SIEMENS

SINUMERIK 810D/840Di/840D

ePS Network Services
Manual for Machine Operators

Operating Manual

Valid for:

Software Version ePS Network Services 4.2

08/2006
--

Safety Guidelines

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

with a safety alert symbol, indicates that minor personal injury can result if proper precautions are not taken.

Caution

without a safety alert symbol, indicates that property damage can result if proper precautions are not taken.

Notice

indicates that an unintended result or situation can occur if the corresponding information is not taken into account.

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 device/system may only be set up and used in conjunction with this documentation. Commissioning and operation of a device/system may only be performed by **qualified personnel**. Within the context of the safety notes in this documentation qualified persons are defined as persons who are authorized to commission, ground and label devices, systems and circuits in accordance with established safety practices and standards.

Prescribed Usage

Note the following:

Warning

This device may only be used for the applications described in the catalog or the technical description and only in connection with devices or components from other manufacturers which have been approved or recommended by Siemens. Correct, reliable operation of the product requires proper transport, storage, positioning and assembly as well as careful operation and maintenance.

Trademarks

All names identified by ® are registered trademarks of the Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

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.

Siemens AG
Automation and Drives
Postfach 48 48
90437 NÜRNBERG
GERMANY

Order No.: --
℗ 11/2006

Preface

SINUMERIK documentation

The SINUMERIK documentation is organized in 3 parts:

- General documentation
- User documentation
- Manufacturer/Service documentation

An overview of publications, which is updated monthly and also provides information about the language versions available, can be found on the Internet at:

http://www.siemens.com/motioncontrol

Select the menu items "Support" → "Technical Documentation" → "Overview of Publications".

The Internet version of DOConCD (DOConWEB) is available at:

http://www.automation.siemens.com/doconweb

Information about training courses and FAQs (Frequently Asked Questions) can be found at the following website:

http://www.siemens.com/motioncontrol under menu option "Support".

Target group

This operating manual is aimed at machine operators and those who operate plant (systems/machines).

Benefits

The operating manual familiarizes the target group with the control elements and commands. Based on the manual, the target group is capable of responding to problems and to take corrective action.

Utilization phase: Application phase

Standard scope

This documentation only describes the functionality of the standard version. Additions or revisions made by the machine manufacturer are documented by the machine manufacturer.

Other functions not described in this documentation might be executable in the control. However, no claim can be made regarding the availability of these functions when the equipment is first supplied or in the event of servicing.

For the sake of simplicity, this documentation does not contain all detailed information about all types of the product and cannot cover every conceivable case of installation, operation, or maintenance.

Technical Support

If you have any technical questions, please contact our hotline:

	Europe / Africa	Asia / Australia	America
Phone	+49 180 5050 222	+86 1064 719 990	+1 423 262 2522
Fax	+49 180 5050 223	+86 1064 747 474	+1 423 262 2289
Internet	http://www.siemens.com/automation/support-request		
E-Mail	mailto:adsupport@siemens.com		

Note

Country-specific telephone numbers for technical support are provided under the following Internet address:

http://www.siemens.com/automation/service&support

Questions about the manual

If you have any queries (suggestions, corrections) in relation to this documentation, please fax or e-mail us:

Fax	+49 9131 98 63315
E-Mail	docu.motioncontrol@siemens.com

A fax form is available at the end of this document.

SINUMERIK Internet address

http://www.siemens.com/sinumerik

EU Declaration of Conformity

The EC Declaration of Conformity for the EMC Directive can be viewed/downloaded from the Internet at:

http://www.ad.siemens.de/csinfo

under the Product Order No. 15257461 or

at the relevant branch office of the A&D MC group of Siemens AG.

Table of contents

General description

1

What are ePS Network Services ?

The ePS Network Services support machine tool manufacturers and manufacturing companies with maintenance and services. This is done using software services that are available both on the CNC machine and on the PC.

This requires both Internet access and a control on the CNC machine that complies with the specifications.

The ePS Network Services include:

Remote access

Remote access to the control system via a secure Internet infrastructure allows the exchange of information and remote control of the CNC machine control.

- Desktop control
- File transfer
- Chat
- Video ...

Control monitor services

Recording of an event history with the documentation of the current state of the control device at this time.

This allows the status of the device to be analyzed and compared with earlier states should a fault occur. The current status of the machine is documented using the following events and data:

- Alarms, PLC events, time intervals, combinations of machine signals
- Violation of limit value and predefined interval value from Condition Monitoring
- Series of measurements/tests and operating performance monitors
- Manual help request by the machine operator in the event of faults
- HMI action log, machine data, NC status data
- PLC trace, PLC data blocks
- Certain files (e.g. log files) of the control

Condition Monitoring Services

The current machine status is acquired and documented on the basis of predefined, standardized tests and continuous recording of status parameters (traverse path, traverse time and traverse operations for one axis). The test parameters can be defined centrally and configured with appropriate warning limits. Using series of measurements, it is also possible to identify trends and apply them as a basis for optimizing maintenance and service activities.

The machine operator can then carry out these predefined tests quickly and easily and without additional test equipment.

The following tests and monitors are available:

- Circularity test
- Synchronous axis test
- Universal axis test
- NC monitor
- PLC monitor

Data services

The current control archives (NCK and PLC archives) are saved on the ePS server. In the event of an error, the backup copy is loaded back to the control in a controlled process or used as a reference for comparisons of Control Monitors.

Workflow services

Messaging provided by internal and external media (SMS, e-mail, servicing) initiates servicing and maintenance procedures. Maintenance activities are planned, monitored and documented directly on the machine.

The advantages of maintenance schedules are:

- Load- and consumption-based predictive maintenance.
- Automatic triggering of work processes by detected faults
- Planning of the schedule and contents of condition monitors and monitoring of their execution.

The Workflow Services can respond to all event sources of the Control Monitor Services and Condition Monitor Services.

Administration Services

Functions for the administration of the system:

- Creation and administration of machines
- Creation and administration of users
- Assignment of access rights for external organizations
- Access to useful data / invoices

Function overview for MOs

2

Machine Operator (MO)

This manual describes the ePS Network Services functions available to the Machine Operator's (MO) group. The individual functions and procedures are described below.

Menu structure

The overview tree shows the menu structure of the ePS software on the HMI. The ePS Network Services functions for the MO which are activated only after login ("Online Services") are contained in the border with the dashed line.

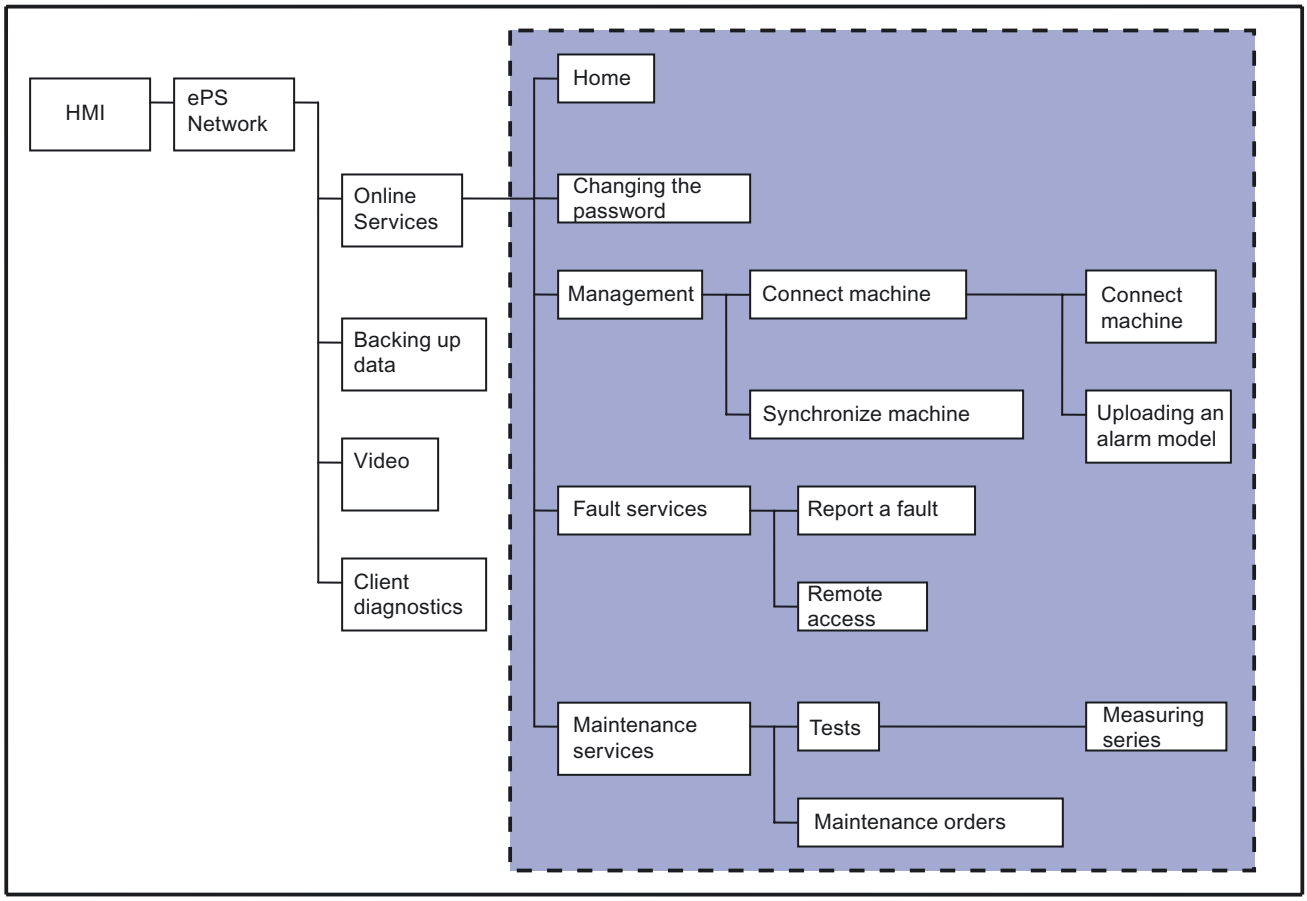


Figure 2-1 Menu structure on the HMI

Overview of functions on the PC:

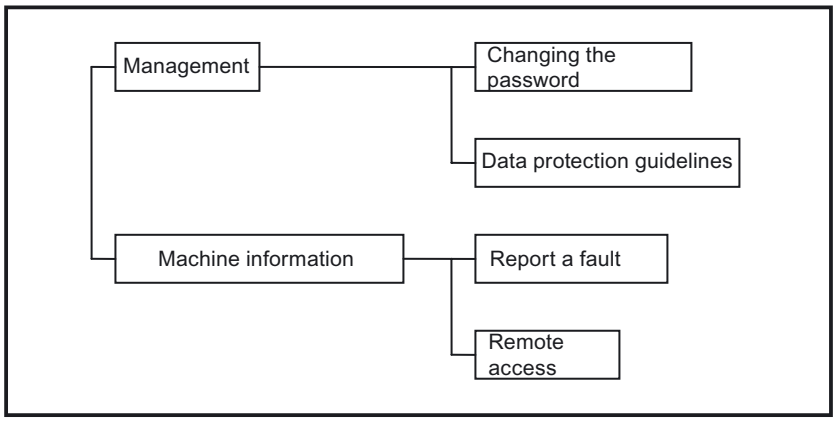


Figure 2-2 Menu structure on the PC

Login on HMI

3

3.1 User login on HMI

Application

To access ePS services, the user must log in to the ePS Network Services after selecting the ePS software. A prompt requesting the user to enter the following data is displayed:

- User name
- Name of user's organization
- Password

The user obtains these data from the relevant in-house contact person.

