Documentation of Production Processes with WinCC flexible

WinCC flexible 2008 SP1

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Documentation of Production Processes

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1 Automation Task

1.1 Introduction

During the every day production process various production processes are started and terminated via the HMI operator panel.

This includes:

- general operator actions

- adjusting of production parameters

- output of process values

- output of process alarms

For a number of operator actions it is difficult in retrospect to assign individual operator actions and alarms to a certain process/batch.

The application is used to assign previously described points specifically to one "**batch**" in form of a "batch report" and hence document the "**single**" process.

A "batch report" (batch log) is required in many areas within industrial production, especially in the pharmaceutical, food and beverage industry.

1.2 Overview of the automation problem

The following figure gives an overview of the automation task.

Figure 1-1
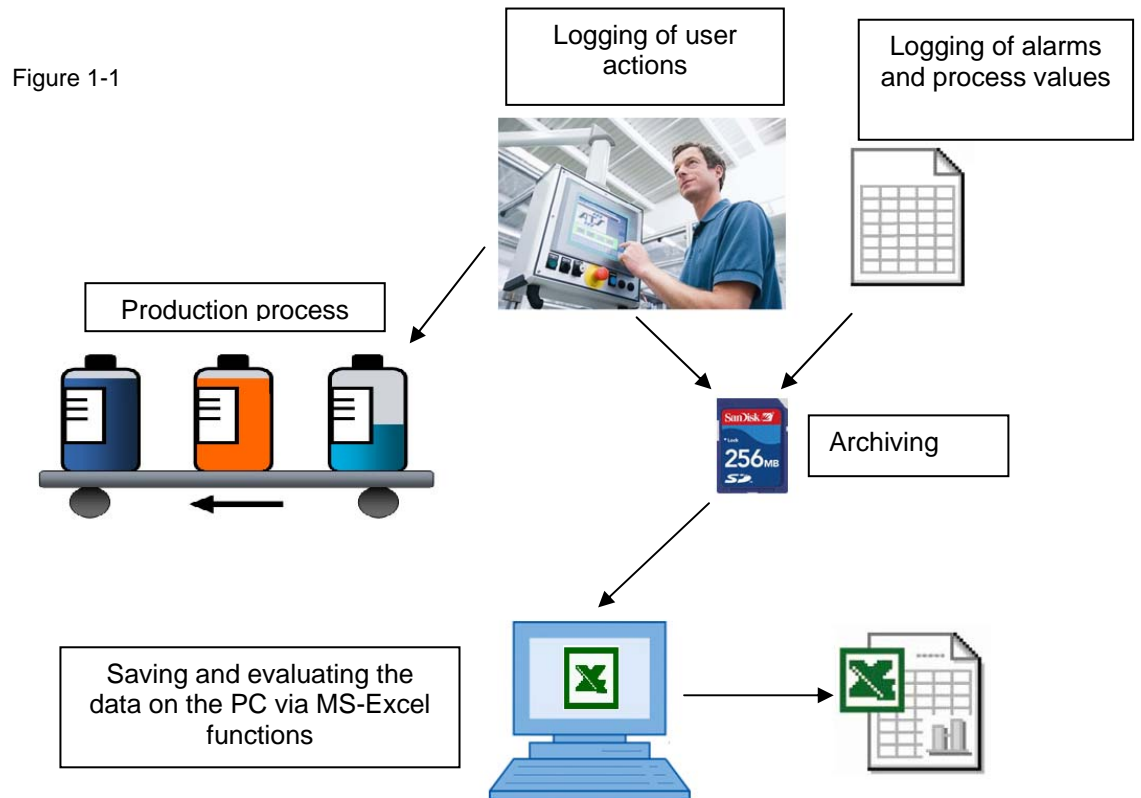
1.3 Description of the automation task

When starting a production process ("batch") via the operator panel, the following points are stored on an operator panel:

- operator actions at the operator panel
- configuration changes of process values
- error messages
- current process values

The storage location for the files can be defined variably here.

Each batch receives a unique "batch ID" and all data associated with the "batch process" are grouped in a folder.

The files come in csv-format so they can be evaluated and edited via standard tools.

Furthermore, there is the option to copy the entire folder content of a "batch process" on a PC and group it to a "batch report" via MS-Excel functionalities.
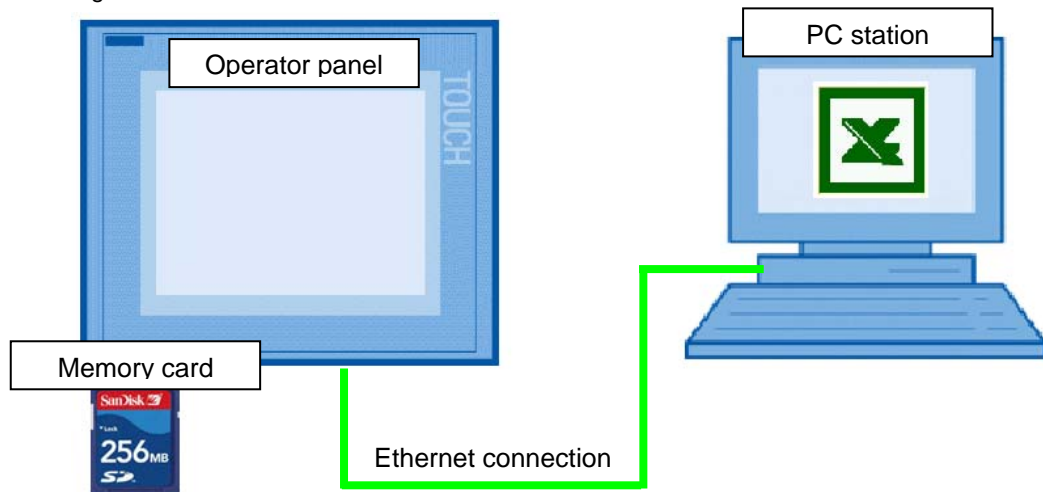
2 Automation Solution

2.1 Overview of the overall solution

Layout

The following figure shows a layout of the most important components of the solution:

Figure 2-1

Operator panel:
- MP 277 or MP 377
- Memory card
- "Audit" option

PC station:
- MS-Excel
- Ethernet interface

All process values and alarms are simulated on the operator panel via script or are given manually via the operator panel.

Software:
- WinCC flexible 2008 SP1
- MS Excel 2003

Topics not covered by this application

This application does not contain a description

- on the WinCC flexible 2008 software

- for creating an Ethernet connection between an operator panel and a PC station

- on VBS / VBA-Script

Basic knowledge of this topic is assumed or can be read up in the respective FAQs and manuals
(see chapter 6 "Links & Literature").

2.2 Description of the core functionality

The core functionality is the recording of process values and user actions occurring within **one** "batch process". Furthermore, additional data such as context data and actual values are stored.
The data is secured on a memory card and can subsequently be transferred to a PC.

The attached Excel file (with macro) "PharmaBatchReport.xls" creates **one** "report file" from the "csv-files" generated by the operator panel which lists all values in a structured format.

So at the end there is one "report file" available for each "batch" for documentation purposes.

