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WinCC Unified SIPEC Workshop

Experience the future of Visualization Hands On

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siemens.com/wincc-unified-system

SIMATIC WinCC Unified Hands On: Goals

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What we are going to accomplish today:

1. Introduction to WinCC Unified
2. Screen Layout with Picture Windows
3. Screen Navigation
4. Screen Engineering
5. Alarming
6. Logging
7. Faceplates

Other topics

8. Openness in WinCC Unified
9. Technological Hierarchy (Object Orientated)
10. User Administration
11. Recipes
12. Reporting

WinCC Unified SIPEC Workshop Basic Information

Agenda



1 Overview

2 Licensing

3 Preconditions

4 Unified Tools

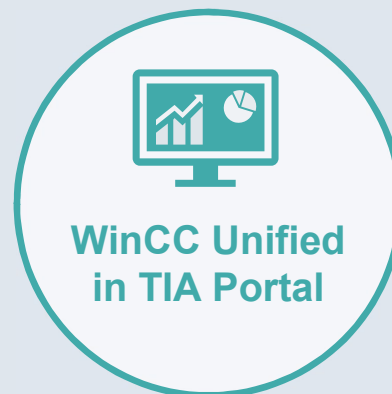
We meet these requirements with the new WinCC Unified system!



- Native Web Technology, HTML5, SVG, JavaScript
- Device independent
- Object oriented – HMI



- One Engineering
- Unified Comfort Panels
- WinCC Unified PC
- Collaboration



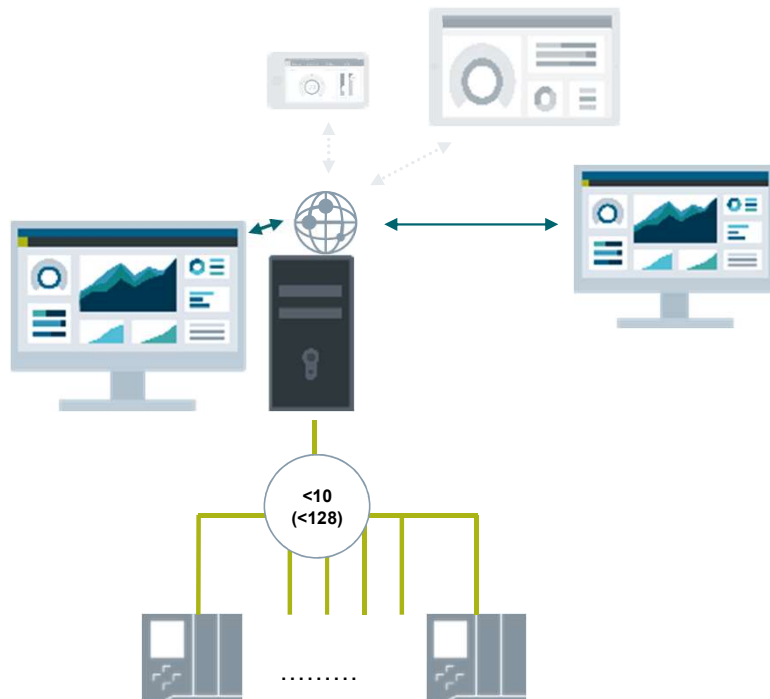
- On Premise
- Unified @Cloud
- Unified @Edge
- MindSphere Apps



- Basis for Digitalization
- Plant Intelligence
- Integration Platform for everything north of the PLC
- Openness

SIMATIC WinCC Unified Configuration - PC Systems

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Grow from small to large applications

What is included:

- **Openness** (Engineering, Runtime, Custom web controls) and **Scripting**
- **2 Clients included**
one for local HMI plus one for remote access
- **S7 connections** (up to 10)
- OPC UA DA Server & Client
- 3rd Party Drivers
- **Reporting** (manual)
- **Object oriented Technological Hierarchy**

Expandable via options

- S7 connections up to 128
- Logging concept (w/o, file-based, databased)
- Logging tags (file-based up to 5000, databased no limit)
- Additional Concurrent Clients (up to 150)

Configuration - PC Systems

WinCC Unified PC Runtime - options



... scalable from operator panel to control center

... expandable to fit every application

... on premise data backbone

... with proven engineering in the TIA Portal

Agenda



1 Overview

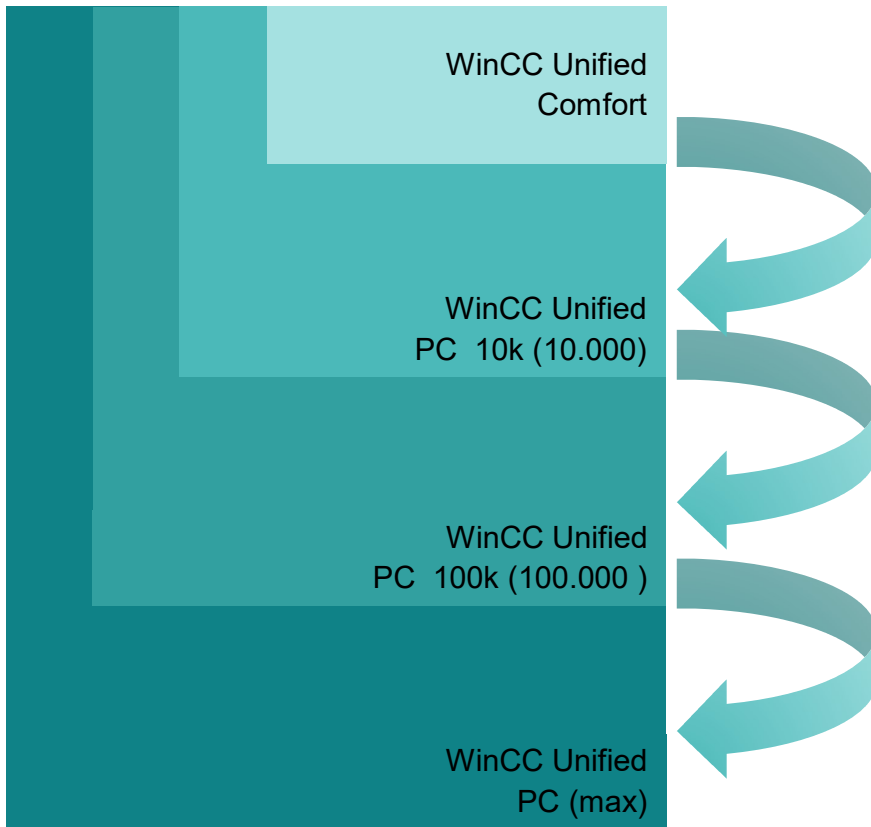
2 Licensing

3 Preconditions

4 Unified Tools

SIMATIC WinCC Unified Engineering Packages

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Engineered in the TIA Portal

SIMATIC WinCC Unified

License Compatibility Engineering - Existing customers



WinCC (TIA Portal) V16			
Engineering System  valid for...	Comfort Panels	WinCC RT Adv.	WinCC RT Prof.
WinCC Prof. (max)	✓	✓	✓ (max.)
WinCC Prof. (4k)	✓	✓	✓ (4k)
WinCC Prof.(512)	✓	✓	✓ (512)
WinCC Advanced	✓	✓	✗
WinCC Comfort	✓	✗	✗



WinCC Unified (TIA Portal) V16	
Unified Comfort Panels	Unified PC Runtime
✓	✓ (100k)
✓	✓ (10k)
✓	✓ (10k)
✓	✓ (10k)
✓	✗

Existing customers with WinCC (TIA Portal):

The license of WinCC (TIA Portal) is also valid for engineering using WinCC Unified (TIA Portal).

SIMATIC WinCC Unified License Compatibility Engineering - New Customers



WinCC Unified (TIA Portal) V16		
Engineering System <small>valid for..</small>	Unified Comfort Panels	Unified PC Runtime
PC (max.)	✓	✓ (max.)
PC (100k)	✓	✓ (100k)
PC (10k)	✓	✓ (10k)
Comfort	✓	✗



WinCC (TIA Portal) V16		
Comfort Panels	WinCC RT Advanced	WinCC RT Professional
✓	✓	✓ (max.)
✓	✓	✓ (max.)
✓	✓	✗
✓	✗	✗

Agenda



1 Overview


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SIMATIC WinCC Unified Preconditions



Operating System (PC-systems)	Configuration	Remark
Windows 10 Pro	<ul style="list-style-type: none"> • Windows 10 Pro Version 1809 • Windows 10 Pro Version 1903 	 Windows 10
Windows 10 Enterprise	<ul style="list-style-type: none"> • Windows 10 Enterprise Version 1809 • Windows 10 Enterprise Version 1903 	64-Bit
Windows 10 IoT Enterprise LTSB (Test for IPC)	<ul style="list-style-type: none"> • Windows 10 IoT Enterprise 2015 LTSB • Windows 10 IoT Enterprise 2016 LTSB • Windows 10 IoT Enterprise 2019 LTSC 	
<ul style="list-style-type: none"> • Windows Server 2012 R2 StdE • Windows Server 2016 Standard • Windows Server 2019 Standard 	Full Installation	64-Bit

SIMATIC WinCC Unified Preconditions

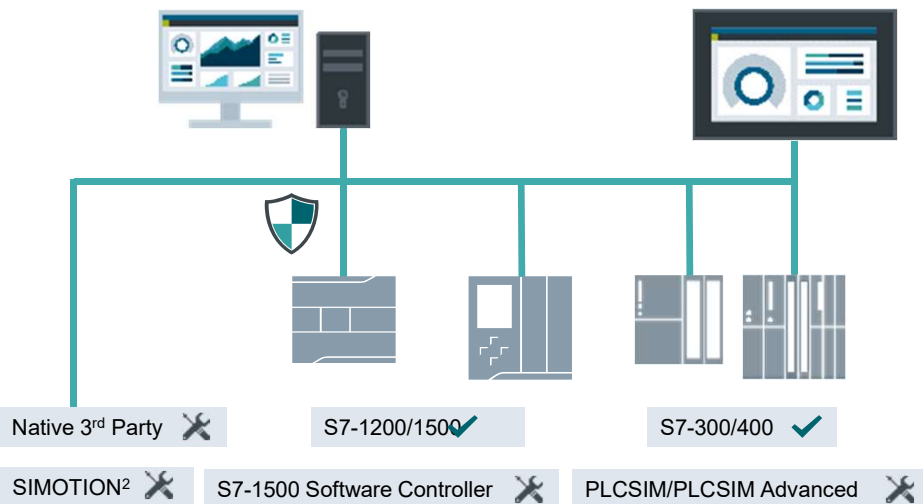
Operating System (Client)	Recommended Browser
Microsoft Windows	<ul style="list-style-type: none">• Google Chrome (Test focus)• Mozilla Firefox,• Microsoft Edge
Android	<ul style="list-style-type: none">• Google Chrome (Test focus)• Firefox• Edge
iOS, Mac	<ul style="list-style-type: none">• Safari (Test focus)• Google Chrome• Firefox• Edge



SIMATIC WinCC Unified– Connectivity To automation systems

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Unified Comfort Panel ✓ PC ✓



Native 3rd Party¹ communication via Channel Support Package
e.g., Modbus TCP, Allen-Bradley EtherNet/IP, ...

OPC UA today

¹ In preparation ² only tag communication via OPC UA DA

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Perfect integration of SIMATIC PLCs
(TIA Portal)

High number of connections
for PC systems, up to 128 PLCs
(>10 with extra Softnet-IE license)

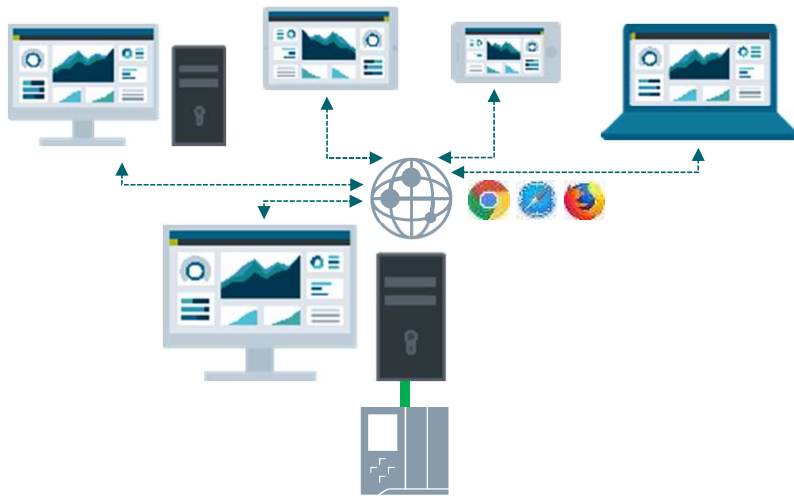
Increased number of connections
for Panel systems, up to 16 PLCs

SIMATIC WinCC Unified– Clients

Flexible web-based, remote Monitoring and Operation

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Unified Comfort Panel  PC 



WinCC Unified includes two Clients: One for local visualization plus **ONE Client for remote operation, which is included in every WinCC Unified PC Runtime system.**

“Zero Installation” Clients, based on native web technology, independent of platform and browser

Flexible, maintenance free 24/7 remote access due to pooled license (concurrent access)

Secure remote access using Web standards (https with SSL)



**WinCC Unified
Device Handling**

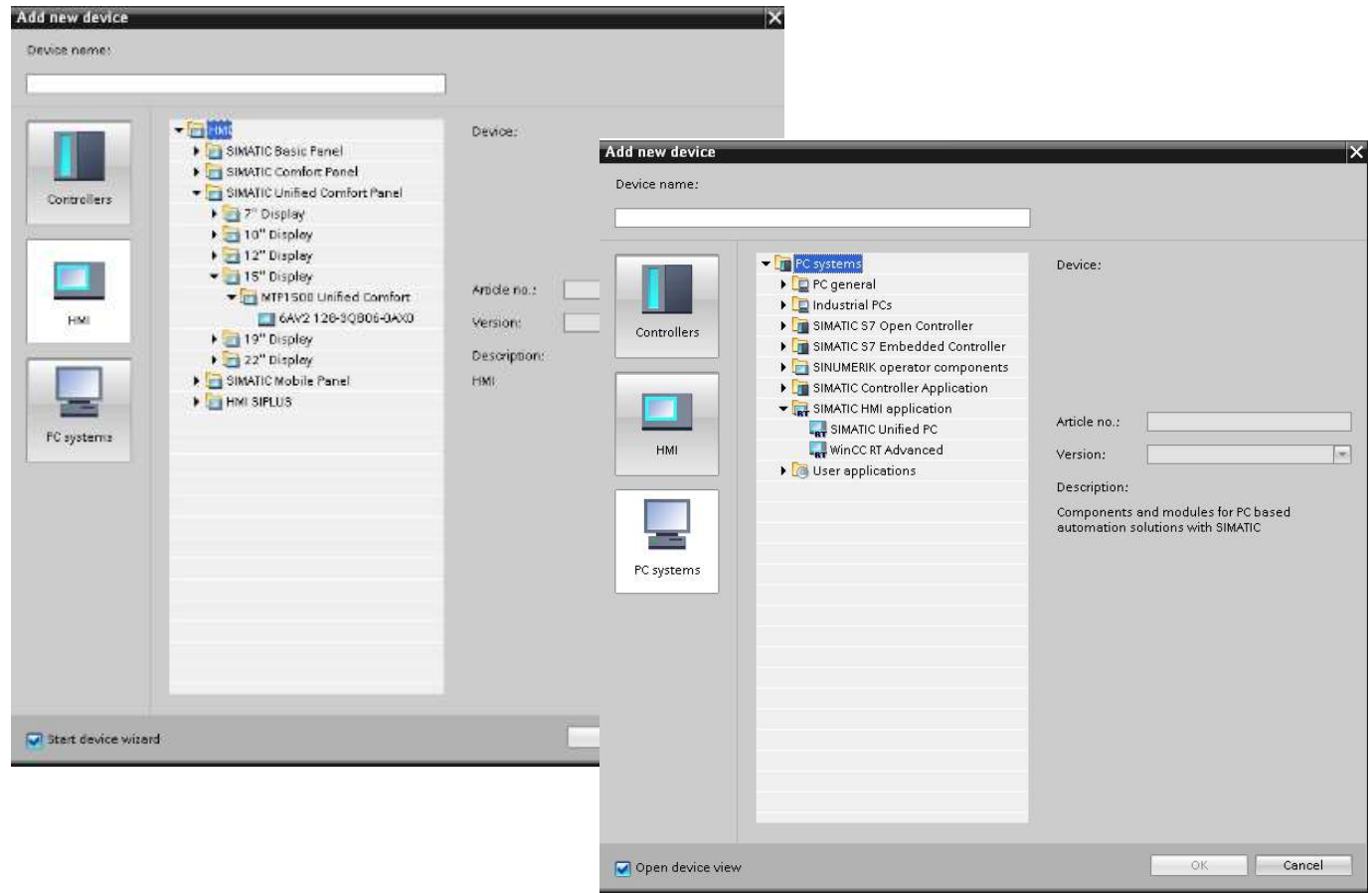
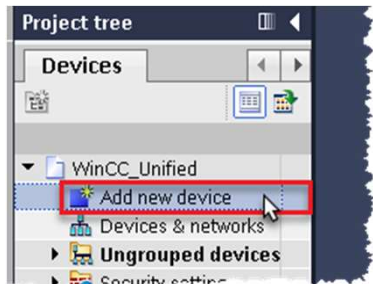
Agenda



1 Device Handling

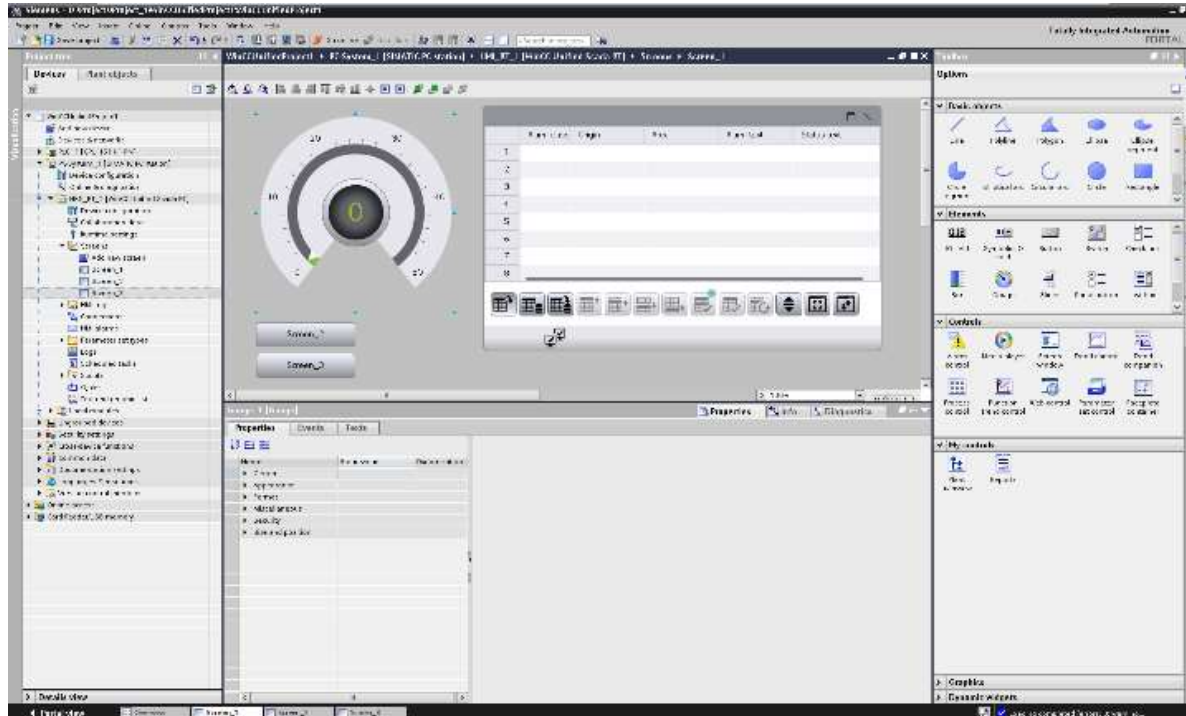
2 Screen Navigation

SIMATIC WinCC Unified Add Device



SIMATIC WinCC Unified Screen Engineering

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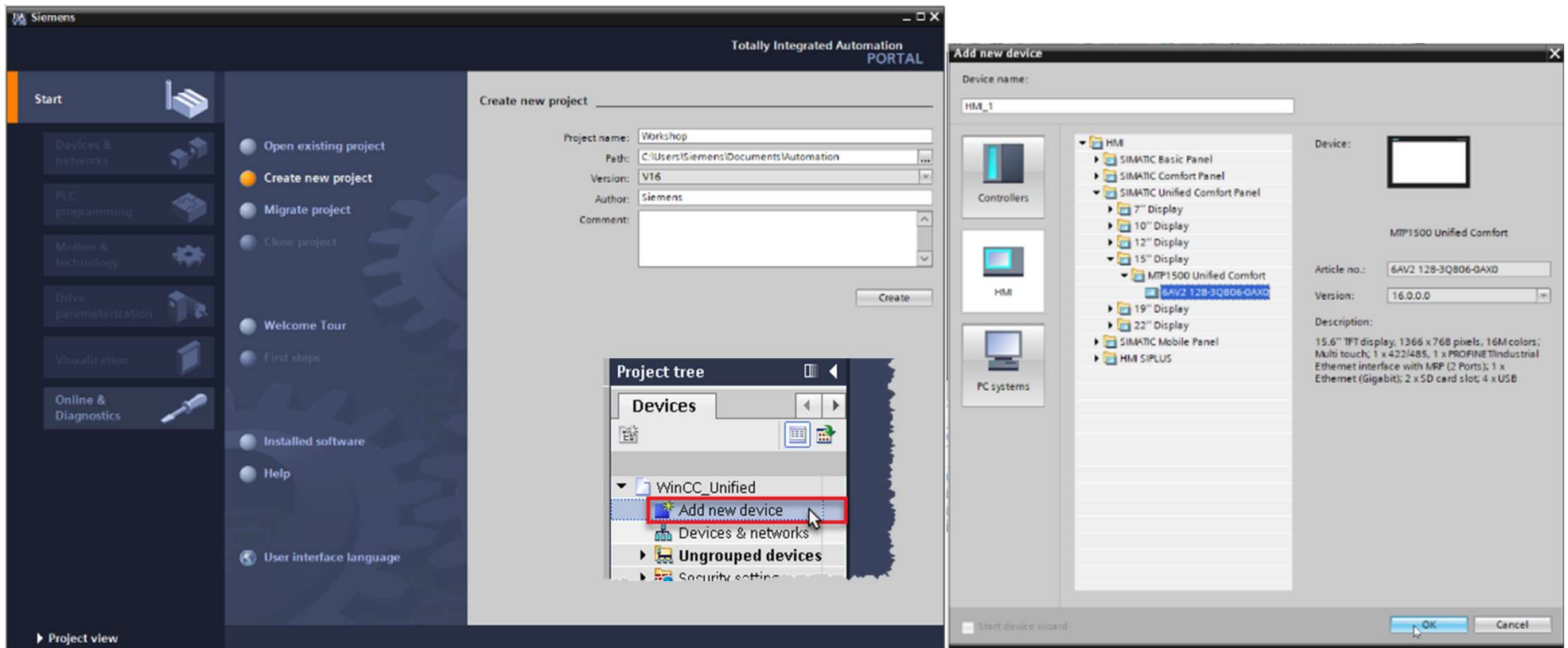


The screen editor of WinCC Unified fits inside the TIA portal suite!