General sequence

1. Press the "ePS Network" softkey on the HMI.
2. Press the "Online Services" softkey.
3. Enter the user name, password and organization name and confirm your inputs with "OK".

Result: The user is now logged in.

Visualized input sequence

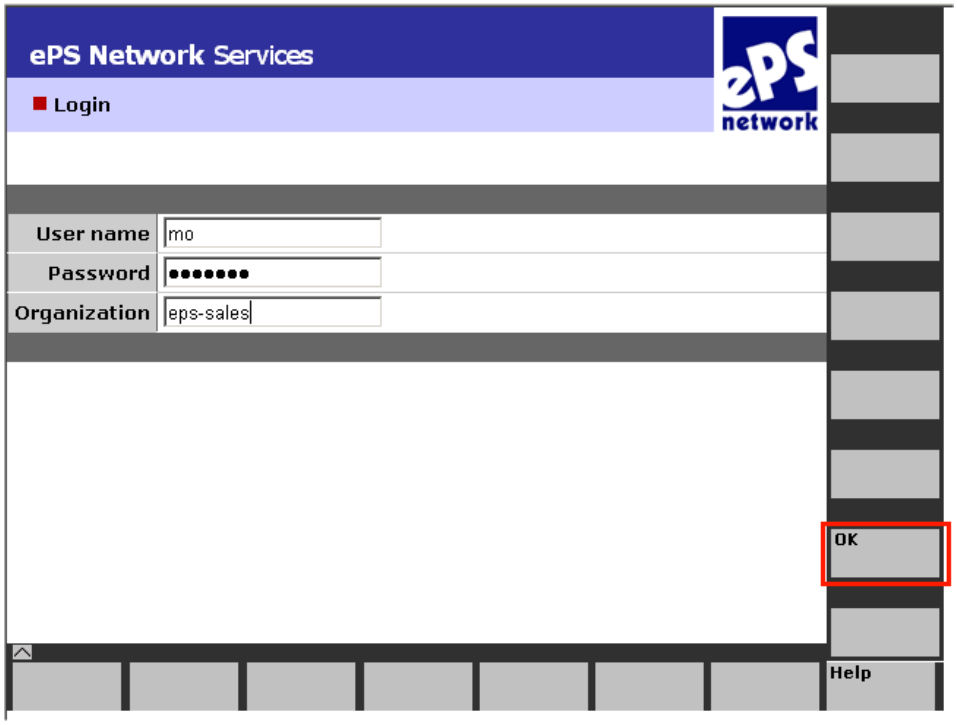


Figure 3-1 User login

"Auto Login"

If the administrator has activated the "Auto Login" function for the MO when the machine was set up, it will enable the user to log in to the ePS Network Services without specifying a user name or organization.

3.2 Accepting the data protection guidelines

Requirement

After initial login on the HMI or PC, every user must accept the data protection guidelines of the ePS Network Services once. The user confirms that he or she will only enter personal data in the system after having first obtained the consent of the person concerned and will comply with the valid data protection guidelines. The exact wording can be found in the "Data Protection Policy".

General sequence

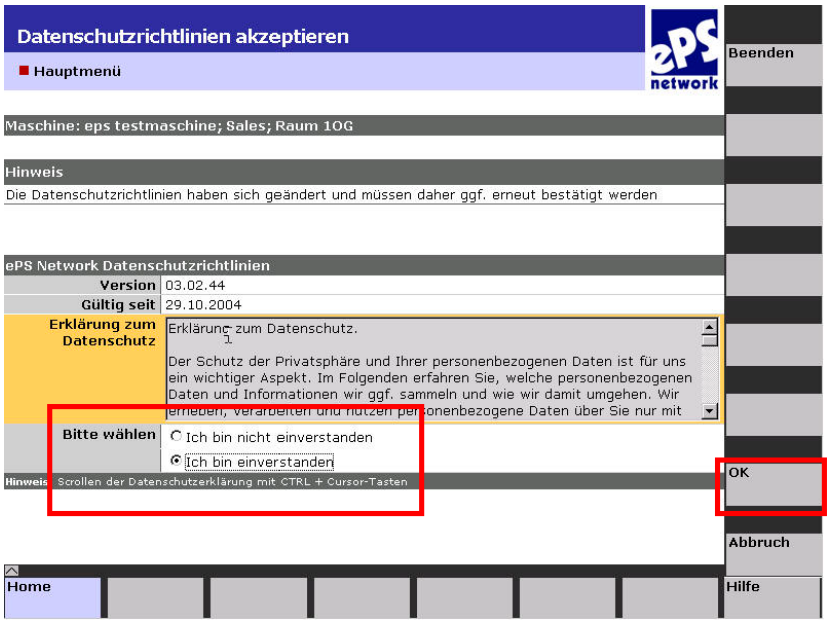


Figure 3-2 Confirming data protection guidelines on the HMI

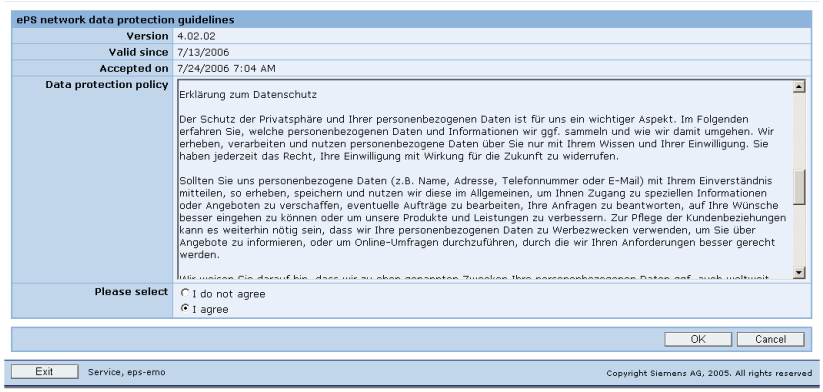


Figure 3-3 Confirming data protection guidelines on the PC

Note

A user cannot access the ePS Network Services without first agreeing to the current data protection guidelines.

If the data protection guidelines of the ePS Network Services are modified, all existing ePS Network Services users must confirm their acceptance of the modified guidelines again.

Agreement to the data protection guidelines can be revoked at any time.

3.3 Connect machine

Application

Before a machine can use the ePS Network Services for the first time, it must be connected to the ePS Network server. As part of this process, the user receives a machine ID for a machine from the relevant maintenance or service engineer. This ID provides a machine with a unique identification.

The machine is generally connected to ePS Network Services by the machine manufacturer.

General sequence

1. Enter the machine ID.
2. Confirm with "OK".
3. Confirm the prompt for the master data with "OK."

Result:

If no message appears and the entered machine ID is displayed in the grey line at the top, you can assume that the machine is connected to ePS Network Services.

It is not possible to connect a machine which is already connected. If you wish to do so, you must disconnect the machine from the ePS Network server first (in accordance with the rights matrix of ePS Network Services) and reconnect it again.

Visualized input sequence

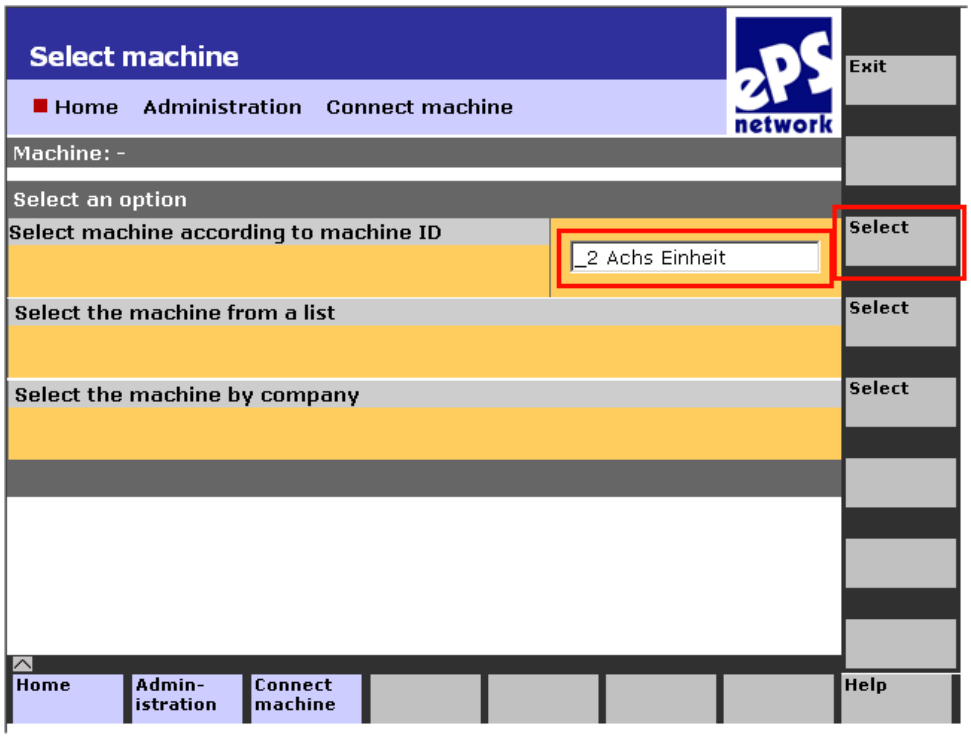


Figure 3-4 Select a machine via its ID and connect

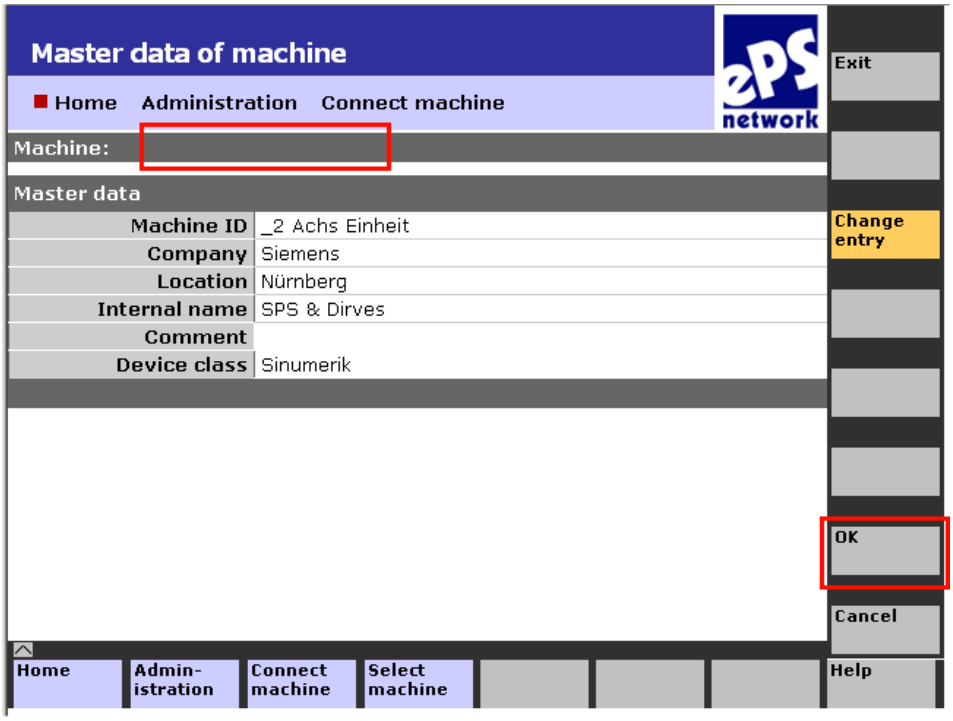


Figure 3-5 Finish connecting the machine

3.4 Change the password on the HMI

Operating sequence

Start: "Home"

Application

The "Change password" function can be found on the right-hand softkey menu on the "Home" screen. Every user can change his or her password in accordance with the specified guidelines.