Example of context data:

- Batch ID
- Job number
- Job name

Figure 2-2
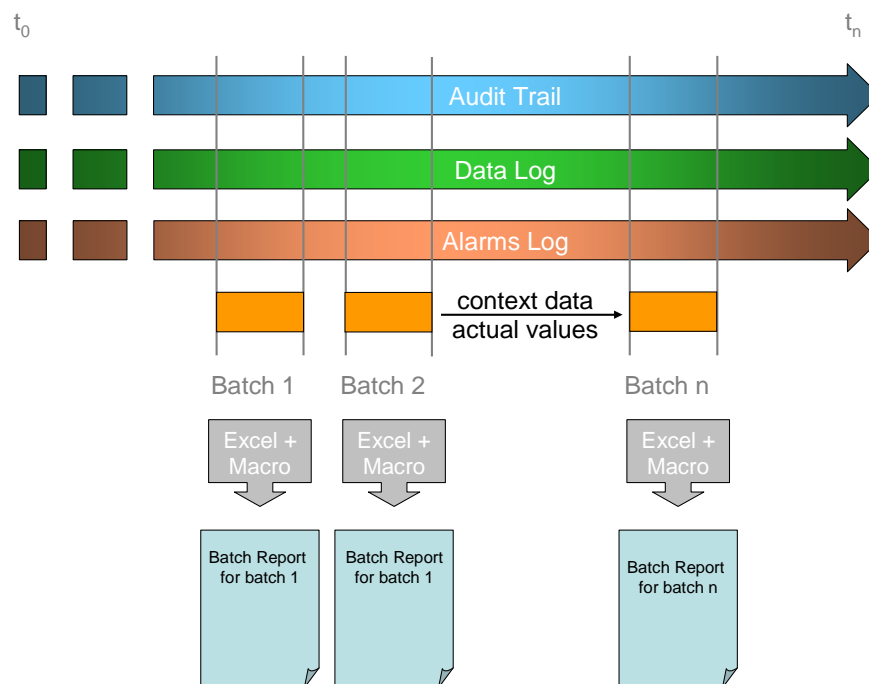
| **Note** | The example project on hand can only serve as a template since the requirements are normally very plant specific.
The example application can be expanded and adjusted at will. |

2.2 Description of the core functionality

Audit (regulated project)

        Via the "WinCC flexible Audit" option the user actions and system processes are recorded.

        Depending on the configuration, audit-relevant processes are recorded.

        Detailed information on the "Audit" topic is available in the "Online help" of WinCC flexible.
The processes which have been realized "audit-relevant" are given in the attached project.

Scripts

        The main functions are realized with scripts.
A detailed description is available in chapter 3.4 "Functionality of the scripts".
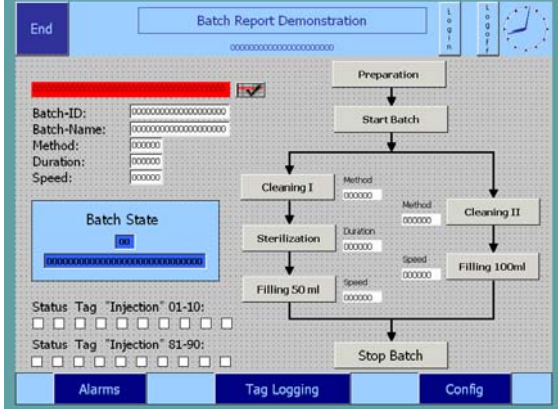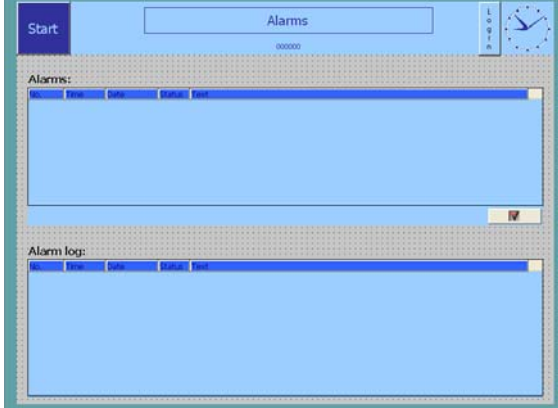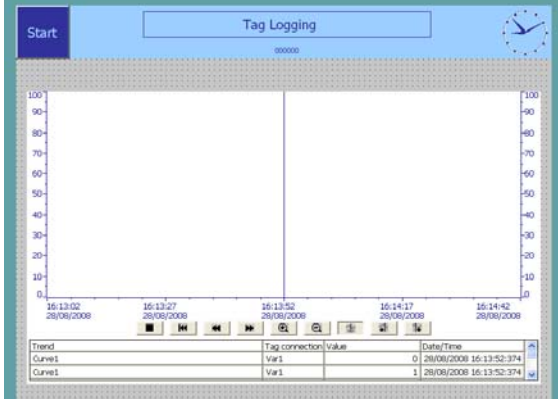
        With the various scripts, tags are archived, data copied to the PC and read.

        You can adjust the scripts to your respective requirements.
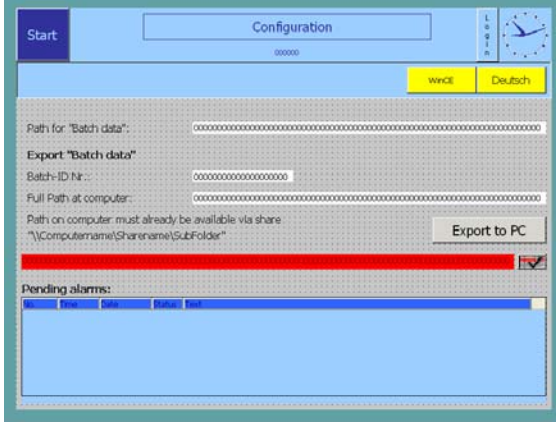
2.2.1 Overview and description of the user interface

A brief description of the configured screen is given below

Table 2-1

No.	Description	Screen
1.	**"01_Start" screen:** "Batch Report Demonstration" For demonstration purposes two processes can be started via the screen. Each "production step" is selected via the respective button. Prior to starting a "process" a respective "batch ID" and "batch name" must be assigned. Furthermore, the current state of 20 tags is "graphically" displayed.	
2.	**"02_Messages" screen:** "Alarms" Two alarm displays are illustrated in this screen. The first alarm display shows pending and unacknowledged alarms. The second alarm display shows alarms from the alarm log.	
3.	**"03_TagLogging" screen:** "Trend display" In this screen the values of two tags are represented in a trend display.	

2.2 Description of the core functionality

No.	Description	Screen
4.	**"04_Config" screen:** "Configuration" Various functions can be performed via the screen. • Specifying the storage path on the memory card for the "Batch data" on the operator panel • Specifying the storage path for the "Batch data" on the PC • Copying "Batch data" from the operator panel to the PC Furthermore, pending alarms are displayed via the Alarms display.	