SIMATIC WinCC Unified

Create a new project and Add Device

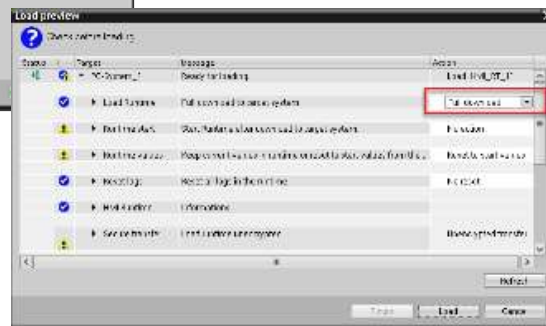
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SIMATIC WinCC Unified Hands On: Project Creation & Runtime Start

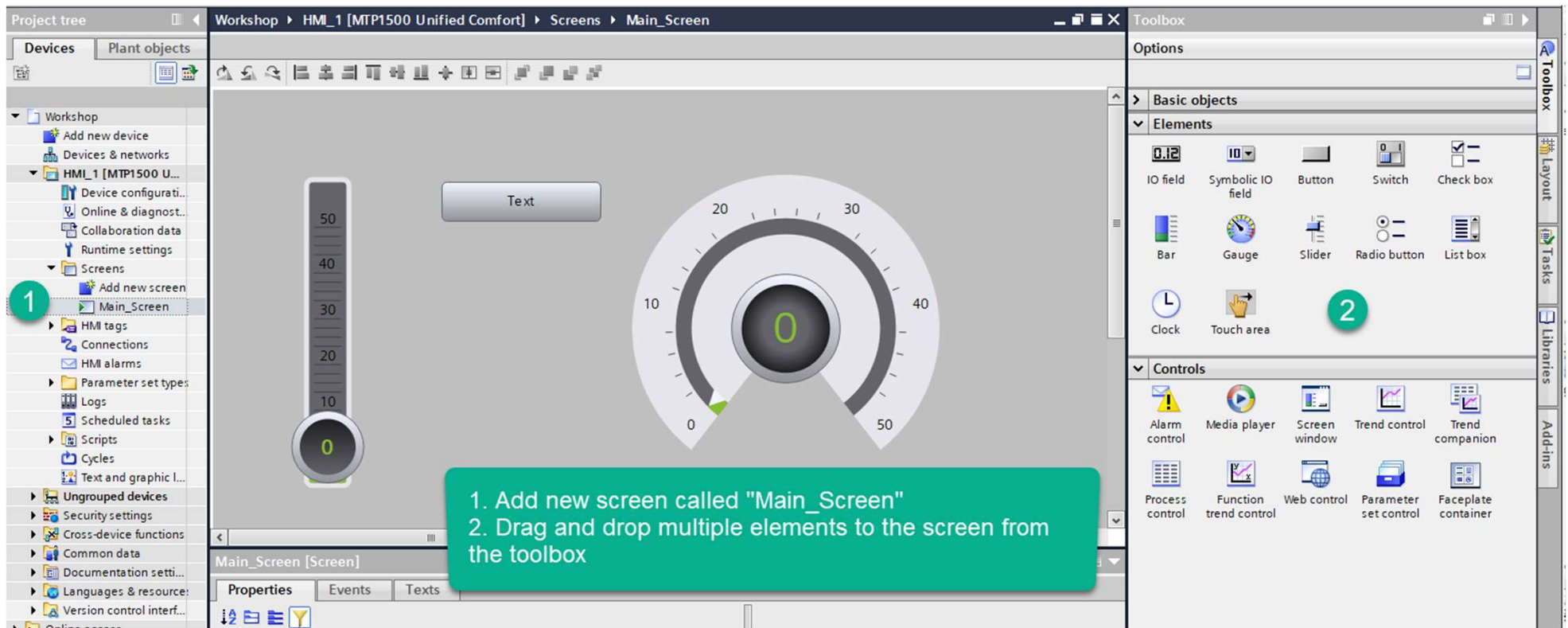
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HANDS ON in 10 min



1. Add a Unified Panel to your TIA Project
2. Create a Start screen called 'Main_screen'
3. Add some elements
4. Compile and simulate your project
5. Open a browser and connect to the Unified Runtime

SIMATIC WinCC Unified Add Screen and Elements



SIMATIC WinCC Unified Runtime Settings

The screenshot shows the SIMATIC WinCC Unified Runtime Settings interface. The left sidebar contains a project tree with the following structure:

- Project tree
 - Workshop
 - Plant objects
 - General
 - Alarms
 - Services
 - Language & font
 - Collaboration
 - Storage system
 - Devices
 - Add new device
 - Devices & networks
 - HMI_1 [MTP1500 U...]
 - Device configurati...
 - Online & diagnost...
 - Collaboration data
 - Runtime settings (1)
 - Screens
 - Add new screen
 - Main_Screen
 - HMI tags
 - Connections
 - HMI alarms
 - Parameter set types
 - Logs
 - Scheduled tasks (5)

The main window displays the 'Runtime settings' for 'HMI_1 [MTP1500 Unified Comfort]'. The 'General' tab is active, showing the following sections:

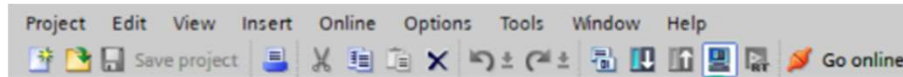
- Identification**
 - Runtime ID: 2322f46a-5ec1-4085-a77f-38bf2d2866ed
- Encrypted transfer**
 - 2. Activate encrypted transfer
 - Password: [text input]
 - Confirm password: [text input]
 - Allow initial password transfer via unencrypted download
- Screen**
 - 3. Start screen: Main_Screen

A green callout box on the right contains the following instructions:

1. Open Runtime settings
2. Deactivate encryption
3. Assign 'Main_Screen' as the start screen

SIMATIC WinCC Unified

Download to Simulator and test screen



Load preview

? Check before loading

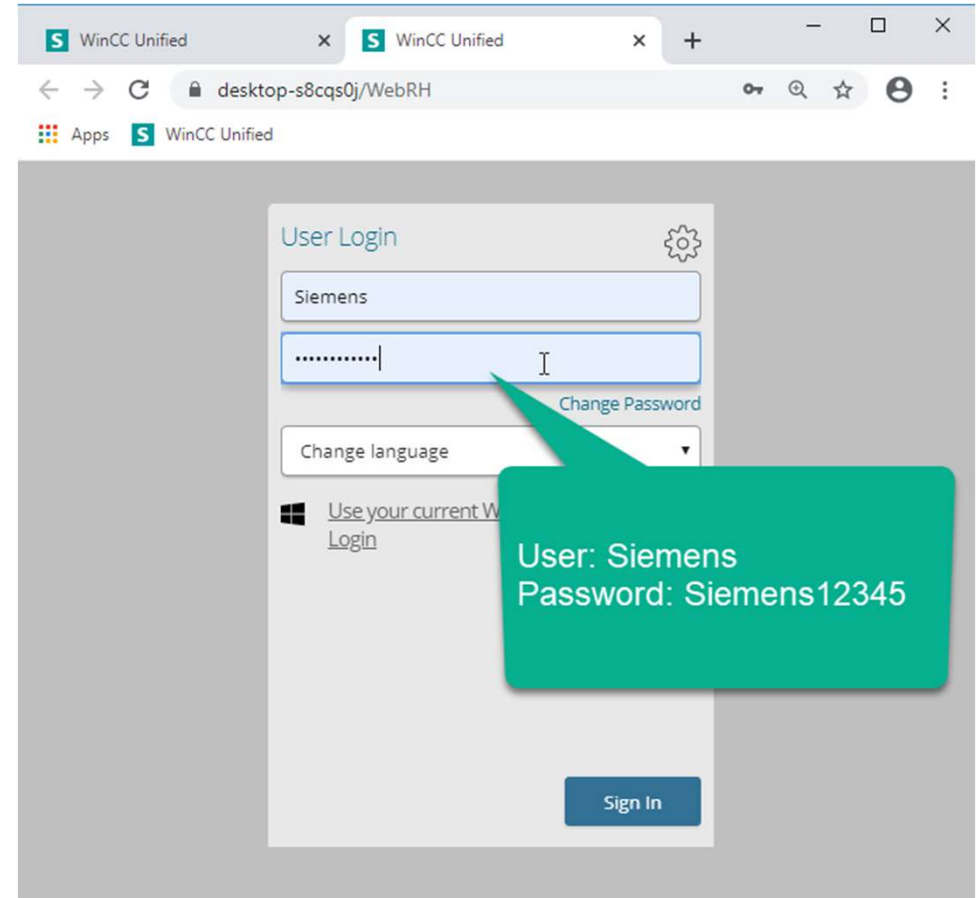
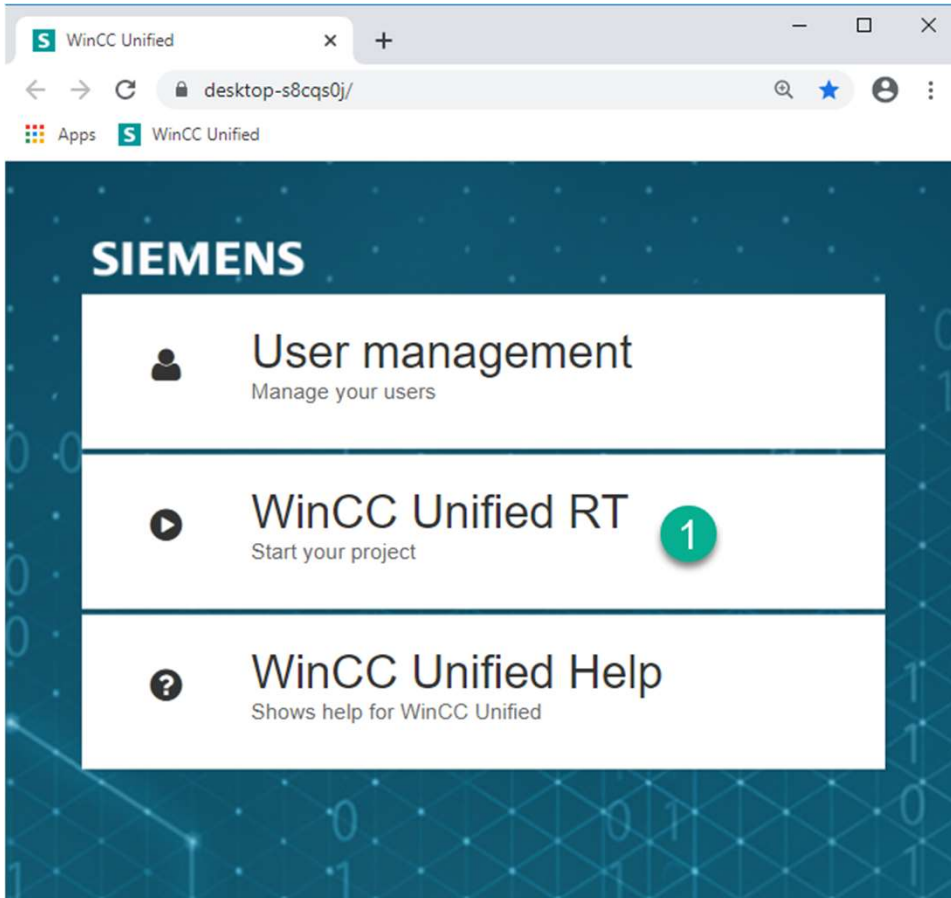
Status		Target	Message	Action
↓	<input checked="" type="checkbox"/>	▼ HMI_1	Ready for loading.	Load 'HMI_RT_1'
	<input checked="" type="checkbox"/>	▶ Simulation mode	Load Runtime in simulation mode	
	<input checked="" type="checkbox"/>	▶ Load Runtime	Full download to target system	Full download
	<input checked="" type="checkbox"/>	▶ Runtime start	Start Runtime after download to target system.	Start runtime
	<input checked="" type="checkbox"/>	▶ Runtime values	Keep current values in runtime or reset to start values from the en	Keep current values
	<input checked="" type="checkbox"/>	▶ Reset logs	Reset all logs in the runtime	No reset
	<input checked="" type="checkbox"/>	▶ HMI Runtime	Informations	

Refresh

Finish Load Cancel

SIMATIC WinCC Unified Open Browser and Launch Runtime

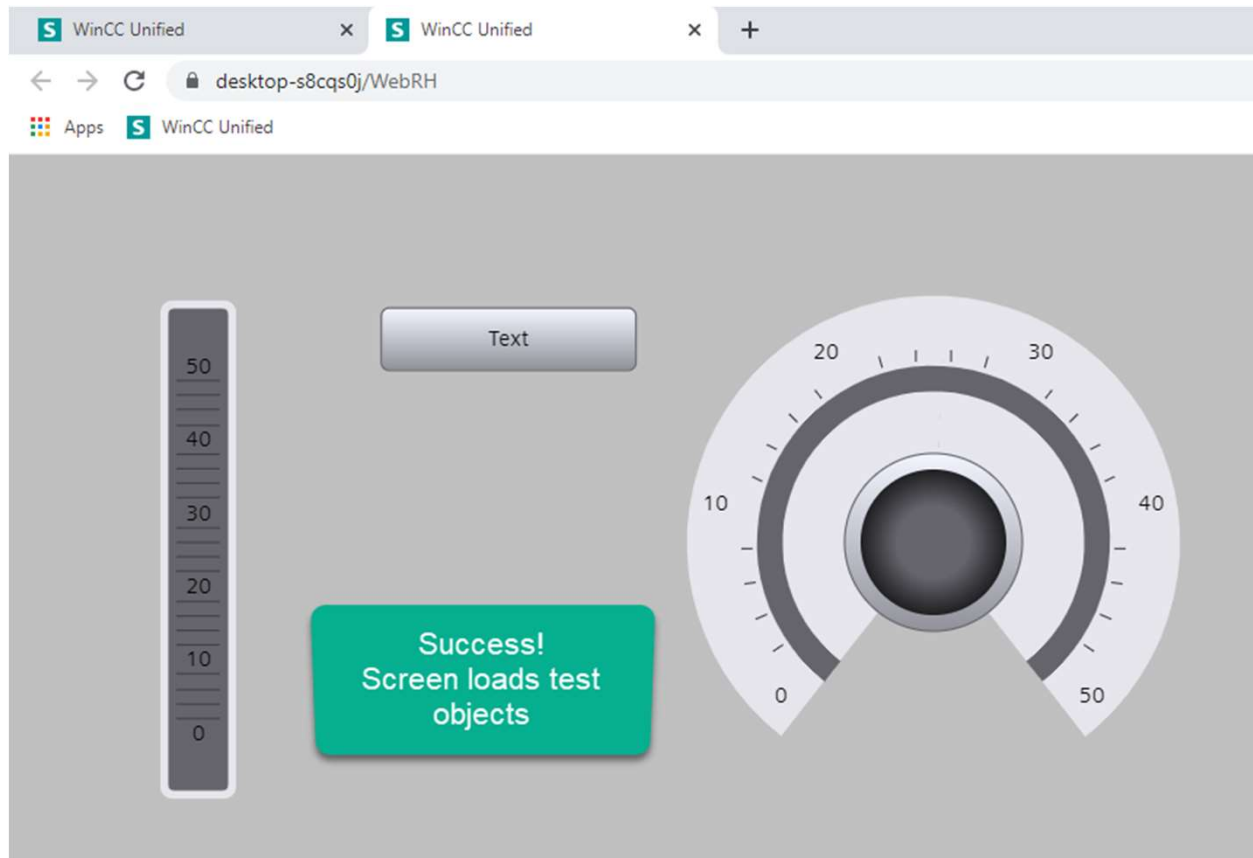
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SIMATIC WinCC Unified Success!!

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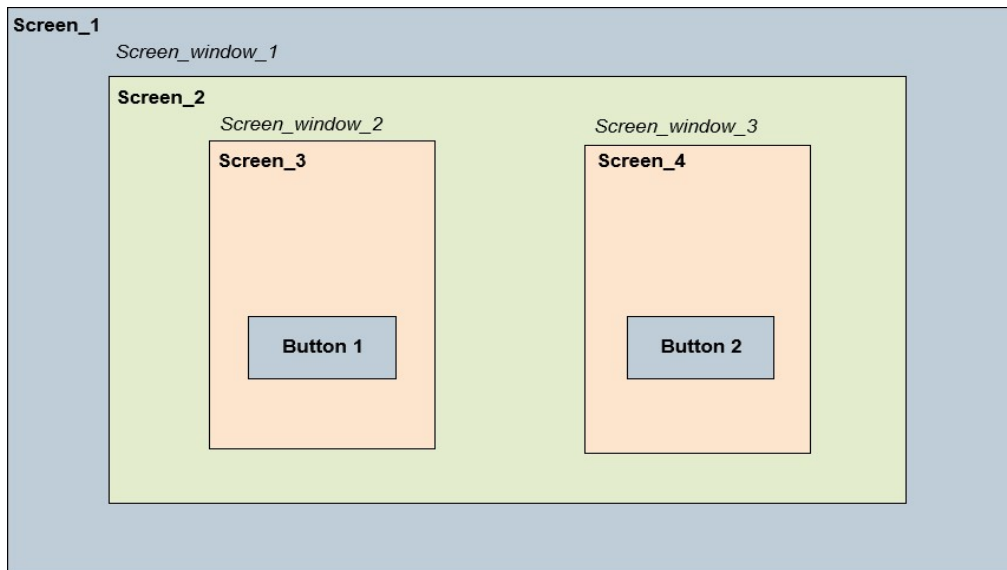
Agenda



1 Device Handling

2 Screen Navigation

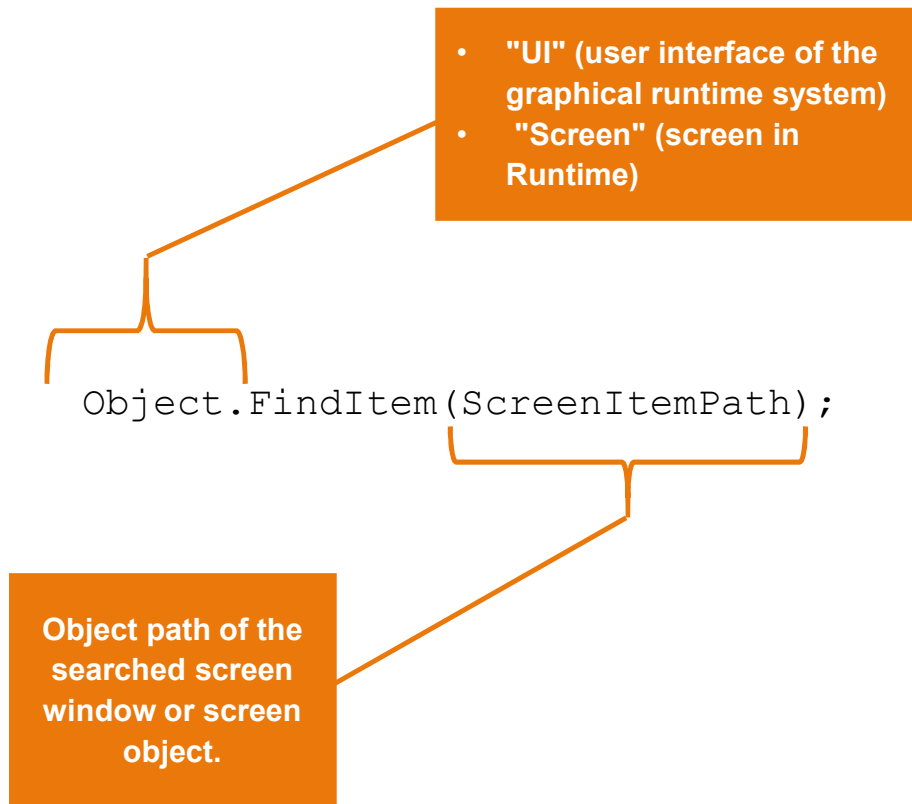
SIMATIC WinCC Unified Screen Navigation - Description



- To create the screen layout screen windows are used in WinCC Unified
- This applies also to the Unified Comfort Panels
- Depending on the application, it may happen that several screen windows are nested.
- The **FindItem()** method can be used to reference the objects within the screen windows and to change their properties dynamically.
- Method of the following objects: **UI** and **Screen**.
- Syntax: **Object.FindItem(ScreenItemPath);**
- Parameter: **ScreenItemPath** [String].

Working with clear object names, instead of default object names is highly recommended!

SIMATIC WinCC Unified Screen Navigation - Description



- The object path consists of the names of the screen windows (Screen Windows) and screen objects (Screen Items).
- The names are connected via a slash ("/") according to the hierarchical positioning.

SIMATIC WinCC Unified Screen Navigation - Description

r
e
l
a
t
i
v

Prefix	Description
" .."	References the higher level screen window (parent) in the context of the current screen window.
" ."	References the own screen window (self).
""	A screen object of the current screen window is referenced without prefix.

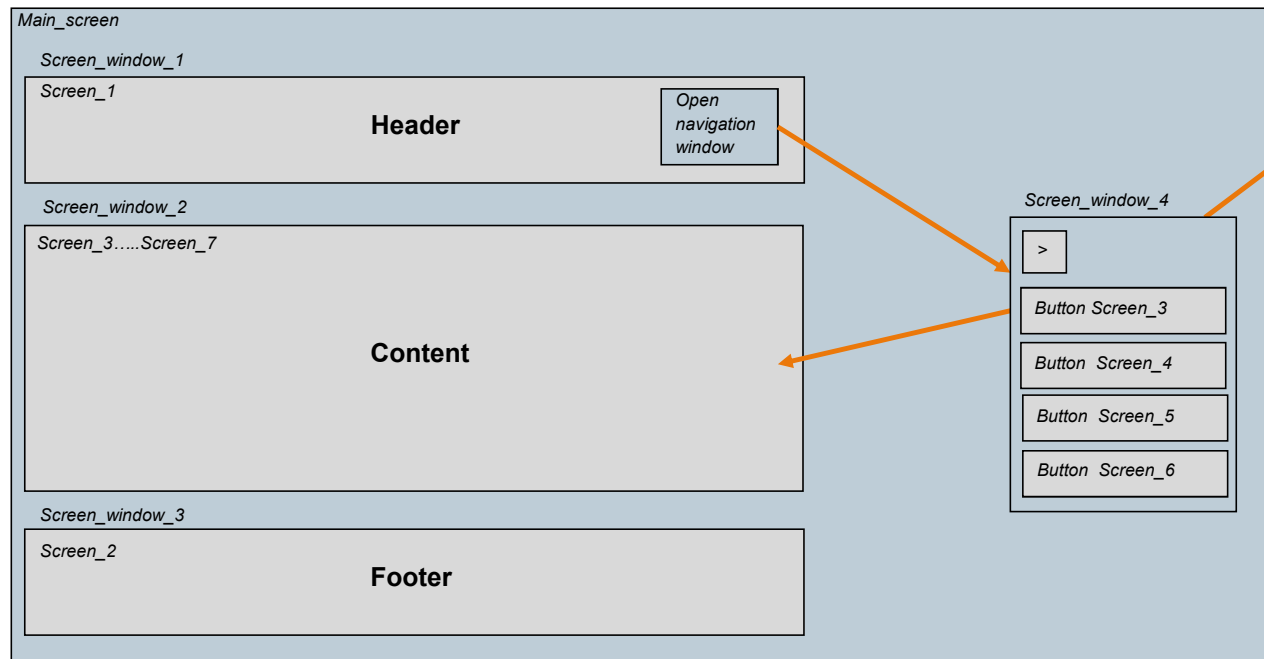
a
b
s
o
l
u
t

Prefix	Description
"/"	References a screen window on the highest level, whose name must follow.
"~"	References the screen window on the highest level in the own screen hierarchy.

- Relative and absolute objects paths are distinguished by the prefix of the object path.
- The **relative object path** is specified starting from the screen where the script is called.
- The **absolute object path** is specified starting from the "RootScreenWindow".

SIMATIC WinCC Unified Screen Navigation – Example 1 - Adjacent screen windows

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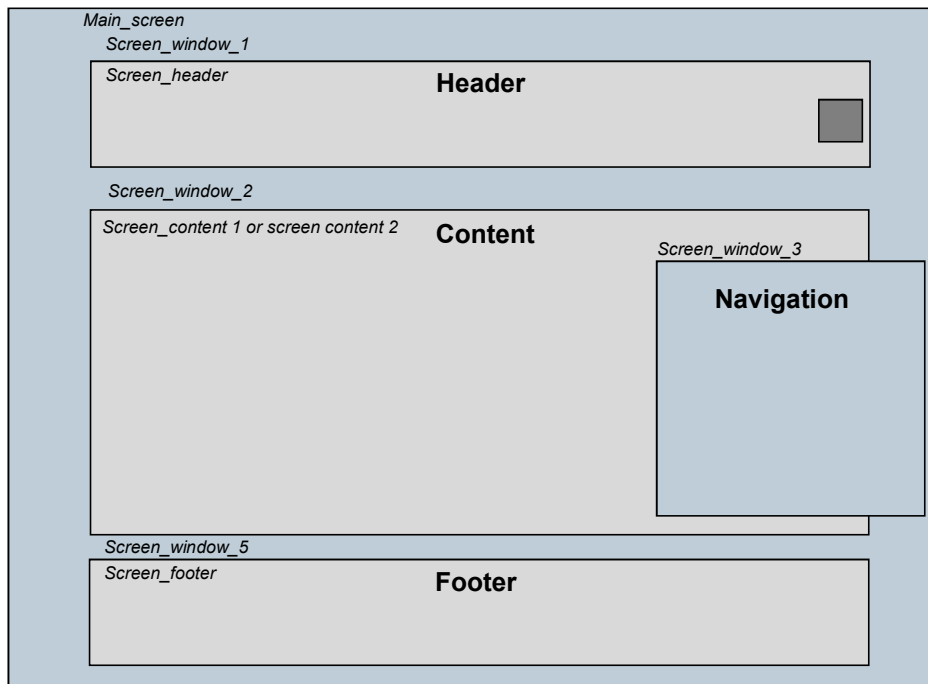


Navigation screen
to change content
of the Screen_
window_2

The navigation window is a good example of the FindItem() Method functionality.

SIMATIC WinCC Unified Screen Navigation

LIVE DEMO



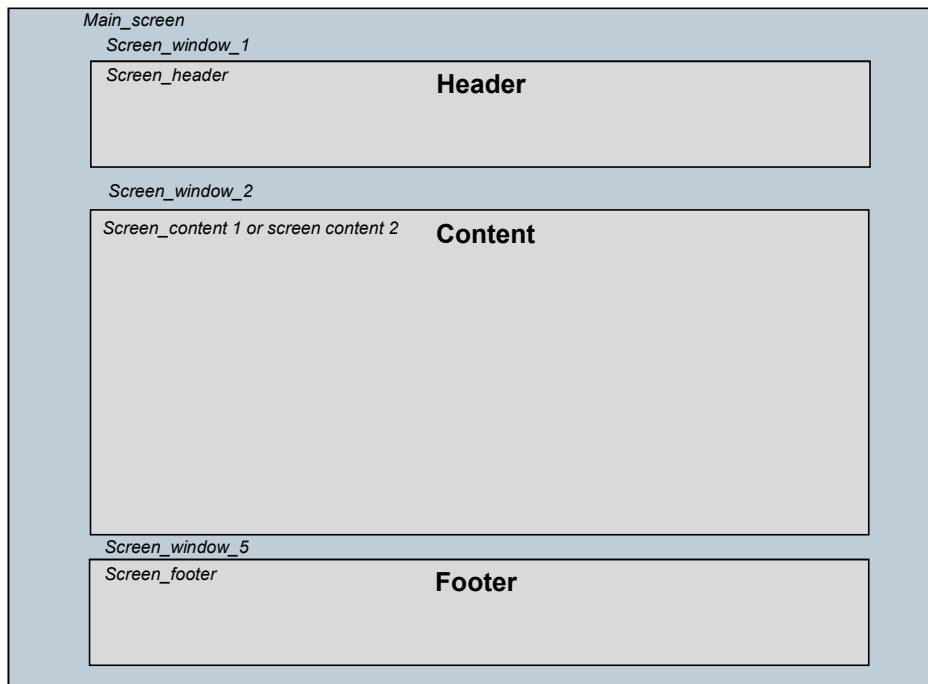
Create a Navigation

Working with Screen windows

SIMATIC WinCC Unified

Hands On: Screen Windows & Screens

H A N D S O N in 15 min

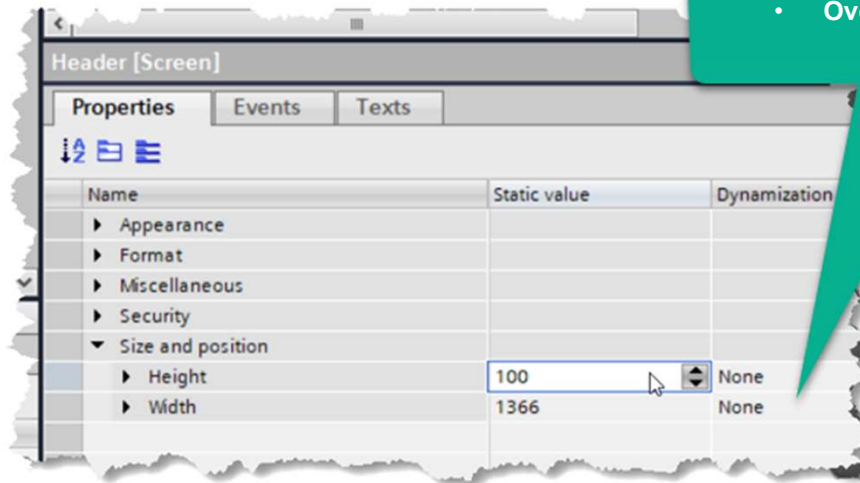
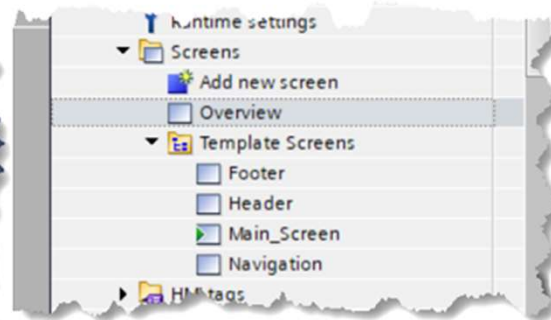
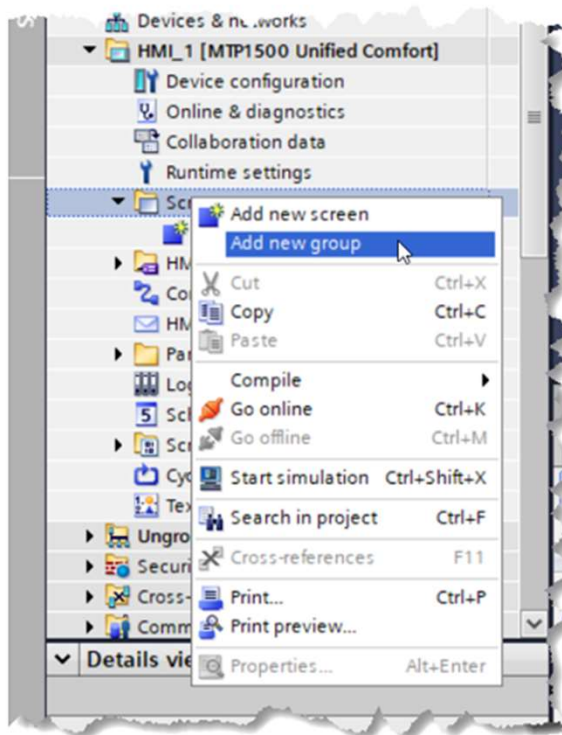


