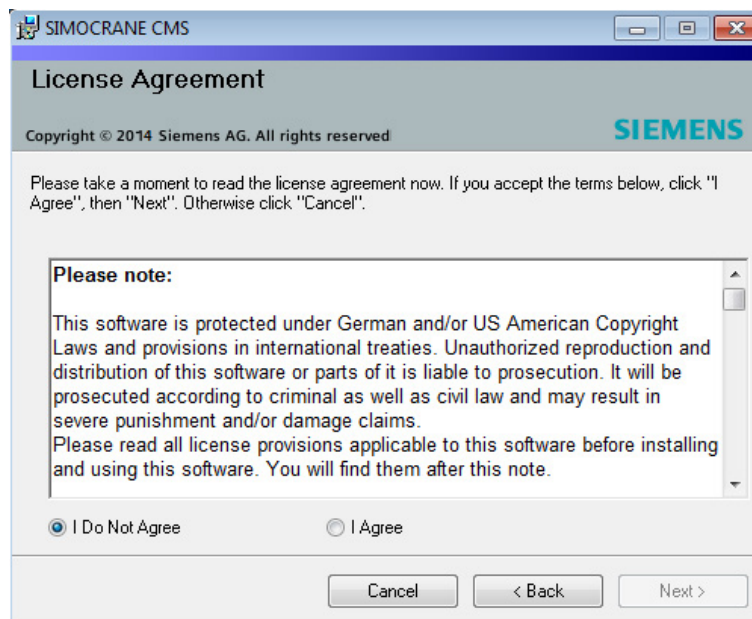


Figure 9-5 Setup, acceptance of license agreement

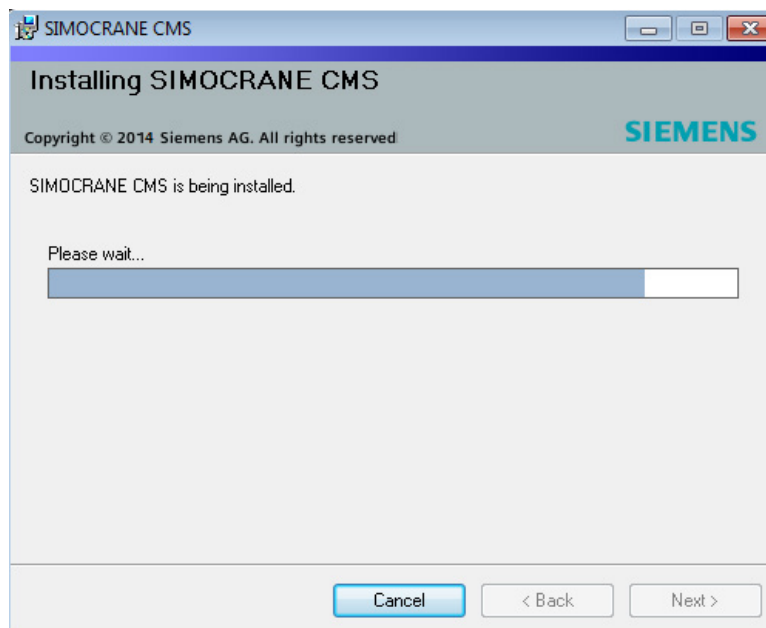


Figure 9-6 Setup, installation progress display

When the software has been successfully installed, a window showing the ReadMe file is displayed. The ReadMe file contains the following information:

- Detailed information on the scope of supply (content of the DVD)
- Detailed installation instructions
- Restrictions
- Information on troubleshooting

Migration of an existing project (CMS V4.2)

10.1 General

Before you can use a project in CMS V4.3 that you created in CMS V4.2, you have to migrate it.

10.2 Exporting the CMS-specific data with CMS V4.2

1. Open the project to be migrated in WinCC V7.0.
2. Open SIMOCRANE CMS V4.2.
3. In the navigation tree, go to System → Maintenance.
4. Activate "Including configuration data," enter the path under "Backup," and click "Start."

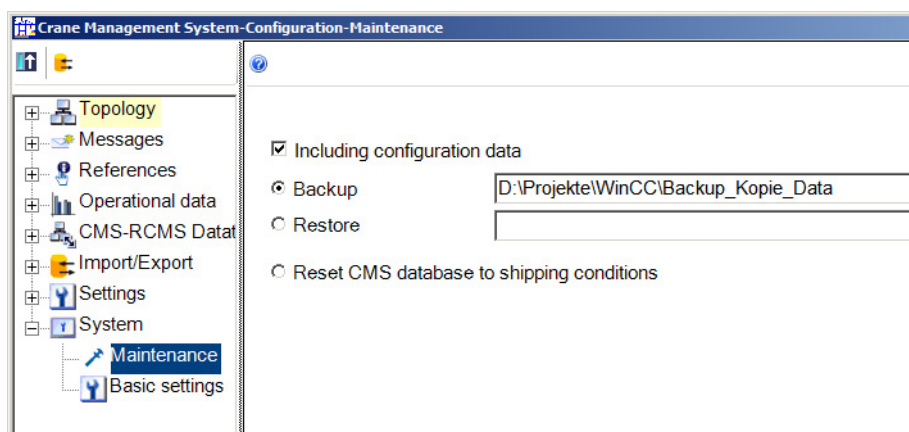


Figure 10-1 Preparing export of existing projects

After export has been successfully completed, "Backup ok" will be displayed at the bottom of the window.

5. Then install the new versions of SIMATIC WinCC (V7.2) and SIMOCRANE CMS (V4.3); see Chapter Installation (Page 157).

10.3 Preparing for migration

Note

Note that WinCC V7.2 and CMS V4.3 must be installed before you can perform the following steps.

1. Make sure that WinCC is closed.
2. Open SQL Server Management Studio 2008 R2 (Start → All Programs → SQL Server Management Studio 2008 R2 → SQL Server Management Studio) as the administrator.

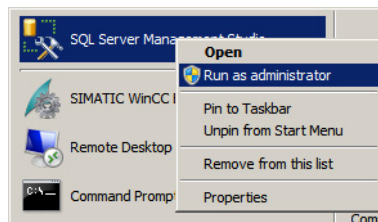


Figure 10-2 Opening SQL Server Management Studio as the administrator.