2.2.2   Process sequence of main functionality

```
┌─────────────────────────────────────────────┐
│   Start screen "Batch Report Demonstration"  │
│  Starting the process via the "Preparation"  │
│                  button                      │
└─────────────────────────────────────────────┘
                      │
                      │          ┌──────┐
                      ▼◄─────────┤  no  │◄──┐
                                 └──────┘   │
              ╱─────────────────╲           │
             ╱   User logged on? ╲──────────┘
             ╲                   ╱
              ╲─────────────────╱
                      │          ┌──────┐
                      ▼◄─────────┤  no  │◄──┐
                                 └──────┘   │
              ╱─────────────────╲           │
             ╱    Batch ID and   ╲          │
            ╱     batch name      ╲─────────┘
            ╲     assigned?       ╱
             ╲                   ╱
              ╲─────────────────╱
                      │
                      ▼
       ┌──────────────────────────────┐
       │         Start "Batch"         │
       └──────────────────────────────┘
                      │
                      ▼
       ┌──────────────────────────────┐
       │    Start "Cleaning" (I or II) │
       └──────────────────────────────┘
                      │
                      ▼
       ┌──────────────────────────────┐
       │      Start "Sterilization"    │
       └──────────────────────────────┘
                      │
                      ▼
       ┌──────────────────────────────┐
       │   Start "Filling" (50 / 100ml)│
       └──────────────────────────────┘
                      │
                      ▼
       ┌──────────────────────────────┐
       │      Terminate/cancel Batch   │
       └──────────────────────────────┘
```
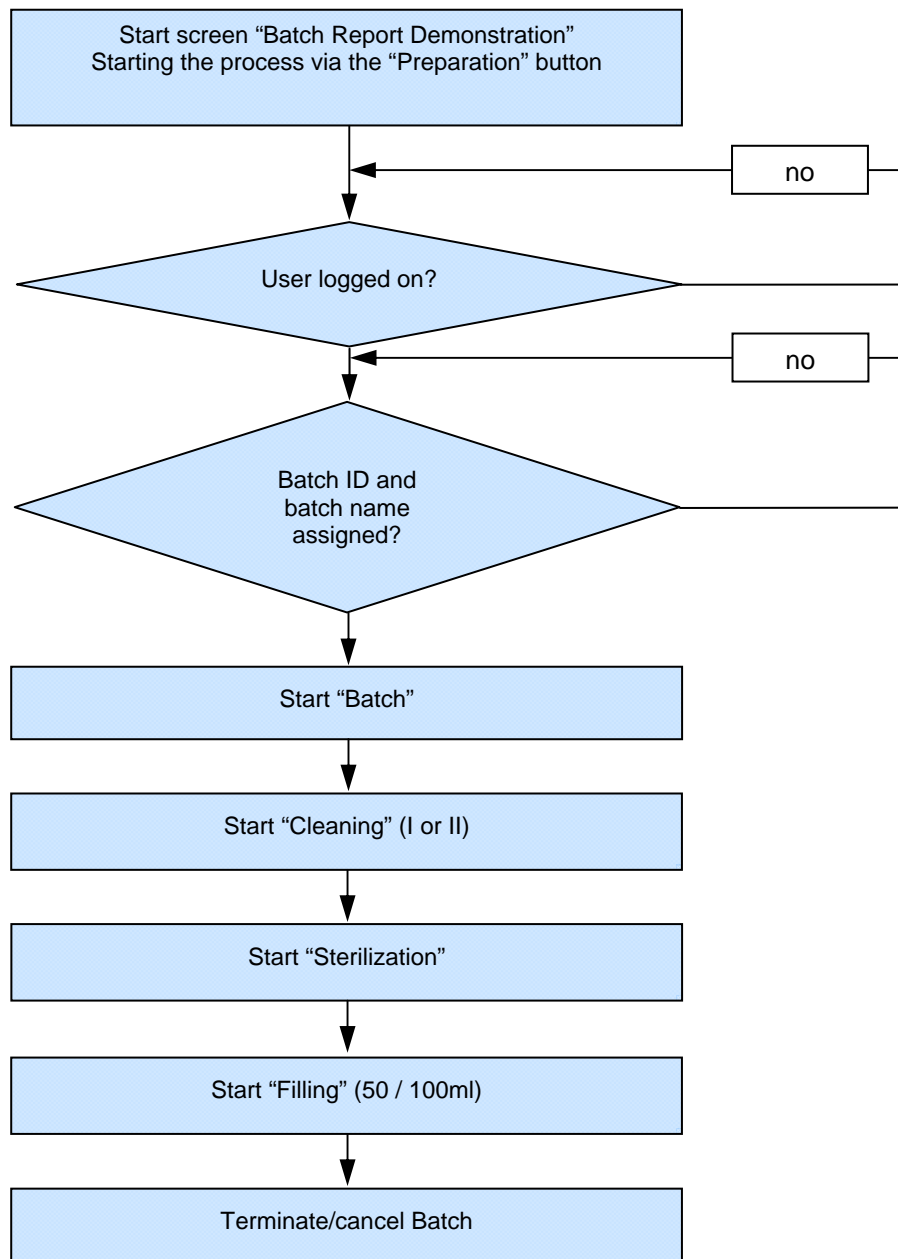
| **Note** | A controller is not necessary for this example. All values are simulated via scripts. |

2.3   Hardware and software components used

The application was created with the following components:

Hardware components

Table 2-2

Component	Qty.	MLFB/order number	Note
MP 377 Touch 12"	1	6AV6 644-0AA01-2AX0	Alternatively MP 277
SD Card 256 MByte	1	6AV6 671-8XB10-0AX0	see FAQ entry: http://support.automation.siemens.com/WW/view/en/21847868
Standard PC	1		

Standard software components

Table 2-3

Component	Qty.	MLFB/order number	Note
WinCC flexible 2008 Standard	1	6AV6612-0AA51-3CA5	Alternatively, WinCC flexible 2008 Advanced can be used (6AV6613-0AA51-3CA5)
WinCC flexible 2008 **SP1**	1	Siehe Customer Support Seiten http://support.automation.siemens.com/	The SP1 is available as download.
WinCC flexible /Audit for Panels	1	6AV6618-7HB01-3AB0	

Example files and projects

The following table contains all files and projects used in this example.

Table 2-4

Component	Note
42931547_WinCC_flexible_Batch_Report_CODE_V10.zip	HMI configuration for MP 377 Touch
42931547_WinCC_flexible_Batch_Report_DOKU_V10_d.pdf	This document
42931547_Template_Batch_Report_v10.zip	The zip.-file contains two folders: • Template_BatchReport_Excel_V1.2 [1] • Sample_Data_BatchReport [2]

[1] **Folder "Template_BatchReport_Excel_V1.2":**

The folder contains files required for implementing a "Batch Report".

- HmiCheckLogIntegrity.exe
- PharmaBatchReport.xls
- ReportTemplate.xls

A description of the files is available in chapter 3.8.

[2] **Folder "Sample_Data_BatchReport":**

The folder contains the "process files" of two "batches" including the "report file".
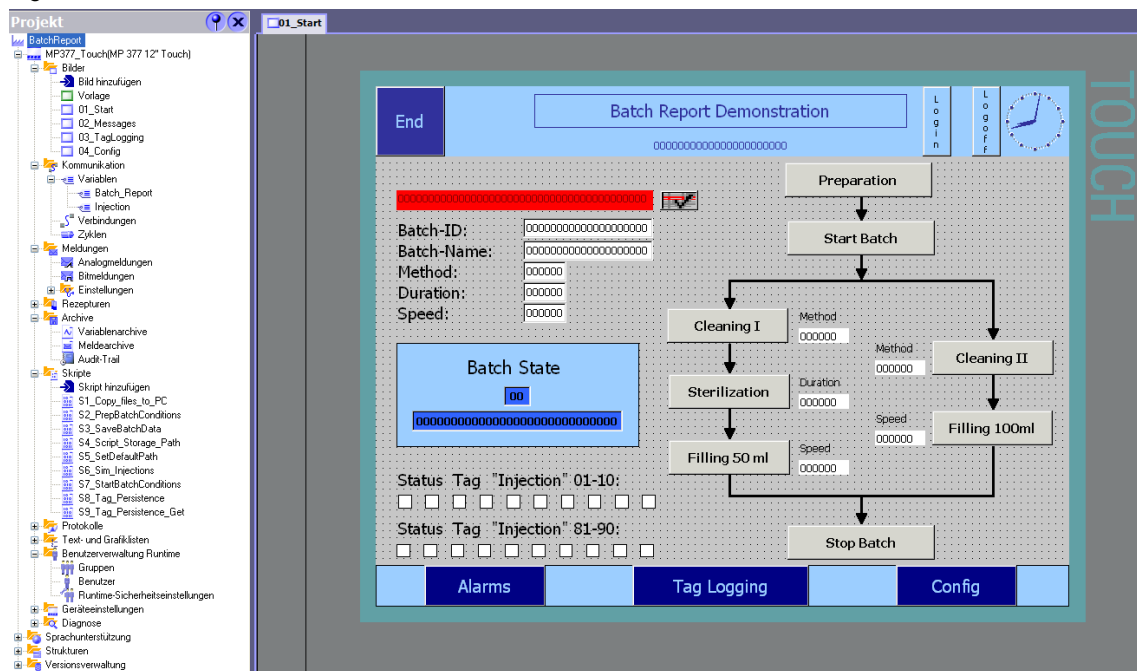The application of the table is described in chapter 5.2.

The tables serve as example to learn about the functionality of the application.