Create the following screens:

1. Main screen 1366*768 (default)
 2. Header 1366*120
 3. Footer 1366*70
 4. Overview 1366*578
1. On the main screen add 3 screen windows:
as show on the left picture and define the screen
for each screen window.
 2. Define clear names for the screen windows

SIMATIC WinCC Unified Add Screen Groups and Screens

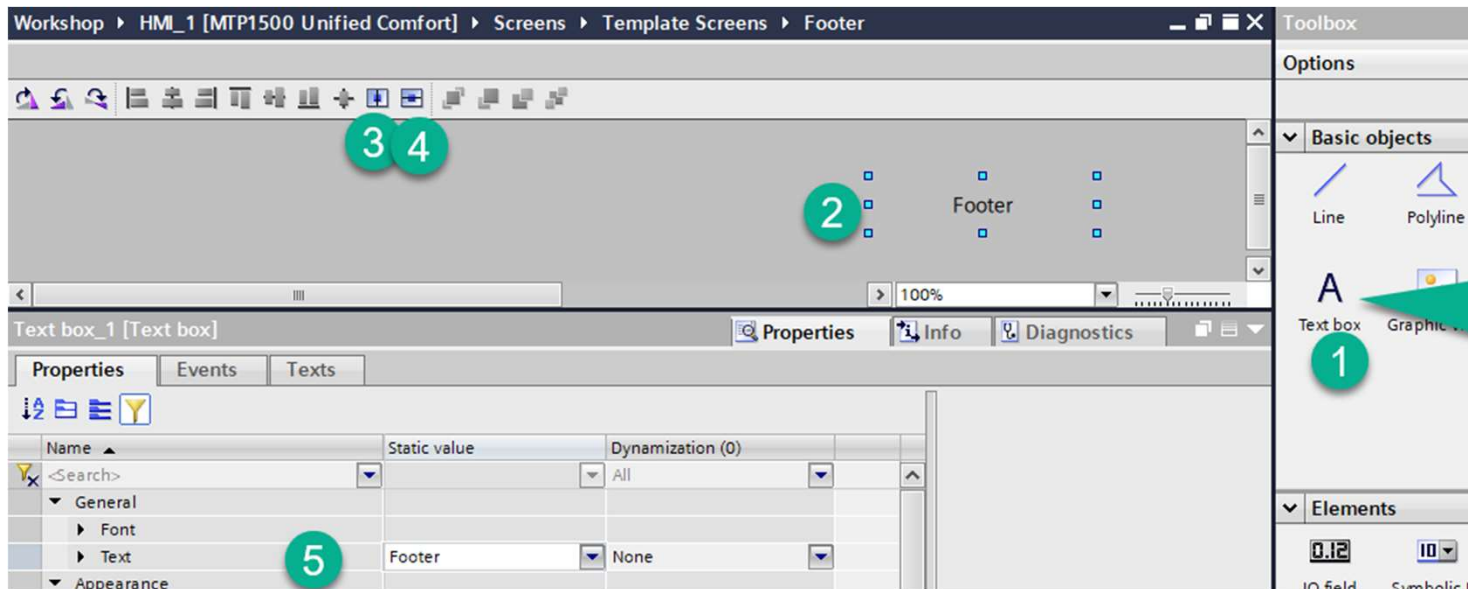
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- Main screen 1366*768 (default)
- Header 1366*120
- Footer 1366*70
- Overview 1366*578

SIMATIC WinCC Unified

Add Text label on each screen

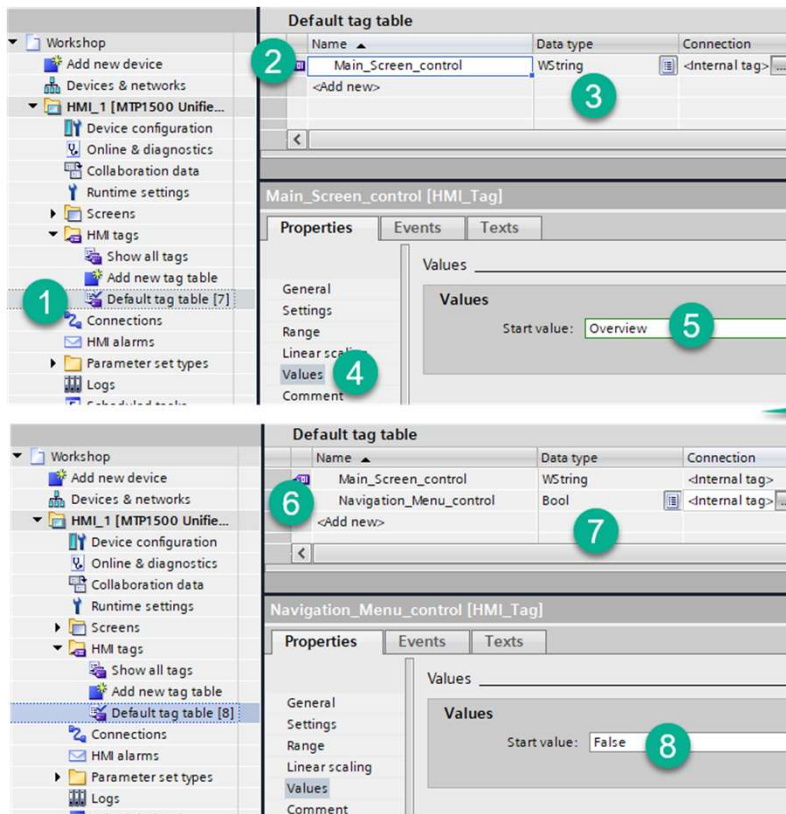


Add a Text box to each screen created to help indicate which screen is being displayed during runtime.

1. Footer
2. Header
3. Overview

NOTE: Center object on screen with the tools #3 and #4

SIMATIC WinCC Unified Add Tags for Navigation



SIMATIC WinCC Unified Add Screen Windows

SW_Header [Screen window]

Properties Events Texts

Name	Static value	Dynamization (0)
<Search>		All
General		
▶ Screen	Header	None
▶ Appearance		
▶ Window settings	None	None
▶ Format		
▶ Allow zoom		<input checked="" type="checkbox"/> None
▶ Fit to size	Fit screen in window	None
▶ Horizontal scroll bar position	0	None
▶ Vertical scroll bar position	0	None
▶ Visibility horizontal scroll bar	Automatic	None
▶ Visibility vertical scroll bar	Automatic	None
▶ Zoom factor	1	None
▼ Miscellaneous		
▶ Connection status	None	
▶ Icon		None
▶ Label		
▶ Name	SW_Header	
▶ Screen name	Header	
▶ Screen number	0	
▶ Switch into window with tab		<input type="checkbox"/> None
▶ System	0	None
▶ Tab index	0	
▶ Visibility		<input checked="" type="checkbox"/> None
▶ Security		
▼ Size and position		
▶ Height	120	None
▶ Left	0	None
▶ Top	0	None
▶ Width	1366	None

SW_Footer [Screen window]

Properties Events Texts

Name	Static value	Dynamization (0)
<Search>		All
General		
▶ Screen	Footer	None
▶ Appearance		
▶ Window settings	None	None
▶ Format		
▶ Allow zoom		<input checked="" type="checkbox"/> None
▶ Fit to size	Fit screen in window	None
▶ Horizontal scroll bar position	0	None
▶ Vertical scroll bar position	0	None
▶ Visibility horizontal scroll bar	Automatic	None
▶ Visibility vertical scroll bar	Automatic	None
▶ Zoom factor	1	None
▼ Miscellaneous		
▶ Connection status	None	
▶ Icon		None
▶ Label		
▶ Name	SW_Footer	
▶ Screen name	Footer	
▶ Screen number	0	
▶ Switch into window with tab		<input type="checkbox"/> None
▶ System	0	None
▶ Tab index	0	
▶ Visibility		<input checked="" type="checkbox"/> None
▶ Security		
▼ Size and position		
▶ Height	70	None
▶ Left	0	None
▶ Top	698	None
▶ Width	1366	None

SIMATIC WinCC Unified

Add Screen Windows continued

SW_Navigation [Screen window]

Properties Events Texts

Name Static value Dynamization (1)

Name	Static value	Dynamization (1)
General		All
Screen	Navigation	None
Appearance		
Window settings	Show heading, Show bord...	None
Format		
Allow zoom		<input checked="" type="checkbox"/> None
Fit to size	Fit screen in window	None
Horizontal scroll bar position	0	None
Vertical scroll bar position	0	None
Visibility horizontal scroll bar	Automatic	None
Visibility vertical scroll bar	Automatic	None
Zoom factor	1	None
Miscellaneous		
Connection status	None	
Icon		None
Label		
Name	SW_Navigation	
Screen name	Navigation	
Screen number	0	
Switch into window with tab		<input type="checkbox"/> None
System	0	None
Tab index	0	
Visibility		<input checked="" type="checkbox"/> Tag
Security		
Size and position		
Height	596	None
Left	1066	None
Top	120	None
Width	300	None

Tag

Process

5 Tag: Navigation_Menu_control

PLC tag: Bool

Address: Bool

Settings

Use indirect

Read-only

Type

None

Range

Condition	Visibility

SIMATIC WinCC Unified

Add Screen Windows continued

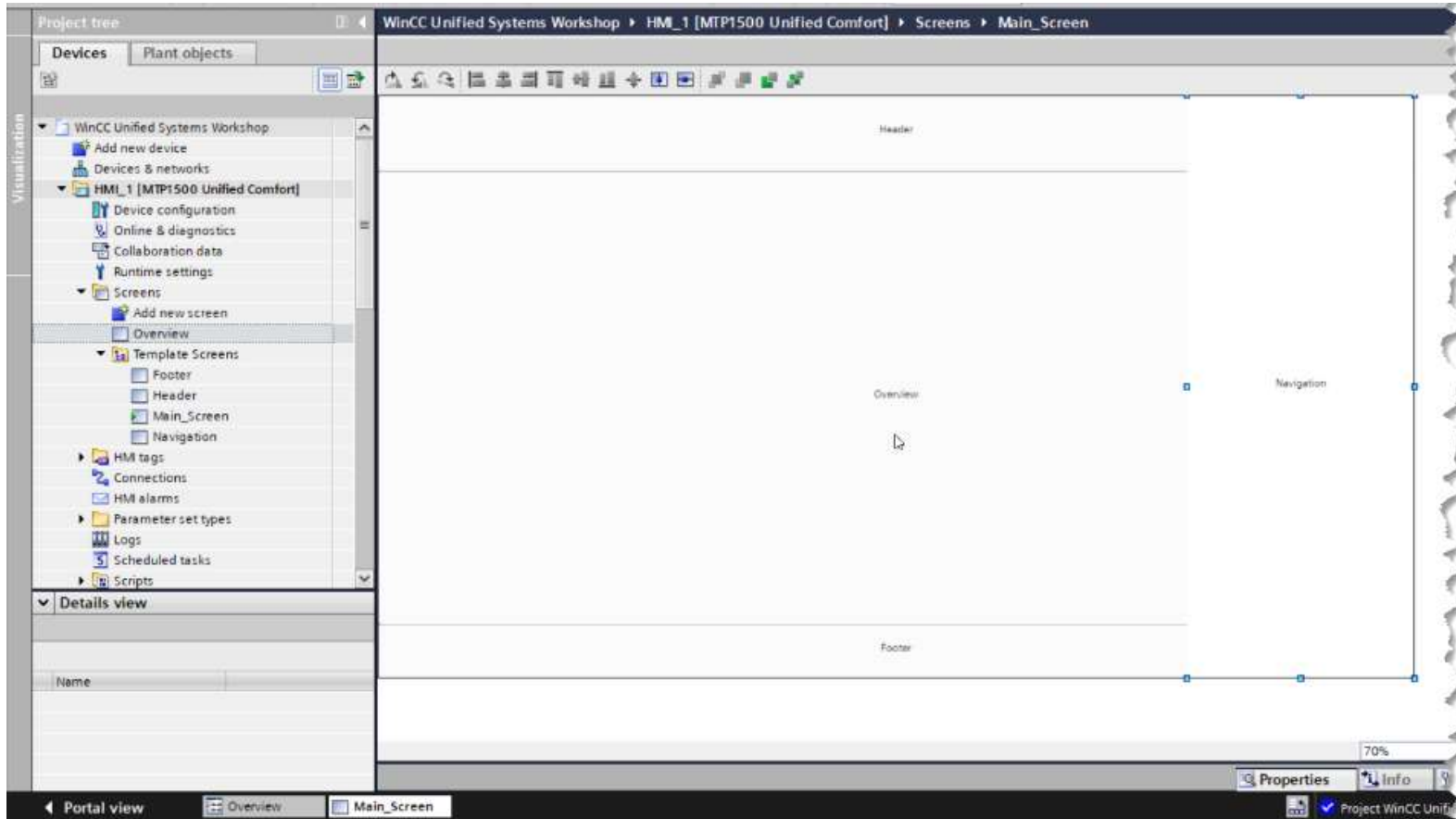
SW_Main [Screen window] Properties Events Texts

↓ ↑ ↺ ↻

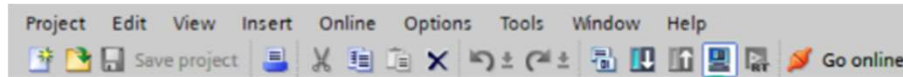
Name	Static value	Dynamization (0)
<Search>		All
General		
▶ Screen	Overview	None
▶ Appearance		
▶ Window settings	None	None
▶ Format		
▶ Allow zoom		<input checked="" type="checkbox"/> None
▶ Fit to size	Fit window in screen	None
▶ Horizontal scroll bar position	0	None
▶ Vertical scroll bar position	0	None
▶ Visibility horizontal scroll bar	Automatic	None
▶ Visibility vertical scroll bar	Automatic	None
▶ Zoom factor	1	None
▶ Miscellaneous		
▶ Connection status	None	
▶ Icon		None
▶ Label		
Name	SW_Main	
Screen name	Overview	
Screen number	0	
▶ Switch into window with tab		<input type="checkbox"/> None
▶ System	0	None
▶ Tab index	0	
▶ Visibility		<input checked="" type="checkbox"/> None
▶ Security		
▶ Allow operator control		<input checked="" type="checkbox"/> None
▶ Size and position		
▶ Height	578	None
▶ Left	0	None
▶ Top	120	None
▶ Width	1366	None

SIMATIC WinCC Unified Main Screen window layout

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SIMATIC WinCC Unified Save/Compile and test



Load preview [Close]

? Check before loading

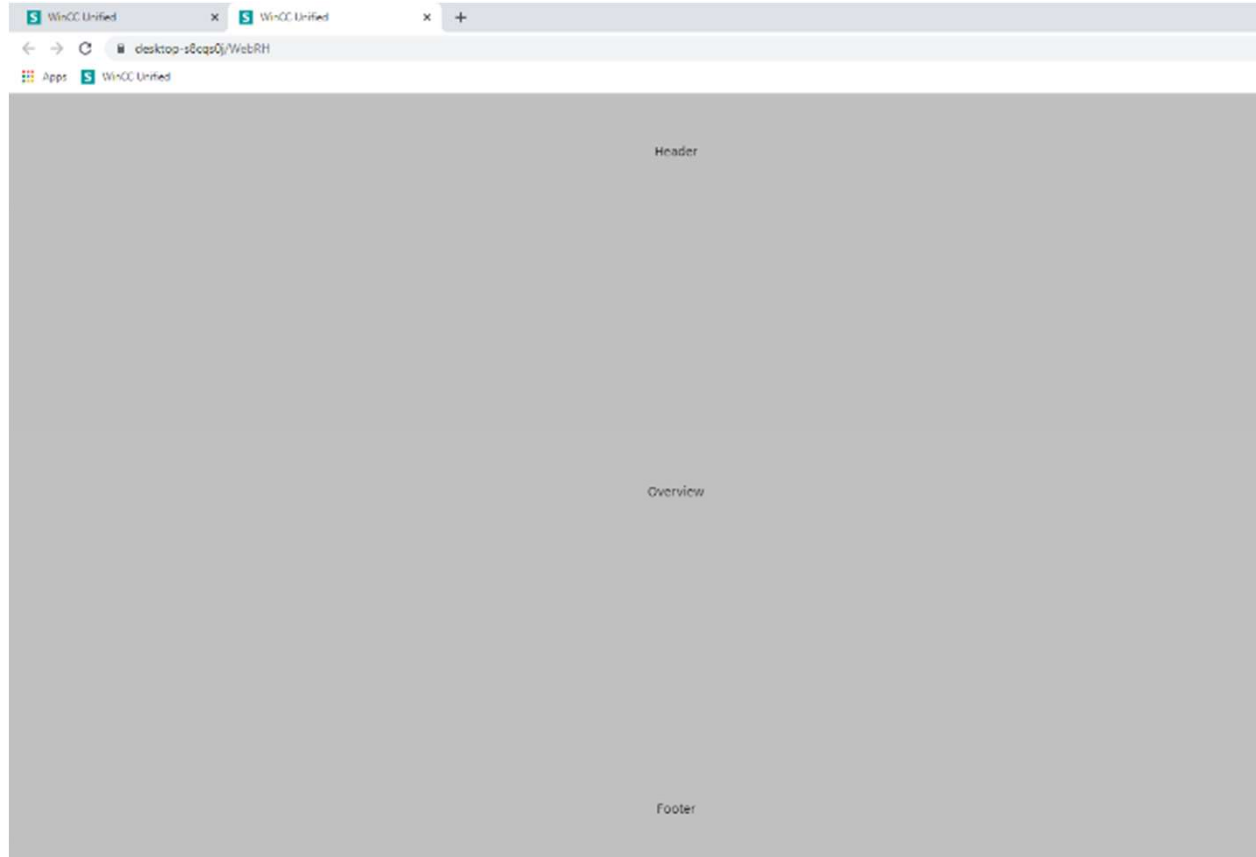
Status		Target	Message	Action
↓	<input checked="" type="checkbox"/>	▼ HMI_1	Ready for loading.	Load 'HMI_RT_1'
	<input checked="" type="checkbox"/>	▶ Simulation mode	Load Runtime in simulation mode	
	<input checked="" type="checkbox"/>	▶ Load Runtime	Full download to target system	Full download
	<input checked="" type="checkbox"/>	▶ Runtime start	Start Runtime after download to target system.	Start runtime
	<input checked="" type="checkbox"/>	▶ Runtime values	Keep current values in runtime or reset to start values from the en	Keep current values
	<input checked="" type="checkbox"/>	▶ Reset logs	Reset all logs in the runtime	No reset
	<input checked="" type="checkbox"/>	▶ HMI Runtime	Informations	

[Refresh]

[Finish] [Load] [Cancel]

SIMATIC WinCC Unified Save/Compile and test

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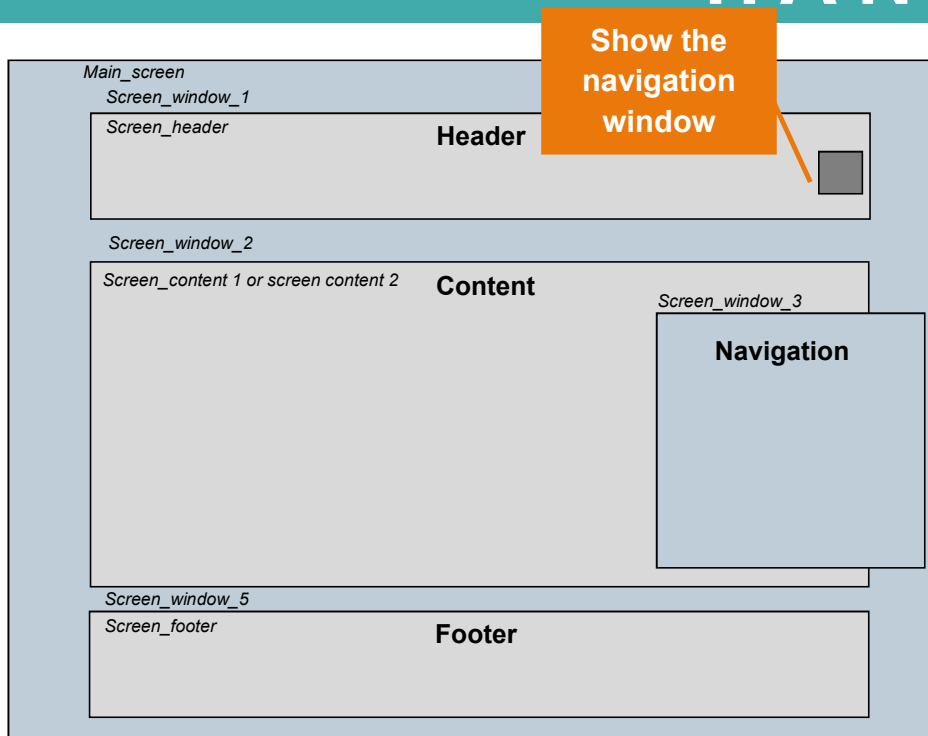


SIMATIC WinCC Unified

Hands On: Screen Navigation via navigation window (SlideIn)

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HANDS ON in 15 min 



1. Add a new screen window for Navigation on the Main screen
2. On the screen "Header" place a new button to make the navigation screen visible

```
Screen.FindItem("../Screen_window_4").Visible = 1;
```
3. Add a new screen "Navigation" 300*596
4. Connect the screen "Navigation" to the screen window "Navigation"

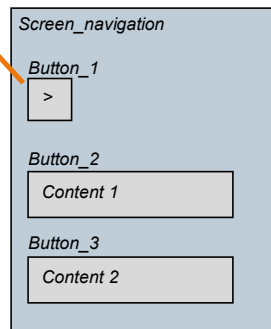
SIMATIC WinCC Unified

Hands On: Screen Navigation via navigation window

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H A N D S O N in 15 min 

Hide the
navigation
window



1. Place in the buttons for screen navigation
2. Use the button 1 to hide the navigation
3. Use the Additional Buttons for the “content change”
4. Save, compile and start simulation
5. Check the main screen if its works

SIMATIC WinCC Unified Navigation control

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Workshop > HMI_1 [MTP1500 Unified Comfort] > Screens > Template Screens > Navigation

Font

Type

Fonts	Font style	Size
Siemens Sans	Bold	19
Arial	Normal	9
Times New Roman	Bold	11
SimSun	Italic	12
Siemens Sans	Bold Italic	13
		15
		16
		17
		19

Underline
Strikethrough
Vertical reading direction

Example

English (United States)

OK Cancel

Button_1 [Button]

Properties Events Texts

Name	Static value	Dynamization (0)
<Search>		All
General		
> Contents		
> Graphic		None
> Graphic with pressed button		None
> Text	X	None
> Text with pressed button		None
Appearance		
> Alternative background color	128, 128, 128	None
> Alternative border color	255, 255, 255	None
> Background color	242, 244, 255	None
> Border color	100, 100, 106	None
> Border width	1	None
Font		
> Font	Siemens Sans, 19, style=Bold	
> Italic		None
> Name	Siemens Sans	None
> Size	19	None

1

2

3

4

Open the Navigation Screen
Add a Button to the top Left corner
Modify the text to be "X"
Modify Button size and Font to Bold and a larger Size

SIMATIC WinCC Unified Navigation close event

The screenshot shows the 'Properties' window for 'Button_1 [Button]'. The 'Events' tab is active, displaying a list of events on the left and a configuration table on the right. The 'Press' event is selected. The configuration table has columns for 'Name' and 'Value'. A 'SetTagValue' function is added, with 'Tag' set to 'Navigation_Menu_control' and 'Value' set to '0'. A green callout box points to the 'Tag' field with the following text:

Configure a Press Event for the 'X' button to call function 'SetTagValue'
Attach tag 'Navigation_Menu_control' and value of 0

Name	Value
▼ SetTagValue	
Tag	Navigation_Menu_control
Value	0
<Add function>	

SIMATIC WinCC Unified Navigation open

SIEMENS
Ingenuity for life

The screenshot displays the SIMATIC WinCC Unified Navigation interface. At the top, a grey bar labeled 'Header' contains a button with an 'X' icon, marked with a red circle '1'. Below this, the 'Button_1 [Button]' configuration window is open, showing the 'Events' tab. The 'SetTagValue' event is selected, with the 'Tag' set to 'Navigation_Menu_control' and the 'Value' set to '1', marked with a red circle '2'. A green callout box on the right contains the following instructions:

1. Copy the X button from the Navigation screen and place it on the right side of the 'Header' screen
2. Modify the Value in the event to '1'

SIMATIC WinCC Unified Navigation open continued

The screenshot displays the SIMATIC WinCC Unified software interface. The main workspace shows a 'Header' area with a button icon labeled '4'. The 'Properties' window for 'Button_1 [Button]' is open, showing the 'Contents' tab. The 'Content mode' is set to 'Graphic'. The 'Graphic' property is set to 'Graphic_1'. The 'Toolbox' on the right shows the 'Graphics' folder expanded, with the 'Navigate & operate' folder selected. The 'Button icons [PNG]' folder is also expanded, showing the 'Blue grey' folder. The '26x22' graphic is selected, labeled '2'. The 'Dynamic widgets' folder is also visible. A green callout box contains the following instructions:

1. Set focus on the button and then navigate to the 'Graphics' area in the Toolbox
2. Find the 'Navigate & Operate' folder and buttons and icons.
3. In the lower window once a folder is selected find the graphic of 3 horizontal bars.
4. Drag and drop that graphic onto the button.
5. Modify the Content Mode to be ONLY Graphic, making image the whole button.

SIMATIC WinCC Unified Dynamization of Screen Name to Text box

The screenshot displays the SIMATIC WinCC Unified interface. At the top, the breadcrumb navigation shows: Workshop > HMI_1 [MTP1500 Unified Comfort] > Screens > Template Screens > Header. A green callout box on the left contains the following instructions:

1. Select the Header text object
2. Change the 'Dynamization' of the 'Text' to be a Tag
3. Assign Tag 'Main_Screen_control' to the Tag to be Processed.

The main workspace shows a 'Header' text object with a green circle '1' next to it. Below the workspace, the 'Text box_1 [Text box]' properties window is open. The 'Properties' tab is active, showing a table with columns for Name, Static value, and Dynamization (1). The 'Text' property is set to 'Header' and the 'Dynamization (1)' dropdown is set to 'Tag', with a green circle '2' next to it. To the right, the 'Process' section of the properties window shows the 'Tag' field set to 'Main_Screen_control', with a green circle '3' next to it. The 'Address' field is set to 'WString[254]'. The 'Type' section shows 'None' selected.