3. Use the "Windows Authentication" setting.
4. Right-click "Databases" and select "Attach..."

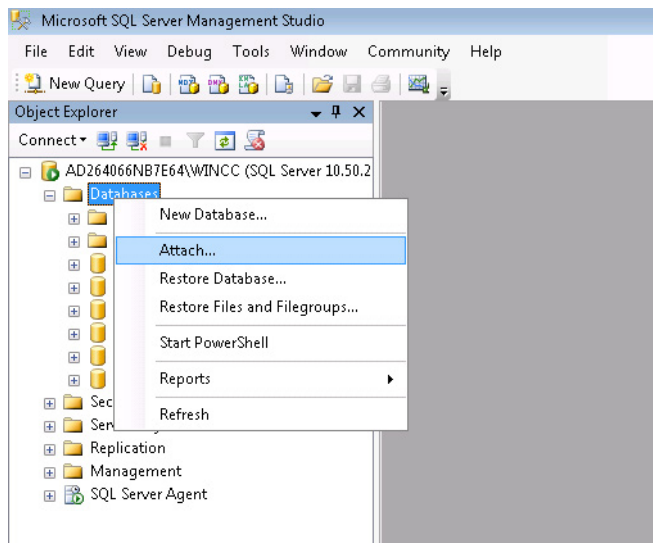


Figure 10-3 Connecting a database

5. Click "Add..."

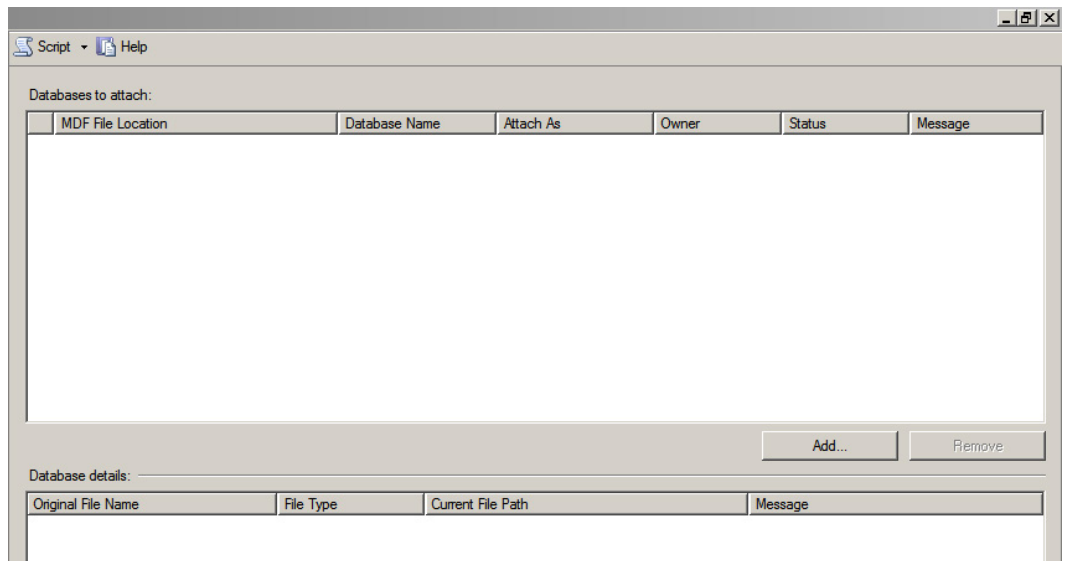


Figure 10-4 Adding a database

6. Navigate to the WinCC project folder.
7. Select the database (mdf file), whose name does NOT end in "RT," and confirm with "OK."

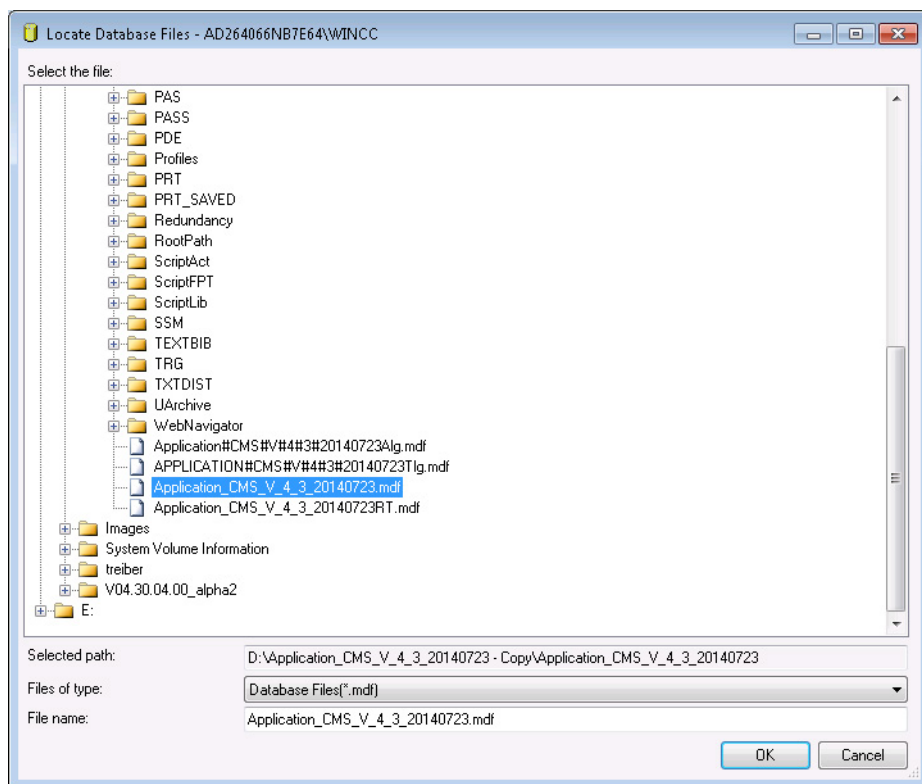


Figure 10-5 Selecting the database without the ending "...RT"

8. Confirm with "OK."
9. Click "View" → "Object Explorer Details."

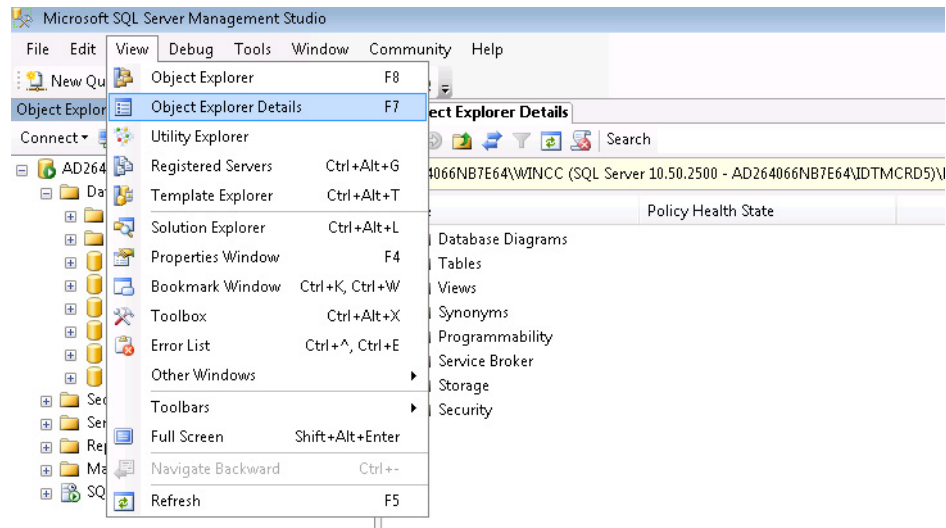


Figure 10-6 Setting the detailed view in the Object Explorer.

10. Expand the database (with the + symbol) and click "Tables."

All the tables in the database appear in the right hand portion of the window.

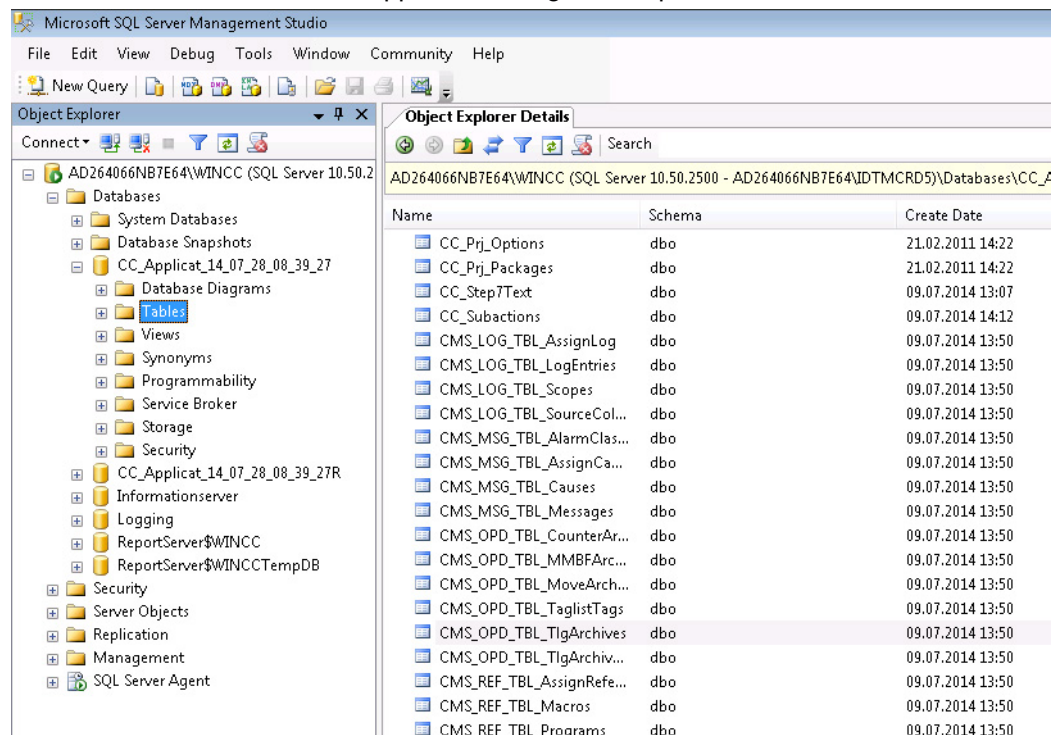


Figure 10-7 Selecting tables in the database

11. Select all tables with a name starting "CMS."

12. Press the Del key.

The selected tables are deleted. Some tables remain undeleted because of dependencies between the tables.