3 Function Mechanisms of this Application

The individual pictures, used scripts and functions are described in greater detail in the following sub-chapters.
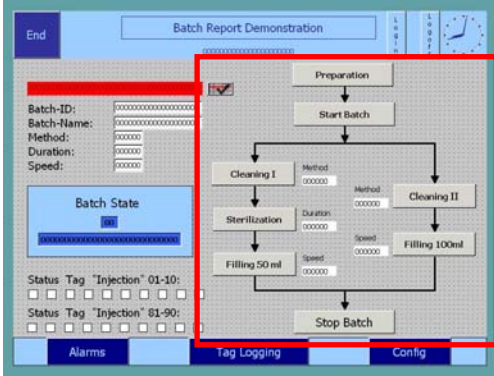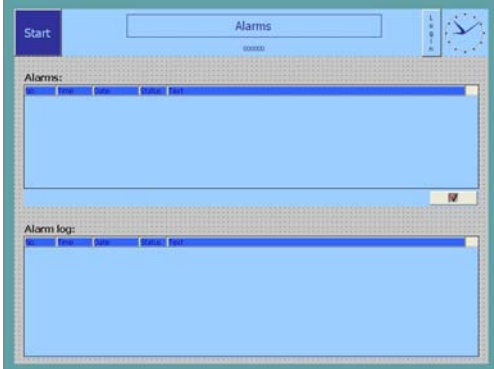
3.1 General overview

Figure 3-1

The following objects and functions are used in the configuration.

- Screens
- Archives
- Scripts
- Audit option
- Alarms
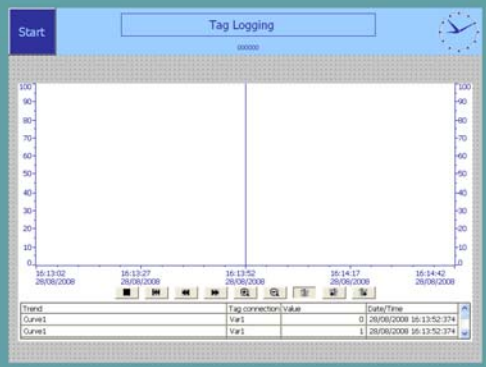- User administration

3.2   Functionality of the screens

Table 3-1

No.	Description	Screen
1.	Values are assigned to tags and alarms are triggered via a simulation. For this purpose the system function "SimulateTag" is used for the screen design. The following tags are "simulated": • Temperature (Batch_Report\Temperature) • Quantity (Batch_Report\Quantity) • Alarms generated (Batch_Report\AlarmVar1) Please generally view the properties of the individual objects in the screens. They can only be listed rudimentary in this document.	
2.	**"01_Start" screen:** This screen serves for simulating a "batch process". For the screen design a script is executed which assigns values to the storage location. Similar to a step chain the individual functions can only be selected if appropriate frame conditions apply. You will receive a warning message if a condition is not fulfilled: Pressing the button always enables the subsequent "step". Each operation of the buttons is archived in the "Audit Trail file". Via the buttons the scripts are called through which the "batch process" is archived.	
3.	**"02_Messages" screen:** The displayed error alarms are generated is the "SimulateTag" system function. Values from 0 to 8 are assigned to the "AlarmVar1" tags in a cycle of 10 seconds and the configured bit alarm is created this way.	

3.2 Functionality of the screens

No.	Description	Screen
4.	**"03_TagLogging" screen:** The displayed trend values are generated via the "SimulateTag" system function. Values from 0 to 100 are assigned to the "Temperature" tag in a 1 second cycle. Values from 20 to 80 are assigned to the "Quantity" tag in a 2 seconds cycle.	
5.	**"04_Config" screen:** Values are assigned to the storage paths when starting the panel via the "S5_SetDefaultPath" script. The storage path can also be assigned manually. The data is copied from the memory card to the PC through the "S1_Copy_files_to_PC" script via the "Export zum PC" button.	

3.3 Functionality of the archives

In the application the following archives are used:

- Tag archives
- Alarm logs
- Audit trail

Via the archives the respective tags, alarms and operations are recorded.

The archived tags are given in the attached project. Please use the "cross references list":

3.3.1 Notes on the archives

When using archives, the following must be observed.

For the archives to be displayed correctly and evaluated on your PC the region and language options of the operator panel must match those of your PC.

Check the used "decimal separators" and "list separators"

Language settings of the operator panel

1. Open the "Control Panel".
2. Open the "Regional Settings".
3. In the "**Regional Settings**" tab you can select various "countries" and adopt their country-specific settings.
   In the "**Number**" tab you can manually adjust country-specific settings

Language settings PC (operating system Windows XP)

1. Open the "Control Panel".
2. Open the "Regional and Language Settings".
3. In the "**Regional Options**" tab you can select various "Countries" and adopt their country-specific settings.
   Via the "**Customize...**" button you can manually adjust country-specific settings

"S3_SaveBatchData" script

Please look at the information on the topic "Language-specific settings in script "S3_SaveBatchData".

3.4 Functionality of the scripts

S1_Copy_files_to_PC

With this script the "csv-files" generated on the operating device are copied to a PC. Subsequently the data on the memory card are deleted (no double data management).

S2_PrepBatchConditions

This script creates a "temp folder" on the memory card.
In this "temp folder" the "audit trail file" is temporarily stored first.
Through "copying" the "audit trail file" is marked with a time stamp. The time stamp consists of data, time and the device name of the operator panel and is automatically assigned by the system.

Example:

Original   "AuditTrail0.csv"

Temp folder   "AuditTrail0_20100510_083709_HMI_Demo_Batch.csv"

In the "audit trail file" the user actions and system functions related to the current batch process are logged.

S3_SaveBatchData

When terminating the "batch program" the script "S3_SaveBatchData" is executed.

Via the script the current values of the "Injection_1 to Injection_160" tag and the context data are stored in a CSV-file (BatchData.csv).

The script copies all "batch files" into a previously defined folder on the memory card (storage path and folder are assigned via a script).

The following csv-files are copied:

- AuditTrail0l.csv
- TagArchiv0.csv
- TagArchiv10.csv
- Alarms0.csv
- BatchData.csv

Language-specific settings in the "S3_SaveBatchData" script

Depending on the list separator which you have set on your HMI operator panel and PC, you have to adapt the script accordingly.

Please also refer to the notes of the previous chapter 3.3.1 "Notes on the archives".

Figure 3-2

```
Function S3_SaveBatchData( )

47
48 'If the operation system in german – use semicolon as seperator
49
50     strline = """BatchStart"";""" & SmartTags("Batch_Report\BatchStart").Value & """"
51     f.LinePrint(strline)
52     strline = """BatchEnd"";""" & SmartTags("Batch_Report\BatchEnd").Value   & """"
53     f.LinePrint(strline)
54     strline = """BatchID"";""" & SmartTags("Batch_Report\BatchID").Value   & """"
55     f.LinePrint(strline)
56     strline = """BatchName"";""" & SmartTags("Batch_Report\BatchName").Value   & """"
57     f.LinePrint(strline)
58
59     'save injection data                              1
60     For i = 1 To 160
61         strTagName = "Injection\Injection_" & i
62         strline = """" & "Injection_" & CStr(i) & """;" & SmartTags(strTagName).Value
63         f.LinePrint(strline)
64     Next

66 'If the operation system in english – use comma as seperator
67 '
68 '    strline = """BatchStart"","""" & SmartTags("Batch_Report\BatchStart").Value & """"
69 '    f.LinePrint(strline)
70 '    strline = """BatchEnd"",""" & SmartTags("Batch_Report\BatchEnd").Value   & """"
71 '    f.LinePrint(strline)
72 '    strline = """BatchID"",""" & SmartTags("Batch_Report\BatchID").Value   & """"
73 '    f.LinePrint(strline)
74 '    strline = """BatchName"",""" & SmartTags("Batch_Report\BatchName").Value   & """"
75 '    f.LinePrint(strline)
76 '
77 '    'save injection data                              2
78 '    For i = 1 To 160
79 '        strTagName = "Injection\Injection_" & i
80 '        strline = """" & "Injection_" & CStr(i) & """," & SmartTags(strTagName).Value
81 '        f.LinePrint(strline)
82 '    Next
```

Point 1:

On PC systems in German language the list separator is a "semicolon" by default.
In this case you activate line "50 to 64".
Line "68 to 82" must then be commented.