General sequence:

1. Enter the current password.
2. Enter a new password.
3. Repeat the new password and confirm with "OK".

Visualized input sequence

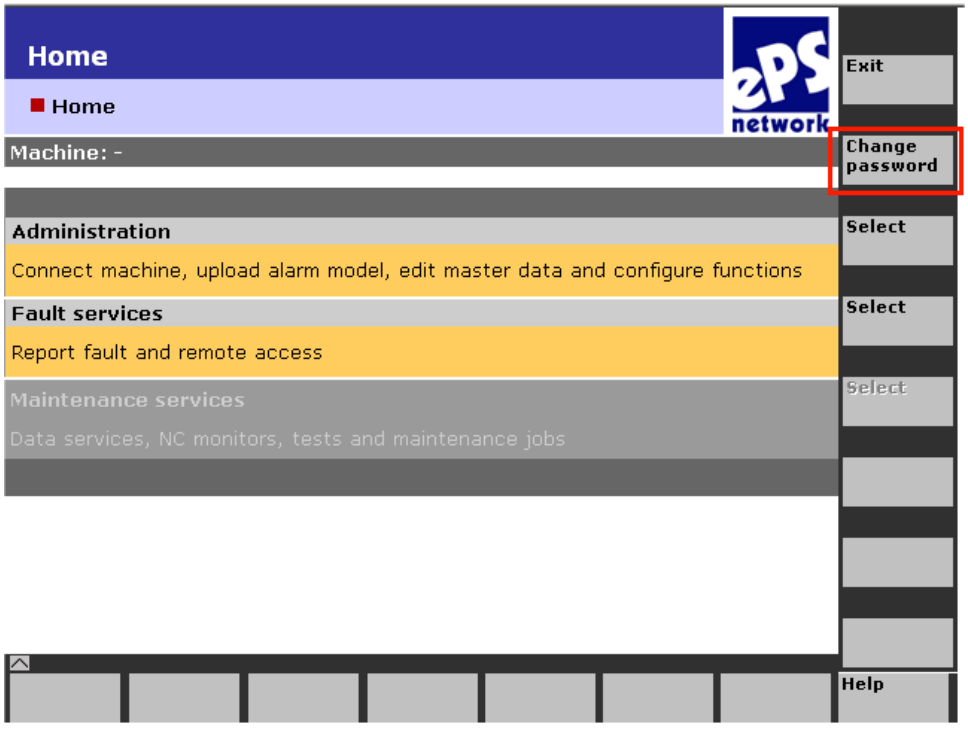


Figure 3-6 Change the password on the HMI

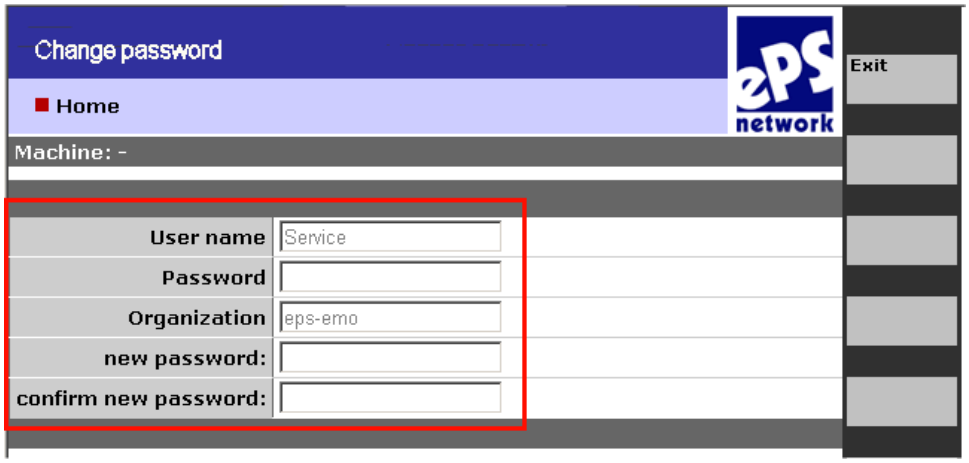


Figure 3-7 Enter the password on the HMI

"Auto Login"

If the administrator has activated the "Auto Login" function for the MO when the machine was set up, it will enable the user to log in to the ePS Network Services without specifying a user name or organization.

3.5 Uploading an alarm model

Operating sequence

Start: "Home" → "Administration" → "Upload alarm model"

Application

The alarm model contains all the error messages in all languages installed on the machine. The alarm model must be uploaded before the alarm texts are displayed on the HMI in the selected language or uploaded to the ePS server as events.

General sequence

1. To load the alarm model, press the "Select" softkey.
2. Confirm with "OK" after the model has been loaded.

   The error messages are now available on the ePS server in the languages displayed beforehand.

Visualized input sequence

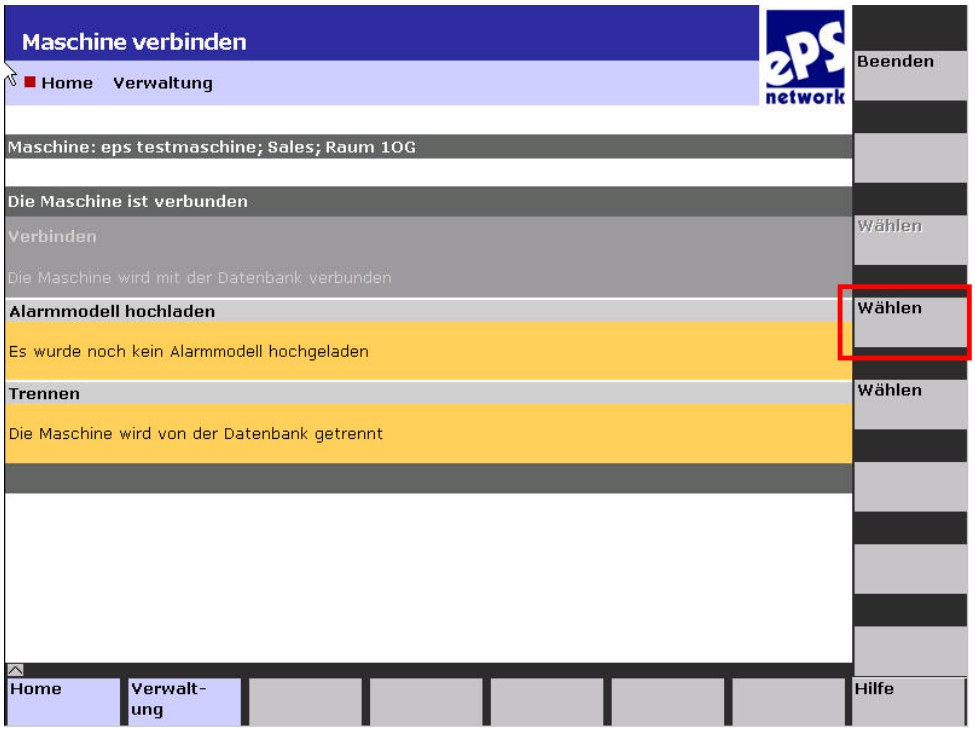


Figure 3-8 Uploading an alarm model

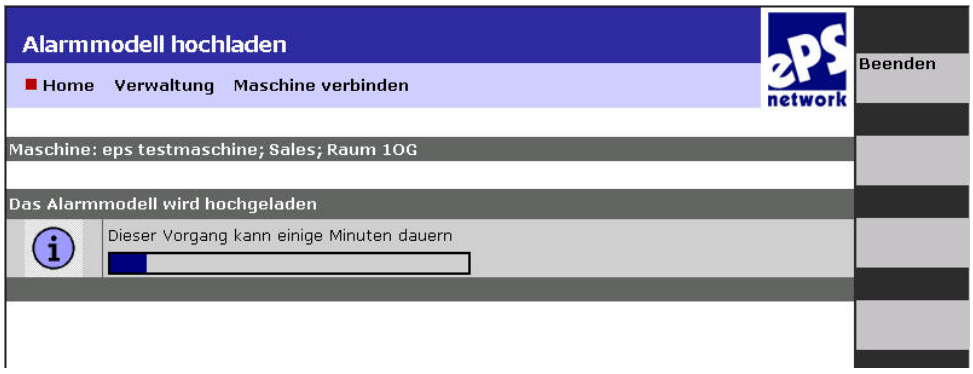
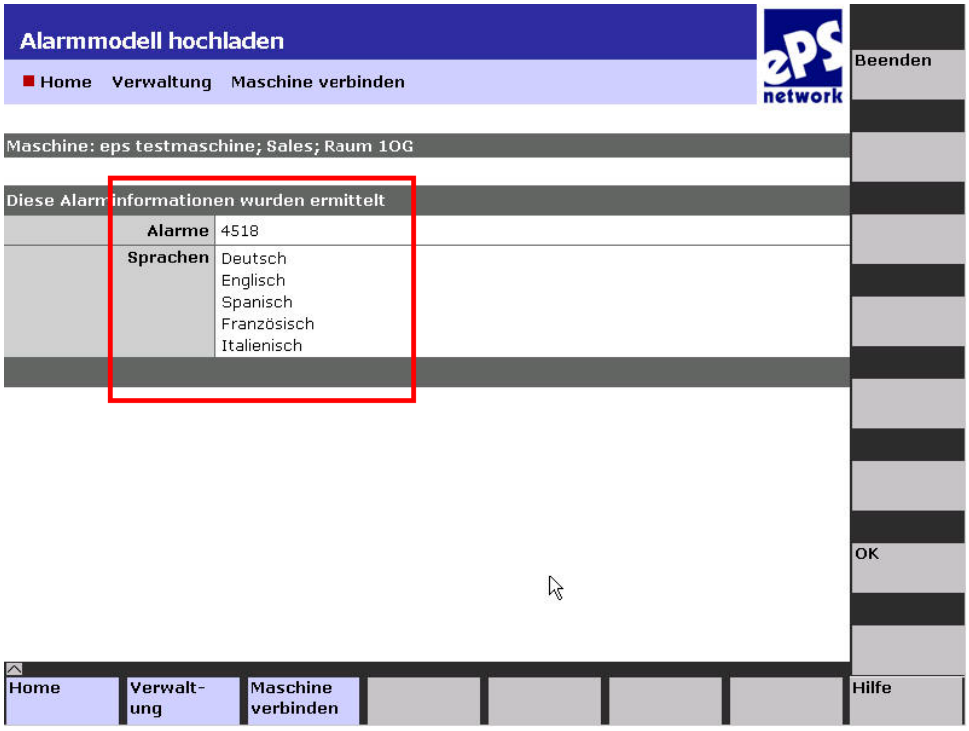


Figure 3-9 The alarm model is being uploaded.