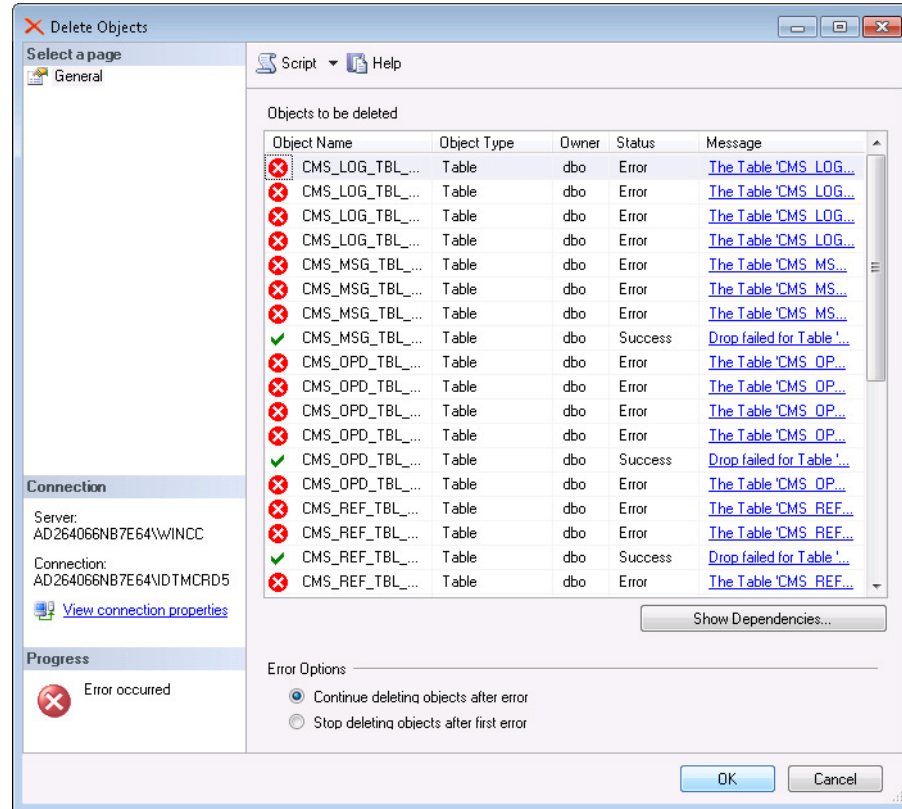


Figure 10-8 Deleting the tables

13. Click "OK" again to delete the remaining entries.

Now, no tables should be listed that have a name starting "CMS."

14. Ignore the message indicating the errors have been found.

15. Click "Views."

All the views in the database appear in the right hand portion of the window.

16. Select all views with a name starting "CMS."

17. Press the Del key.

The selected views are deleted.

18. Select the database in the Explorer, select "Tasks → Detach" from the shortcut menu to detach the database.

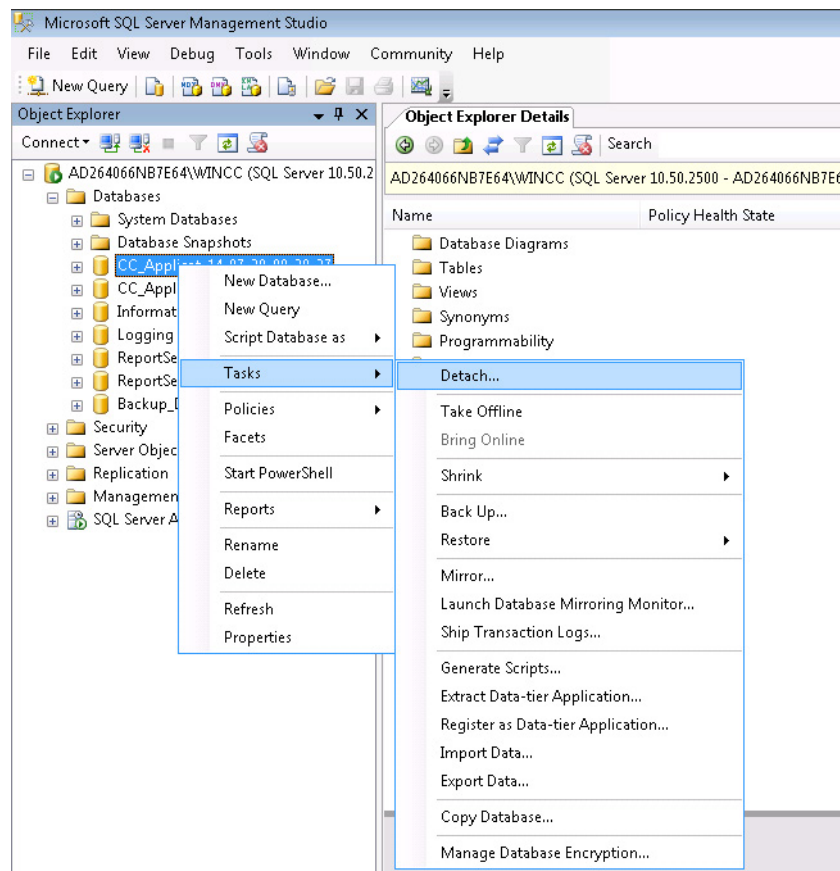


Figure 10-9 Detaching from the database.

19. Close SQL Server Management Studio 2008 R2.
20. Using the WinCC Project Migrator, migrate the CMS V4.2 project; see Chapter Migrating the project (Page 167).

10.4 Migrating the project

Preliminary remark

When migrating using the WinCC Project Migrator, there is no difference between single-user projects, multi-user projects, and clients with a dedicated project.

The projects are migrated to UNICODE. Tables that do not originate from WinCC are not migrated.

The time required depends on the size of the project to be migrated and the performance of the computer used. The time required for migration of the Runtime data varies according to the number of messages and tags. It can take several hours.

Note

Make a backup copy of the project before the migration. This enables users to fall back on a copy of the original project in the case of faulty migration.

Procedure

1. Open "Simatic → WinCC → Tools → Project Migrator" in the Start menu of the operating system.

The start window of the Project Migrator "CCMigrator - Step 1 of 2" opens.

2. Select the project directory in which the WinCC project is located by clicking the "..." button. If you want to migrate more than one project in one step, select the path with the directories containing the WinCC projects.
3. Set the language of the computer on which the project or projects were created. The default setting is the language version defined in the language options of the operating system for non-Unicode programs or in the system locale.
4. Click the "Migrate" button.

The window "CCMigrator - Step 2 of 2" opens. The Project Migrator shows the steps of the migration. Wait until the migration has been successfully completed. Migration of a project can take several hours.

5. When the migration is completed successfully, the Project Migrator displays the message: "WinCC project successfully migrated."
6. Click the "Finish" button.

10.5 Importing the CMS-specific data

1. Open the migrated project in the WinCC Explorer.
2. Open the CMS editor.
3. Go to "System" → "Maintenance"
4. Activate "Including configuration data," enter the path to the configuration file under "Restore" (see Chapter Exporting the CMS-specific data with CMS V4.2 (Page 161), and click "Start."