Point 2:

On PC systems **not** in German language the list separator is usually a "comma". In this case you activate line "68 to 82".
Line "50 to 64" must then be commented.

3.4 Functionality of the scripts

S4_Script_Storage_Path

> The script is called via the scripts "S2_PrepBatchConditions" and
> "S3_SaveBatchData".
>
> The script creates the storage path in which the "batch files" are stored.

S5_SetDefaultPath

> The paths are preassigned via the script in which the later future are stored.

S6_Sim_Injections

> Tags "Injection_1" to "Injection_160" are preassigned with a value of 0 to 2 via the
> script. The values are determined via "random generator".
>
> The script is used for displaying the status of injection processes for a filling
> process.
>
> – Value 0   Error (red)
> – Value 1   OK (green)
> – Value 2   Warning (yellow)
>
> The values are archived and later evaluated in the "report file".

S7_StartBatchConditions

> Via this script the various start requirements to be fulfilled when starting a "batch
> process" are checked (for example, a user must be logged on, etc.).
>
> Furthermore, the start time of the "batch process" is stored.

S8_Tag_Persistence

> Via the script the values of the tag stored in the script is saved to a file. It serves for
> saving the preset values prior to switching the operator panel off.
>
> The script is executed in the application before terminating the runtime.

S9_Tag_Persistence_Get

> Via this script, the values stored via the "S8_Tag_Persistence" script are read out
> again and assigned to the individual tags.
>
> The script is executed in the application after starting the runtime.

| Note	When changing the storage location or names of tags in your configuration, please also check the existing scripts.
	Normally you have to perform appropriate adjustments in the scripts.

3.5 Functionality of the audit

The "Audit Trail" function and the "Electronic signature" are provided with the Audit option. This supports the user in fulfilling increased quality requirements of his/her project, for example, for plants requiring validation according to 21 CFR Part 11.

The Audit option is called up in the "Properties" of the context menu of the project. In the "GMP Settings" area you activate the "Regulated project" checkbox.

Figure 3-3
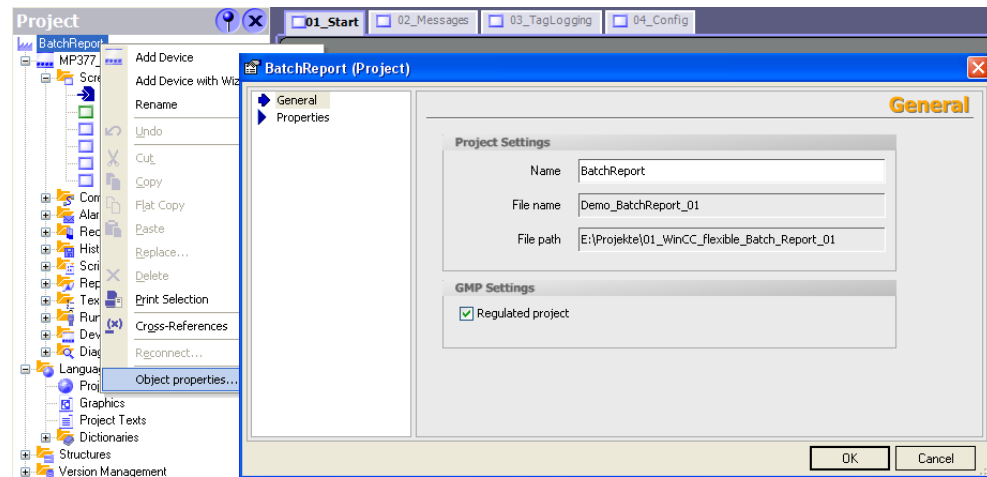
The following Audit functions are used in this application:

- Audit Trail archive:
  "Project window > Archives > AuditTrail"
  With Audit Trail you configure an archive in which all audit-relevant user actions and system processes are recorded during Runtime.

- GMP settings at several tags:
  "Properties window > Properties > GMP settings"
  Here you define which tags are BMP-relevant and whether the user must acknowledge a value change of the tag during runtime with his/her electronic signature.

- System function "Record user action":
  With this system function you record the user actions in the Audit trail which are not automatically entered in the Audit trail. Furthermore, using this system function you can prompt the user to give an acknowledgement or an electronic signature for the operator action as well as a comment.

The tags and objects (buttons) classified as GMP-relevant are given in the attached configuration.

3.6 Functionality of the messages

For illustration purposes some bit alarms have been configured in the configuration. These are triggered by a simulation

The alarms are used for supplying the "alarm log" with data.

3.7 Functionality of the user administration

The GMP functionality requires a user administration.

The following users are used:

- Admin   Password: 100

- user1   Password: 111

- user2   Password: 222

In the application all users have "administrative" rights.

The various users are used for receiving different entries in the Audit trail file.

3.8 Functionality of the Excel templates

The application includes the following files:

- HmiCheckLogIntegrity.exe
- PharmaBatchReport.xls
- ReportTemplate.xls

These three files together must be located in one folder.

The csv-files copied by the operator panel are edited via the "PharmaBatchReport.xls" file and grouped into **one** "Batch Report file".

The "PharmaBatchReport.xls" file contains scripts which access the two files "HmiCheckLogIntegrity.exe" and "ReportTemplate.xls".

HmiCheckLogIntegrity.exe

The correctness of the check sums in the files can be verified with the command line tool "HmiCheckLogIntegrity.exe". In this case the intactness of the Audit Trail file is verified (it is checked whether the file has been manipulated).

The program "HmiCheckLogIntegrity.exe" is also available in the installation directory of WinCC flexible in the folder
"WinCC flexible 2008 Runtime"
(e.g. C:\Program Files\Siemens\SIMATIC WinCC flexible\WinCC flexible 2008 Runtime)

Always use the "HmiCheckLogIntegrity.exe" file appropriate for your WinCC flexible version.

The file is required for implementing the "Batch Report file".

PharmaBatchReport.xls

The "PharmaBatchReport.xls file" generates a "Batch Report file" (batch log file) from the csv-file created by the operator panel.

To implement this functionality you need the two following files.

- "HmiCheckLogIntegrity.exe"
- "ReportTemplate.xls".

The two files must be located in the same directory as the "PharmaBatchReport.xls" file.

A detailed description on how the "PharmaBatchReport.xls file" is available in chapter "Operating the EXCEL templates".

ReportTemplate.xls

The file is used as a template for the "batch report".

The files generated via the "PharmaBatchReport.xls file" are written to this "report template".

3.8.1 Adjusting the "PharmaBatchReport.xls" file

The "PharmaBatchReport.xls file" contains a script which is divided into various functions.

Via the "Visual Basic-Editor" you can open the scripts and edit them afterwards.

In "Module1" you can call up all functions and adjust them if necessary.

Figure 3-4
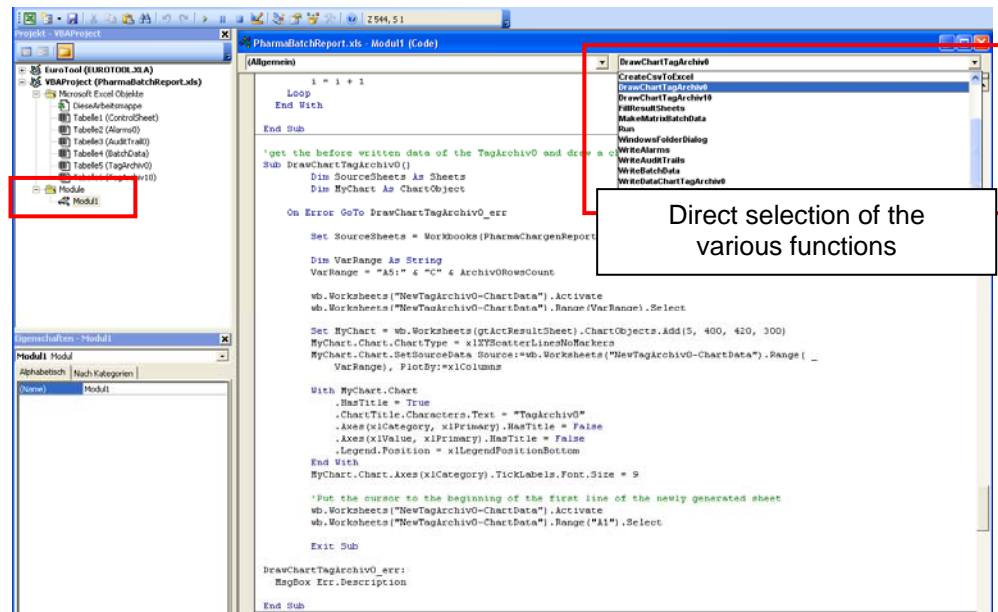
Adjust tags

Via the "PharmaBatchReport.xls file" the tag archive "TagArchiv0" and "TagArchiv10" is read out.