Result

The alarm model has been uploaded, the displayed languages are installed on this HMI and the messages are available in the selected language on the ePS server.

Functions on the HMI

4

4.1 Set up a service session

4.1.1 Service session with "Use remote access" on the HMI

Operating sequence

Start: "Home" → "Fault services" → "Remote access"

Application

The MO can use remote access to request Internet support from the manufacturer of the production installation.

In the event of a fault, the service organization of the machine manufacturer has fast access to important control data and diagnostic functions. This allows the manufacturer to acquire and analyze the current machine status immediately.

General sequence

1. Confirm with the "Use remote access" softkey.
2. Call the support representative and ask for a session ID.
3. Enter the session ID and confirm with "OK".

   The service session is then set up.
4. Open a chat window to start communication.
5. Grant the support representative permission to control the HMI when the prompt is displayed on your screen.

Visualized input sequence

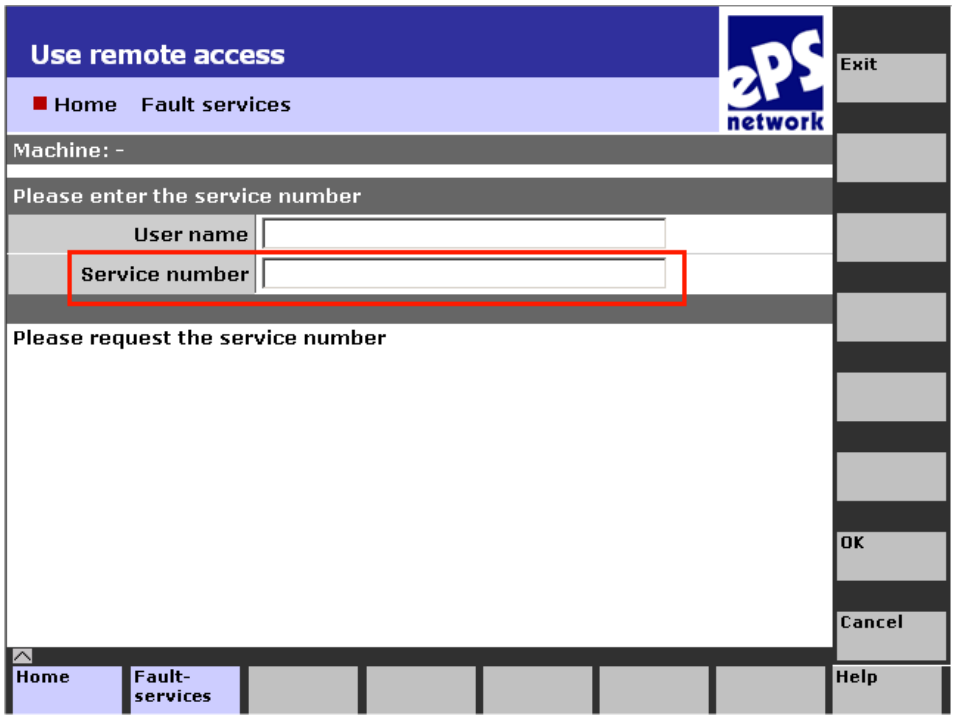


Figure 4-1 Request remote access

4.1.2 Grant permission to execute functions

Requirement

In order to relinquish control of the machine to the support representative, you must grant permission as the machine operator. You can grant permission just for the requested “desktop control” function or generally for all functions to be used during the service session.

For you as the machine operator, it is easier to grant permission to the service engineer for the entire session.

Note

The machine manufacturer can change the defaults for prompts and windows. In other words, some of the dialogs described here might not be visible on the HMI.

Grant desktop control

The support representative clicks on option "Request Desktop Control..." on the "Desktop" card

Figure 4-2 Request permission

You are shown the following display for your information. You can acknowledge it with “OK”. As soon as permission has been granted at the machine end, the window is acknowledged automatically.

The following dialog box is displayed on the operator's interface:

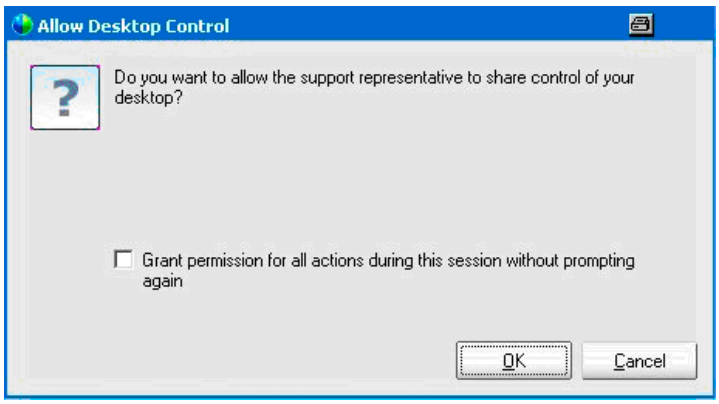


Figure 4-3 Grant permission

In this dialog box, you, as the machine operator, allow the support representiative control of the machine control and via “Grant Permissions for all actions …”, general execution of all functions without prior confirmation. As the machine operator, you cannot independently take back control of the desktop, but must wait for the support representative to relinquish control again. When the session is ended, desktop control is automatically transferred back to you.

Note

You will not find it easy to operate the chat window without a mouse. You can place the chat window in the background or foreground via softkeys during a desktop control session. The chat window on the machine control is automatically placed in the foreground if a text message is received.

If you send a text message on your own initiative and the chat window is minimized, you can place the chat window in the foreground via a softkey.

Figure 4-4 Open the chat window

4.2 Synchronize machine

Operating sequence

Start: "Home" → "Administration" → "Synchronize machine"

Application

During synchronization, the currently defined configurations for the specific machine are downloaded from the ePS Network server to the control and thus activated immediately, irrespective of any preset synchronization time.

General sequence:

1. To start synchronization, press the "Select" softkey.
2. Confirm with "OK" when the machine is synchronized.
   The currently defined configurations are now active.

Visualized input sequence

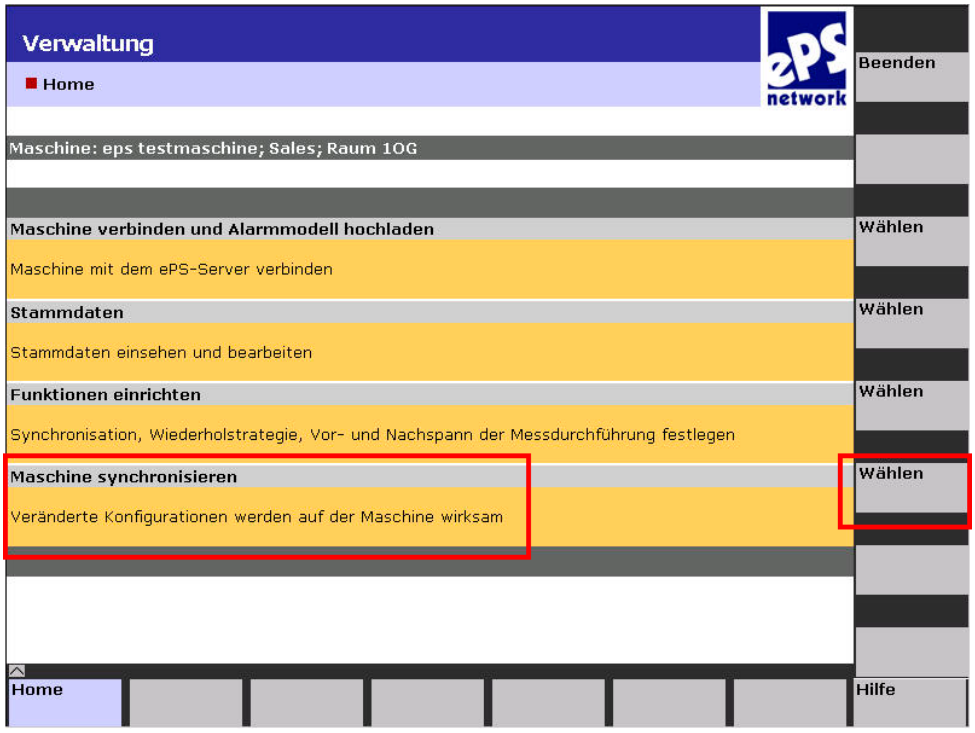


Figure 4-5 Synchronizing on the HMI

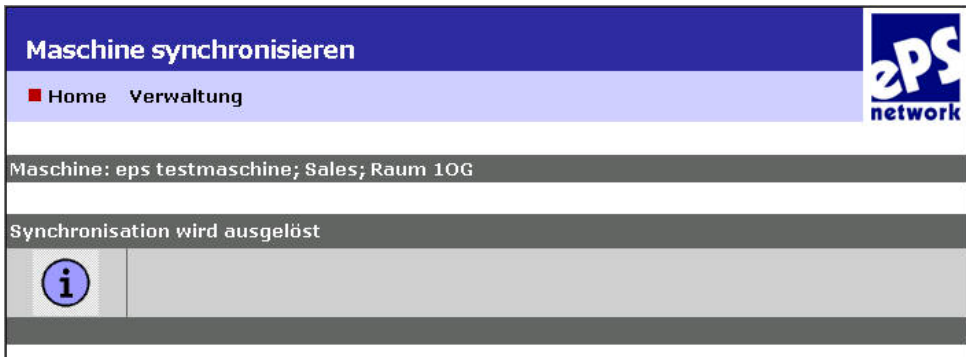
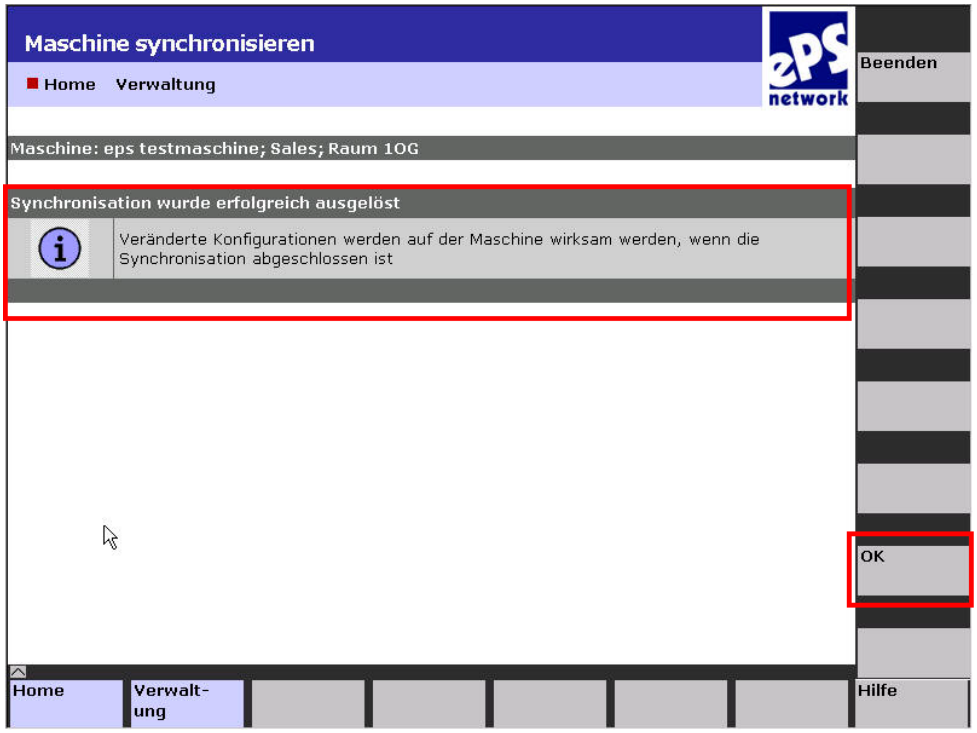


Figure 4-6 Start synchronization



Synchronization on the HMI has been successful and is finished with "OK".