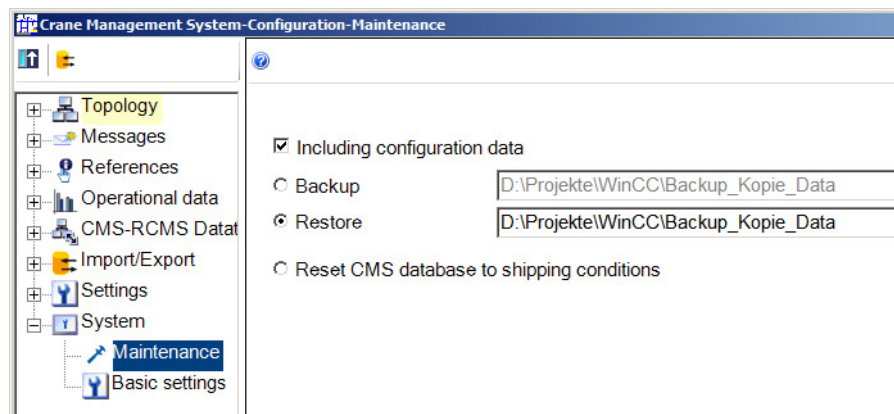


Figure 10-10 Selecting a database

After the restore has been successfully completed, "Restore ok" will be displayed at the bottom of the window.

5. Check that the configuration data have been correctly transferred.

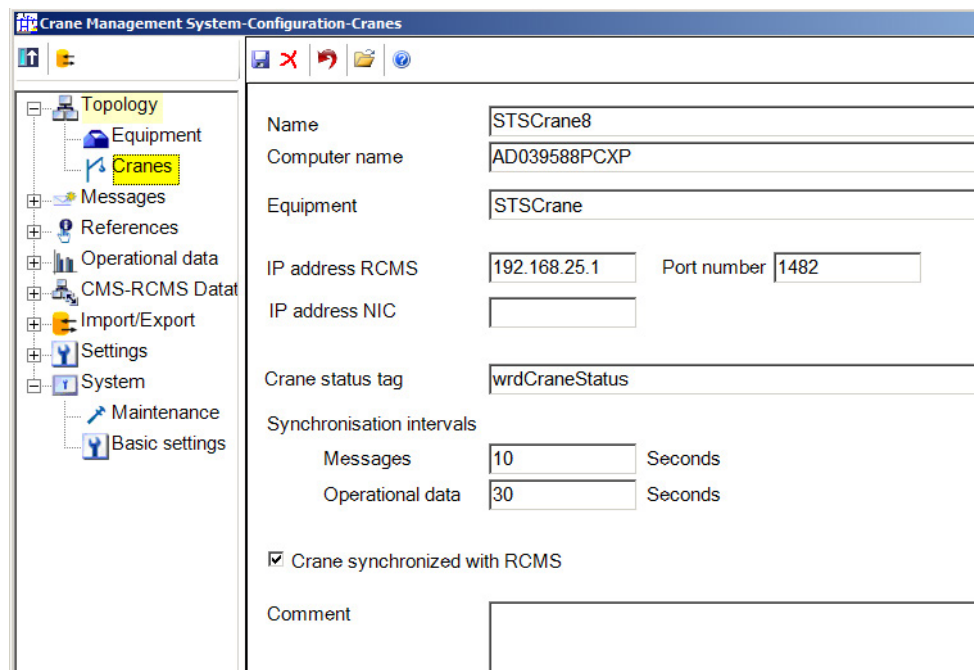


Figure 10-11 Have the configuration data been correctly transferred?

Appendix: XML import formats

A.1 General information

All import and export formats are structured as follows:

Basic structure of the import and export formats:

```
<?xml version="1.0" standalone="yes"?>
  <TableName-ExportDate>
    <TableName>
      <AttributeName>attribute_value</AttributeName>
      ...
    </TableName>
    <CMS_SYS_TBL_Version>
      <MajorNumber>1</MajorNumber>
      <MinorNumber>0</MinorNumber>
      <Revision>4</Revision>
    </CMS_SYS_TBL_Version>
  </TableName-ExportDate>
```

The tag names are case-sensitive, i.e. they differentiate between upper-case and lower-case letters. All mandatory fields must be filled in, optional fields can be left empty or excluded completely.

The coding format of the export date in the root tag of the export file is as follows:

yyyy-mm-dd_HH-MM-SS

(yyyy: four-digit year; mm: Month; dd: Day; HH: Hours; MM: Minutes; SS: seconds)

The database version used to create the XML file is output in each XML file. These details must not be deleted or changed. If necessary, this version information can also be used for the purpose of importing XML files that are compatible with all versions once changes have been made to the database pattern.

Note

The database version is not listed in all of the following examples.

A.2 Terminals

Table name: CMS_TOP_TBL_Terminals

Table A- 1 Terminals

XML tag	Meaning	Format	Mandatory field
TerminalName	Name of the terminal	Text	yes
IconName	Name of the icon assigned to the terminal	Text	yes
Comment	Optional comment	Text	no

Example:

```
<CMS_TOP_TBL_Terminals-2007-12-30_14-45-45>
  <CMS_TOP_TBL_Terminals>
    <TerminalName>Terminal 1</TerminalName>
    <IconName>Terminal</IconName>
  </CMS_TOP_TBL_Terminals>
</CMS_TOP_TBL_Terminals-2007-12-30_14-45-45>
```

A.3 Equipment types

Table name: CMS_TOP_TBL_Equipments

Table A- 2 Equipment types

XML tag	Meaning	Format	Mandatory field
EquipmentName	Name of the equipment type	Text	yes
IconName	Name of the icons assigned to the equipment type	Text	yes
Description	Equipment-specific comment to be displayed in a WinCC screen	Text	no
WinCCTag	Name of a WinCC tag for displaying an equipment-specific comment	Text	no
BandConditionFault	Range of numbers for "Fault" status	Text	no
BandConditionOk	Range of numbers for "OK" status	Text	no
BandConditionStandby	Range of numbers for "Idle" status	Text	no
BandConditionWarning	Range of numbers for "Warning" status	Text	no
OffsetMessageNumber	Offset for WinCC message numbers in the WinCC Alarm Logging	Numeric	yes
Comment	Optional comment	Text	no

Example:

```

CMS_TOP_TBL_Equipments-2010-09-07_14-27-35>
  <CMS_TOP_TBL_Equipments>
    <EquipmentName>STSCrane</EquipmentName>
    <IconName>Crane</IconName>
    <Description>80 tons</Description>
    <WinCCTag>Eq_Desc</WinCCTag>
    <BandConditionFault>128</BandConditionFault>
    <BandConditionOk>1</BandConditionOk>
    <BandConditionStandby>2-32</BandConditionStandby>
    <BandConditionWarning>64</BandConditionWarning>
    <OffsetMessageNumber>1000</OffsetMessageNumber>
  </CMS_TOP_TBL_Equipments>
</CMS_TOP_TBL_Equipments-2010-09-07_14-27-35>

```

A.4 Cranes

Table name: CMS_TOP_TBL_Nodes

Table A- 3 Cranes

XML tag	Meaning	Format	Mandatory field
TerminalName	Identifier of terminal to which the crane is assigned	Text	yes
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
NodeName	Name of the crane	Text	yes
ComputerName	Name of the computer on which the CMS is running	Text	yes
IPAddress	IP address of the relevant link partner	Text	yes
PortNumber	Number of the port used for communication with the RCMS	Numeric	yes
IPAddressNIC	IP address of the network card, via which the CMS station is connected with the RCMS server. This setting should only be made for the topology "CMS with RCMS server".	Text	no
isNodeViaTCPIP	Crane is linked to RCMS via TCP/IP	true/false	yes
isServer	Identifier indicating whether this involves an RCMS server	true/false	yes
TagNodeState	Name of a WinCC tag that can be used to read the crane status for controlling the display of the crane in the CMSNodeTree control.	Text	no (for CMS station)
SyncIntervalMessages	Interval in seconds where messages are transferred to the RCMS	Numeric	yes (for CMS station)
SyncIntervalOperationalData	Interval in seconds where operational data (such as cargo handling data, MMBF data, etc.) is transferred to the RCMS	Numeric	yes (for CMS station)
Comment	Optional comment	Text	no