For the evaluation in the "PharmaBatchReport.xls file" it is important that the tag name and the storage path matches that specified in WinCC flexible.

Check the entries in the script at:

- WriteDataChartTagArchiv0
- WriteDataChartTagArchiv10

Example:

WinCC flexible:
Storage path: *Batch_Report\Temperature*

EXCEL "PharmaBatchReport.xls file":
Script function: *WriteDataChartTagArchiv0*

Figure 3-5
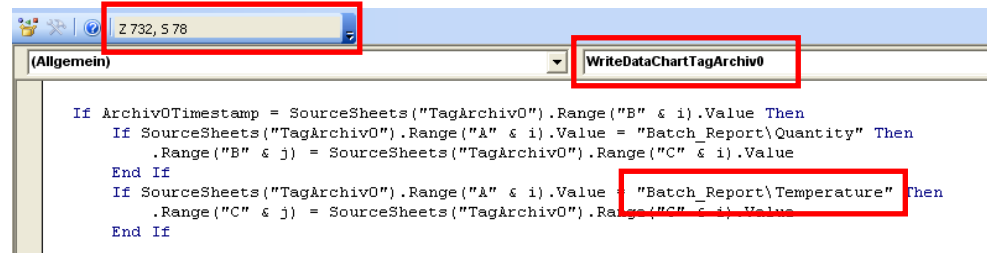
Instruction

1. Call the "PharmaBatchReport.xls" file
2. Open the Visual Basic Editor.
3. Open "Module1".
4. In the module you call the "WriteDataChartTagArchiv0" function
5. Navigate to line "Z 729" or "Z 732".
   There you find the tags "Temperature" and "Quantity".
   Adjust the name and the storage path accordingly if necessary.

3.8.2 Using the Excel templates at "Excel 2007"

The Excel templates were created for "Excel 2003"

When using "Excel 2007" you perform the instructions below.

PharmaBatchReport.xls

1. Open the "PharmaBatchReport.xls" file with Excel 2007.

2. Save the file via the menu command
   "Save as...> **Excel Macro-Enabled Workbook**".
   The new name of the file is "PharmaBatchReport.xlsm".

ReportTemplate.xls

3. Open the "ReportTemplate.xls" file with Excel 2007.

4. Save the file via the menu command
   "Save as...> **Excel Workbook**".
   The new name of the file is "ReportTemplate.xlsx".

The "Report file" is generated as in Excel 2003.

A detailed description on how the "PharmaBatchReport.xls file" is available in chapter 5.2 "Operating the EXCEL templates".

3.9 Archived files on the memory card

On the memory card the following files are stored.
The files are located in folder "Batchdata". The files are created by the system or via a script.

- Alarms0_*xxx*_HMI_Demo_Batch.csv

- AuditTrail0_*xxx*_HMI_Demo_Batch.csv

- BatchData.csv

- TagArchiv0_*xxx*_HMI_Demo_Batch.csv

- TagArchiv10_*xxx*_HMI_Demo_Batch.csv

xxx = time and date stamp of the operator panel

4 Startup of the Application

General

The WinCC flexible configuration contains scripts which only work in connection with operator panels as of series 270 e.g. (MP 277 / MP 377).

Note The used source code cannot be used for a PC Runtime. You cannot simulate the configuration with a PC-Runtime.

Excel templates:

Please ensure that the following files are contained in a folder.

- HmiCheckLogIntegrity.exe
- PharmaBatchReport.xls
- ReportTemplate.xls

Batch Report folder

For each "batch process" a separate folder must be created on the PC. The folder must **only** contain the respective data of **one** "batch process".

Windows Explorer (PC)

- Via the operator panel you can copy archive data located on the memory card to the PC.
  To copy the data to the PC you need to share a "drive" in the Windows Explorer (Properties > Sharing).
- Through the copying process the csv-files are prefixed by the "batch ID". This "batch ID" must match the name of the "folder" in the Windows Explorer.

Ethernet connection

Create an Ethernet connection with the connected operator panel. The connection is required if you wish to transfer the csv-file to the PC.

HMI configuration

Please ensure that the configured storage location is supported by the operator panel.
If necessary, you have to adjust the storage path in the scripts and archives.

3.9 Archived files on the memory card

Operator panel

- Supply the operator panel with a memory card and transfer the configuration to the operator panel.

- To assign the storage path on the PC (for the csv-files to be copied) the following must be known:
    - PC computer name
      (Start > Settings > Control Panel > System > Computer Name)
    - Share name
      (folder in the Windows Explorer)

Assigning the storage path

- The complete name for the storage path is composed as follows:
  \\computer name\share name\batch ID
  (The default storage path can be assigned via script, whereby the "**batch ID**" must only be assigned at "Runtime")

- The assigned storage path must be created on the PC
  (the assigned storage path is not automatically created)

5 Operating the Application

5.1 Operating the HMI configuration

The operation of the individual screens is listed below.

Screen: 01_Start "Demonstration Batch Report"

On this screen a "batch process" is simulated.
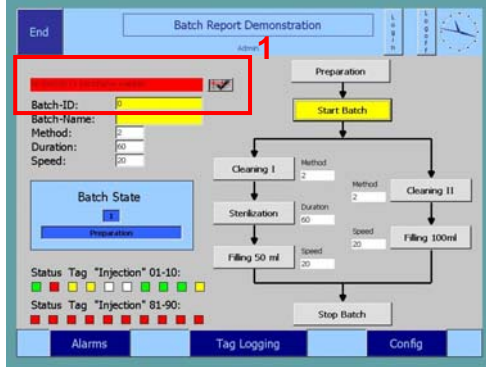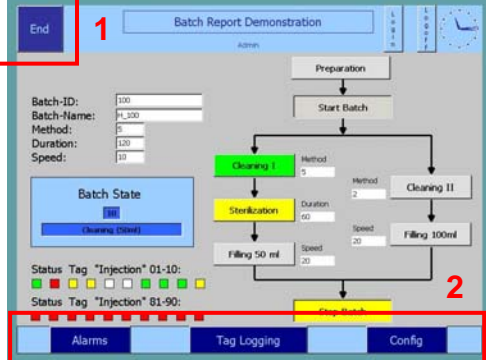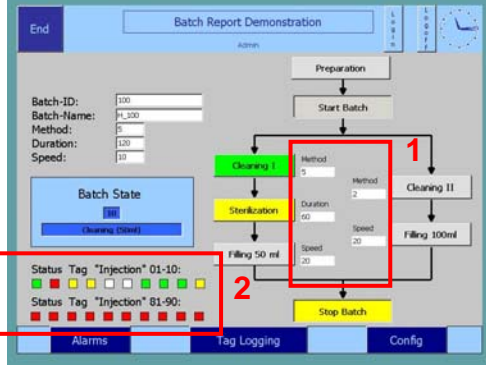
All processes serve the purpose of familiarizing the user with the functionality for creating a "Batch Report" (batch log).