4.3 Report fault to the organization

Operating sequence

Start: "Home" → "Fault services" → "Report fault"

Application

In the event of a fault, the user can write a brief fault report to the manufacturer's service organization. This report is then sent to the service organization and the service department then contacts the author of the report.

Note

Please note the information in the machine manufacturer's documentation regarding "Fault reporting" via ePS Network Services and remote access.

General sequence

Press the "Report fault" softkey and write a short fault report.

Result: The support representative receives a service message in his system.

The operator can optionally request remote access. The service organization then initiates remote access.

Visualized input sequence

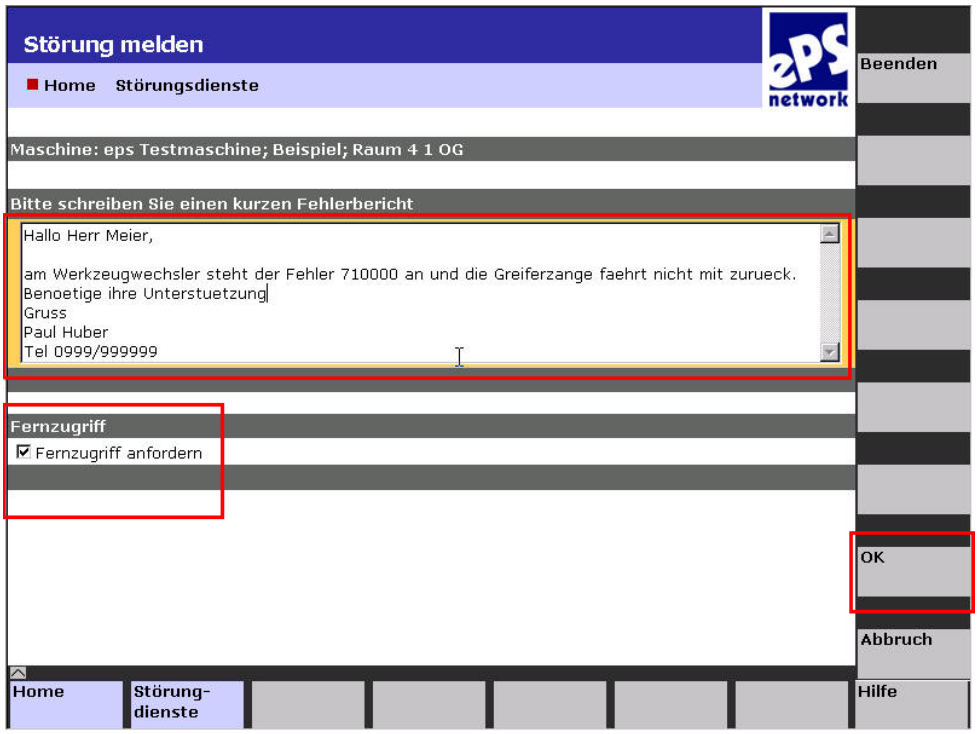


Figure 4-7 Report a fault on the HMI

4.4 Execute a series of measurements

Operating sequence

Start: "Home" → "Maintenance services" → "Measurement series" → "Select measurement series"

Application

You can execute a preprogrammed series of synchronous axis tests, circularity tests or universal axis tests.

Once you have selected a series of measurements, you have the option of performing a collision test on unchecked measurements, i.e. those which have not been executed on the machine before.

To perform a contour test, the machine traverses the exact path of the measurement program, applying the parameters defined in the prolog/epilog (freely configurable measurement leader and trailer).

If the contour test is successful, the measurement can be started directly afterwards.

When the measurement is completed, the system offers you the option of repeating the series. This can be useful if the measurement has been influenced by disturbance which could falsify the result, e.g. if the guideway covers on the machine were not closed as the measurement was taken.

Note

Measurement series are individual, identical measurements which share a common history and reference. Single measurements outside of "measurement series" have no shared history or reference. They cannot be subsequently integrated into a measurement series, even if the single measurement is identical to others in the series.

General sequence

The sequence is not dependent on the type of measurement:

1. Select a series of measurements or tests.
2. Enter a comment text relating to the series measurement.
3. Perform a contour test as a collision check before the actual measurement.
4. Set AUTO mode on the control and adjust the feedrate override to 100%.
5. Press "NC START" on the control.
   - A machine-specific leader is executed: During this process, the machine can retract the axes or change pallets and/or millheads.
   - The measurement motions are executed and the measurement data recorded.
   - The machine-specific trailer for the measurement motion is executed. The machine returns to its original state before the measurement was taken.

6. The measurement result is displayed.

   You have the option of repeating the process by selecting "Delete and repeat", or deleting the measurement completely.

7. Save the result.

Notice

Please note the information in the machine manufacturer's documentation regarding measurements and measurement series.

Please observe the information displayed on the operator panel while the measurement is in progress.