Example:

```

<CMS_TOP_TBL_Nodes-2010-09-07_14-27-38>
  <CMS_TOP_TBL_Nodes>
    <TerminalName>Terminal1</TerminalName>
    <EquipmentName>RCMS</EquipmentName>
    <NodeName>RCMSServer</NodeName>
    <ComputerName>RCMS01</ComputerName>
    <IPAddress>192.168.11.1</IPAddress>
    <PortNumber>1482</PortNumber>
    <isNodeViaTCPIP>false</isNodeViaTCPIP>
    <isServer>true</isServer>
    <Comment>RCMS Server PC</Comment>
  </CMS_TOP_TBL_Nodes>
  <CMS_TOP_TBL_Nodes>
    <TerminalName>Terminal1</TerminalName>
    <EquipmentName>STSCrane</EquipmentName>
    <NodeName>STSCrane1</NodeName>
    <ComputerName>CMS01</ComputerName>
    <IPAddress>192.168.11.10</IPAddress>
    <PortNumber>1482</PortNumber>
    <isNodeViaTCPIP>true</isNodeViaTCPIP>
    <isServer>false</isServer>
    <TagNodeState>Kran1.wrdCraneStatus</TagNodeState>
    <SyncIntervalMessages>10</SyncIntervalMessages>
    <SyncIntervalOperationalData>10</SyncIntervalOperationalData>
    <Comment>CMS-Station of STSCrane1</Comment>
  </CMS_TOP_TBL_Nodes>
</CMS_TOP_TBL_Nodes-2010-09-07_14-27-38>

```

A.5 Maintenance instructions

Table name: CMS_MSG_TBL_Causes

Table A- 4 Maintenance instructions

XML tag	Meaning	Format	Mandatory field
Description	Maintenance instruction text	Text	yes
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
PossibleCause	Description of the possible cause of the fault	Text	no
PossibleRemedy	Description of a possible repair measure	Text	no
Comment	Comment on the maintenance instruction, is also displayed in CMSFaults.	Text	no

Example:

```
<CMS_MSG_TBL_Causes-2010-09-07_14-09-12>
  <CMS_MSG_TBL_Causes>
    <Description> Crane 4711 elevator jerks</Description>
    <PossibleCause> Cause2</PossibleCause>
    <PossibleRemedy> Remedy2</PossibleRemedy>
    <Comment> Comment2</Comment>
    <EquipmentName>STSCrane</EquipmentName>
  </CMS_MSG_TBL_Causes>
</CMS_MSG_TBL_Causes-2010-09-07_14-09-12>
```

A.6 Comments on maintenance instructions

Table name: CMS_LOG_TBL_LogEntries

Table A- 5 Logbook

XML Tag	Meaning	Format	Mandatory field
Author	Name of the author	Text	yes
DateTimeEntered	Date entered	Date	yes
Scope	Indicates whether the comment is assigned to a message or a maintenance instruction text (only "Message" can be specified).	Text	yes
Entry	Comment text or logbook entry text	Text	no

Example:

```
<CMS_LOG_TBL_LogEntries-2007-12-30_14-45-45>
  <CMS_LOG_TBL_LogEntries>
    <Author>Adam</Author>
    <DateTimeEntered>2000-12-30T17:56:12+01:00</DateTimeEntered>
    <Entry>Entry</Entry>
    <Scope>Message</Scope>
  </CMS_LOG_TBL_LogEntries>
</CMS_TOP_TBL_LogEntries-2007-12-30_14-45-45>
```

A.7 Assignment of comments to maintenance instructions

Table name: CMS_MSG_TBL_AssignLog

Table A- 6 Assignment of comments to maintenance instructions

XML Tag	Meaning	Format	Mandatory field
Author	Name of the author	Text	yes
DateTimeEntered	Date entered	Date	yes
ColumnName	Column where an entry was made (<i>PossibleCause, PossibleRemedy, Comment</i>)	Text	yes
SourceType	Type of assignment (<i>Message, Cause</i>)	Text	yes
SourceName	Name of the element that is assigned to the the comment (WinCC message number, name of the maintenance instruction)	Text	yes

Example:

```
<CMS_LOG_TBL_AssignLog-2011-01-31_10-15-31>
  <CMS_LOG_TBL_AssignLog>
    <DateTimeEntered>2000-12-30T17:56:12+01:00</DateTimeEntered>
    <Author>Adam</Author>
    <ColumnName>Comment</ColumnName>
    <SourceType>Message</SourceType>
    <SourceName>1</SourceName>
  </CMS_LOG_TBL_AssignLog>
</CMS_LOG_TBL_AssignLog-2011-01-31_10-15-31>
```

A.8 Assignment of maintenance instructions

Table name: CMS_MSG_TBL_AssignCause

Table A- 7 Assignment of maintenance instructions

XML tag	Meaning	Format	Mandatory field
Description	Name of the maintenance instruction that is assigned	Text	yes
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
MessageNumber	Message number from WinCC	Numeric	yes

Multiple items of information must be linked when maintenance instructions are assigned. Firstly, the maintenance instruction must be uniquely identifiable. This is achieved by specifying the maintenance instruction identifier. Secondly, the object to which the maintenance instruction is assigned must be exactly specified.

Example:

```
<CMS_MSG_TBL_AssignCause-2010-09-07_13-50-08>
  <CMS_MSG_TBL_AssignCause>
    <Description>Crane 4711 Limit switch tripped</Description>
    <EquipmentName>STSCrane</EquipmentName>
    <MessageNumber>1</MessageNumber>
  </CMS_MSG_TBL_AssignCause>
</CMS_MSG_TBL_AssignCause-2010-09-07_13-50-08>
```

In the example, the maintenance instruction with identifier "Crane 4711 Limit switch tripped" is assigned to the WinCC message with number 1 from "STSCrane" equipment type.

A.9 References

Table name: CMS_REF_TBL_References

Table A- 8 References

XML tag	Meaning	Format	Mandatory field
ReferenceName	Reference identifier	Text	yes
ReferenceTypeName	Type of reference	Text	yes
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
ReferencePath	Path for accessing the reference	Text	no
MacroList	List of macros used, separated by tabs	Text	no
Comment	Optional comment	Text	no
ProgramName	Program with which the reference should be opened	Text	yes

Example :

```
<CMS_REF_TBL_References-2010-09-07_13-43-02>
  <CMS_REF_TBL_References>
    <ReferenceName> crane 4711 Motor Operating Instructions</ReferenceName>
    <ReferenceTypeName>Manuals</ReferenceTypeName>
    <ReferencePath>/A "page=%Page% %adobeFilename%</ReferencePath>
    <MacroList>%adobeFilename% %Page% </MacroList>
    <Comment> Notice! Big changes to XALM12</Comment>
    <ProgramName>Acrobat Reader</ProgramName>
    <EquipmentName>STSCrane</EquipmentName>
  </CMS_REF_TBL_References>
</CMS_REF_TBL_References-2010-09-07_13-43-02>
```

A.10 Assignment of references

Table name: CMS_MSG_TBL_AssignReference

Table A- 9 Assignment of references

XML tag	Meaning	Format	Mandatory field
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
Reference	Identifier of the assigned reference	Text	yes
Type	Object type to which the reference is assigned (<i>Equipment, Node, Message</i>)	Selection	yes
Source	Name of the object to which the reference is assigned (name of crane or name of equipment type or message number)	Text	yes
ParameterList	List of macros and macro values used, separated by tabs Format: macro name <tab> macro value <tab>, etc.	Text	no

Multiple items of information must be linked when references are assigned. Firstly, the reference must be uniquely identifiable. This is achieved by specifying the reference identifier. Secondly, the object to which the reference must be assigned must be exactly specified.

If macros are used in the assignment, these macros are stored in the "ParameterList" tag along with the value to be substituted. The individual values are stored one after the other using the format <macro name> <tab> macro value <tab>, etc.

References can be assigned to the following types of object:

- An equipment type (type: Equipment)
- A message (type: Message)
- A crane (type: Node)

The type of assignment is defined by the "Type" tag. In addition to the type of assignment, the name of the object to which the reference is assigned is also required. This name is passed in the "Source" tag which contains either the name of the equipment type or of the crane.