Table 5-1

No.	Action	Screen
1.	**(1) Login and Logoff:** Before being able to perform an action, you must login via the "**LOGIN**" button. Possible names are: – Admin 100 – User1 111 – User2 222 If a user has logged in and within 5 minutes there is no operation at the operator panel, the user is logged off again. Alternatively you can log off via the "**LOGOFF**" button.	
2.	**(1) Starting the "batch process":** After a successful logon you start the process via the "**Preparation**" button. The production parameters can now be assigned. **(2) Entering the production parameters:** To continue further you need to assign a "batch ID" first as well as a "batch name". The "batch ID" must only be assigned once. The parameters for – Method – Duration – Speed can be changed as desired. The values are used for the recording in the "Audit Trail file".	
3.	**(1) Starting the production process:** The production process is started via the "**Start Batch**" button. Similar to a "sequential control configuration" the subsequent step is enabled by the preceding one. Pressing the "**Stop batch**" button terminates the production process and a new "process" can be started. Two different "processes" can be started. (Cleaning I and Cleaning II).	

5.1 Operating the HMI configuration

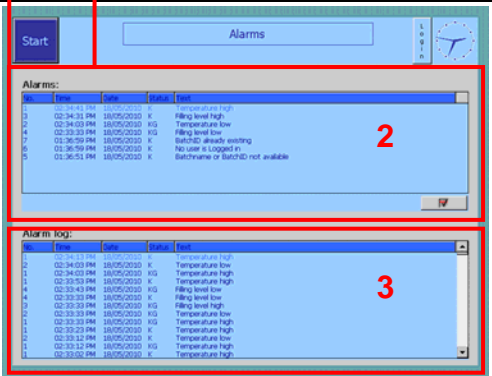| No.	Action	Screen

4.	**(1) Alarms:**
	On this screen the alarms are not output via the "standard alarm display" but via a configured text line. The text line is only shown if an alarm is pending.
	In the following cases an alarm is output:
	   – If no "batch ID" or "batch name" has been entered when starting the production process.
	   – If a "batch ID" has been entered which already exists.
	   – If no user has logged in.
	Via the button next to the text line the alarm is "acknowledged" and the text line is hidden.	

5.	**(1) Terminating runtime:** Runtime is terminated via the button. Always press this button before switching off the operator panel. **(2) Calling further screens:** Via the buttons the screens displayed on the buttons are called.	
6.	**Further display values:** **(1) Current "process parameters":** After pressing a "process button" (e.g. Cleaning I) the respective parameters are adopted and displayed for "checking". **(2) Status display of a filling process:** The status of injection processes for a filling process is simulated via a script. Depending on the assigned value, the status of the individual valves is represented in "color". The "status values" are logged in a data log and listed in the "Batch Report". **Example:** red "Error" green "OK" yellow "Warning" white "no current status exists"	

Screen: 02_Messages "Alarms"

On this screen the alarms created via a simulation are output.

Table 5-2

No.	Action	**1** Screen
1.	**Alarm display:** **(1) "Start" button:** The "**Start**" button takes you back to the start screen. **(2) Pending and unacknowledged alarms:** All pending and unacknowledged alarms are displayed via this screen. To acknowledge an alarm the user must be logged in. **(3) Alarm log:** The archived alarms are output via the alarm log.	

5.1 Operating the HMI configuration

Screen: 03_TagLogging "Trend display"

On this screen two simulated tag values are output in a trend display.

Table 5-3
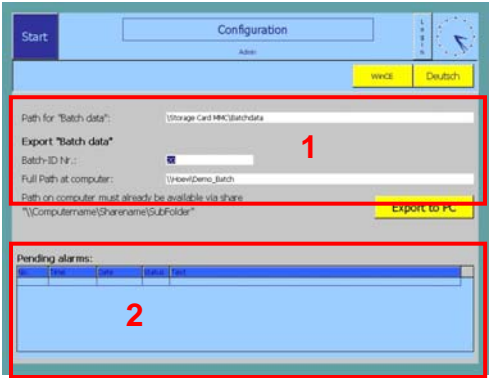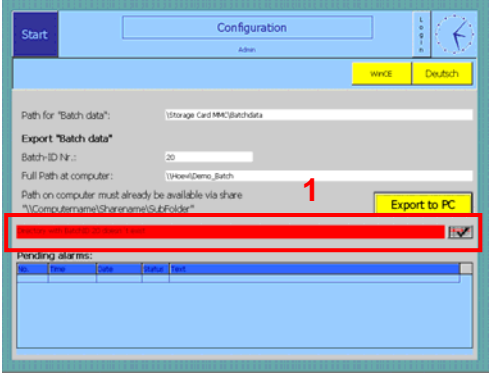
No.	Action	1 Screen
1.	**Trend display:** Via the trend display the simulated values for "Temperature" and "Quantity" are displayed. **(1) "Start" button:** The "**Start**" button takes you back to the start screen.	

Screen: 04_Config "Configuration"

On this screen the various configurations are made.
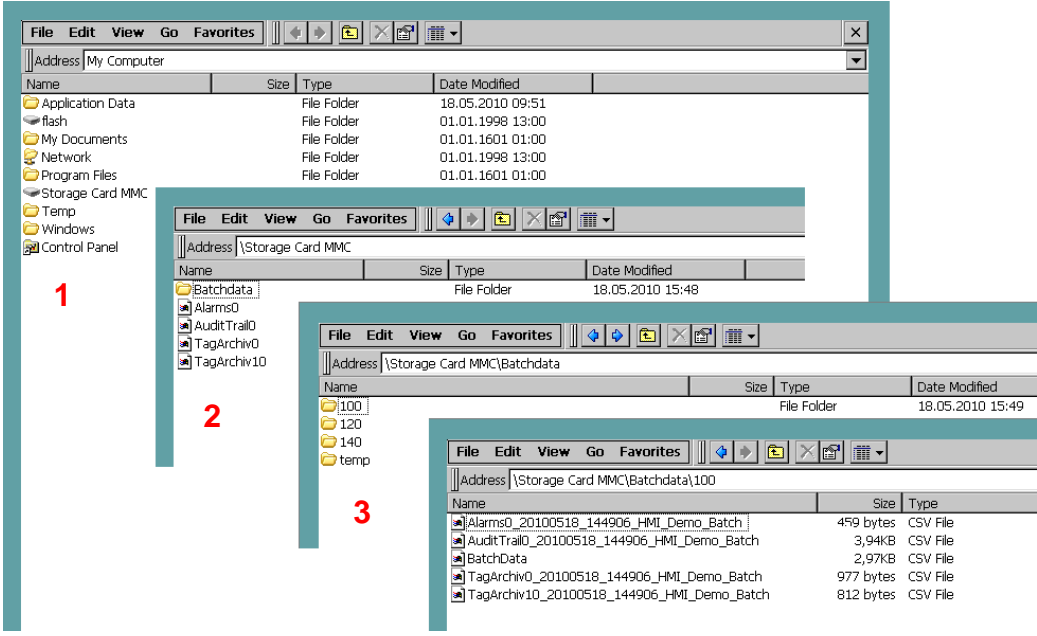
Table 5-4

No.	Action	Screen
1.	**Buttons** **(1) "Start" button:** The "**Start**" button takes you back to the start screen. **(2) "WinCE" button:** The button takes you directly to the "Explorer view" of the operating system of the operator panel. From there you have direct access to the memory card to view individual files and their names. (Details see Table 5-1 no 4) **(2) "English" ("German") button:** This button enables selecting the language. The options are "English" or "German". **(3) "Export to PC" button:** This button transfers the data of a "batch" (csv-files) from the memory card to the PC. Requirement is that the operator has logged in and no "production process" is running. After a respective "batch" has been transferred to the PC, it is automatically deleted from the memory card. If you try to export the same "batch" again, a respective warning message appears.	