SIMATIC WinCC Unified Duplicate screens

1. Copy the Overview screen and make 3 more duplicates named: Alarms, Production, Trend
2&3 Modify the text object on each new screen to reflect the screen name

Name	Static value	Dynamization (0)
<Search>		All
General		
Font		
Text	Overview	None

SIMATIC WinCC Unified

Add Navigation buttons to the screen

1. In the Navigation Screen Add and size a large button and modify the text to read "Overview"

2. Go to the 'Events' Tab in the properties

3. Set the 'Press' event to a JavaScript

4. Type the script in line 2
Screen.FindItem("../SW_Main").Screen = "Overview";

5. Set up a 'Release' Event of 'SetTagValue'

6. Use the Tag 'Main_Screen_Control'

7. Modify the data type to the value to be a 'String'

8. Enter the name of the screen to call. In this case 'Overview'

Copy this button and repeat steps for the following screens
'Production'
'Alarms'
'Trends'

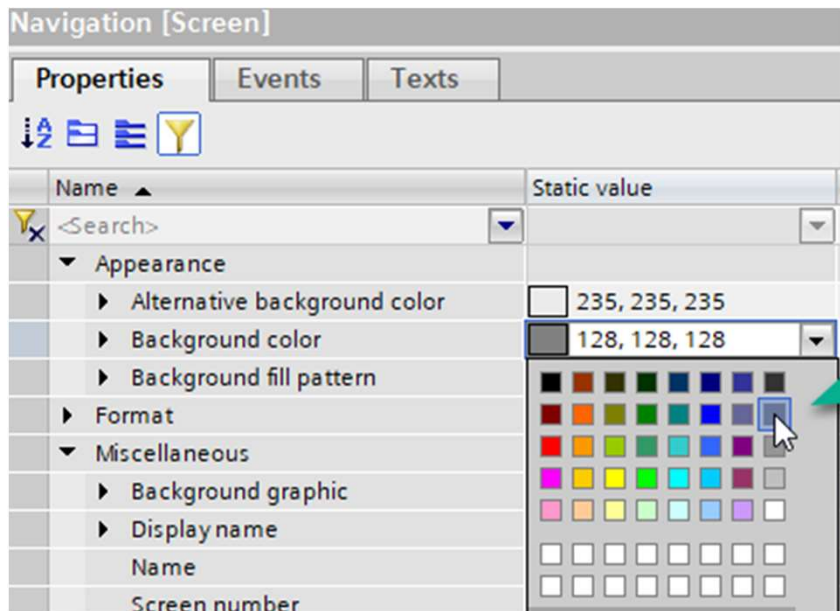
```

export function Button_2_OnDown(item, x, y, modifiers, trigger) {
  1 Screen.FindItem("../SW_Main").Screen = "Overview";
  2
  3
}
    
```

Name	Value
SetTagValue	
Tag	Main_Screen_Control
Value	Overview
<Add function>	

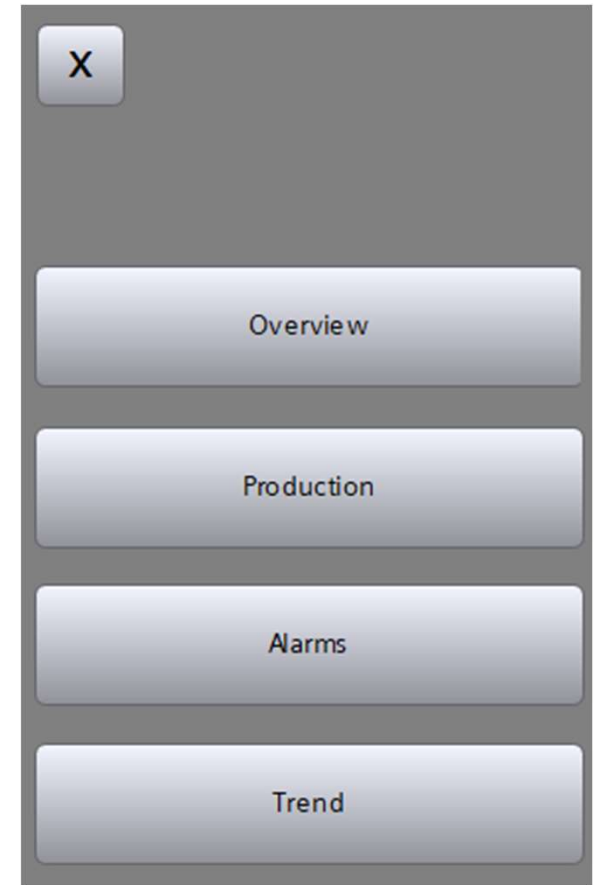


SIMATIC WinCC Unified Navigation Screen background color

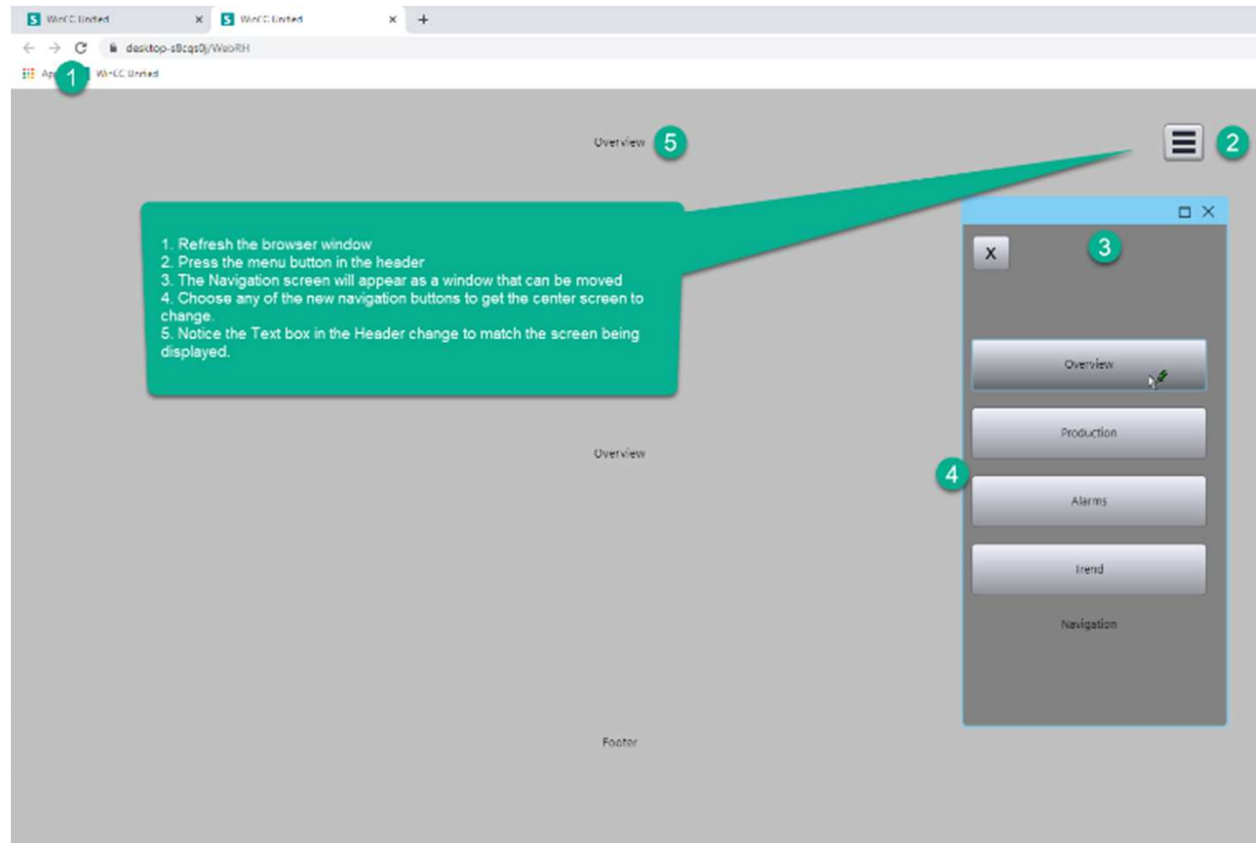


Modify the Background color of the Navigation screen to be a darker shade of Gray to help set the window apart from the rest of the screen

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SIMATIC WinCC Unified Save/Compile and test



WinCC Unified SIPEC Workshop Communication

Agenda



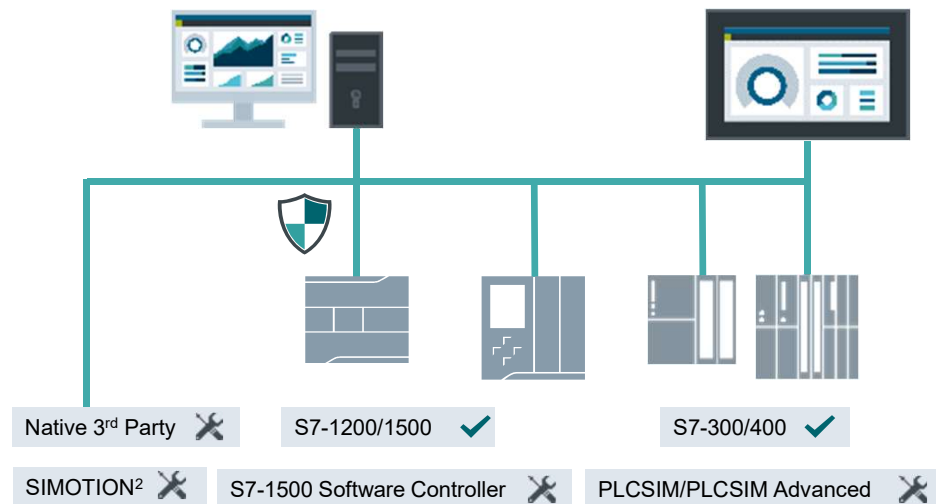
1 Communication

2 OPC Communication

SIMATIC WinCC Unified To automation systems



Unified Comfort Panel ✓ PC ✓



Native 3rd Party¹ communication via Channel Support Package
e.g., Modbus TCP, Allen-Bradley EtherNet/IP, ...

\Download from Service and Support website

¹ In preparation ² only tag communication via OPC UA DA

Unrestricted © Siemens AG 2020

Perfect integration of SIMATIC PLCs
(TIA Portal)

High number of connections for PC systems, up
to 128 PLCs (>10 with extra Softnet-IE license)

Increased number of connections
for Panel systems, up to 16 PLCs

Agenda

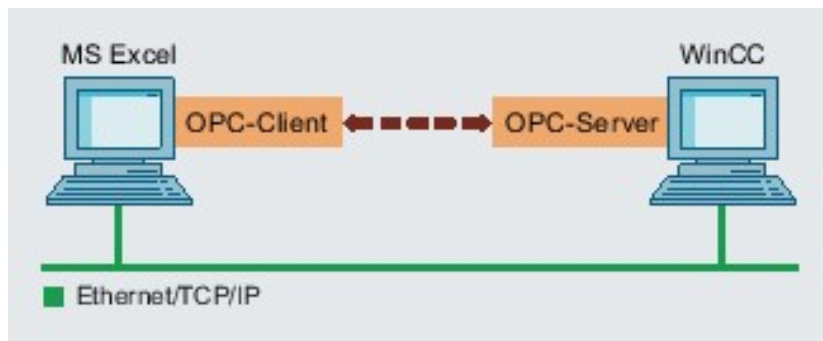


1 Communication

2 OPC Communication

SIMATIC WinCC Unified OPC UA Connection

Unified Comfort Panel  PC 



SIEMENS
Ingenuity for life

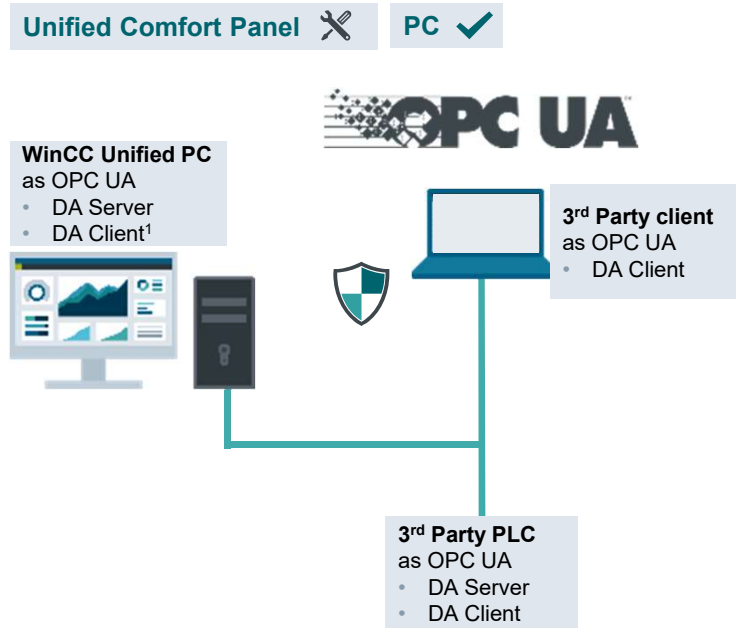
OPC UA (Unified Architecture)

- You use OPC interface to link the devices and applications from various manufacturers in a standardized manner
- WinCC Unified can be configured as OPC UA server and as OPC UA client*. The OPC server provides process values from the WinCC data management for one or more OPC clients.

OPC UA is a platform-independent technology.

* Only PCs can be an OPC client for a remote OPC server.

SIMATIC WinCC Unified Using standard interface OPC UA Server



Using communication standard OPC UA for OT/IT and automation connectivity

¹ In V16 only local OPC UA server can be connected as OPC UA client

Standard connectivity via OPC UA
(DA Server & DA Client¹)

OT/IT connectivity via OPC UA to forward
data to 3rd party applications

Automation connectivity via OPC UA
to integrated 3rd party PLCs

The background of the advertisement features a 3D perspective view of a factory floor with various machinery and conveyor belts. Overlaid on this scene are several semi-transparent, blue-tinted digital screens and panels. One prominent screen in the foreground shows a software interface with a sidebar menu, a main content area with a circular gauge displaying the number '30', and a header bar with the text 'WinCC Unified project' and 'Start Production'. Another screen in the background displays 'Operator: User Name' and 'Version: Version 1.1'. The overall aesthetic is clean, modern, and technical, emphasizing digital manufacturing and automation.

SIEMENS
Ingenuity for life

WinCC Unified Screen Engineering

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www.usa.siemens.com/wincc-unified

Agenda

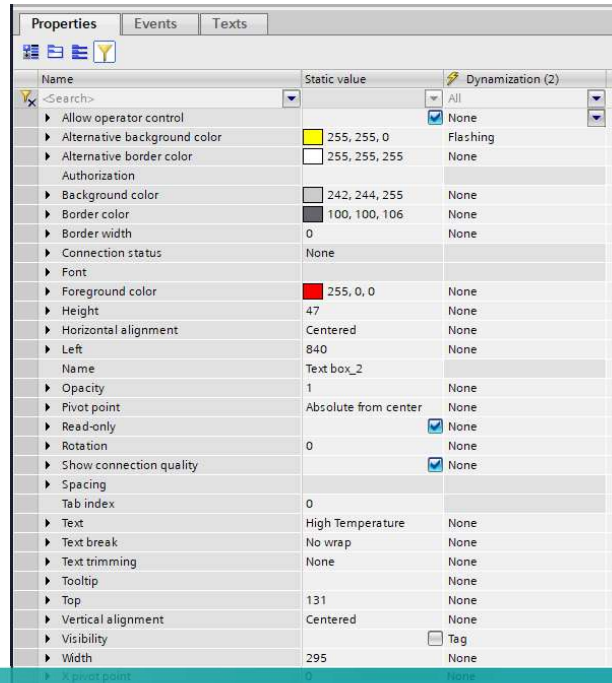
1 Screen Engineering

2 Basic Screen Objects

3 Dynamic SVG

4 Animations

SIMATIC WinCC Unified Screen Engineering – Properties



It is possible to view and to edit the properties of an object using the property list in the Inspector window.




SIMATIC WinCC Unified Screen Engineering – Properties

Additionally total number of dynamized properties is displayed

Search for properties by characters

Filter for dynamization type

The property list can be sorted as follows:

-  Display of properties in alphabetical order
-  Display of the properties grouped in categories
-  Search Filter:
 - Search for all properties by characters
 - Overview of used dynamizations
 - Filter of different dynamizations

Tip: most important properties of an object can always be found in the “General” category (list needs to be sorted by category)

SIMATIC WinCC Unified Screen Engineering – Properties

Column for static
values

Column for
dynamization

Name	Static value	Dynamization (2)
General		
Appearance		
Alternative background color	128, 128, 128	None
Alternative border color	255, 255, 255	None
Background color	255, 255, 255	Script
Border color	100, 100, 106	None
Border width	1	None
Foreground color	0, 0, 0	None
Opacity	1	None
Format		
Miscellaneous		

```
1 export function IO_field_1_BackColor_Trigger(item) {
2   var value;
3   return value;
4 }
```

Dynamic parameter
can be chosen

Almost all object properties can be dynamized. Tags, Scripts and depending on the property other objects (resource list for example) can be used for dynamization.

Agenda



1 Screen Engineering

2 **Basic Screen Objects**

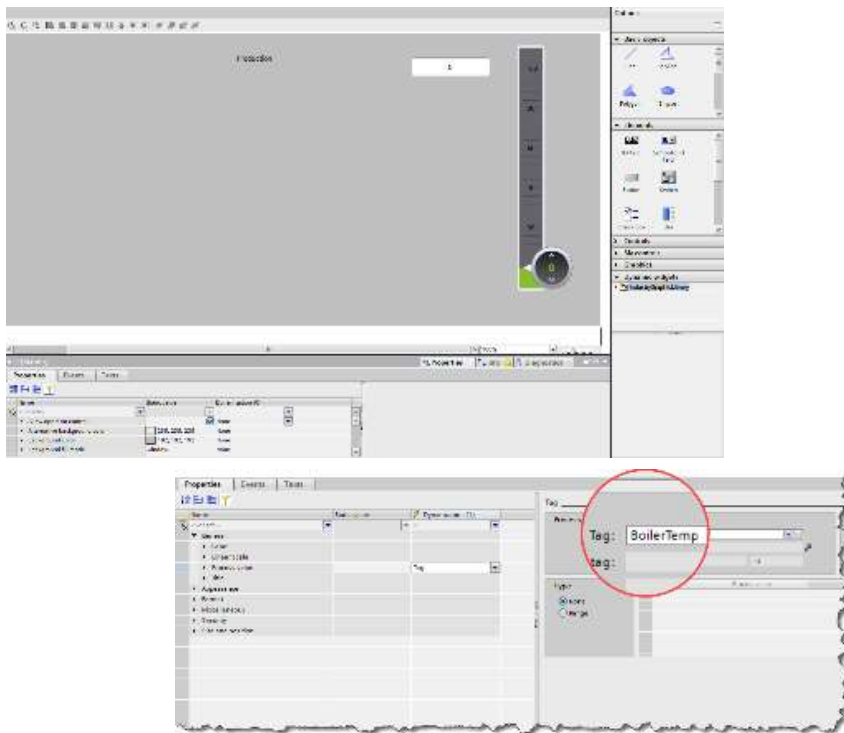
3 Dynamic SVG

4 Animations

SIMATIC WinCC Unified Alarming

SIEMENS
Ingenuity for life

LIVE DEMO

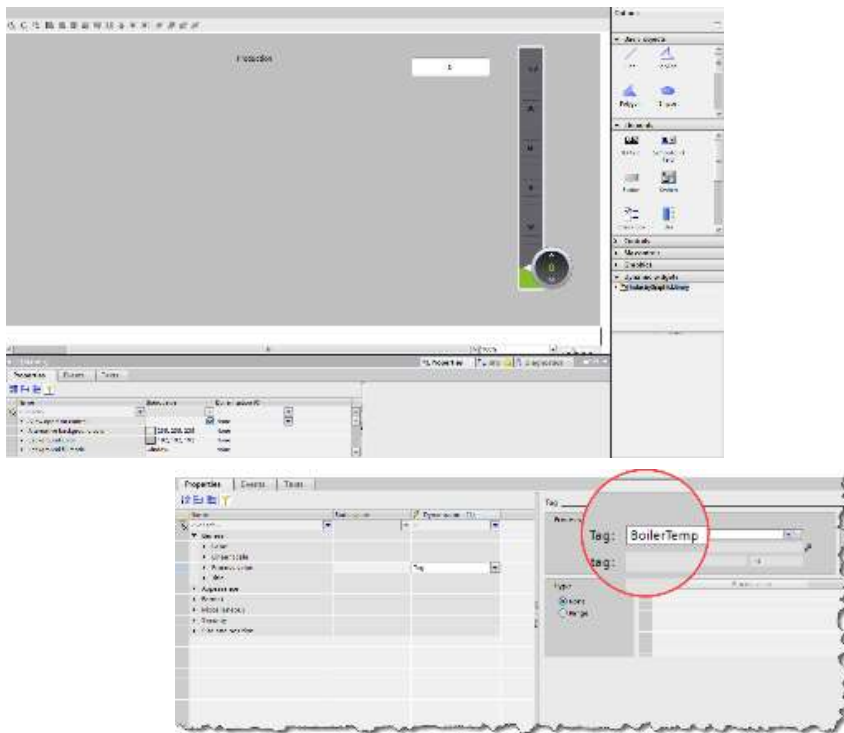


- Show HMI Toolbox and different areas
- Drag and drop objects on screen
- Configure objects
- Create tags and assign to objects

SIMATIC WinCC Unified Hands On: Properties

SIEMENS
Ingenuity for life

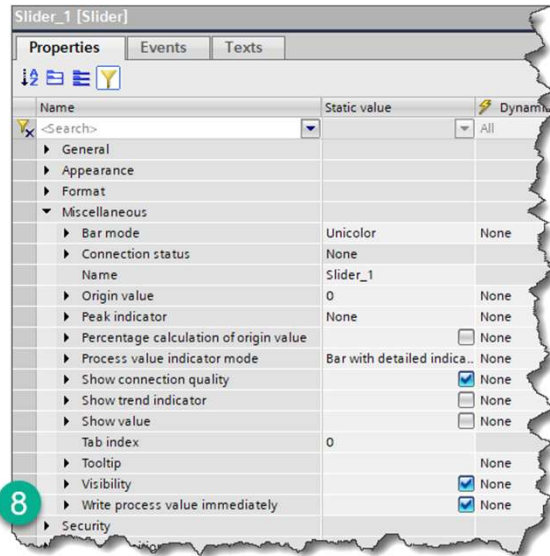
HANDS ON in 10 min 



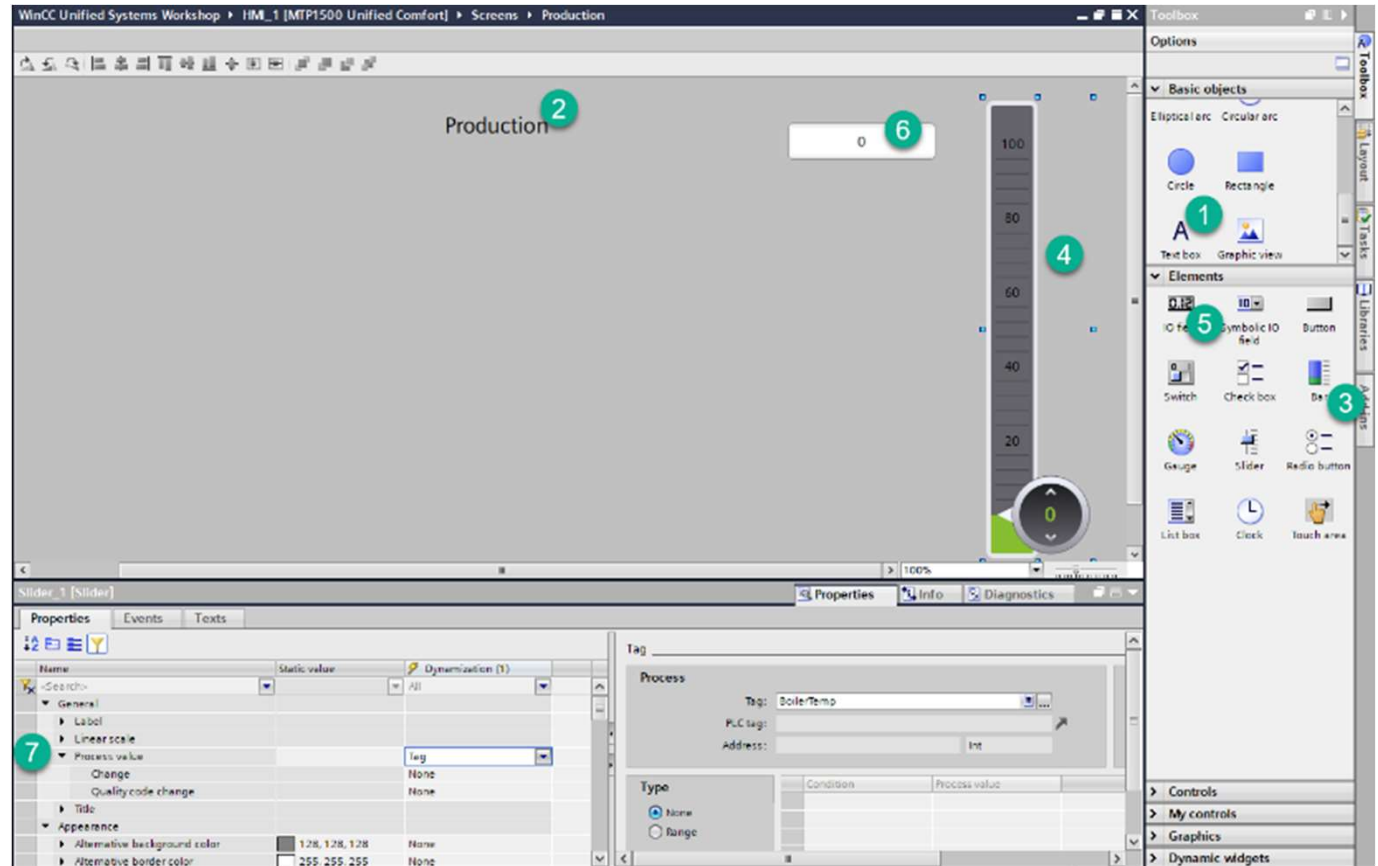
1. Create Production Screen (1366*578)
2. On Production Screen insert
 1. Slider
 2. I/O field
3. Set lower and upper limits of slider to 0, 100
4. Create Tag (BoilerTemp - internal tag) and attach to both Slider and IO field
5. Save and test