Example:

```
<CMS_REF_TBL_AssignReference-2010-09-07_13-40-12>
  <CMS_REF_TBL_AssignReference>
    <EquipmentName>STSCrane</EquipmentName>
    <Reference>Crane 4711 Wind Meter Operating Instructions</Reference>
    <Type>Message</Type>
    <Source>1</Source>
    <ParameterList>=%Page% 4 %adobeFilename% wind.pdf</ParameterList>
  </CMS_REF_TBL_AssignReference>
</CMS_REF_TBL_AssignReference-2010-09-07_13-40-12>
```

In the example, the reference with identifier "Crane 4711 Wind Meter Operating Instructions" is assigned to the message with message number 1 for the "STSCrane" equipment type.

A.11 Cargo handling data

Table name: CMS_OPD_TBL_MoveArchives

Table A- 10 Cargo handling data

XML tag	Meaning	Format	Mandatory field
ArchiveName	Name of the WinCC Tag Logging archive in which the data are entered.	Text	yes
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
TagStartMoveTrigger	Name of a WinCC tag, which contains the trigger event at the instant that the cargo handling operation starts.	Text	no
TagStartTimestampYear	Name of a WinCC tag, which contains the year of the start time.	Text	no
TagStartTimestampMonth	Name of a WinCC tag, which contains the month of the start time.	Text	no
TagStartTimestampDay	Name of a WinCC tag, which contains the day of the start time.	Text	no
TagStartTimestampHour	Name of a WinCC tag, which contains the hour of the start time.	Text	no
TagStartTimestampMinute	Name of a WinCC tag, which contains the minute of the start time.	Text	no
TagStartTimestampSecond	Name of a WinCC tag, which contains the second of the start time.	Text	no
TagStopMoveTrigger	Name of a WinCC tag, which contains the trigger event at the instant that the cargo handling operation stops.	Text	yes
TagStopTimestampYear	Name of a WinCC tag, which contains the year of the stop time.	Text	no
TagStopTimestampMonth	Name of a WinCC tag, which contains the month of the stop time.	Text	no
TagStopTimestampDay	Name of a WinCC tag, which contains the day of the stop time.	Text	no
TagStopTimestampHour	Name of a WinCC tag, which contains the hour of the stop time.	Text	no
TagStopTimestampMinute	Name of a WinCC tag, which contains the minute of the stop time.	Text	no
TagStopTimestampSecond	Name of a WinCC tag, which contains the second of the stop time.	Text	no
TagDurationMove	Name of a WinCC tag, which contains the duration of the cargo handling operation.	Text	no

XML tag	Meaning	Format	Mandatory field
TimestampFromStartEvent	Identifier as to whether the start time is also the archiving time. In the other case, the stop time is the archiving time.	true/false	no
isDisabled	Identifier as to whether processing is disabled	true/false	no
Comment	Optional comment	Text	no

For cargo handling data, you must always specify an archive name, the name of the equipment type as well as the selection as to which time stamp should be entered into the archive. Using the WinCC tags for the start and stop times, you control which acquisition mode should be selected.

You can either specify only the start and stop triggers, or you can specify the start and stop triggers as well as tags for the start and/or the stop time stamp from the control.

As a third possibility, you can just specify the stop trigger as well as the tags for the start time stamp and the stop time stamp.

As soon as you specify one of the time stamp components (year, month, ...), then you must also specify all of the other components in the time stamp.

Example:

```
<CMS_OPD_TBL_MoveArchives-2010-09-07_10-47-15>
  <CMS_OPD_TBL_MoveArchives>
    <ArchiveName>Process Value Archive</ArchiveName>
    <TagStartMoveTrigger>MoveStart</TagStartMoveTrigger>
    <TagStartTimestampYear>MoveStartYear</TagStartTimestampYear>
    <TagStartTimestampMonth> MoveStartMonth</TagStartTimestampMonth>
    <TagStartTimestampDay> MoveStartDay</TagStartTimestampDay>
    <TagStartTimestampHour> MoveStartHour</TagStartTimestampHour>
    <TagStartTimestampMinute> MoveStartMinute</TagStartTimestampMinute>
    <TagStartTimestampSecond> MoveStartSecond</TagStartTimestampSecond>
    <TagStopMoveTrigger> MoveStop</TagStopMoveTrigger>
    <TagStopTimestampYear> MoveStopYear</TagStopTimestampYear>
    <TagStopTimestampMonth> MoveStopMonth</TagStopTimestampMonth>
    <TagStopTimestampDay> MoveStopDay</TagStopTimestampDay>
    <TagStopTimestampHour> MoveStopHour</TagStopTimestampHour>
    <TagStopTimestampMinute> MoveStopMinute</TagStopTimestampMinute>
    <TagStopTimestampSecond> MoveStopSecond</TagStopTimestampSecond>
    <TagDurationMove>MoveDuration</TagDurationMove>
    <TimestampFromStartEvent>true</TimestampFromStartEvent>
    <EquipmentName>STSCrane</EquipmentName>
  </CMS_OPD_TBL_MoveArchives>
</CMS_OPD_TBL_MoveArchives-2010-09-07_10-47-15>
```

In the example, the buffered cargo handling data acquisition is imported with start and stop trigger for the "STSCrane" equipment type.

A.12 Counters

Table name: CMS_TOP_TBL_Nodes

Table A- 11 Counters

XML tag	Meaning	Format	Mandatory field
ArchiveName	Name of the WinCC Tag Logging archive in which the data are entered	Text	yes
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
AcquisitionCycle	Selection of the acquisition cycle for calculating the difference.	Numeric	yes
FirstStartDay	Parameters for the acquisition cycle; acquisition day.	Numeric	no
FirstStartHour	Parameters for the acquisition cycle; acquisition hour.	Numeric	no
FirstStartMinute	Parameters for the acquisition cycle; acquisition minute.	Numeric	no
isDisabled	Identifier as to whether processing is disabled.	true/false	no
Comment	Optional comment	Text	no

For the counters, you must always specify an archive name, the name of the equipment type as well as the acquisition cycle.

The acquisition cycle is coded as a numeric value. You can specify the following acquisition cycles:

- 2: Hourly
- 3: Daily
- 4: Weekly
- 5: Monthly

Depending on the acquisition cycle you select, the following parameters apply as mandatory fields:

- Hourly: FirstStartMinute (0-59)
- Daily: FirstStartMinute (0-59); FirstStartHour (0-23)
- Weekly: FirstStartMinute (0-59); FirstStartHour (0-23); FirstStartDay (1-7)
- Monthly: FirstStartMinute (0-59); FirstStartHour (0-23); FirstStartDay (1-31)

Example:

```
<CMS_OPD_TBL_CounterArchives-2010-09-07_11-00-55>
  <CMS_OPD_TBL_CounterArchives>
    <ArchiveName> CounterHourly </ArchiveName>
    <AcquisitionCycle>2</AcquisitionCycle>
    <FirstStartMinute>0</FirstStartMinute>
    <EquipmentName>TEST</EquipmentName>
  </CMS_OPD_TBL_CounterArchives>
  <CMS_OPD_TBL_CounterArchives>
    <ArchiveName>CounterMonthly</ArchiveName>
    <AcquisitionCycle>5</AcquisitionCycle>
    <FirstStartDay>1</FirstStartDay>
    <FirstStartHour>0</FirstStartHour>
    <FirstStartMinute>0</FirstStartMinute>
    <EquipmentName>STSCrane</EquipmentName>
  </CMS_OPD_TBL_CounterArchives>
</CMS_OPD_TBL_CounterArchives-2010-09-07_11-00-55>
```

In this example, two archives are imported for calculating the counter difference for the "STSCrane" equipment type. The first archive records the data hourly to minute 0, the second archive records the data monthly to the first day of the month at 00:00:00.