Visualized input sequence

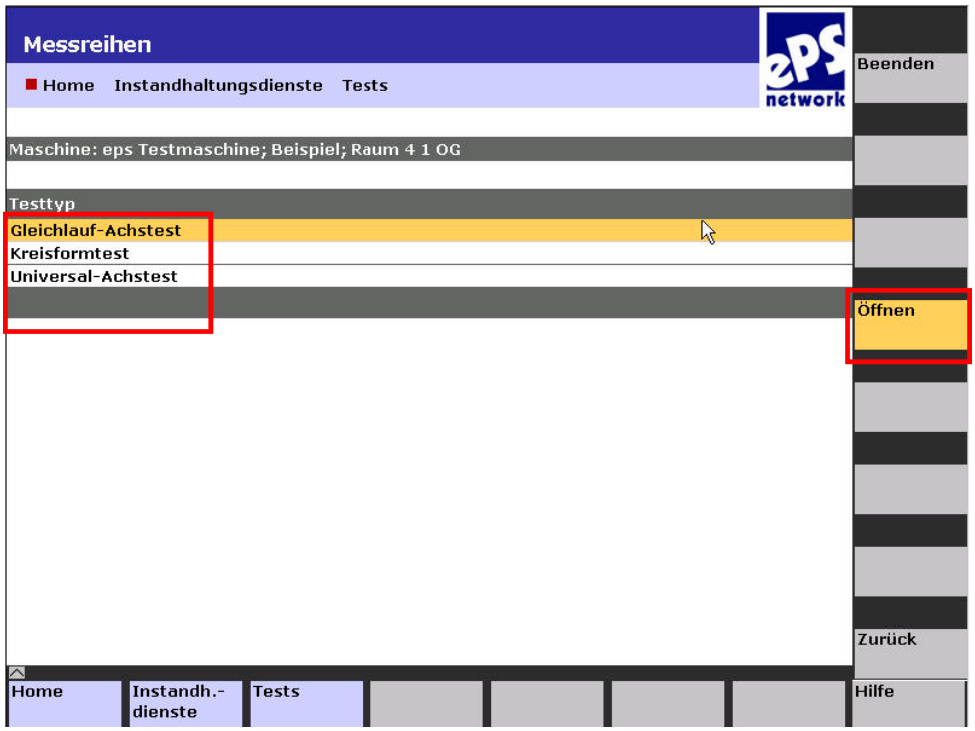


Figure 4-8 Select the type of measurement series

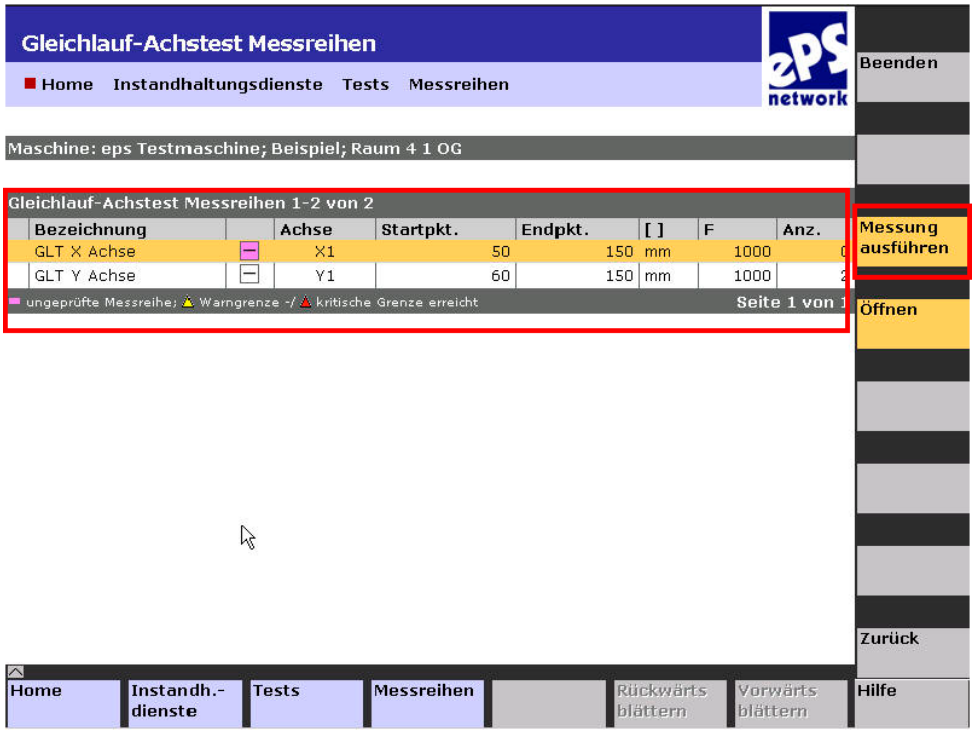


Figure 4-9 Select the measurement series

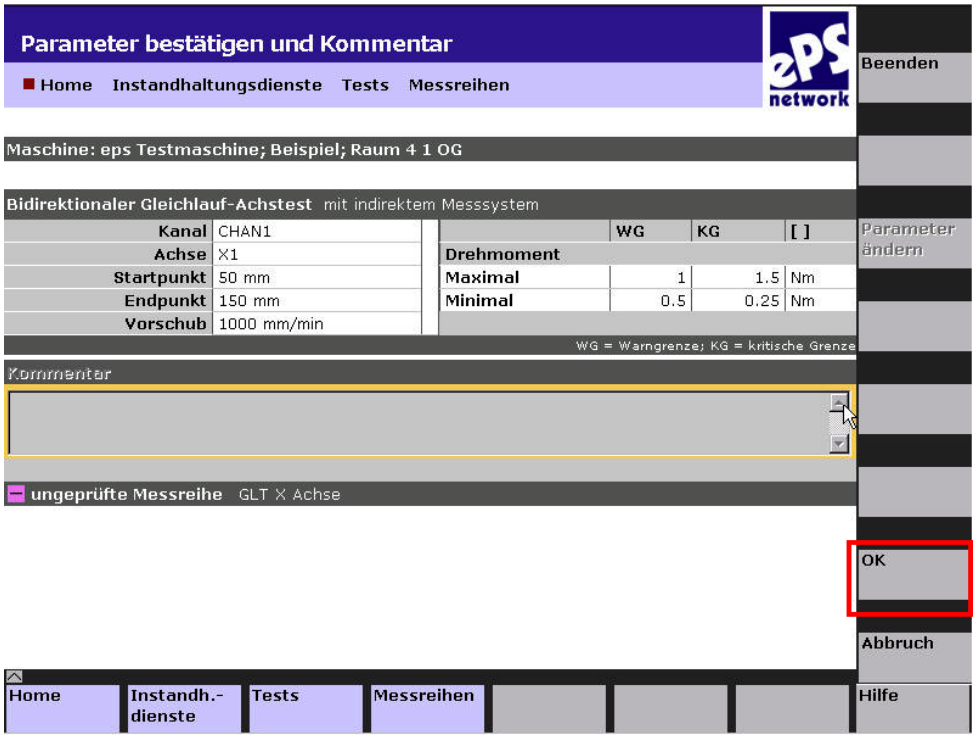


Figure 4-10 Start the measurement series

Figure 4-11 Start the contour test or measurement series

Figure 4-12 Measurement series in progress

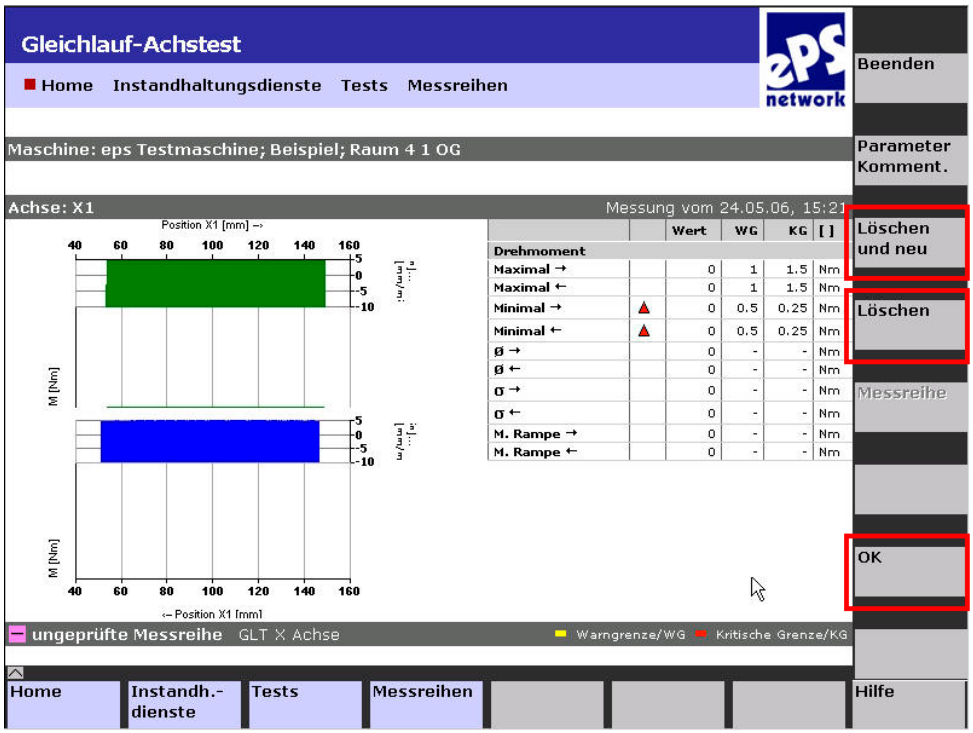


Figure 4-13 Measuring result

- You can repeat the measurement by selecting "Delete and repeat", e.g. if disturbance has affected the measurement quality.
- The last measurement is deleted when you click on "Delete".
- Click "OK" to save the measurement series.

4.4.1 Contour test

Application

A dry run is possible to ensure measurements can safely be performed on the machine. This allows you to execute an optional dry run with reduced velocity before the test run configured for the specific measurement type. The purpose of the dry run is to allow you to check the path motions (contour monitoring) of the machine axes to ensure that collisions are avoided.

When the contour test is finished, you can start the measurement series, or end it, for example, if the contour test detects a collision.

General sequence

The contour test sequence is not dependent on the type of measurement:

1. Select a series of measurements or tests.
2. Enter a comment text relating to the series measurement.
3. Perform a contour test as a collision check before the actual measurement.
4. Press "NC START" on the control.
   - A machine-specific leader is executed: During this process, the machine can retract the axes or change pallets and/or millheads.
   - The measurement motions are executed and the measurement data recorded.
   - The machine-specific trailer for the measurement motion is executed. The machine returns to its original state before the measurement was taken.

The contour test is ended once you reach the point where you can choose to start the measurement or abort the action.

Visualized input sequence

Figure 4-14 Select the contour test

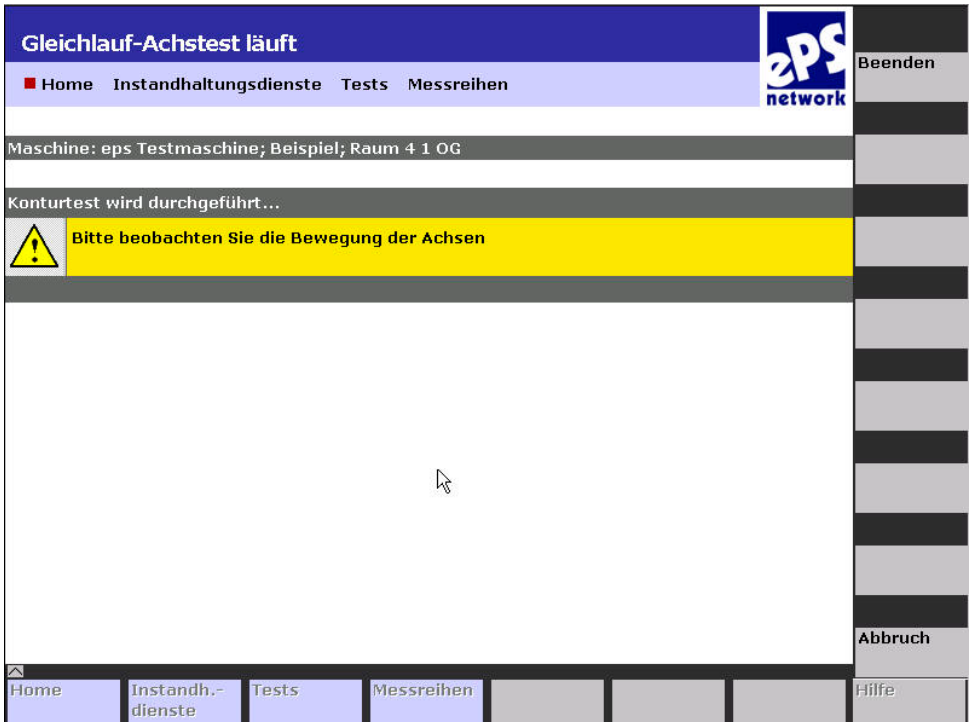


Figure 4-15 Contour test in progress

Once the contour test is finished, the display reverts to the previously active selection screen.

4.5 Execute a maintenance job on the HMI

operating sequence

Start: "Home → "Maintenance services" → "Maintenance jobs" → "Select maintenance job"

Application

As the machine operator, you process maintenance jobs on the HMI:

- Maintenance jobs marked in yellow have not yet been processed or executed.
- Maintenance jobs marked in red are overdue by * days. The processing intervals for a maintenance job are specified when the job is created on the PC.

General sequence

Job instructions for the machine operator, plus other relevant files where necessary, are stored in the selected maintenance job.

1. Select and open a maintenance job.
2. Open the attached file and read its contents.
3. Read and follow the job instructions.
4. Start the measurement or test series if necessary.
5. Type in a comment.
6. Change the status of the maintenance job and close it.