SIMATIC WinCC Unified Hands On: Properties

SIEMENS
Ingenuity for life

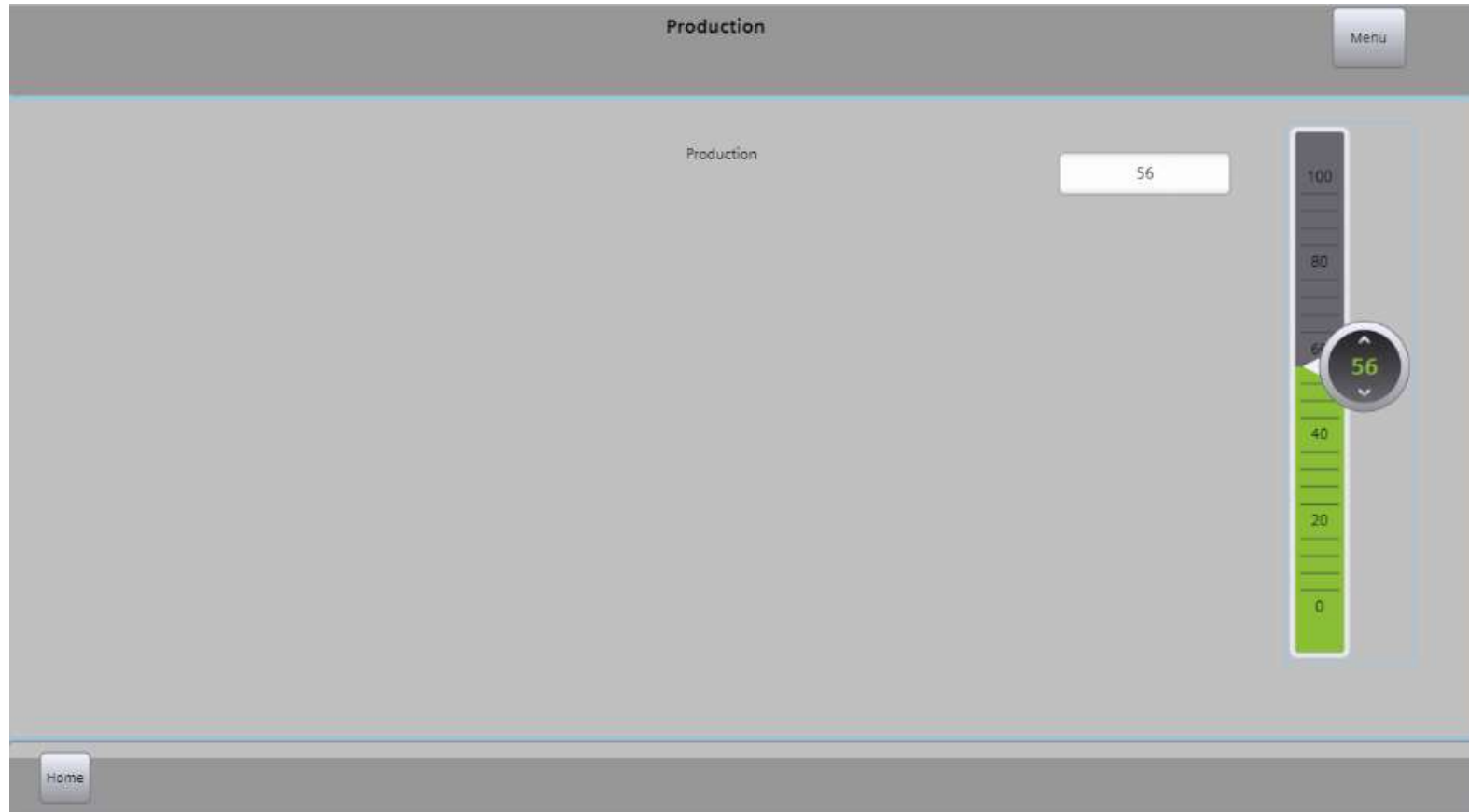


Note: Select Write process value immediately



SIMATIC WinCC Unified Hands On: Properties

SIEMENS
Ingenuity for life



Agenda

1 Screen Engineering

2 Basic Screen Objects

3 **Dynamic SVG**

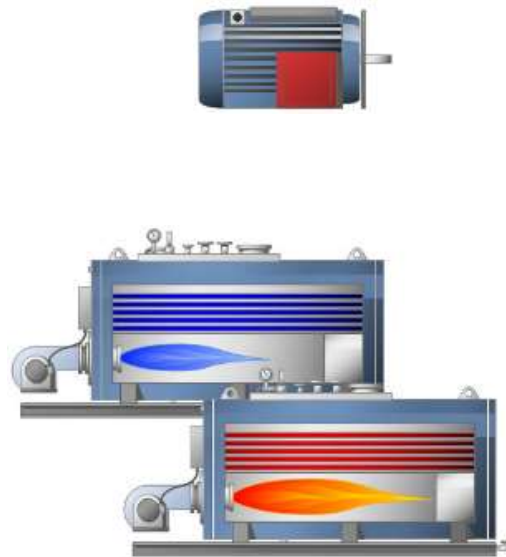
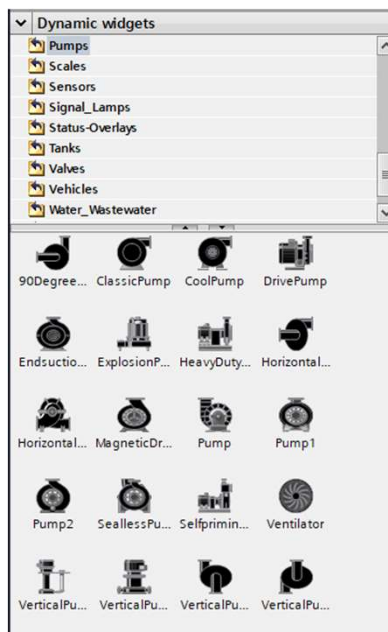
4 Animations

SIMATIC WinCC Unified Scalable Vector Graphic (SVG)

SIEMENS
Ingenuity for life

Unified Comfort Panel ✓

PC ✓



Scalable Vector Graphics (SVG)
for all resolutions without loss of quality

- **Animate (dynamic) SVG files** according to the process state

- **Ready to use industry library** with static and dynamic SVGs

SIMATIC WinCC Unified Dynamizations

SIEMENS
Ingenuity for life

DynamicSVG_1 [DynamicSVG]

Properties | Events | Texts

Name	Static value	Dynamization
Appearance		
Miscellaneous		
Connection status	None	
Interface		
BasicColor	218, 218, 218	None
Cutaway		<input checked="" type="checkbox"/> None
FlameBasicColor	255, 0, 0	None
FlameBorderColor	255, 250, 0	None
FlameContrastColor	255, 161, 0	None
FlameSize	100	None
PipeColor	218, 218, 218	Tag
Name	DynamicSVG_1	
Show connection quality		<input checked="" type="checkbox"/> None
Tab index	0	
Tooltip		None
Visibility		<input checked="" type="checkbox"/> None
Security		
Size and position		

Tag

Process

Tag: Tag_1

PLC tag:

Address: Int

Type

None

Range

Condition	PipeColor
0 - 24	218, 218, 218
25 - 50	255, 204, 0
51 - 75	255, 153, 0
75 - 99	255, 0, 0
100	128, 0, 0
<Add new>	

Choose the specific value for the range or value

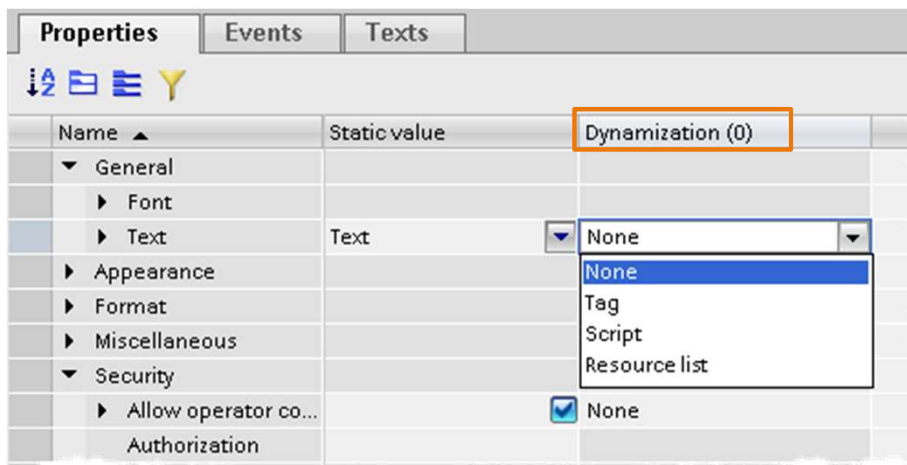
Almost any property can be dynamized

Condition could be a range or a specific value

SIMATIC WinCC Unified Dynamization

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Dynamization types depend on the selected object



Dynamization types:

- Tag – Defines the property value depending on the tag value
- Script – Defines the property value depending on the return value
- Resource list – Defines the property value depending on an entry from a text/graphic list
- Flashing – Defines that the property flashes in configurable colors

Dynamics are used to change the properties of screen objects and screens in runtime depending on another value.

SIMATIC WinCC Unified Alarming

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LIVE DEMO

The screenshot displays the SIMATIC WinCC Unified Alarming configuration interface. It features two main tables and a properties panel.

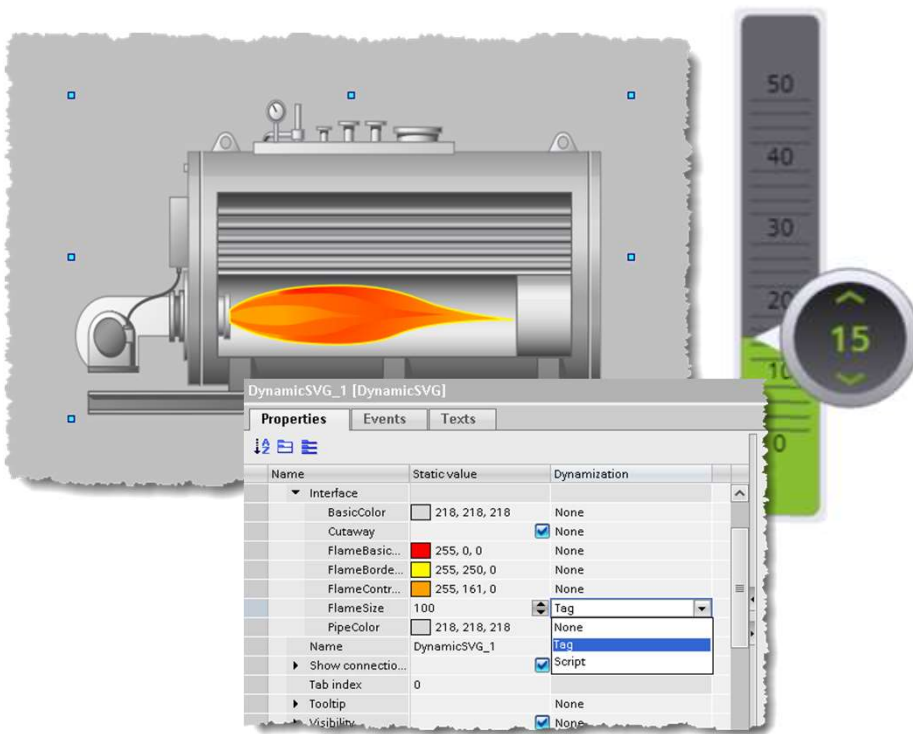
Name	Data type	Connection	PLC name	PLC tag	Address
Motor_Status	Real	<Internal tag>		<Undefined>	
Motor_Speed	Real	<Internal tag>		<Undefined>	
<Add new>					

ID	Name	Alarm text	Alarm class	Trigger tag	Limit	Limit mode
2	Stop		Information	Motor_Status	0	Equal
3	Run		Notification	Motor_Sta...	1	Equal
4	Error		Alarm	Motor_Status	2	Equal
<Add new>						

Below the tables, there is a 'Run [Analog_alarm]' section with a 'Properties' tab selected. The 'General' sub-tab is visible, showing a 'General' label.

- Add SVG Graphics
- Edit Graphics Properties
- Assign to tags to visualize changes
- Simulate

HANDS ON in 20 min



1. Add the SVG Boiler with flame to a screen
"BoilerHorizontalCutawaywithFire"
2. Open the interface in the properties of the SVG
3. Connect the Slider Tag to the flame size of the boiler
4. Download the Runtime
5. Change the size of the flame during the Runtime

Additional: Try also some other SVG's to see the differences in the interface!

SIMATIC WinCC Unified Hands On: SVG's

SIEMENS
Ingenuity for life

The screenshot displays the SIMATIC WinCC Unified Systems Workshop interface. The main workspace shows a 'Production' screen with a boiler cutaway graphic. A vertical scale on the right indicates a value of 100. A callout box labeled '1' points to a boiler icon in the 'IndustryGraphicLibrary' of the 'Toolbox' on the right. A callout box labeled '2' points to the boiler cutaway graphic in the main workspace. A callout box labeled '3' points to the 'DynamicSVG_1 [DynamicSVG]' properties window at the bottom left. A callout box labeled '4' points to the 'Tag' field in the 'Process' section of the properties window, which is set to 'BoilerTemp'.

DynamicSVG_1 [DynamicSVG]

Name	Static value	Dynamization (1)
zSearch		All
Appearance		
Opacity	1	None
Miscellaneous		
Connection status	None	
Interface		
BasicColor	218, 218, 218	None
Cutaway		<input checked="" type="checkbox"/> None
FlameBasicColor	255, 0, 0	None
FlameBorderColor	255, 250, 0	None
FlameContrastColor	255, 161, 0	None
FlameSize	100	Tag
PipeColor	218, 218, 218	None
Name	DynamicSVG_1	None
Show connection quality		<input checked="" type="checkbox"/> None
Tab index	0	

Process

Tag: BoilerTemp

PLC tag:

Address: Int

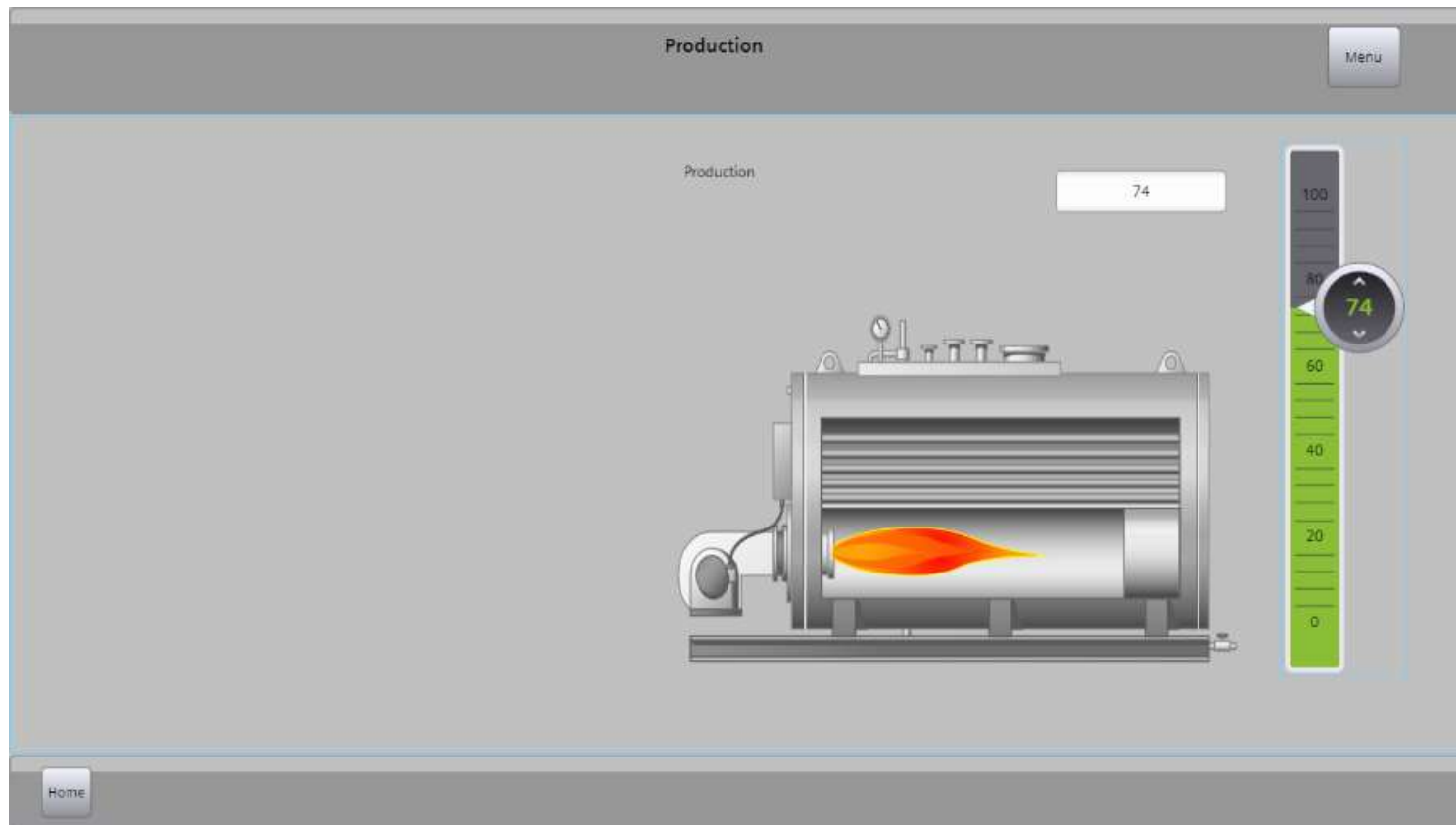
Type

None

Range

SIMATIC WinCC Unified Hands On: SVG's

SIEMENS
Ingenuity for life



SIMATIC WinCC Unified Alarming

SIEMENS
Ingenuity for life

LIVE DEMO

The screenshot displays the SIMATIC WinCC Unified Alarming configuration interface. It features two main tables and a properties panel.

Name	Data type	Connection	PLC name	PLC tag	Address
Motor_Status	Real	<Internal tag>		<Undefined>	
Motor_Speed	Real	<Internal tag>		<Undefined>	
<Add new>					

ID	Name	Alarm text	Alarm class	Trigger tag	Limit	Limit mode
2	Stop		Information	Motor_Status	0	Equal
3	Run		Notification	Motor_Sta...	1	Equal
4	Error		Alarm	Motor_Status	2	Equal
<Add new>						

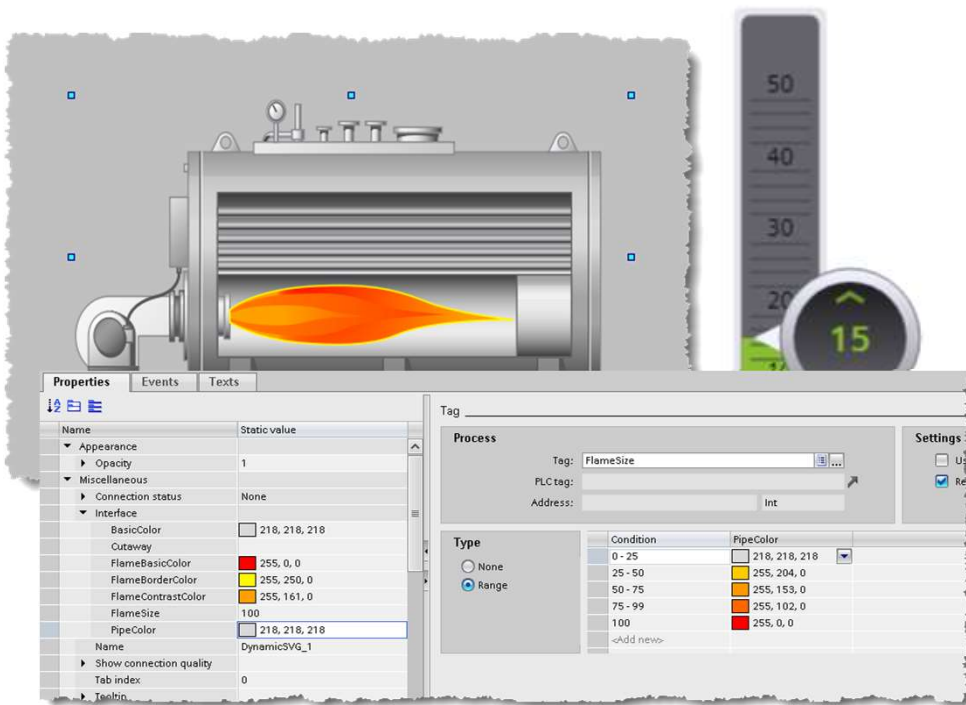
Run [Analog_alarm] Properties Info Di

Properties Events Texts

General

- Edit SVG Properties (more)
- Flame size
- Simulate

ADDITIONAL HANDS ON in 15 min



1. Add the same tag you added to the flame size also to pipe color
2. Activate dynamization type "Range"
3. Create different colors depending on the value
4. Do this with ranges or static values
5. Download the Runtime and test
6. Change pipe color during the Runtime

SIMATIC WinCC Unified Hands On: SVG's

SIEMENS
Ingenuity for life

The screenshot shows the SIMATIC WinCC Properties dialog for an SVG object. The 'Dynamization (2)' tab is active, showing a list of properties. The 'PipeColor' property is highlighted, and its 'Dynamization' is set to 'Tag'. A callout box points to the 'Tag' dropdown menu with the text: 'Choose the specific value for the range or value'. Another callout box points to the 'PipeColor' configuration table with the text: 'Condition could be a range or a specific value'. A third callout box points to the 'PipeColor' property in the list with the text: 'Almost any property can be dynamized'.

Condition	PipeColor
0 - 25	51, 102, 255
26 - 50	255, 204, 0
51 - 75	255, 102, 0
76 - 100	255, 0, 0
<Add new>	

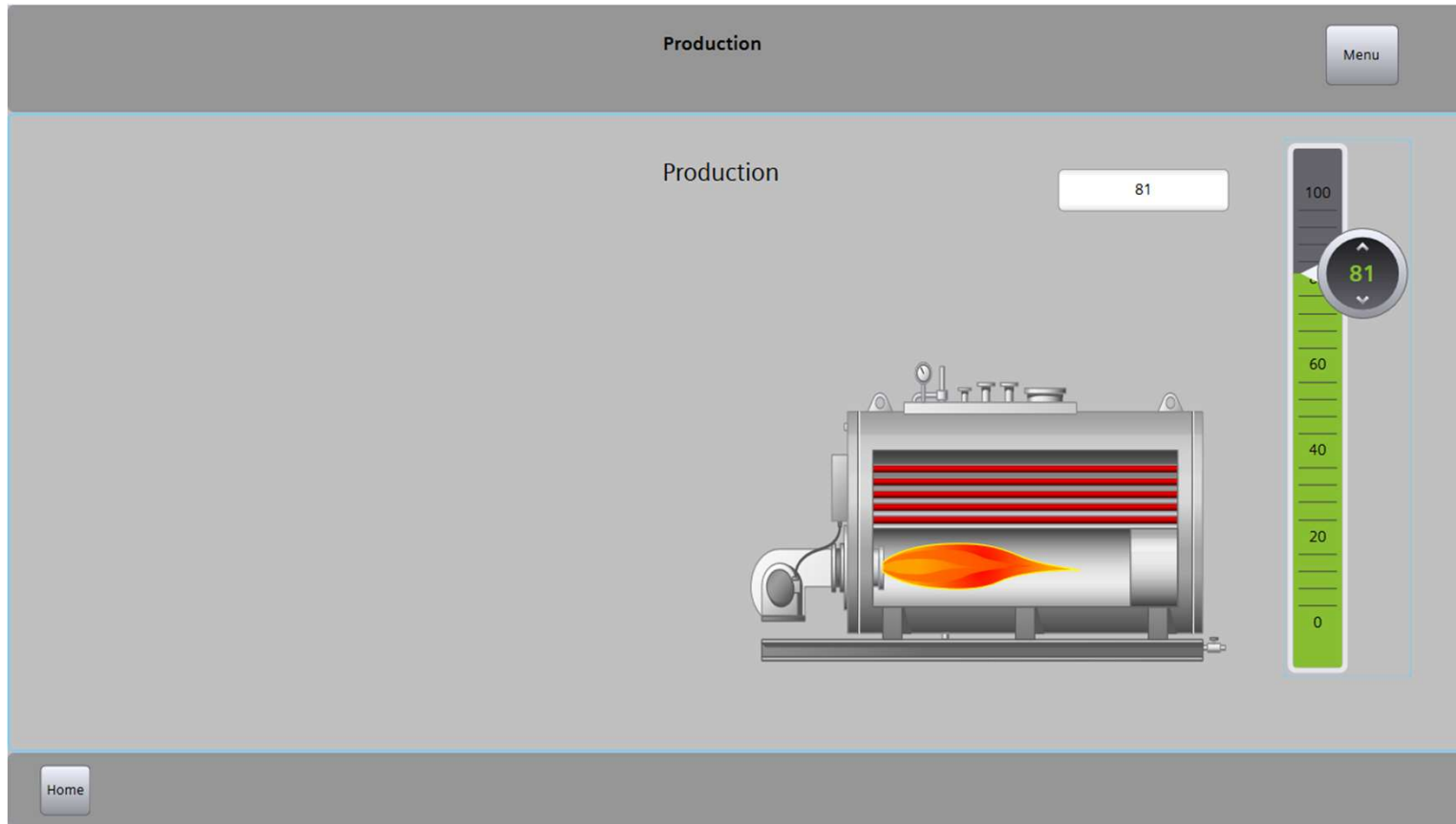
Choose the specific value for the range or value

Condition could be a range or a specific value

Almost any property can be dynamized

SIMATIC WinCC Unified Hands On: SVG's

SIEMENS
Ingenuity for life



Agenda



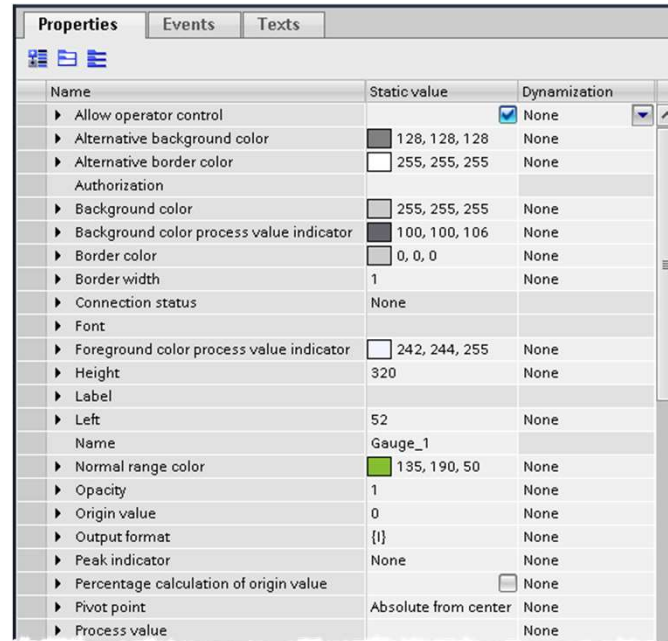
1 Screen Engineering

2 Basic Screen Objects

3 Dynamic SVG

4 Animations

SIMATIC WinCC Unified Screen Engineering – Properties



The screenshot shows the 'Properties' tab of the SIMATIC WinCC Unified Inspector window. The window has three tabs: 'Properties', 'Events', and 'Texts'. Below the tabs are three icons representing different views. The main area is a table with three columns: 'Name', 'Static value', and 'Dynamization'. The table lists various properties for an object, including colors, dimensions, and dynamic settings. The 'Name' column shows the object is named 'Gauge_1'.

Name	Static value	Dynamization
▶ Allow operator control		<input checked="" type="checkbox"/> None
▶ Alternative background color	128, 128, 128	None
▶ Alternative border color	255, 255, 255	None
Authorization		
▶ Background color	255, 255, 255	None
▶ Background color process value indicator	100, 100, 106	None
▶ Border color	0, 0, 0	None
▶ Border width	1	None
▶ Connection status	None	
▶ Font		
▶ Foreground color process value indicator	242, 244, 255	None
▶ Height	320	None
▶ Label		
▶ Left	52	None
Name	Gauge_1	
▶ Normal range color	135, 190, 50	None
▶ Opacity	1	None
▶ Origin value	0	None
▶ Output format	{}	None
▶ Peak indicator	None	None
▶ Percentage calculation of origin value		<input type="checkbox"/> None
▶ Pivot point	Absolute from center	None
▶ Process value		None

It is possible to view and to edit the properties of an object using the property list in the Inspector window.