A.13 MMBF

Table name: CMS_OPD_TBL_MMBFArchives

Table A- 12 MMBF

XML tag	Meaning	Format	Mandatory field
ArchiveName	Name of the WinCC Tag Logging archive in which the data are entered.	Text	yes
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
TagMMBFTrigger	Selection of the acquisition cycle for calculating the difference	Text	yes
TagTimestampYear	Name of a WinCC tag, which contains the year of the time stamp	Text	no
TagTimestampMonth	Name of a WinCC tag, which contains the month of the time stamp	Text	no
TagTimestampDay	Name of a WinCC tag, which contains the day of the time stamp	Text	no
TagTimestampHour	Name of a WinCC tag, which contains the hour of the time stamp.	Text	no
TagTimestampMinute	Name of a WinCC tag, which contains the minute of the time stamp.	Text	no
TagTimestampSecond	Name of a WinCC tag, which contains the second of the time stamp.	Text	no
isDisabled	Identifier as to whether processing is disabled.	true/false	no
Comment	Optional comment	Text	no

For the MMBF data, you must always specify an archive name, the name of the equipment type as well as the trigger.

As soon as you specify one of the time stamp components (year, month, ...), then you must also specify all of the other components in the time stamp.

Example :

```
<CMS_OPD_TBL_MMBFArchives-2010-09-07_11-39-49>
  <CMS_OPD_TBL_MMBFArchives>
    <ArchiveName>Process Value Archive</ArchiveName>
    <TagMMBFTrigger>MmbfTrigger</TagMMBFTrigger>
    <TagTimestampYear> MmbfYear</TagTimestampYear>
    <TagTimestampMonth>MmbfMonth</TagTimestampMonth>
    <TagTimestampDay>MmbfDay</TagTimestampDay>
    <TagTimestampHour>MmbfHour</TagTimestampHour>
    <TagTimestampMinute>MmbfMinute</TagTimestampMinute>
    <TagTimestampSecond>MmbfSecond</TagTimestampSecond>
    <EquipmentName>STSCrane</EquipmentName>
  </CMS_OPD_TBL_MMBFArchives>
</CMS_OPD_TBL_MMBFArchives-2010-09-07_11-39-49>
```

In the example, an MMBF data archive is imported for the "STSCrane" equipment type. WinCC tags are defined to acquire the time stamp.

A.14 Tag list

Table name: CMS_OPD_TBL_Taglists

Table A- 13 Tag list

XML tag	Meaning	Format	Mandatory field
TagName	Name of the WinCC tag to be transferred	Text	yes
isSystemTag	True: Identifier for CMS system variable	true/false	no
AcquisitionCycle	Selection of the acquisition cycle for the tag	Numeric	yes
FirstStartHour	Parameters for the acquisition cycle; acquisition hour	Numeric	no
FirstStartMinute	Parameters for the acquisition cycle; acquisition minute	Numeric	no
VariableTypeID	ID for WinCC tag type (see table below)	Numeric	yes
VariableTypeLength	Length of the WinCC tag	Numeric	yes
isSyncRTDisabled	True: Selection Runtime data transfer	true/false	No
isSyncCSDisabled	True: Selection, configuration data transfer	true/false	no
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes

For the tag list, for each tag that you wish to transfer you must specify a tag name, the name of the equipment type as well as the acquisition cycle.

The acquisition cycle is coded as a numeric value. You can specify the following acquisition cycles:

- 0: Every minute
- 1: Every second
- 2: Every hour
- 3: Daily
- 7: Upon change

Depending on the acquisition cycle you select, the following parameters apply as mandatory fields:

- Every hour: FirstStartMinute (0-59)
- Daily: FirstStartMinute (0-59); FirstStartHour (0-23)

For each tag, the tag type is coded in the form of an ID:

Example :	
<CMS OPD TBL TaglistTags-2011-01-17 10-52-27>	
	<CMS OPD TBL TaglistTags>
	<TagName>StartAus</TagName>
	<isSystemTag>false</isSystemTag>
	<AcquisitionCycle>3</AcquisitionCycle>
	<FirstStartHour>12</FirstStartHour>
	<FirstStartMinute>0</FirstStartMinute>
	<VariableTypeID>11</VariableTypeID>
	<VariableTypeLength>0</VariableTypeLength>
	<isSyncRTDisabled>false</isSyncRTDisabled>
	<isSyncCSDisabled>false</isSyncCSDisabled>
	<EquipmentName>STSCrane</EquipmentName>
	</CMS OPD TBL TaglistTags>
</CMS OPD TBL TaglistTags-2011-01-17 10-52-27>	

In the example, a tag is imported for the "STSCrane" equipment type. The tag is acquired daily.

A.15 Icons

Table name: CMS_TOP_TBL_Icons

Table A- 14 Icons

XML tag	Meaning	Format	Mandatory field
IconName	Name of the icon	Text	yes
IconOk	Icon for displaying the "OK" status; 16 x 16 pixels	Base64String	no
IconLargeOk	Icon for displaying the "OK" status 32 x 32 pixels	Base64String	no
IconOffline	Icon for displaying the "Offline" status; 16 x 16 pixels	Base64String	no
IconLargeOffline	Icon for displaying the "Offline" status; 32 x 32 pixels	Base64String	no
IconFault	Icon for displaying the "Fault" status; 16 x 16 pixels	Base64String	no
IconLargeFault	Icon for displaying the "Fault" status; 32 x 32 pixels	Base64String	no
IconWarning	Icon for displaying the "Warning" status; 16 x 16 pixels	Base64String	no
IconLargeWarning	Icon for displaying the "Warning" status; 32 x 32 pixels	Base64String	no
IconStandby	Icon for displaying the "Idle" status; 16 x 16 pixels	Base64String	no
IconLargeStandby	Icon for displaying the "Idle" status; 32 x 32 pixels	Base64String	no
IconCMSRuntimeDown	Icon for displaying that the CMS Runtime has not been started; 16 x 16 pixels	Base64String	no
IconLargeCMSRuntimeDown	Icon for displaying that the CMS Runtime has not been started; 32 x 32 pixels	Base64String	no
IconWinCCRuntimeDown	Icon for displaying that the WinCC Runtime has not been started; 16 x 16 pixels	Base64String	no
IconLargeWinCCRuntimeDown	Icon for displaying that the WinCC Runtime has not been started; 32 x 32 pixels	Base64String	no
IconPLCNotConnected	Icon for displaying that there is no connection to the control; 16 x 16 pixels	Base64String	no
IconLargePLCNotConnected	Icon for displaying that there is no connection to the control; 32 x 32 pixels	Base64String	no
IconUndefined	Icon for displaying an undefined status; 16 x 16 pixels	Base64String	no
IconLargeUndefined	Icon for displaying an undefined status; 32 x 32 pixels	Base64String	no
Comment	Optional comment	Text	no

Note

Base64 defines a method for coding 8-bit binary data (e.g. executable programs, zip files or screens) in a string comprising only a few codepage-neutral ASCII characters. External tools are available for displaying and/or generating base64-coded information. Services for the online coding or decoding of base64-coded information are also available on the Internet.

Example:

```
<CMS_TOP_TBL_Icons-2007-12-30_14-45-45>
  <CMS_TOP_TBL_Icons>
    <IconName>Crane</IconName>
    <IconOk>Qk32AAAAAAAAAHYAAAAoAAAAEAA ... AAAAAAAAA==</IconOk>
    <IconOffline>Qk32AAAAAAAAAHYAAAAoAAAAEAA ... AAAAAAAAA==</IconOffline>
    <IconFault>Qk32AAAAAAAAAHYAAAAoAAAAEA ... BAAAAAAAAAAAAA==</IconFault>
    <IconWarning>Qk32AAAAAAAAAHYAAAAoAAA ... AAAAAAAAA==</IconWarning>
    <Comment />
  </CMS_TOP_TBL_Icons>
</CMS_TOP_TBL_Icons-2007-12-30_14-45-45>
```


A.16 Macros

Table name: CMS_REF_TBL_Macros

Table A- 15 Macros

XML tag	Meaning	Format	Mandatory field
MacroName	Macro name	Text	yes
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
MacroText	Macro value for global macros	Text	no
isValueSuppliedBySystem	Identifier, macro value determined by the system	true/false	yes
isPredefined	Identifier, predefined macro	true/false	yes
Comment	Optional comment	Text	no

When manually adapting macros, no changes must be made to macros which have the value "true" in one or both of the "isPredefined" or "isValueSuppliedBySystem" identifiers. For all user-defined macros, the value for both these fields must always be "false".