Visualized input sequence

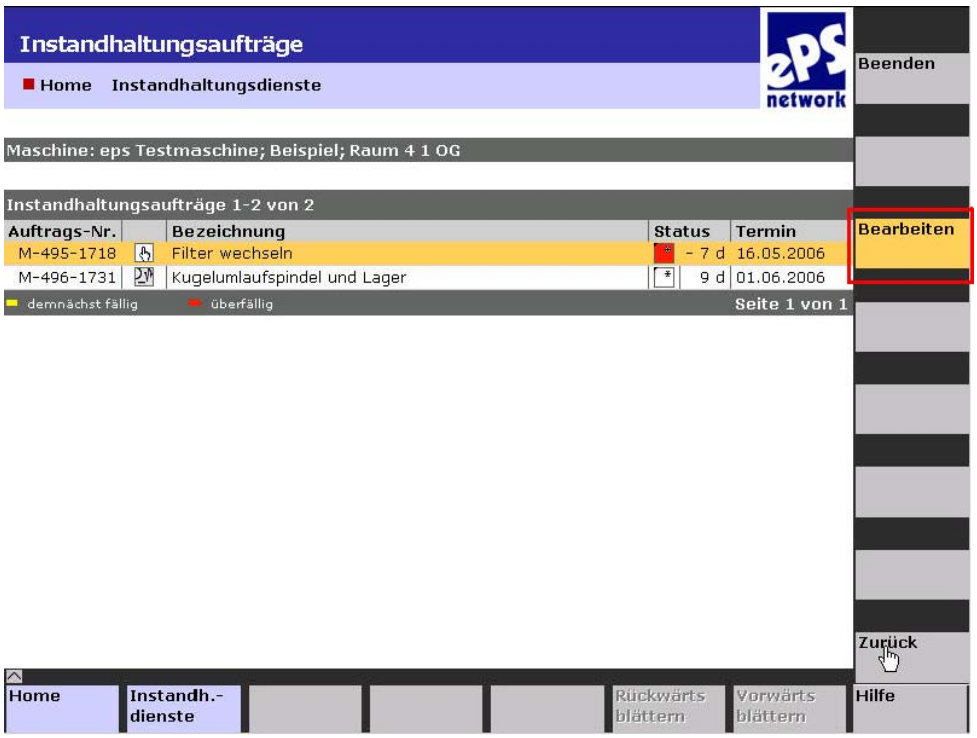


Figure 4-16 Select a maintenance job

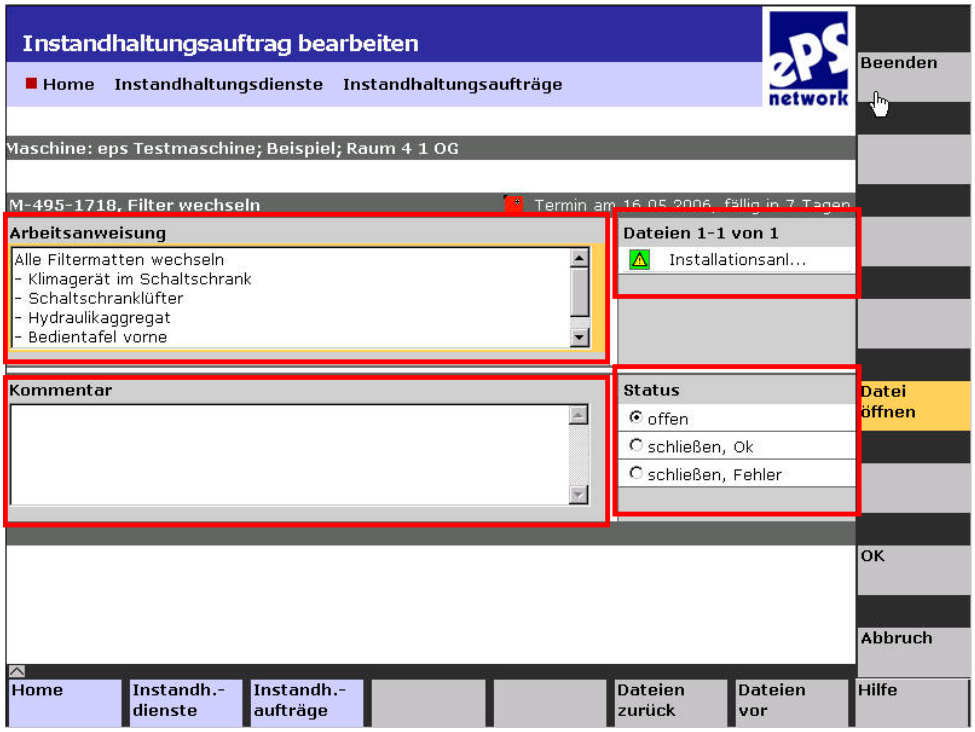


Figure 4-17 Maintenance job opened, variant without measurements

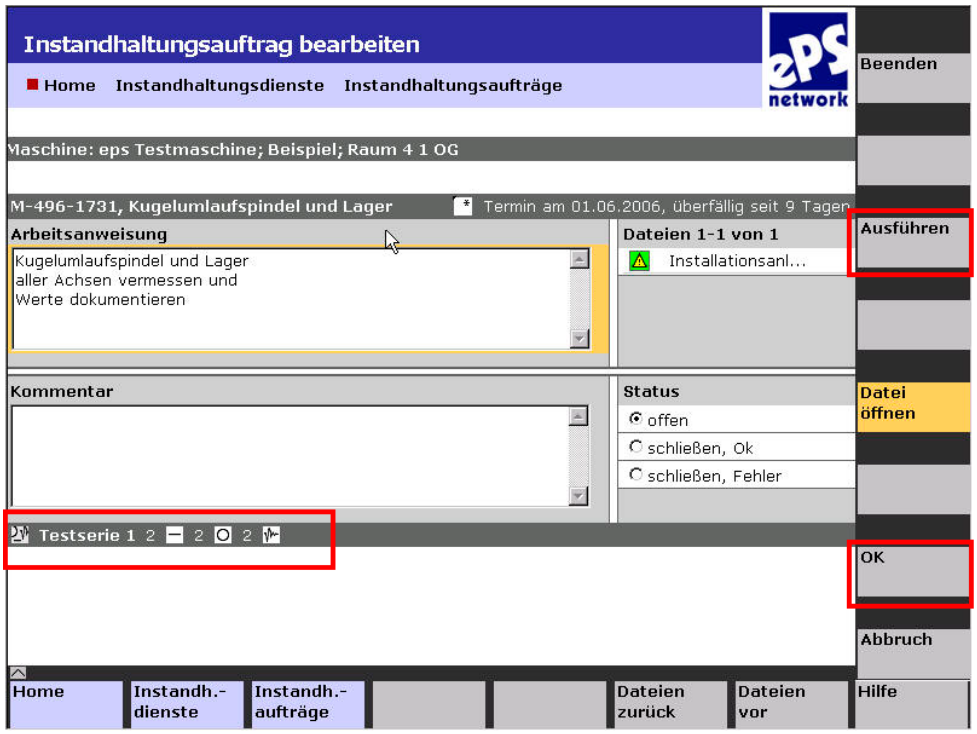


Figure 4-18 Maintenance job opened, variant with measurements/test series

- Start the test series using the “Execute” softkey.
- Close the maintenance job by selecting the status and confirm with "OK".

4.5.1 Execute a test series in a maintenance job on the HMI

operating sequence

Start: "Home" → "Maintenance services" → "Tests" → "Test series"

Application

A test series comprises one series of measurements, or several series in succession. You can start a test series independently or in conjunction with a maintenance job. The machine operator can execute a test series only from a maintenance job.

Notice

Please note the information in the machine manufacturer's documentation regarding maintenance jobs and test series.

General sequence

1. Select and open a maintenance job.
2. Select the "Execute" softkey.

   The measurements included in the test series are displayed.

   You then have the following options:

   – Check all measurement series.
   – Check only the unchecked measurement series (violet) for risk of collision.
   – Write a comment for the test series.
   – Execute the test series
3. Start the test series with "NC Start".

   When the test series is complete, both the successful and the unsuccessful measurement series are displayed on the screen.
4. Close the test series with "OK".

Visualized input sequence

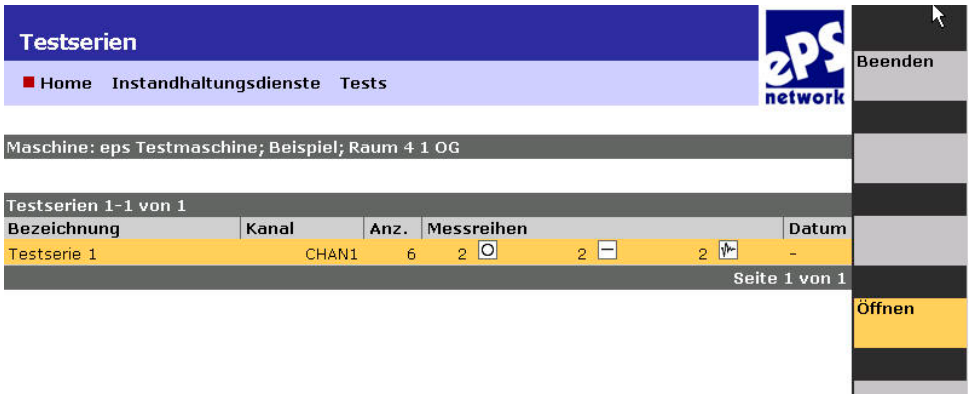


Figure 4-19 Select and open a test series

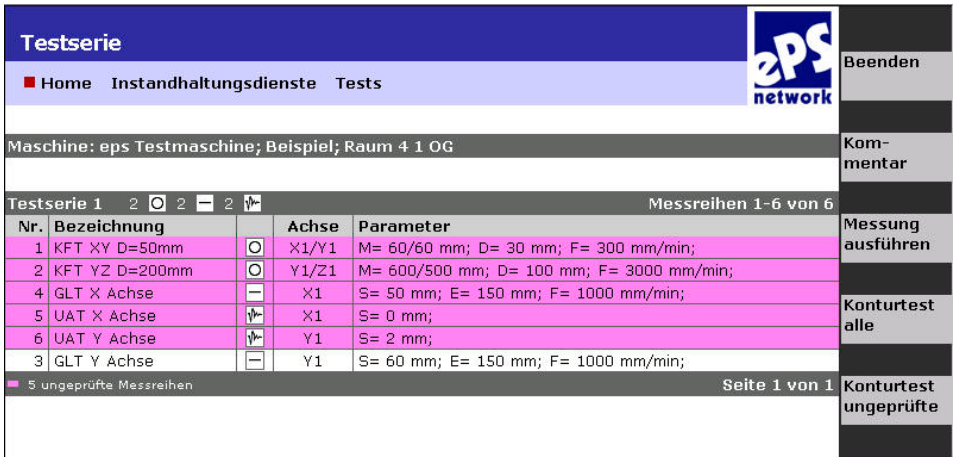


Figure 4-20 Overview of measurement series contained in the selected test series

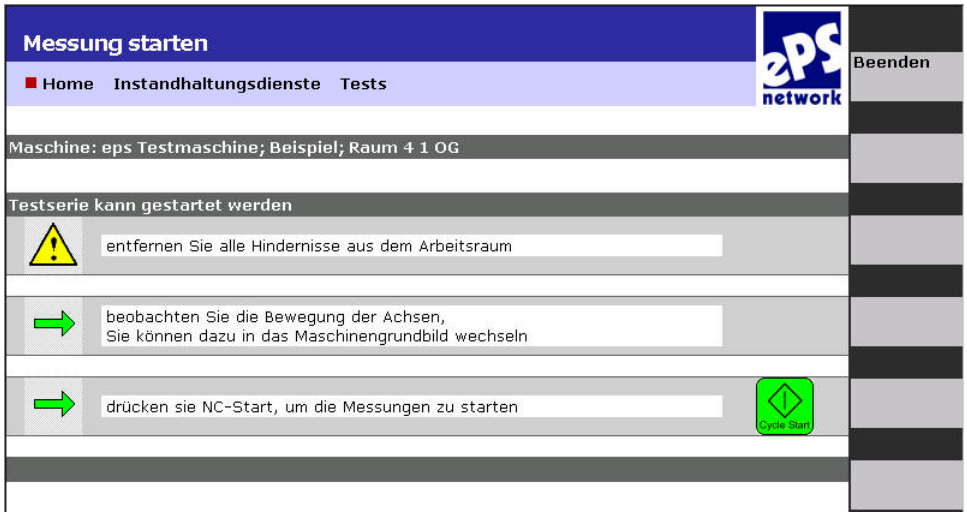


Figure 4-21 Start the test series with "NC Start"

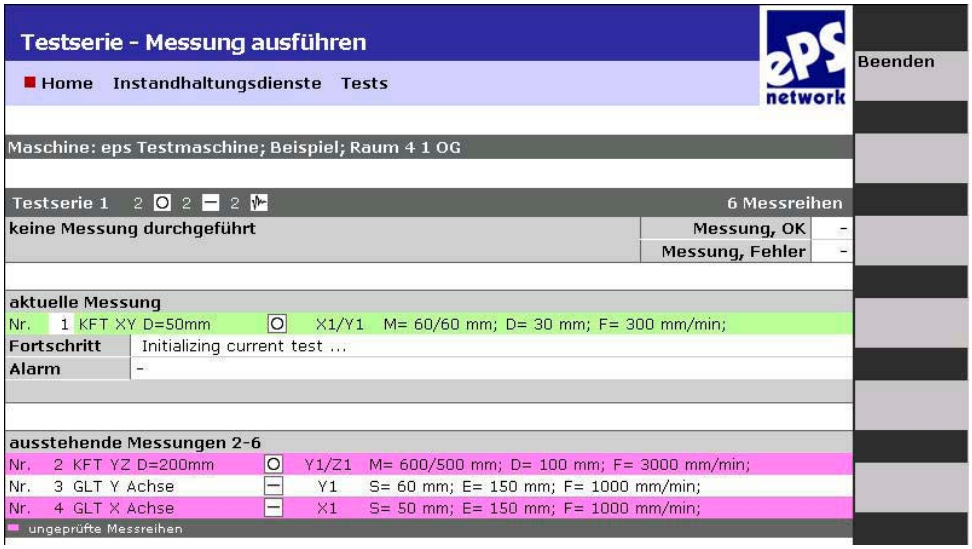


Figure 4-22 Test series during execution of individual programmed measurement series