SIMATIC WinCC Unified Alarming

SIEMENS
Ingenuity for life

LIVE DEMO

The screenshot displays the SIMATIC WinCC Unified Alarming configuration interface. It is divided into two main sections: variable definitions and alarm configuration.

Motor Variable Definitions:

Name	Data type	Connection	PLC name	PLC tag	Address
Motor_Status	Real	<Internal tag>		<Undefined>	
Motor_Speed	Real	<Internal tag>		<Undefined>	

Alarm Configuration (Analog alarms tab):

ID	Name	Alarm text	Alarm class	Trigger tag	Limit	Limit mode
2	Stop		Information	Motor_Status	0	Equal
3	Run		Notification	Motor_Sta...	1	Equal
4	Error		Alarm	Motor_Status	2	Equal

The bottom of the screenshot shows the 'Run [Analog_alarm]' window with tabs for 'Properties', 'Events', and 'Texts'. The 'Properties' tab is active, showing a 'General' section.

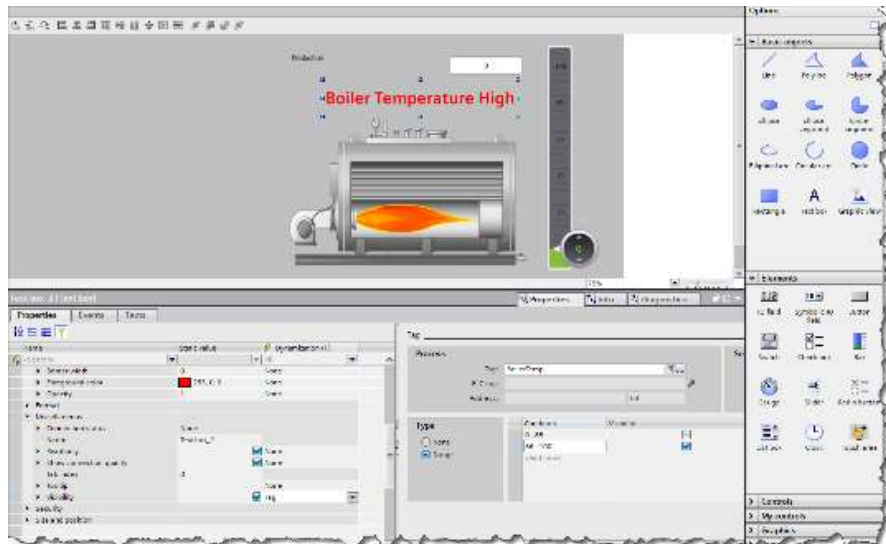
- Add test field
- Animate field
- Simulate

SIMATIC WinCC Unified Hands On: Animations

SIEMENS
Ingenuity for life

HANDS ON

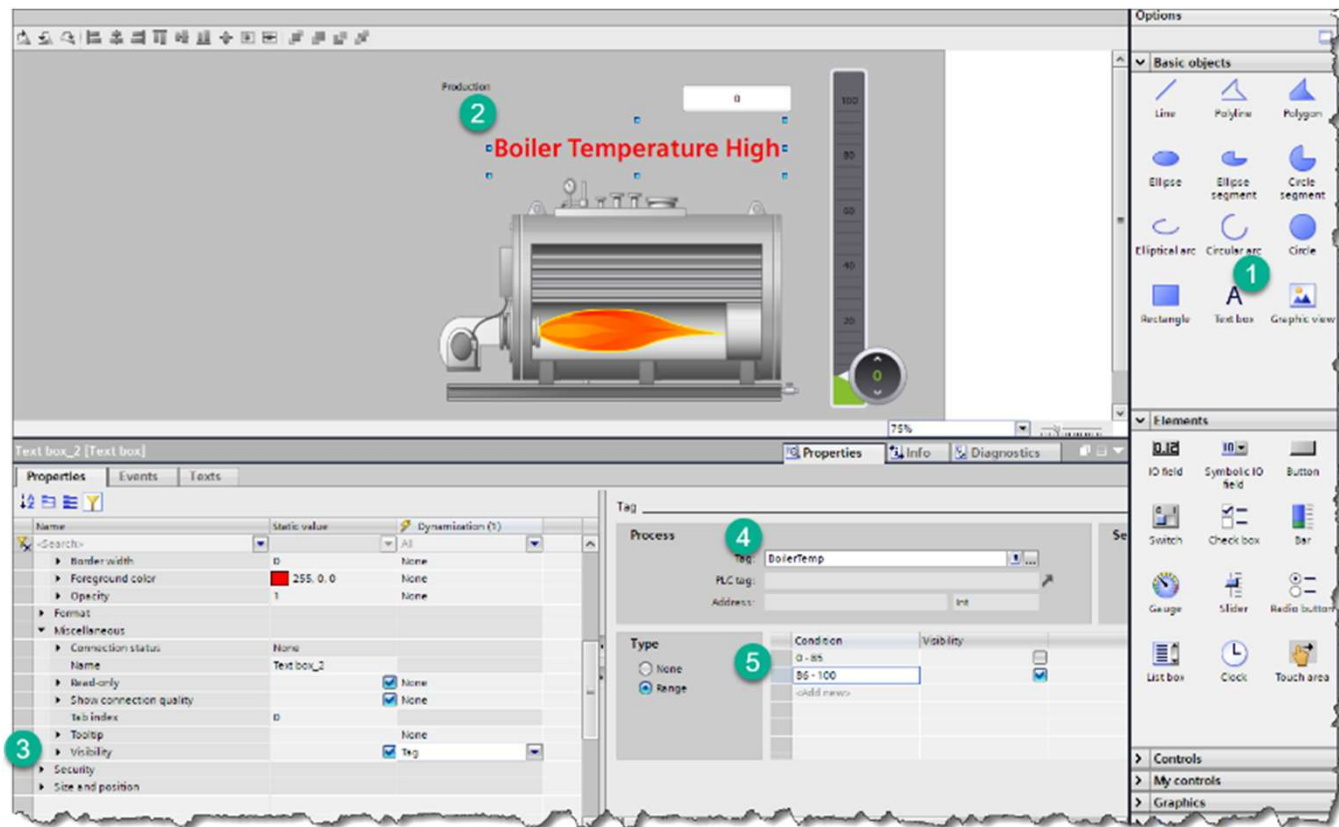
in 15 min



1. Add a Text Field
2. Adjust font and color
3. Set text field only to show based on tag value
4. Download the Runtime
5. Test

SIMATIC WinCC Unified Hands On: Animations

SIEMENS
Ingenuity for life



SIMATIC WinCC Unified Alarming

SIEMENS
Ingenuity for life

LIVE DEMO

The screenshot displays the SIMATIC WinCC Unified Alarming configuration interface. It is divided into two main sections: a table for Motor variables and a table for Analog alarms.

Motor Variables Table:

Name	Data type	Connection	PLC name	PLC tag	Address
Motor_Status	Real	<Internal tag>		<Undefined>	
Motor_Speed	Real	<Internal tag>		<Undefined>	
<Add new>					

Analog Alarms Table:

ID	Name	Alarm text	Alarm class	Trigger tag	Limit	Limit mode
2	Stop		Information	Motor_Status	0	Equal
3	Run		Notification	Motor_Sta...	1	Equal
4	Error		Alarm	Motor_Status	2	Equal
<Add new>						

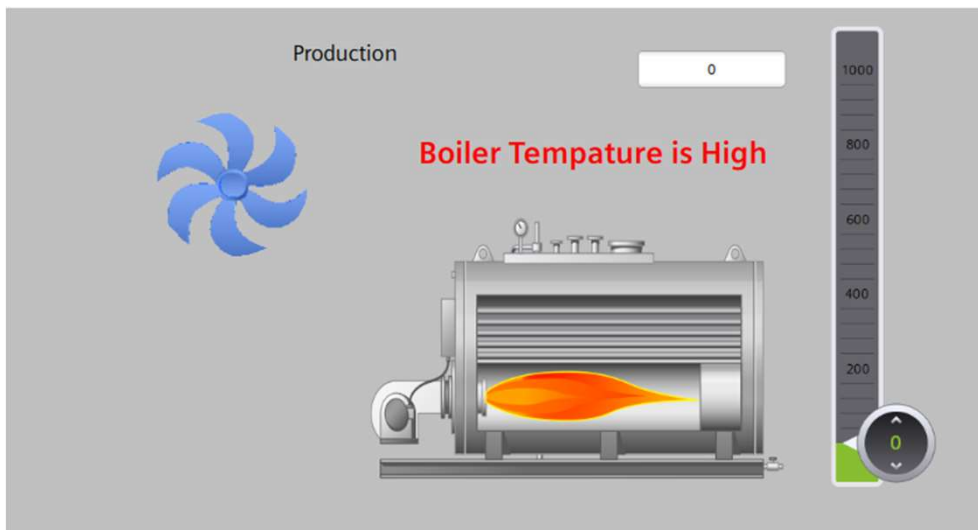
At the bottom, there is a 'Run [Analog_alarm]' window with tabs for 'Properties', 'Events', and 'Texts'. The 'Properties' tab is active, showing a 'General' section.

- Add graphic
- Show rotation animation
- Simulate

SIMATIC WinCC Unified Hands On: Rotation

SIEMENS
Ingenuity for life

H A N D S O N in 15 min 



1. Add some basic objects on a screen
2. Create a tag for the rotation and connect it to a slider control
3. Use the tag to configure the rotation of objects
4. Download the runtime
5. Rotate the objects

SIMATIC WinCC Unified Hands On: Properties

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The screenshot displays the SIMATIC WinCC Unified Properties dialog box for a fan widget. The main window shows a production control interface with a fan icon, a 'Boiler Temperature is High' warning, and two vertical gauges. The Properties dialog is open, showing various configuration options. A 'Tag' dialog is also visible, showing the 'Rotation' tag.

6 Vertical gauge on the left of the main window.

3 Fan icon in the main window.

1 Fan widget icon in the Graphics library.

5 Tag input field in the Tag dialog.

4 Rotation dropdown menu in the Properties dialog.

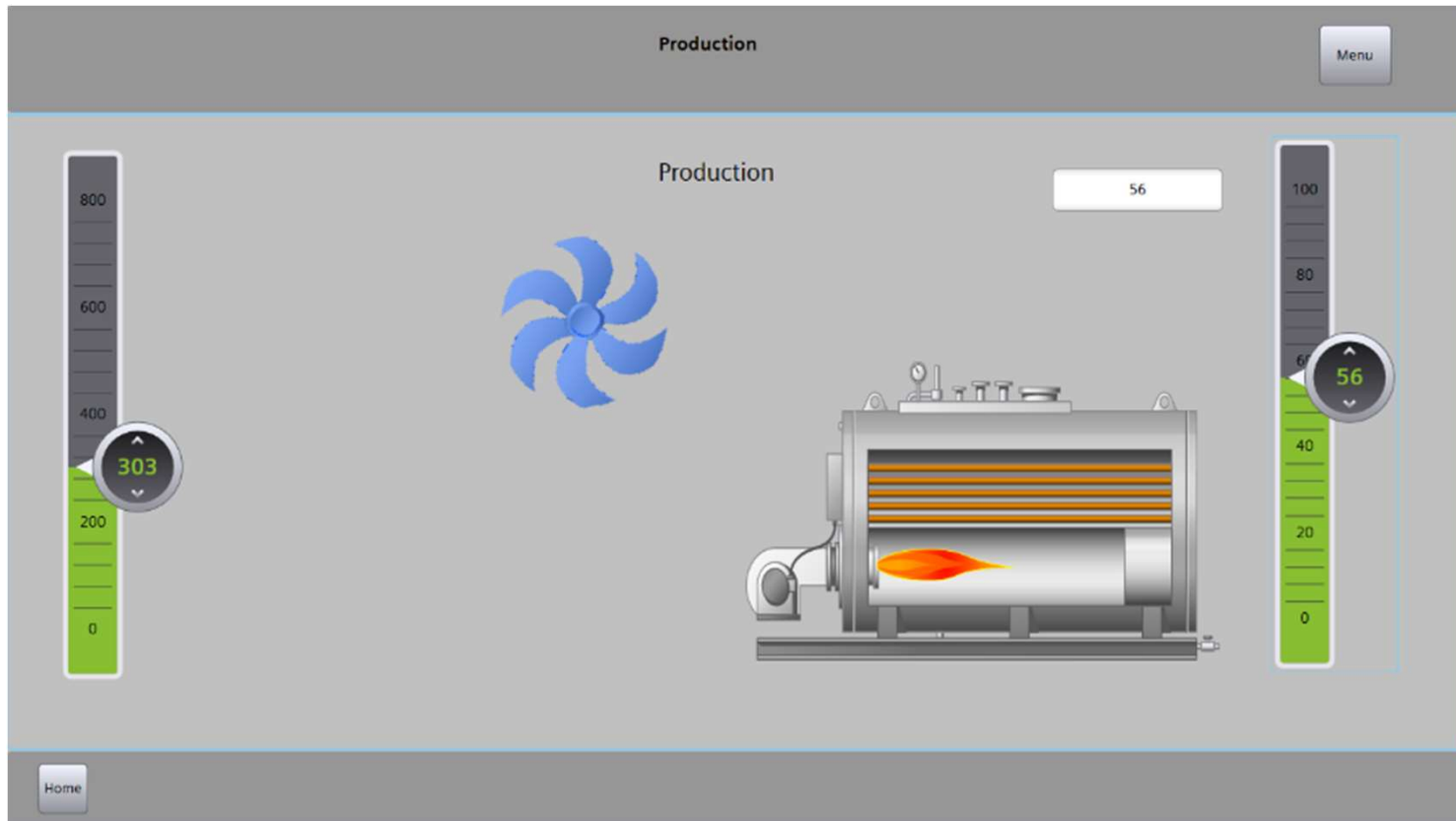
2 Fan widget icon in the Dynamic widgets library.

Name	Static value	Dynamization (!)
Opacity	1	None
Show fill level		None
Format		
Scale background graphic	Fill	None
Spacing		
Miscellaneous		
Connection status	None	
Name	Graphic view_1	
Tab index	0	
Tooltip		
Visibility	Fan 1	None
Security		
Allow operator control		None
Authorization		
Size and position		
Height	162	None
Left	456	None
Pivot point	Absolute from center	None
Rotation	0	Tag
Top	115	None
Width	171	None
X pivot point	0	None

Type	Condition	Rotation
None		
Range		

SIMATIC WinCC Unified Hands On: Properties

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**WinCC Unified
Alarming**

Agenda

1 General Information

2 TIA Settings

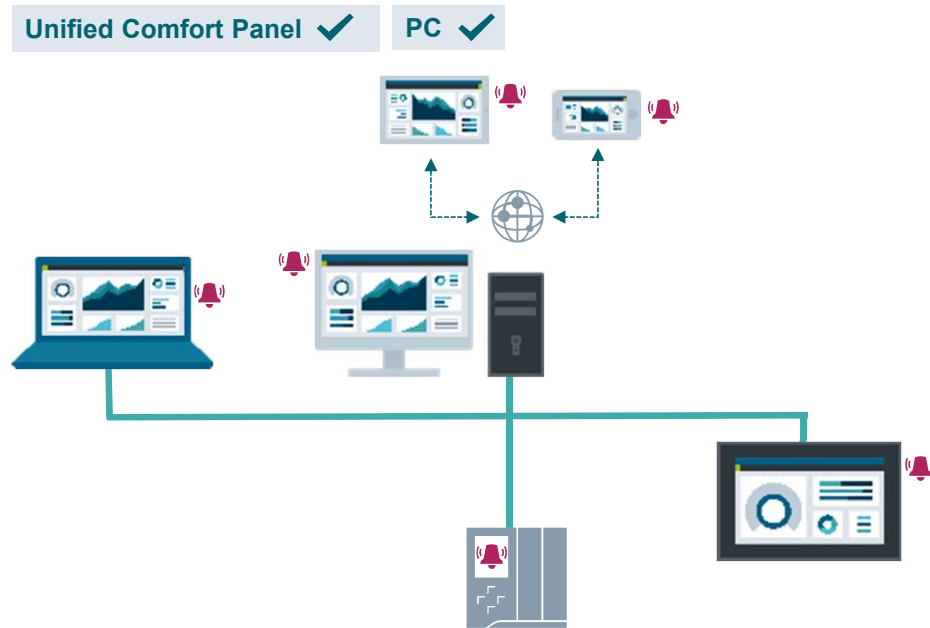
3 Alarm Classes

4 Alarm Logging

5 Alarm Control settings

SIMATIC WinCC Unified Alarming

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Immediate notification of process states, warnings or critical alarms for quick reactions and shorter downtimes.

Maximum process transparency due to a **configurable alarm system** based on IEC 62682

Availability of **S7-1500 PLC- and HMI alarms**

Alarm control for efficient handling e.g., filter, sort, acknowledge, manually or via scripting

SIMATIC WinCC Unified Alarm Control

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Unified Comfort Panel ✓

PC ✓



ID	Name	Meldeklasse	Priorität	Herkunft	Bereich	Ereignistext	Melderzustand	Zeit des Auftretens
12	Bit_Valve_out	Notification	4	Ventile	HMI_RT_1::Alarming	Valve OUT closed	Raised	7/30/19 10:16:42
10	Bitmeldung_1	Notification	4		HMI_RT_1::Alarming	BIT 1 Steigend	Raised	7/30/19 10:16:48
11	Bitmeldung_2	Notification	4		HMI_RT_1::Alarming	BIT 2 fallend (0)	Raised	7/30/19 10:16:49
3	Analog_alarm_3	Warning	8	Tank	HMI_RT_1::Alarming	Fill lever above 900	Raised	7/30/19 10:17:20
4	Analog_alarm_4	Alarm	12	Tank	HMI_RT_1::Alarming	Tank full	Raised	7/30/19 10:17:27
13	Bitmeldung_3	Alarm	12		HMI_RT_1::Alarming	Achtung, es ist irge	Raised	7/30/19 10:17:37

Know what's happening at your facility depending on your personal demand (operator, supervisor, maintenance, ...). Multilingual alarm view to support commissioning phase and international operators.

Free configurable alarm view
e.g., column order, toolbar buttons

Select alarms according to production unit or user demand e.g., plant unit in technological hierarchy, maintenance

Alarm control user interface for e.g., select time-range, sort, filter, print, hide and lock, acknowledgement

Agenda

1 General Information

2 TIA Settings

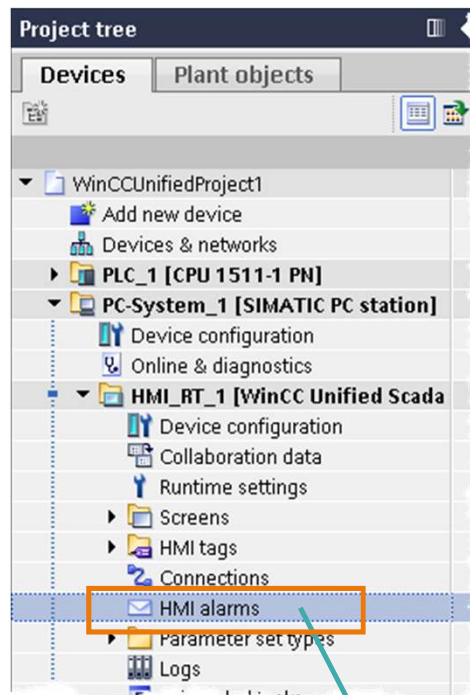
3 Alarm Classes

4 Alarm Logging

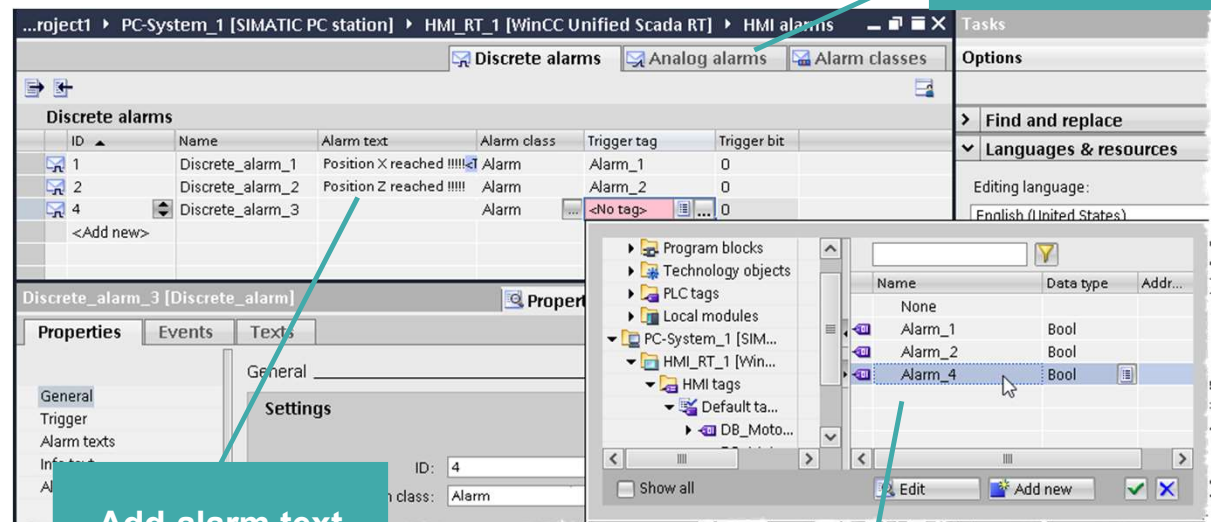
5 Alarm Control settings

SIMATIC WinCC Unified HMI Alarms

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Location in the project tree



Add alarm text

Choose a trigger tag

Switch to Analog Alarms

SIMATIC WinCC Unified Alarming

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LIVE DEMO

The screenshot displays the SIMATIC WinCC Unified Alarming configuration interface. It is divided into two main sections: variable definitions and alarm configuration.

Motor Variable Definitions:

Name	Data type	Connection	PLC name	PLC tag	Address
Motor_Status	Real	<Internal tag>		<Undefined>	
Motor_Speed	Real	<Internal tag>		<Undefined>	

Alarm Configuration (Analog alarms tab):

ID	Name	Alarm text	Alarm class	Trigger tag	Limit	Limit mode
2	Stop		Information	Motor_Status	0	Equal
3	Run		Notification	Motor_Sta...	1	Equal
4	Error		Alarm	Motor_Status	2	Equal

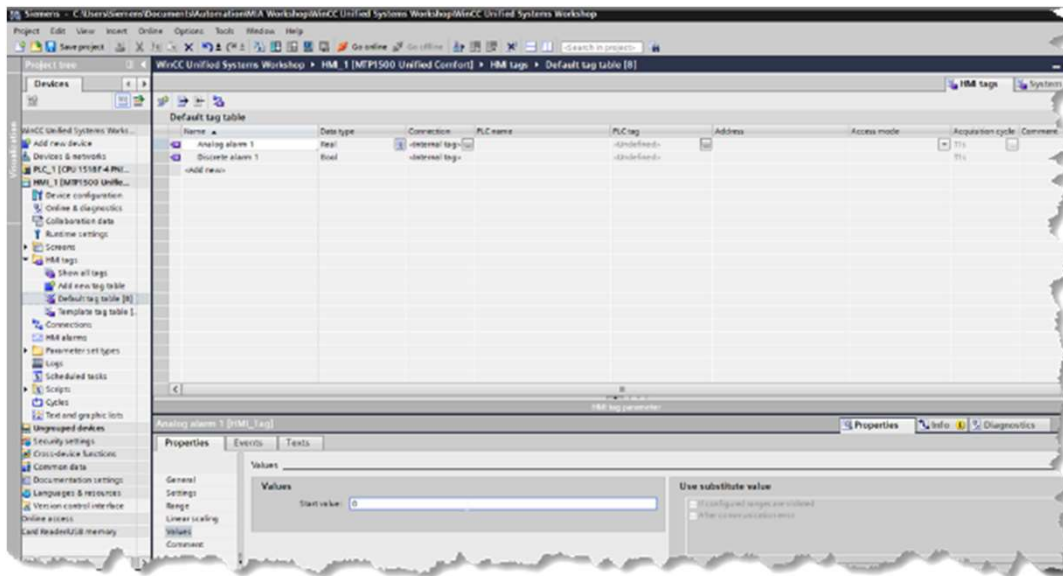
The bottom section shows the 'Run [Analog_alarm]' window with tabs for 'Properties', 'Events', and 'Texts'. The 'Properties' tab is active, showing a 'General' section.