No.	Action	Screen
2.	**(1) Specify storage location:** The storage location for the csv-files on the memory card as well as for the PC are automatically assigned. You can retrospectively adjust these paths via this screen. **Storage path for "batch data":** • The csv-files are stored on the memory card under this given path. **Storage path on the PC:** • The csv-files are copied to the PC under this given path. Please note that the given folders on the PC must already exist. The storage path is composed as follows: \\computer name\share name\batch ID **Batch ID no:** • For each production process a "batch ID" is assigned at the beginning of a process. You have to specify this "batch ID" for the "Export" of the files. **Note:** If you do not know exactly the "batch ID" on the memory card then you can call and check the data on the memory card via the "**WinCE**" button. **(2) Alarm display:** Pending alarms (no error messages) are displayed via the alarm display. The alarms are displayed for the duration of 10 seconds.	
3.	**(1) Warning message** If you wish to transfer the data of a "batch" via the "Export to PC" button, certain requirements must be fulfilled. If these are not fulfilled, a "text line" with a respective note are displayed. **Possible warning messages:** • Directory with Batch-ID doesn´t exist • Batch export directory is empty • Batch-ID or one of the paths is empty • Filecopy to computer failed, check network communication with computer • Batch export directory is empty (The texts are stored in the script in English language). Via the button next to the text line the alarm is "acknowledged" and the text line is hidden.	

5.1 Operating the HMI configuration

No.	Action	Screen

4.	**Explorer view**
	
	Pressing the "**WinCE**" button takes you to the "Explorer view" of the operator panel.
	There you have the option of viewing the data on the memory card. This is especially helpful if you do not know exactly the "batch ID" to be exported.
	
	Figure 5-1
	   – **(1)** Explorer view after pressing the "**WinCE**" button.
	   – **(2)** Viewing the data storage on the memory card (Storage Card MMC)
	   – **(3)** Viewing the data after opening the "Batchdata" folder
	      (This folder contains the stored process data suitable for the respective "batch ID")
	   – **(4)** Viewing the data after opening the "batch ID" folder "100"
	
	The "batch ID folder" contains all relevant data for this process.
	The folder content can be copied to the PC via the "Export function" ("Export to PC" button).	

5.2 Operating the EXCEL templates

The application example contains the folder "Demo_BatchReport_Excel_V1.2".
The folder contains the following three files:

- HmiCheckLogIntegrity.exe

- PharmaBatchReport.xls

- ReportTemplate.xls

These three files must always be located together in one folder. The name of the folder can be selected by the user.

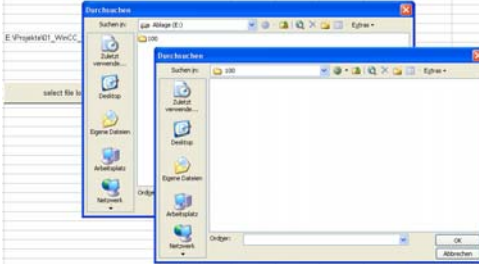For further processing a "Batch Report" you only need the "PharmaBatchReport.xls file".

PharmaBatchReport.xls

Table 5-5

No.	Action	Screenshot
1.	**Opening the PharmaBatchReport.xls file** Open the "PharmaBatchReport.xls" file with a double-click. Depending on your security settings you receive a warning message that the Exce file contains macros. Confirm the query with "Enable macros" **(1)** Button via which the "Batch Report" is selected **(2)** On these screens the read "values" are temporarily stored.	
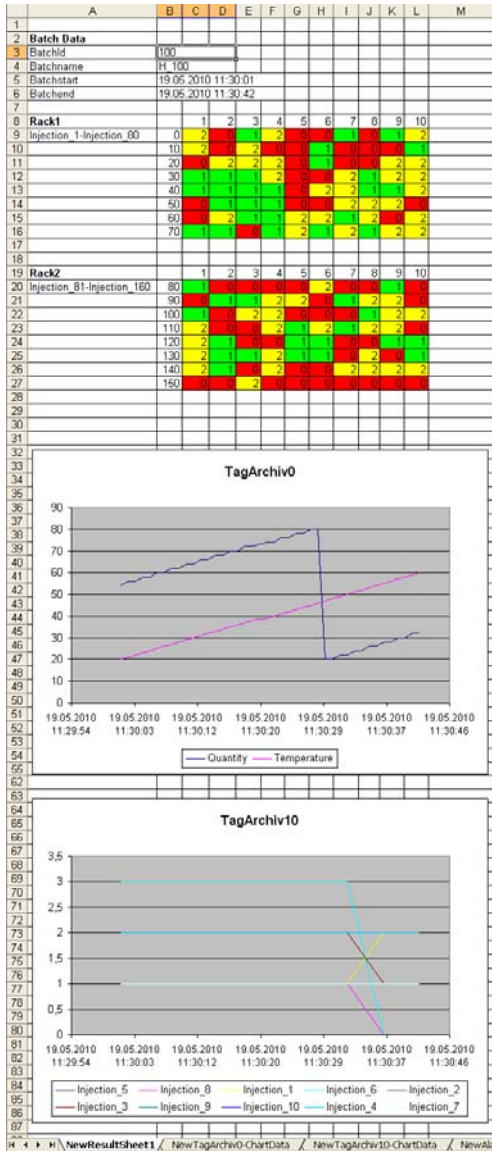
5.2 Operating the EXCEL templates

No.	Action	Screenshot
2.	**Calling a "batch report"** 1. Acknowledge the button "select file location and generate batch protocol" 2. Navigate to the folder which contains the "batch report" file. 3. Then press the "**OK**" button. **Note:** The "batch report files" have the file extension "*.csv". Therefore no files are displayed in the folder window when calling the folder. 4. After pressing the "OK" button a script runs in the background. The "report file" is created. **Note:** You receive a warning message if the condition does not apply: If you do not wish to evaluate a further "batch report file" you can close the "PharmaBatchReport.xls file" again. This file does not need to be saved.	

Report_xxx.xls file

Table 5-6

No.	Action	Screenshot
1.	**View of the generated report file** Via the "PharmaBatchReport.xls" Excel file the "**Report_xxx.xls file**" is generated. The name of the report file is composed as follows: Report_*(Batch-ID)*.xls The Report_xxx.xls file contains all data produced during the "batch process". The "report file" contains a total of 6 worksheets. • NewResultSheet1 (current screen) → graphic evaluation of tag values. • NewTagArchiv0-ChartData → List of tag values of the "Quantity" and "Temperature" tags. • NewTagArchiv0-ChartData → List of tag values of the tags "Injection_1 to Injection_10". • NewAlarmResultSheet1 → List of alarms. • NewAlarmResultSheet1 → List of all operations. • NewResultBatchData → List of tag values of the tags "Injection_1 to Injection_160". The file is automatically stored in the "Batch ID folder".	

6 Links & Literature

6.1 Literature

The following list is by no means complete and only provides a selection of appropriate sources.

Table 6-1

	Topic	Title
/1/	Audit	Information on Audit is available in the WinCC flexible help or in the Getting Started on the WinCC flexible options.
/2/	VBS	Information on VBS is available in the WinCC flexible help or in the manual in chapter "System functions and runtime scripting".

6.2 Internet Links

The following list is by no means complete and only provides a selection of appropriate sources.

Table 6-2

	Topic	Title
\1\	Reference to this entry	http://support.automation.siemens.com/WW/view/de/42931547
\2\	Siemens I IA/DT Customer Support	http://support.automation.siemens.com
\3\	FAQ	How do you integrate an operator panel into a local network? http://support.automation.siemens.com/WW/view/de/13336639
\4\	Manual	WinCC flexible Getting Started options http://support.automation.siemens.com/WW/view/de/18657078
\5\	FAQ	What do you need to watch out for when naming archives and when archiving tags in a csv file on Windows-based systems? http://support.automation.siemens.com/WW/view/de/31155956
\6\	FAQ	Which external storage locations are available on the various operator panels (WinCC flexible/ProTool) for archiving data? http://support.automation.siemens.com/WW/view/de/26190516
\7\	FAQ	Which external filing location for archiving data is available for the various operator panels (WinCC flexible/ProTool)? http://support.automation.siemens.com/WW/view/de/35935468
\8\	FAQ	Which external storage media can be used with the SIMATIC panels,or which memory card interfaces they have. http://support.automation.siemens.com/WW/view/de/21847868

7 History

Table 7-1

Version	Date	Changes
V1.0	23.06.2010	First issue