Example:

```
<CMS_REF_TBL_Macros-2009-05-13_09-56-21>
  <CMS_REF_TBL_Macros>
    <MacroName>%ApplicationPath%</MacroName>
    <isValueSuppliedBySystem>true</isValueSuppliedBySystem>
    <isPredefined>true</isPredefined>
    <EquipmentName>STSCrane</EquipmentName>
  </CMS_REF_TBL_Macros>
</CMS_REF_TBL_Macros-2009-05-13_09-56-21>
```

A.17 Programs

Table name: CMS_REF_TBL_Programs

Table A- 16 Programs

XML tag	Meaning	Format	Mandatory field
ProgramName	Name of the program as it is displayed in the selection fields	Text	yes
CommandString	Command to be executed	Text	no
MacroList	List of macros used, separated by tabs	Text	no
Comment	Optional comment	Text	no

Example:

```
<CMS_REF_TBL_Programs-2007-12-30_14-45-45>
  <CMS_REF_TBL_Programs>
    <ProgramName>Acrobat Reader</ProgramName>
    <CommandString>%ProgramFiles%\Adobe\Reader
      8.0\Reader\AcroRd32.exe</CommandString>
    <MacroList>%ProgramFiles%</MacroList>
  </CMS_REF_TBL_Programs>
</CMS_REF_TBL_Programs-2007-12-30_14-45-45>
```

A.18 Reference types

Table name: CMS_REF_TBL_ReferenceTypes

Table A- 17 Reference types

XML tag	Meaning	Format	Mandatory field
ReferenceTypeName	Name of the reference type	Text	yes
TabOrder	Sort identifier	Numeric	yes
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
Comment	Optional comment	Text	no

Example:

```
<CMS_REF_TBL_ReferenceTypes-2008-01-29_11-19-51>
  <CMS_REF_TBL_ReferenceTypes>
    <ReferenceTypeName>Manuals</ReferenceTypeName>
    <TabOrder>20</TabOrder>
    <EquipmentName>STSCrane</EquipmentName>
    <Comment />
  </CMS_REF_TBL_ReferenceTypes>
</CMS_REF_TBL_ReferenceTypes-2008-01-29_11-19-51>
```

A.19 Languages

A.19.1 Transfer

The transfer export function is used, for example, to transport language-specific texts to other installations. This export file contains the content of several tables in the order given below:

- Table containing all dialog components or messages (CMS_SYS_TBL_UserTextComponents)
- Table with the language-specific content of the dialog components or messages (CMS_SYS_TBL_UserTexts)

A.19 Languages

Table A- 18 Languages

XML tag	Meaning	Format	Mandatory field
CountryRegion	Unique language identifier	Text	yes
ShortSign	Language code	Text	yes
LCID	Windows local ID data	Numeric	yes
TabOrder	Sorting criterion in the table of implemented languages or sequence of tabs in the acquisition screens	Numeric	yes
DefaultLanguage	Identifier for default language	True/False	yes

Table A- 19 Dialog components and messages

XML tag	Meaning	Format	Mandatory field
ComponentName	Message details ("MessageDetailRows") and reference types ("ReferenceTypes")	Text	yes
UserText	Text code for message details and reference types	Text	yes
Comment	Optional comment	Text	no

Table A- 20 Language-specific content of dialog components or messages

XML tag	Meaning	Format	Mandatory field
ComponentName	Name of the dialog, data type or message group	Text	yes
UserName	Name of the dialog component, language code value or message identifier	Text	yes
CountryRegion	Unique language identifier	Text	yes
Text	Language-specific text	Text	yes

Example:

```

<UserTextsTransfer>
  <CMS_SYS_TBL_ImplementedLanguages>
    <CountryRegion>German - default</CountryRegion>
    <ShortSign>de</ShortSign>
    <LCID>1031</LCID>
    <TabOrder>1</TabOrder>
    <DefaultLanguage>1</DefaultLanguage>
  </CMS_SYS_TBL_ImplementedLanguages>
  <CMS_SYS_TBL_UserTextComponents>
    <ComponentName>MessageDetailRows</ComponentName>
    <UserTextName>DBEquipment</UserTextName>
  </CMS_SYS_TBL_UserTextComponents>
  <CMS_SYS_TBL_UserTextComponents>
    <ComponentName>MessageDetailRows</ComponentName>
    <UserTextName>DBNode</UserTextName>
    <Comment />
  </CMS_SYS_TBL_UserTextComponents>
  <CMS_SYS_TBL_UserTexts>
    <ComponentName>MessageDetailRows</ComponentName>
    <UserTextName>DBNode</UserTextName>
    <CountryRegion>English - United States</CountryRegion>
    <Text>Crane name</Text>
  </CMS_SYS_TBL_UserTexts>
</UserTextsTransfer>

```

A.19.2 Translation

The export file for translation of language-specific texts contains only the parameters required for performing a translation. While the transfer export file always contains the language-specific information for all implemented languages, the translation export file contains only the language-specific texts of one language.

Table A- 21 Languages

XML tag	Meaning	Format	Mandatory field
EquipmentName	Identifier of the equipment type to which the crane is assigned	Text	yes
ComponentName	Name of the data type	Text	yes
UserTextName	Internal data key	Text	yes
Text	Language-specific text	Text	yes
Comment	Optional comment	Text	no

Example:

```
<LanguagesTranslation>
  <CMS_SYS_TBL_UserTexts_English-UnitedStates>
    <EquipmentName>STSCrane</EquipmentName>
    <ComponentName>MessageDetailRows</ComponentName>
    <UserTextName>DBNode</UserTextName>
    <Comment />
    <Text>Crane name</Text>
  </CMS_SYS_TBL_UserTexts_English-UnitedStates>
</LanguagesTranslation>
```

A.20 FMDB import

The XML import format is a bought-in component and is therefore completely different to the scheme described above. The following data are supplied for the FMDB import:

Table A- 22 FMDB import

XML tag	Meaning	Format	Mandatory field
IFNo	WinCC fault number	Text	yes
InstructionText	Maintenance instruction (probable cause of fault)	Text	no
TestText	Maintenance instruction (probable fault remedy)	Text	no
CD_Page	Content for macro: Absolute page in the circuit diagram	Numeric	no
PLC_Block	Content for macro: Block in the Step 7 project	Numeric	no
PLC_NW	Content for macro: Network in the above mentioned block of the Step 7 project	Numeric	no
...	Content for macro:

For an FMDB import, maintenance instructions are imported as well as the assignment of references with defined wildcards for any number of existing message numbers. A reference is assigned if it contains an FMDB XML tag.

You can also add any XML tags, the content of which you define existing wildcards (macros) when assigning a reference to the specified message number. You must have first defined the macro in the dialog used to define macros in the CMS Editor. Observe the following notation: %FMDB_TagName%

Example:

```

<XML-Export>
  <IFNo>1</IFNo>
  <MessageText>ET200 fault Low voltage distribution-1</MessageText>
  <InstructionText>fgngfn</InstructionText>
  <TestText>fdbgfngn</TestText>
  <CD_Page>11</CD_Page>
  <PLC_Block>FC1001</PLC_Block>
  <PLC_NW>1</PLC_NW>
</XML-Export>
<XML-Export>
  <IFNo>2</IFNo>
  <MessageText>ET200 fault Low voltage distribution-2</MessageText>
  <InstructionText>fgngfn</InstructionText>
  <TestText>fdbgfngn</TestText>
  <CD_Page>12</CD_Page>
  <PLC_Block>FC1001</PLC_Block>
  <PLC_NW>2</PLC_NW>
</XML-Export>

```

In the example above, the maintenance instructions as well as the content for three wildcards are imported for the reference assignment for two WinCC messages.