- Configure the TIA settings
- Create and trigger discrete and analog alarms

SIMATIC WinCC Unified Hands On: Analog and Discrete Alarms

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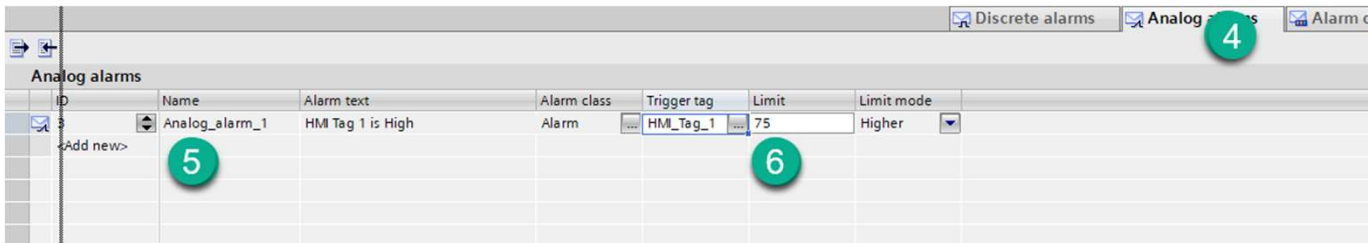
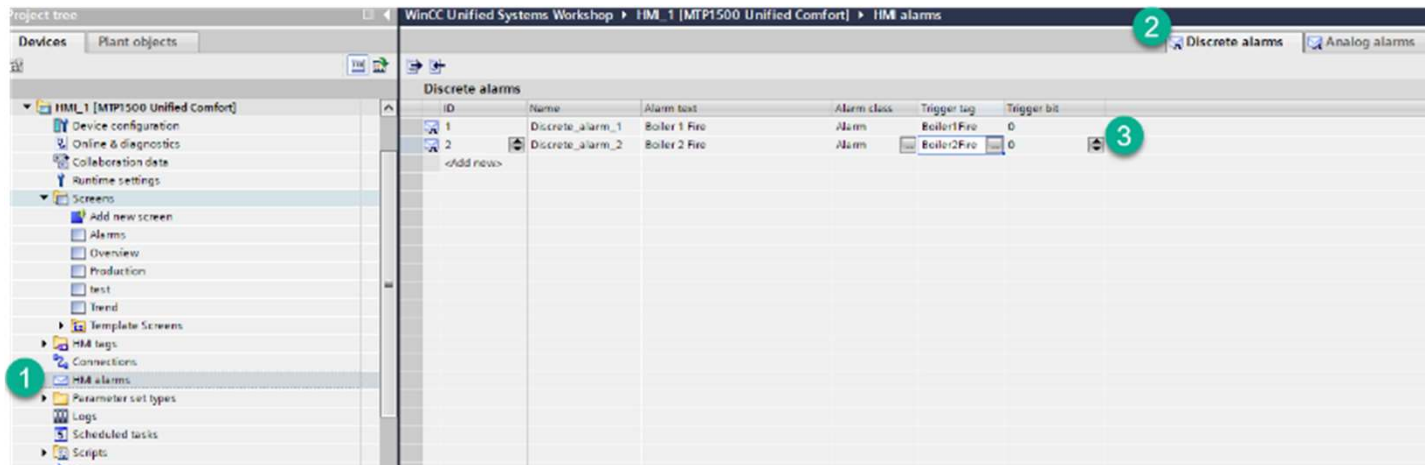
HANDS ON in 15 min 



1. Configure an analog and discrete alarm tag
2. Place a switch or an I/O field on the screen and connect it to the variable to force them
3. Add an alarm Control to a screen
4. Download the Runtime
5. Trigger the alarm

SIMATIC WinCC Unified Alarms

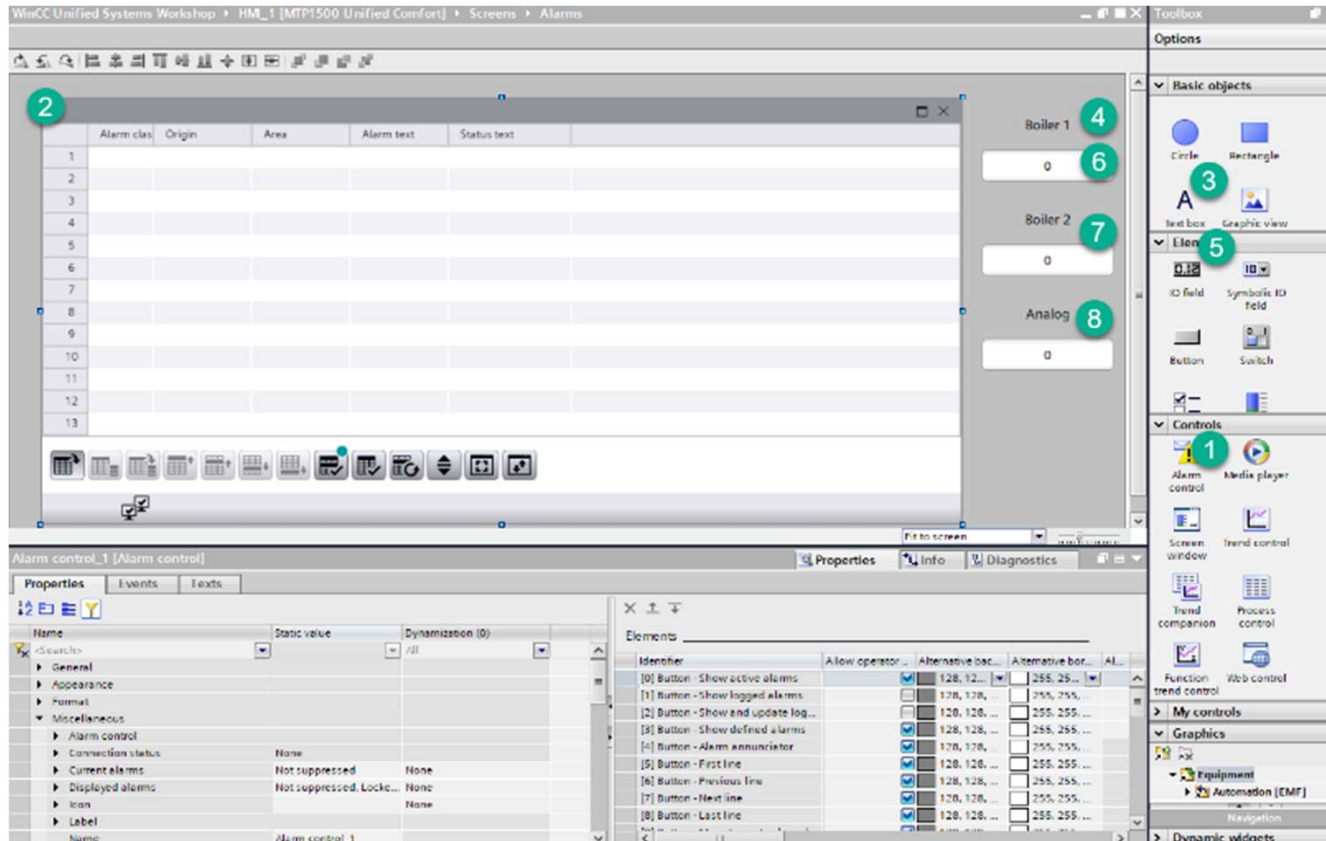
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1. Open HMI Alarms
2. Select Discrete alarms
3. Create 2 alarms and associated tags
 - 1 tag as bit
 - 1 tag as byte
4. Open Analog alarms
5. Create one alarm using tag HMI_Tag_1
6. Set an upper limit

SIMATIC WinCC Unified Alarms

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1. Select Alarm Control
2. Drag to Screen and size
- 3.-8.

Add IO and \Text fields to simulate alarm tags

Assign same tags that you created in the alarms

Download and Test

SIMATIC WinCC Unified Alarms



Alarms

Menu

	Alarm class	Origin	Area	Alarm text	Status text	
1	Alarm		HMI_RT_1::Alarming	Boiler 1 Fire	Incoming	
2	Alarm		HMI_RT_1::Alarming	Boiler 2 Fire	Incoming	
3	Alarm	Total Plant	HMI_RT_1::Alarming	HMI Tag 1 is High	Incoming	
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

Boiler 1

1

Boiler 2

0000 1000

Analog

98

Home

: 0 : 3

SIMATIC WinCC Unified AlarmTexts

The screenshot shows the SIMATIC WinCC Unified AlarmTexts interface. A table with columns 'ID', 'Name', 'Alarm text', 'Alarm class', and 'Trige' is visible. The first row has ID '1', Name 'Discrete_alarm_1', and an empty 'Alarm text' field. A context menu is open over the 'Alarm text' field, with the 'Insert parameter field...' option selected. A teal callout box with the text 'Insert a Parameter field' points to this option. Below the table, a dialog box for 'Insert parameter field' is open, showing the following settings:

- Parameter: Parameter: 1
- Process
 - Tag: int
 - PLC tag:
 - Address: Int
- Format
 - Display type: Decimal
 - Text list:
 - Length: 5
 - Decimal places: 0
 - Alignment: Right
 - Leading zeros:

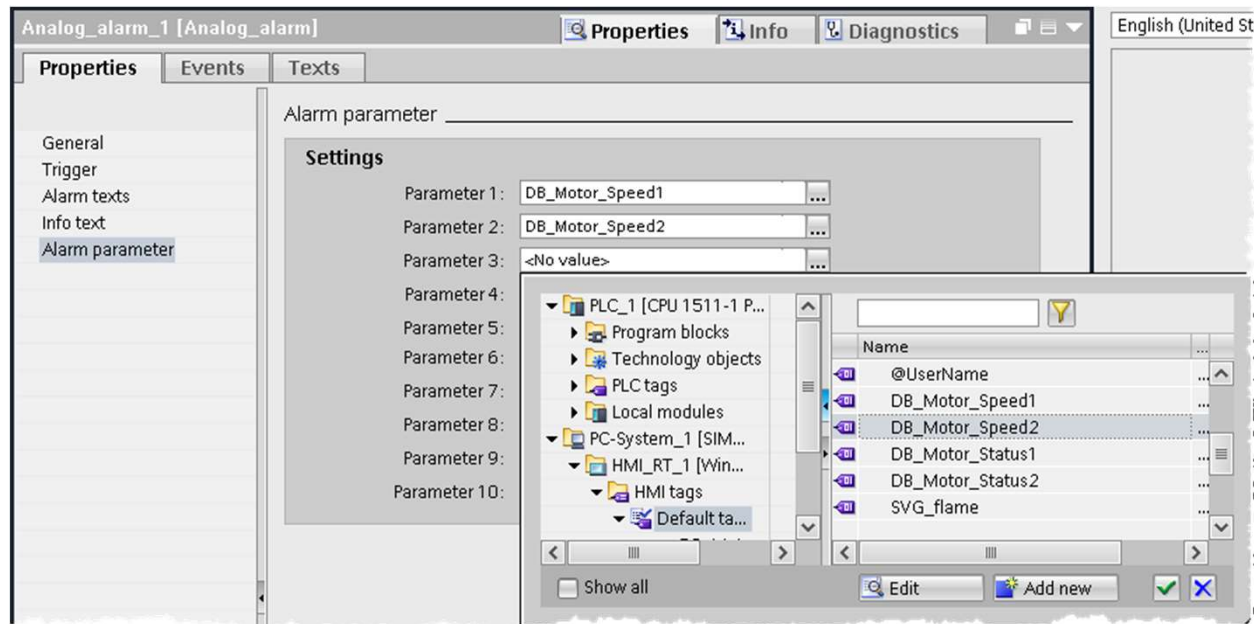
At the bottom left, the text 'Unrestricted © Siemens AG' is visible.

- For an alarm text up to ten parameters can be defied and included in the text
- If required, output fields for displaying alarm parameters in each alarm text can be inserted.
- Each alarm text contains up to 512 characters.

SIMATIC WinCC Unified Alarm parameter

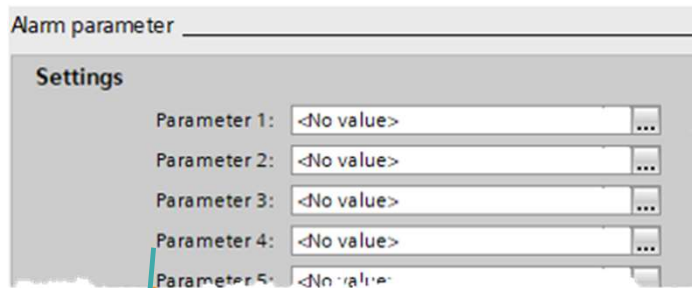
SIEMENS
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Up to 10 different
alarm
parameters can
be used



Alarm parameters are used to output process values in the alarm text (valid for discrete and analog alarms !).

SIMATIC WinCC Unified Alarm parameter



@<No. of alarm parameter> % <format specification>@

Format specification	Type
i	Signed decimal Integer
u	Unsigned decimal Integer
f	Floating
s	String

For accompanying values in the alarm text, it requires a placeholder with a special notation

Example:

- **@2%2.3f@** → Parameter 2 with 2 digits before decimal sign and 3 decimal places → e.g. 44,378
- **@4%i@** → Parameter 4 signed Integer → e.g. -25416

SIMATIC WinCC Unified System parameters

Format specification	System Meldeparameter
S1	HostName
S2	UserName
S3	Value
S4	Quality Code
S5	ValueLimit
S6	Absolute deadband
S7	Connection-ID (PLC alarms)

Assign additional system defined parameters to the alarm text

Example:

- **@S1%S@** → Computer name as String
- **@S3%I@** → Current value of trigger tag when the alarm was raised

SIMATIC WinCC Unified Alarming

LIVE DEMO

The screenshot displays the SIMATIC WinCC Unified Alarming configuration interface. It features a table for defining parameters and a table for configuring analog alarms.

Name	Data type	Connection	PLC name	PLC tag	Address
Motor_Status	Real	<Internal tag>		<Undefined>	
Motor_Speed	Real	<Internal tag>		<Undefined>	
<Add new>					

ID	Name	Alarm text	Alarm class	Trigger tag	Limit	Limit mode
2	Stop		Information	Motor_Status	0	Equal
3	Run		Notification	Motor_Sta...	1	Equal
4	Error		Alarm	Motor_Status	2	Equal
<Add new>						

Run [Analog_alarm] Properties Info Di

Properties Events Texts

General

- Add Parameters to Alarms

SIMATIC WinCC Unified Hands On: Analog and Discrete Alarms



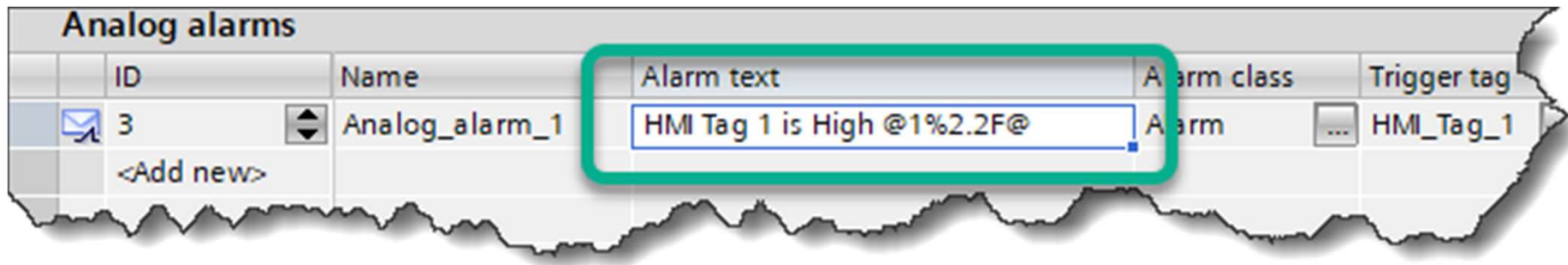
HANDS ON in 15 min


1. Add the tag value to the Analog Alarm Message

	Alarm clas	Origin	Area	Alarm text	Status text
1	Alarm	Total Plant	HMI_RT_1::Alarm	HMI Tag 1 is Hig 68.00	Incoming/Outgoing
2					
3					
4					

SIMATIC WinCC Unified Alarms

SIEMENS
Ingenuity for life



Analog alarms					
	ID	Name	Alarm text	Alarm class	Trigger tag
	3	Analog_alarm_1	HMI Tag 1 is High @1%2.2F@	Alarm	HMI_Tag_1
<Add new>					

Alarm text calls out Parameter and defines format.

Agenda

1 General Information

2 TIA Settings

3 **Alarm Classes**

4 Alarm Logging

5 Alarm Control settings

SIMATIC WinCC Unified

Alarm classes based on IEC 62682

Name	State machine	Priority	Log	Backgro...	Text col...	Backgro...	Text col...	Backgro...	Text col...	Backgro...	Text col...
Critical	Alarm with single-mode ...	16		...	...	...	...	...	...	...	...
SystemNotification	Alarm without acknowle...	4		173...	0, 0...	173...	0, 0...	173...	0, 0...	173...	0, 0...
SystemAlarmWithoutCle...	Alarm without outgoing ...	12		255...	255...	255...	0, 0...	255...	0, 0...	255...	255...
SystemWarningWithoutC...	Alarm without outgoing ...	8		255...	0, 0...	255...	0, 0...	255...	0, 0...	255...	0, 0...
SystemAlarm	Alarm with single-mode ...	12		255...	255...	255...	0, 0...	255...	0, 0...	255...	255...
SystemWarning	Alarm with single-mode ...	8		255...	0, 0...	255...	0, 0...	255...	0, 0...	255...	0, 0...
Information	Alarm without outgoing ...	1		220...	0, 0...	220...	0, 0...	220...	0, 0...	220...	0, 0...
Notification	Alarm without acknowle...	4		173...	0, 0...	173...	0, 0...	173...	0, 0...	173...	0, 0...
SystemInformation	Alarm without outgoing ...	1		220...	0, 0...	220...	0, 0...	220...	0, 0...	220...	0, 0...
WarningWithReset	Alarm with acknowledg...	8		255...	0, 0...	255...	0, 0...	255...	0, 0...	255...	0, 0...
Warning	Alarm with single-mode ...	8		255...	0, 0...	255...	0, 0...	255...	0, 0...	255...	0, 0...
AlarmWithReset	Alarm with acknowledg...	12		255...	255...	255...	0, 0...	255...	0, 0...	255...	255...
CriticalWithReset	Alarm with acknowledg...	16		139...	255...	139...	0, 0...	139...	0, 0...	139...	255...
OperatorInputInformation	Alarm without outgoing ...	1		220...	0, 0...	220...	0, 0...	220...	0, 0...	220...	0, 0...
OperatorInputRequest	Alarm with single-mode ...	5		0, 0...	255...	0, 0...	0, 0...	0, 0...	0, 0...	0, 0...	255...
Alarm	Alarm with single-mode ...	12		255...	255...	255...	0, 0...	255...	0, 0...	255...	255...
Acknowledgement	Alarm with single-mode ...	0		255...	0, 0...	255...	0, 0...	255...	0, 0...	255...	0, 0...
No Acknowledgement	Alarm without acknowle...	0		255...	0, 0...	255...	0, 0...	255...	0, 0...	255...	0, 0...
<Add new>											

Predefined set of alarm classes
based on IEC 62682

Configurable colors
(background and text)

Add custom-specific alarm classes

SIMATIC WinCC Unified

Add your own alarm class

Discrete alarms | Analog alarms | Alarm classes

Name	State machine	Priority	Log	Backgro...	Text col...	Backgro...	Text col...	Backgro...	Text col...
Alarm	Alarm with single-mode ...	12		255...	255...	255...	0, 0...	255...	0, 0...
Acknowledgement	Alarm with single-mode ...	0		255...	0, 0...	255...	0, 0...	255...	0, 0...
No Acknowledgement	Alarm without acknowle...	0		255...	0, 0...	255...	0, 0...	255...	0, 0...
MyAlarmClass	Alarm with single-mo...	0		...	...	...	...	...	...
<Add new>									

the higher the number the more important the priority 16 is the maximum

Add a new Alarm class

Define Colors

Colors

General

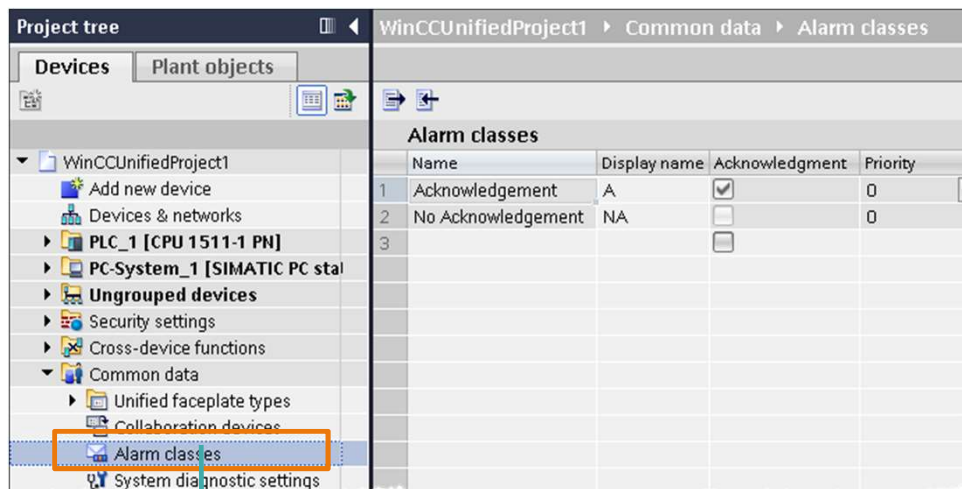
Acknowledgment

Colors

Status

	Background	Text	Flashing
Incoming:	Red	Green	<input type="checkbox"/>
Incoming/Outgoing:	Yellow	Black	<input type="checkbox"/>
Incoming/Acknowledged:	White	Black	<input type="checkbox"/>
Incoming/Outgoing/Acknowledged:	White	Black	<input type="checkbox"/>

SIMATIC WinCC Unified Common alarm classes



Location:
"Common data" in
the project tree

Common alarm classes:

- Common alarm classes are used for controller alarms and the alarms of an HMI device.
- If required, an additional common alarm class can be created.
- Common alarm classes are divided into predefined and user-defined common alarm classes.
- The predefined common alarm classes are "Acknowledgement" (for alarms with acknowledgment) and "No Acknowledgement" (for alarms without acknowledgment).

SIMATIC WinCC Unified Trigger Events by Alarms conditions

Unified > Unified [SIMATIC PC station] > HMI_RT_1 [WinCC Unified Scada RT] > Scheduled tasks

Name	Trigger	Description	Comment
5 Task_1	Alarms	Execute as soon as one of the conditions i.	
<Add new>	<ul style="list-style-type: none"> T500ms T1s T2s T5s T10s Daily Weekly Monthly Yearly Once Tags Alarms 		

Alarms in Scheduled tasks

- In the scheduler you can combine alarm criteria to trigger a event
- You can combine different alarm criteria with: AND or OR

Criteria

- Alarm class name
- Alarm state
- Area
- Last modification
- Incoming time
- Outgoing time
- Reset Time
- Alarm text
- Info Text
- Computer name
- User name
- Origin

The screenshot shows the configuration for the 'Alarms' trigger. It is set to trigger when the 'Alarm state' is 'Equal to' 'Incoming'. Additionally, it is configured to trigger when the 'Alarm class name' is 'Equal to' a specific class, with a list of available classes shown in the dropdown menu.

Agenda

1 General Information

2 TIA Settings

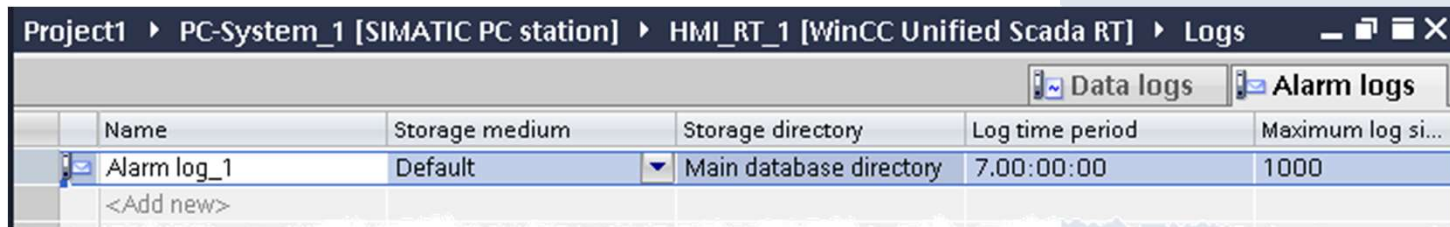
3 Alarm Classes

4 Alarm Logging

5 Alarm Control settings

SIMATIC WinCC Unified Alarm Logs

- Each alarm event is logged, e.g., the transition of the alarm from "incoming" to "acknowledged" status.



Name	Storage medium	Storage directory	Log time period	Maximum log si...
Alarm log_1	Default	Main database directory	7.00:00:00	1000
<Add new>				

- The time stamp of a logged alarm is always specified in standard UTC format (Universal Time Coordinated).

An alarm log is used to log alarms that occur in the monitored process.

SIMATIC WinCC Unified Alarm Logging

The screenshot shows the 'Alarm classes' window in SIMATIC WinCC Unified. The window has tabs for 'Discrete alarms', 'Analog alarms', and 'Alarm classes'. The 'Alarm classes' tab is active, displaying a list of alarm classes with columns for Name, State machine, Priority, and Log. A dialog box is open over the list, showing a tree view of the project structure and a list of alarm logs. The 'Alarm log_1' entry is selected, and a green arrow points to it from a callout box.

Name	State machine	Priority	Log
WarningWithReset	Alarm with acknowledg...	8	
SystemNotification	Alarm without acknowle...	4	
SystemAlarmWithoutCle...	Alarm without outgoing ...	12	
SystemWarningWithoutC...	Alarm without outgoing ...	8	
SystemAlarm	Alarm with single-mode ...	12	
SystemWarning	Alarm with single-mode ...	8	
Information	Alarm without outgoing ...	1	
Notification	Alarm without acknowle...	4	
SystemInformation	Alarm without outgoing ...	1	
Critical	Alarm with single-mode ...	16	
Warning	Alarm with single-mode ...	8	
AlarmWithReset	Alarm with acknowledg...	12	
CriticalWithReset	Alarm with acknowledg...	16	
OperatorInputInformation	Alarm without outgoing ...	1	
OperatorInputRequest	Alarm with single-mode ...	5	
Alarm	Alarm with single-mode ...	12	
Acknowledgement	Alarm with single-mode ...	0	
Notification	Alarm without acknowle...	0	

Select alarm log

Alarms can't be logged separate. It is only possible to add a complete Alarm class to the archive

Agenda

1 General Information

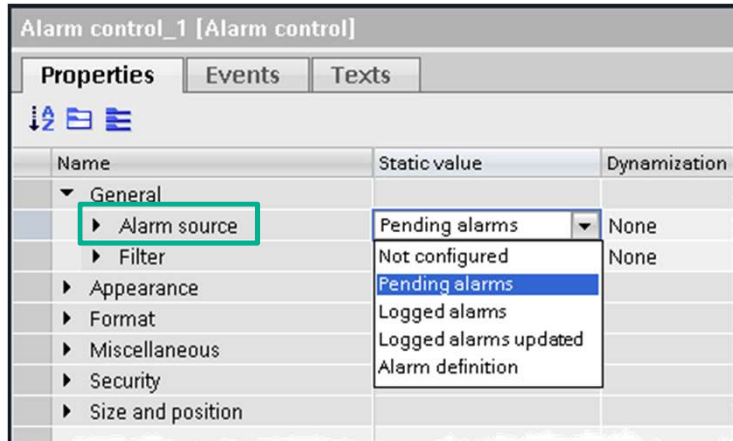
2 TIA Settings

3 Alarm Classes

4 Alarm Logging

5 Alarm Control settings

SIMATIC WinCC Unified Alarm Control – Alarm source

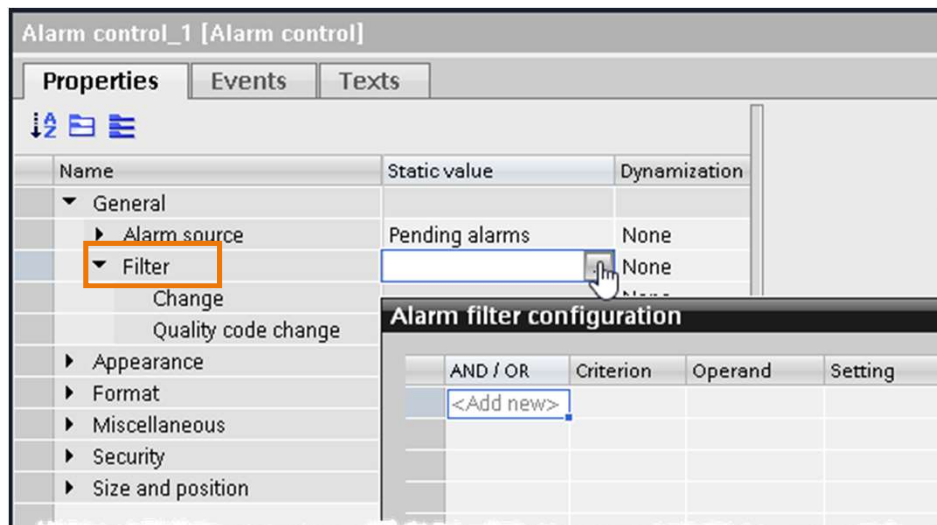


at "Alarm source" you specify which alarms the alarm view displays in runtime by default:

- "Not configured": The alarm view does not show any alarms.
- "Pending alarms": The alarm view shows the currently pending alarms.
- "Logged alarms": The alarm view shows the logged alarms.
- "Logged alarms updated": The alarm view shows the logged alarms that are updated at specified intervals.
- "Alarm definition": The alarm view shows all alarms configured in the engineering system, regardless of whether or not they have occurred.