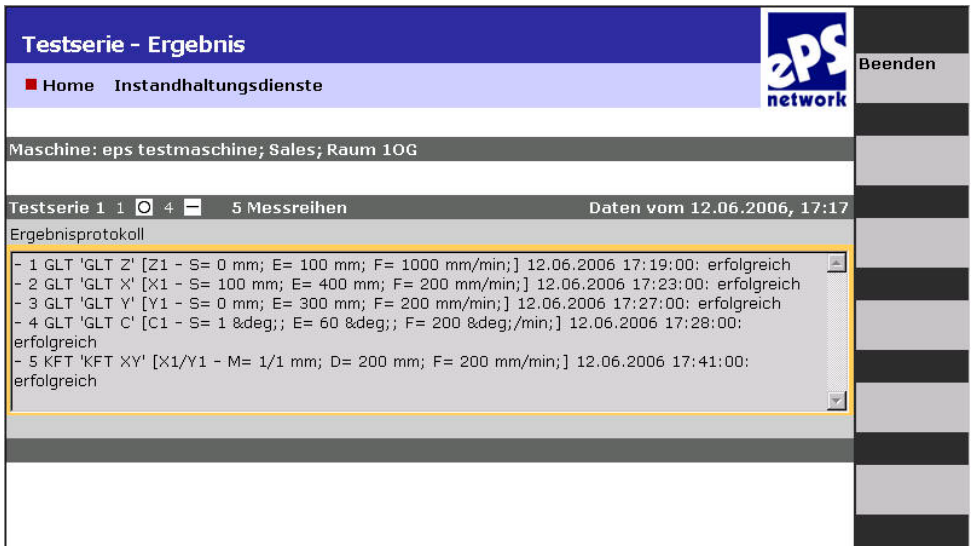


Figure 4-23 The test series is finished.

Working on the PC

5

5.1 Basic principle of PC operation

Overview

The functions of the ePS Network Services are divided into five main categories which can be reached via tabs. The "Machine information" tab and "Set up functions" tab always apply to the selected machine.

Note

The individual functions available to machine operators are described in this manual. Please see the descriptions in each section for details of the functions.

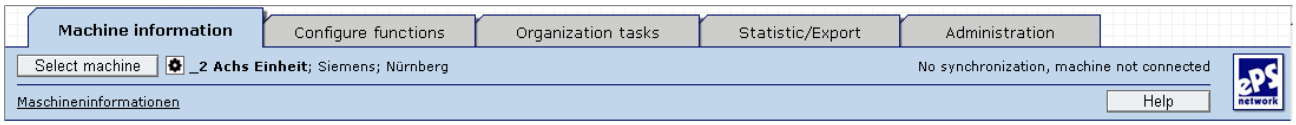


Figure 5-1 Basic principle of operation

Functions available to the MO user group

The following functions can be used by the MO user group:

Tab / Section	Description
Machine information	The "Machine information" tab card contains important information on a particular selected machine. It is divided into the following areas: • Machine overview • Maintenance • **Fault services** **for MOs** • **Remote access** **for MOs**

Tab / Section	Description
Setting up functions	The “Configure functions” tab card allows you to make all settings that apply to a particular selected machine. It is divided into the following areas: • Maintenance • Fault services • Global settings • Copying function settings • Client/server communication
Organizational tasks	The “Organizational tasks” tab card contains functions and services that apply to all machines of an organization. It is divided into the following areas: • Maintenance orders • Service cases

Tab / Section	Description
Statistics/ export	The “Statistic / Export” tab card contains functions and services that apply to all machines of an organization. It is divided into the following areas: • Import • Export • Overviews
Management	The “Administration” tab card contains functions and services that apply to the settings of an organization. It is divided into the following areas: • Organization management • **Personal settings** **for MOs**

5.2 Change the password on the PC

Application

The "Administration" tab card contains the "Change password" function. Every user can change his or her password in accordance with the specified guidelines.

General sequence

1. Enter the current password.
2. Enter a new password.
3. Repeat the new password and confirm with "OK".

Visualized input sequence

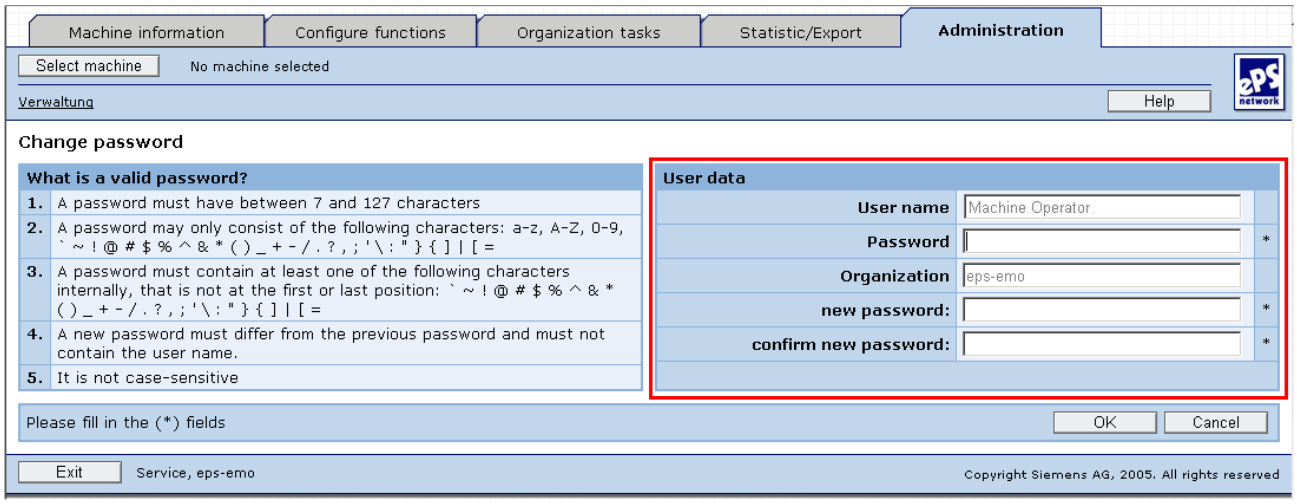


Figure 5-2 Changing the password

5.3 Request remote access from PC

Application

As an MO, you can request remote access from two different sources, i.e. the HMI and the PC. From the viewpoint of the service personnel, the difference between the two is that they can access the current control data on the HMI. With the PC, however, they can only access the monitors and their uploaded files and values that are stored in the ePS system. The service personnel always have access to the ePS data and, for this reason, remote access requests should be always be executed from the HMI.

On the "Machine Information" tab card, you can send a fault report and request remote access. When the service organization has made contact, you can set up a service session by means of the "Use remote access" function.

If the machine is not connected or the database of ePS Network Services contains an entry (conditions of sale), the remote access is billed on a "Call by call" basis.

The general sequence and available functions are analogous to the HMI.

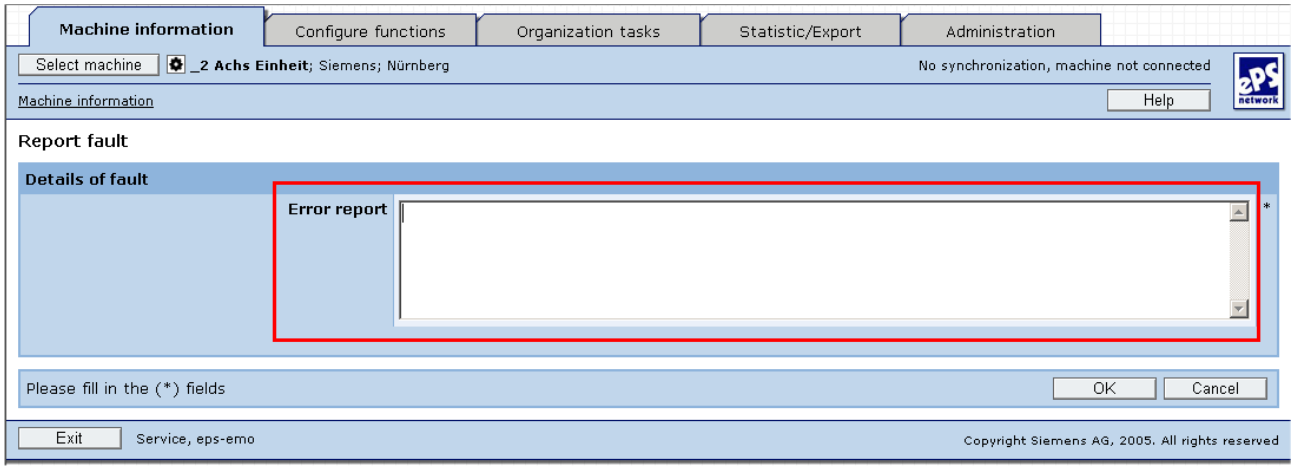


Figure 5-3 Report a fault to the service organization using a fault report

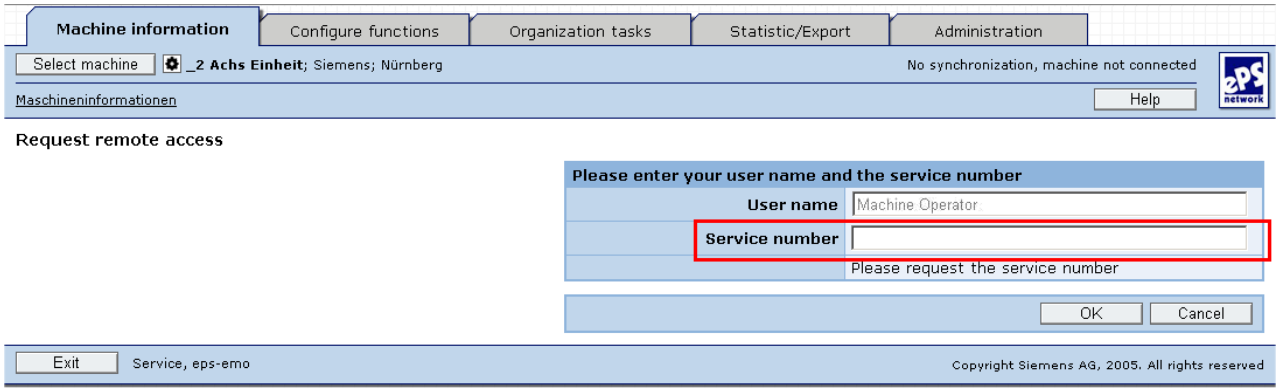


Figure 5-4 Request remote access

See also

Service session with "Use remote access" on the HMI (Page 21)
Report fault to the organization (Page 26)

Correction sheet - fax template

6

Should you come across any printing errors when reading this publication, please notify us on this sheet. Suggestions for improvement are also welcome.

To	From
SIEMENS AG A&D MC MS1 Postfach 3180 D-91050 Erlangen	Name:
	Company/Dept.
	Street:
	Zip code: Town:
Fax: +49 (0) 9131 / 98 - 63315 (Documentation) mailto: docu.motioncontrol@siemens.com www.siemens.com/automation/service&support	Phone: /
	Fax: /

Suggestions and / or corrections

Index