Hint: settings can also be changed and configured in runtime, but in WinCC Unified V16 the control does not support persistency, so any changes in runtime will be reset again to engineering setting after a screen change

SIMATIC WinCC Unified Alarm Control – Filter in Engineering



- The display of alarms in the alarm control can be filtered.
- A static value, a tag or a script can be configured for the filter. This functions can be configured in the alarm control in the "Screens" editor and in Runtime.
- The filter can be created by all parameters, such as ID, name, alarm class, priority, etc.

SIMATIC WinCC Unified Alarm Control – Filter in runtime

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Create a new
filter criterion

And / Or	Criterion	Operand	Setting
	<add>		

Up Down Remove

Filter:
1
2
3
4
5
6

Apply OK Cancel

The filters are not
persistence in
runtime!

To filter the alarms in Runtime, click



WinCC Unified SIPEC Workshop Trending and Logging

Agenda



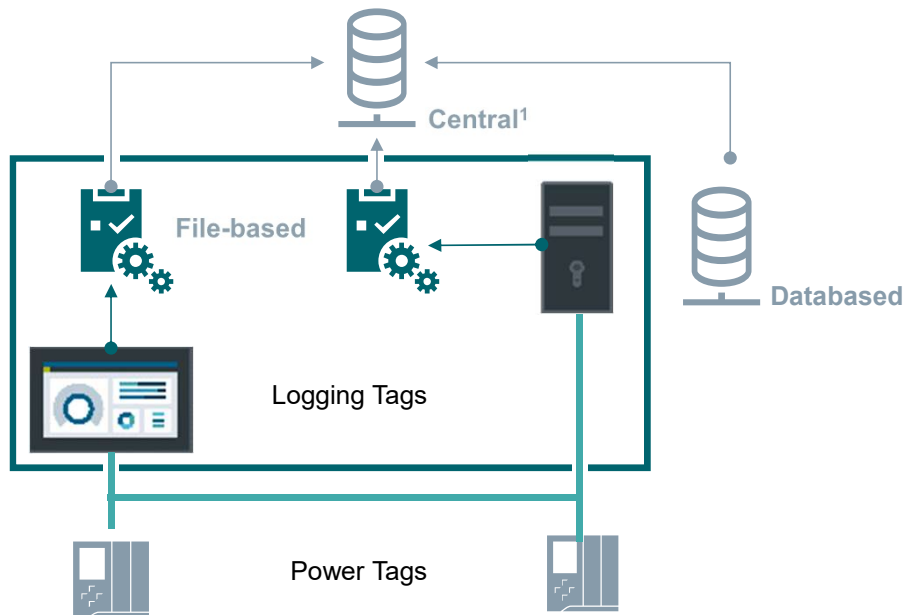
1 General Information

2 TIA Settings

3 Trendcontrol

SIMATIC WinCC Unified File-based Logging - Scalable logging concept

Unified Comfort Panel ✓ PC ✓



Universal logging functionality for machine-level requirements regarding handling of archive data e.g., copy/paste log files

¹ planned

Unrestricted © Siemens AG 2020

Unmanaged file-based data archive for **small to medium applications** up to 5,000 Logging Tags

Changeover to databased logging (optional) possible due to identical logging structures

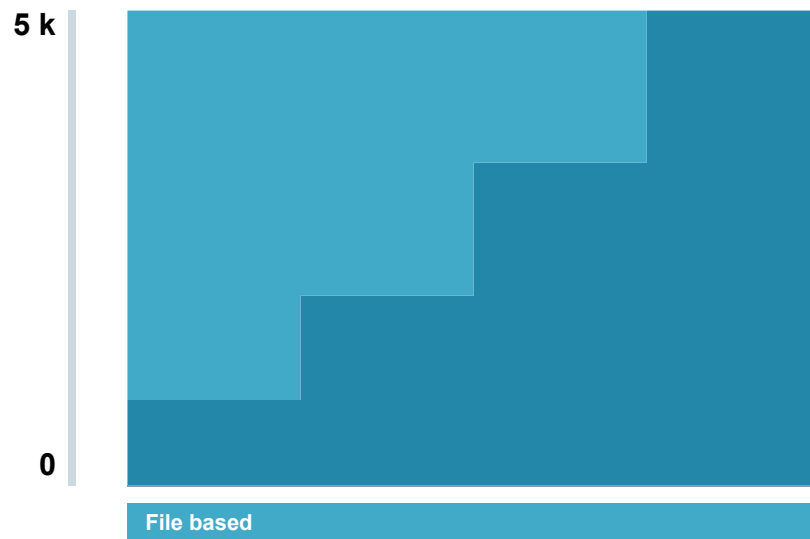
Planned

Central logging¹ as overall plant archiving solution (optional)

SIMATIC WinCC Unified – Logging Tags Licensing concept

Unified Comfort Panel ✓

PC ✓



Unified comfort panel PC

Unrestricted © Siemens AG 2020

Unified Comfort Panels

File-based Logging up to 5,000
Logging Tags (included)

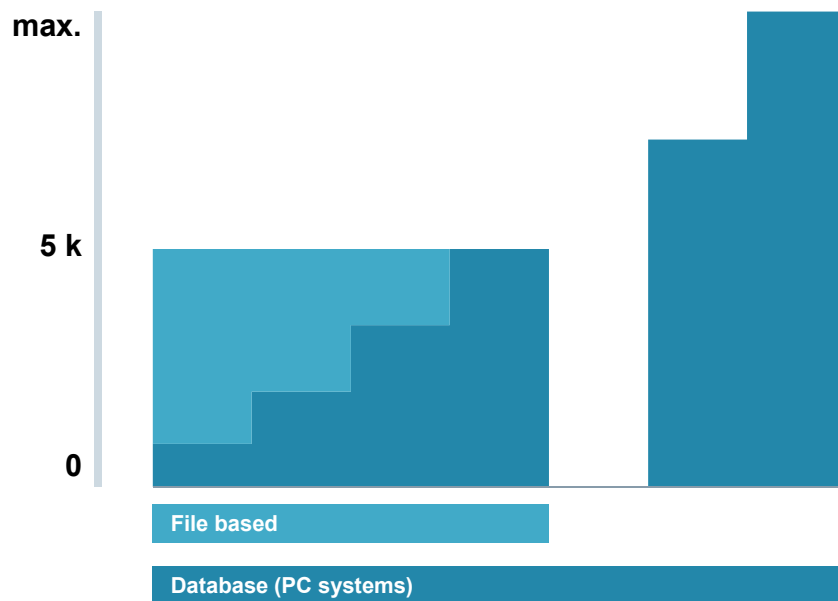
Unified PC Systems

- File-based Logging up to 5,000 Logging Tags
- Licenses for Logging Tags:
100, 500, 1,000, 5,000 (countable)

Possibility to change to Database
Logging for growing requirements

SIMATIC WinCC Unified

– Logging Tags Licensing concept



■ Filebased Logging ■ Database Logging

Unified PC Systems

Configure the logging system according to your requirements

- Database Logging (optional), **scalable up to the maximum number of Power Tags**
- Licenses for Logging Tags:
100, 500, 1,000, 5,000, 10,000, 30,000 (countable)

Agenda

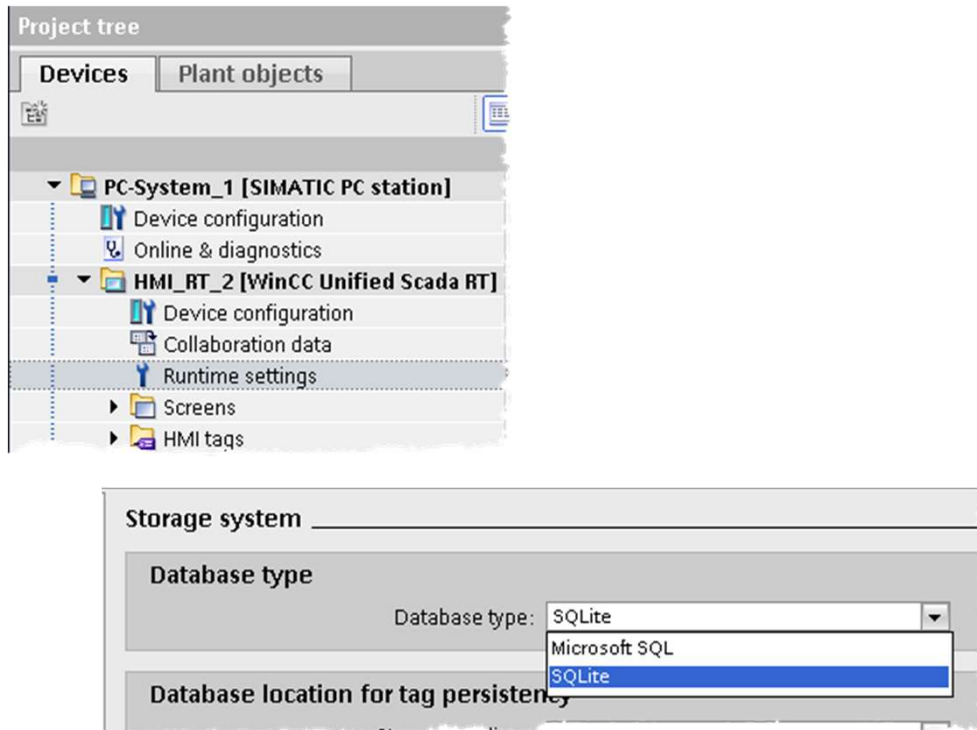


1 General Information

2 TIA Settings

3 Trendcontrol

SIMATIC WinCC Unified Logging – Storage system

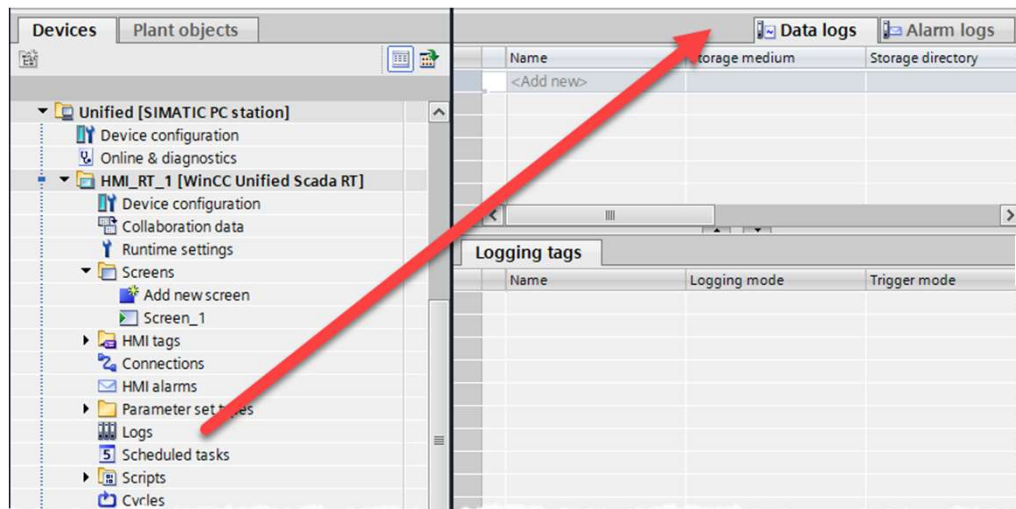


Database supported types:

- File-based logging – SQLite (as default in Unified PC RT systems).
- Database logging – Microsoft SQL (as an option for Unified PC RT Systems). Not available for Unified Comfort Panels.

SIMATIC WinCC Unified Logging Overview

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There are two types of log:

- Data logs - used to log process data from an industrial plant
- Alarm logs - used to log alarms that occur in the monitored process

You have the option of archiving tag values and alarms for subsequent analysis

SIMATIC WinCC Unified Logging – Runtime Settings

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The screenshot shows the 'Logs' configuration window for 'Data logs'. The table below summarizes the settings shown in the interface:

Name	Storage medium	Storage directory	Log time period	Maximum log size (MB)	Segment time period	Maximum seg...	Segment start time	Backup mode
Data log_1	Default	Main database directory	7.00:00:00	1000	1.00:00:00	100	Tuesday, ...	No backup

Callouts from the image:

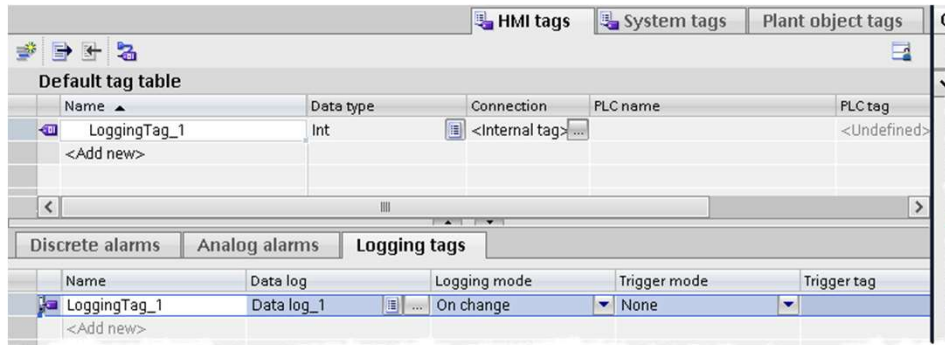
- Assign any name to the log**: Points to the 'Name' column.
- Maximum time and size of the log**: Points to the 'Log time period' and 'Maximum log size (MB)' columns.
- Select backup mode**: Points to the 'Backup mode' column.
- Determines where the log is stored**: Points to the 'Storage medium' and 'Storage directory' columns.
- Maximum time and size of the segment**: Points to the 'Segment time period' and 'Maximum seg...' columns.

With both types of logs you define the same properties for the log.

SIMATIC WinCC Unified Logging settings

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Ingenuity for life

LIVE DEMO



The screenshot shows the SIMATIC WinCC Unified Logging settings interface. It features a 'Default tag table' and a 'Logging tags' section. The 'Default tag table' has columns for Name, Data type, Connection, PLC name, and PLC tag. The 'Logging tags' section has columns for Name, Data log, Logging mode, Trigger mode, and Trigger tag.

Name	Data type	Connection	PLC name	PLC tag
LoggingTag_1	Int	<Internal tag>...		<Undefined>
<Add new>				

Name	Data log	Logging mode	Trigger mode	Trigger tag
LoggingTag_1	Data log_1	On change	None	
<Add new>				

- Which Settings are necessary
- What needs to be considered when archiving



Agenda



1 General Information

2 TIA Settings

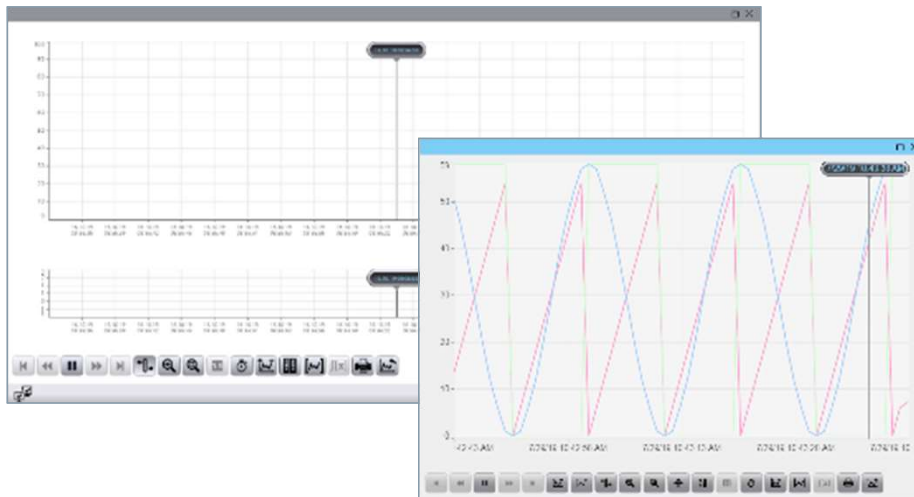
3 Trendcontrol

SIMATIC WinCC Unified Trend Control – Flexible evaluation of process data

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Unified Comfort Panel ✓

PC ✓



Direct evaluation of online and historical data including comparison of different time ranges e.g., shifts

Free configurable trend view of online and/or historical data e.g., multiple trend areas

User defined settings regarding trend appearance e.g., color, line form, single value point, background

Trend user interface e.g., number of trends, ruler, range, print (hardcopy), export

SIMATIC WinCC Unified Configure Trend Control

The screenshot shows the 'Trend control_1 [Trend control]' configuration window. It features a 'Properties' tab and a 'Trends' table. A callout box points to the 'Trends' section in the left-hand tree view, indicating it is a table view for faster adjustment of settings. Another callout points to the top of the 'Trends' table, highlighting icons for sorting and deleting trends. A third callout points to the '<Add new>' button in the 'Trends' table, indicating how to add a new trend. A fourth callout points to the 'Source' field in the 'Data source Y' section, which has a dropdown menu with options like 'HMI_Tag' and 'Logging tag', indicating how to connect a tag to the trend.

Table view for trends for faster adjustment of settings

sort or delete trends

Add a new Trend

Connect a tag/ logging tag to the trend

Identifier	Line color	Line type	Background fill ..
[0] Trend - Y:	149, 193, 34	Solid	Transparent
[1] Trend - Y:	0, 0, 255	Solid	Transparent
[2] Trend - Y:	255, 0, 0	Solid	Transparent
<Add new>			

SIMATIC WinCC Unified Trend Companion – Statistical evaluation of process data

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Flexible statistical evaluation of process data depending on your personal demand (operator, supervisor, maintenance, ...)

Free configurable statistic view in relation to the selected range of the corresponding trend control

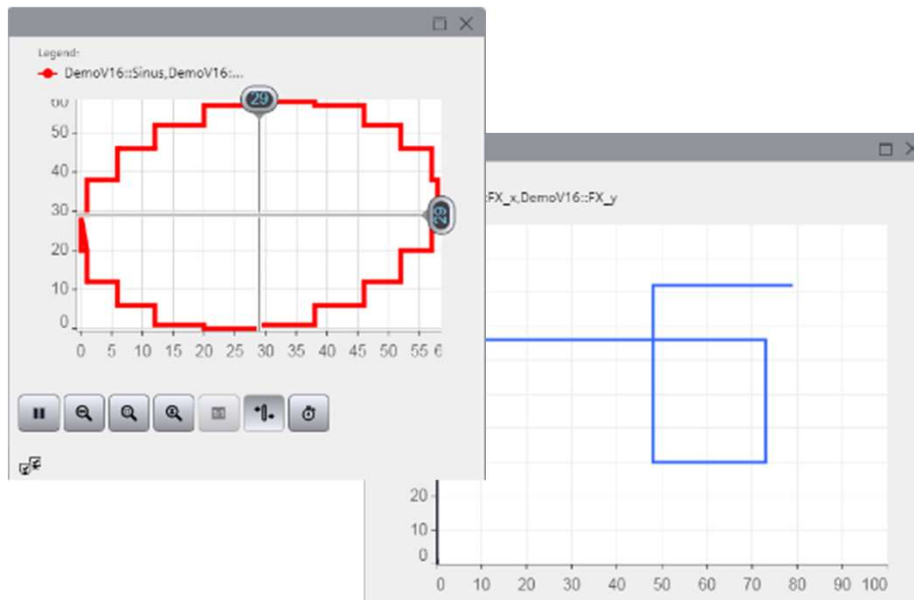
User defined evaluation regarding sum, average, max, min, integral

Trend Companion user interface e.g., print (hardcopy) or the export statistical data

SIMATIC WinCC Unified Function Trend control f(X)

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Function trend control refers to online and historical data.

Analysis of data **without**
time-based relationship

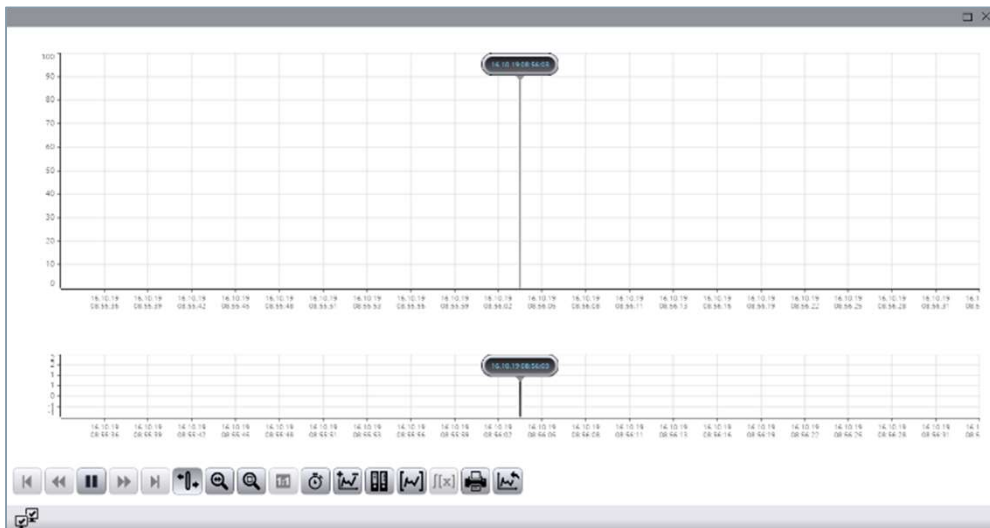
Typical use cases are e.g., batch evaluations
(pressure vs. temperature) or quality evaluations
(availability vs. performance)

Graphical presentation of **mathematical**
formulas e.g., target – performance comparison
or reactions at chemical processes

SIMATIC WinCC Unified Working with the Trend Control

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LIVE DEMO

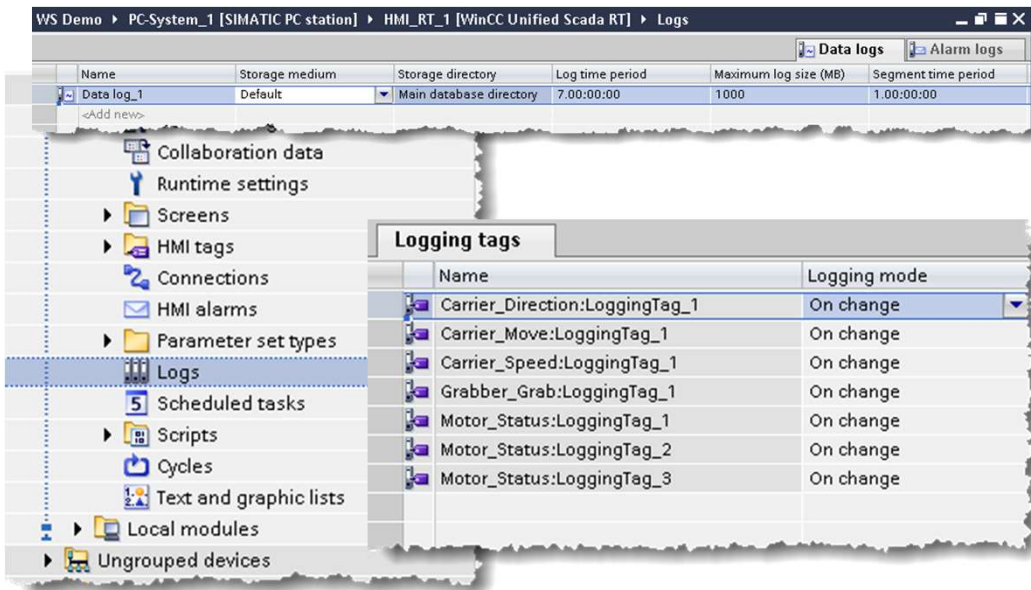


- How does the Trend control work
- Connect tags to it
- Set trend properties
-

SIMATIC WinCC Unified Hands On: Logging of tags

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HANDS ON in 10 min 



The screenshot shows the SIMATIC WinCC Unified Scada RT interface. The top window displays the 'Data logs' configuration table. The left sidebar shows the project tree with 'Logs' selected. The 'Logging tags' window is open, showing a list of tags and their logging modes.

Name	Storage medium	Storage directory	Log time period	Maximum log size (MB)	Segment time period
Data log_1	Default	Main database directory	7.00:00:00	1000	1.00:00:00

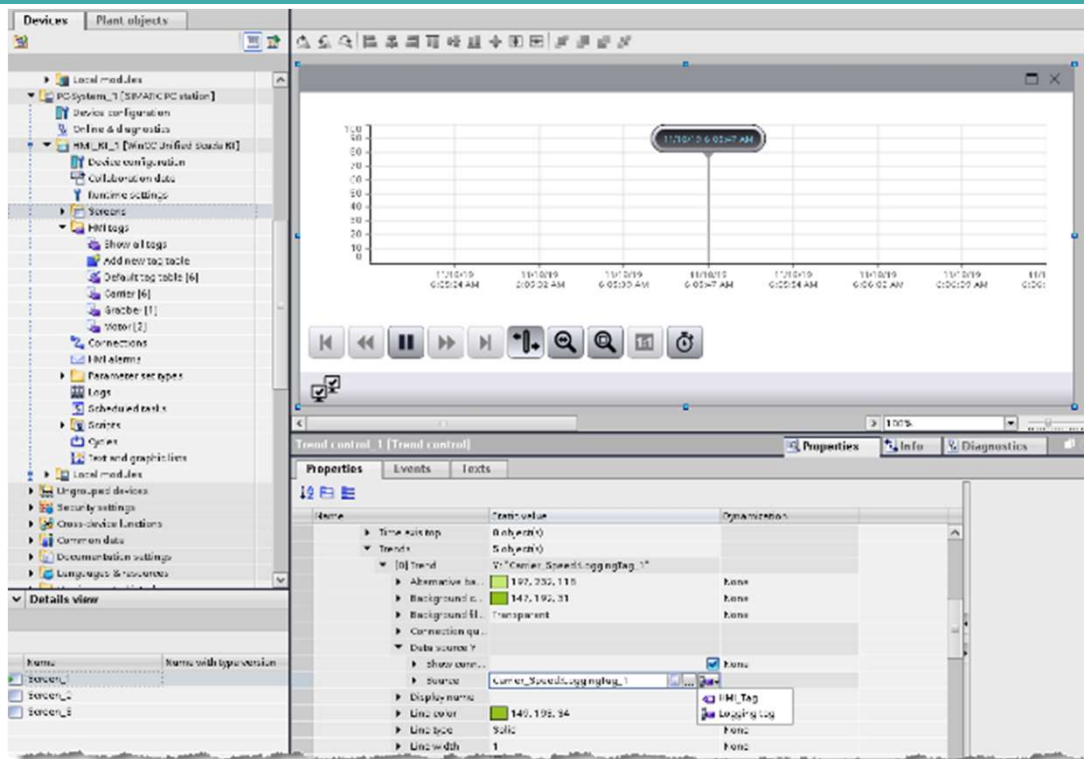
Name	Logging mode
Carrier_Direction:LoggingTag_1	On change
Carrier_Move:LoggingTag_1	On change
Carrier_Speed:LoggingTag_1	On change
Grabber_Grab:LoggingTag_1	On change
Motor_Status:LoggingTag_1	On change
Motor_Status:LoggingTag_2	On change
Motor_Status:LoggingTag_3	On change

1. Create 2 tags
 1. HMI_Tag_1 Int
 2. HMI_Tag_2 Int
2. Create a new data log
3. Define storage path
4. Define logging tags for your tags
5. Download the Runtime

SIMATIC WinCC Unified Hands On: Trend Control

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HANDS ON in 20 min

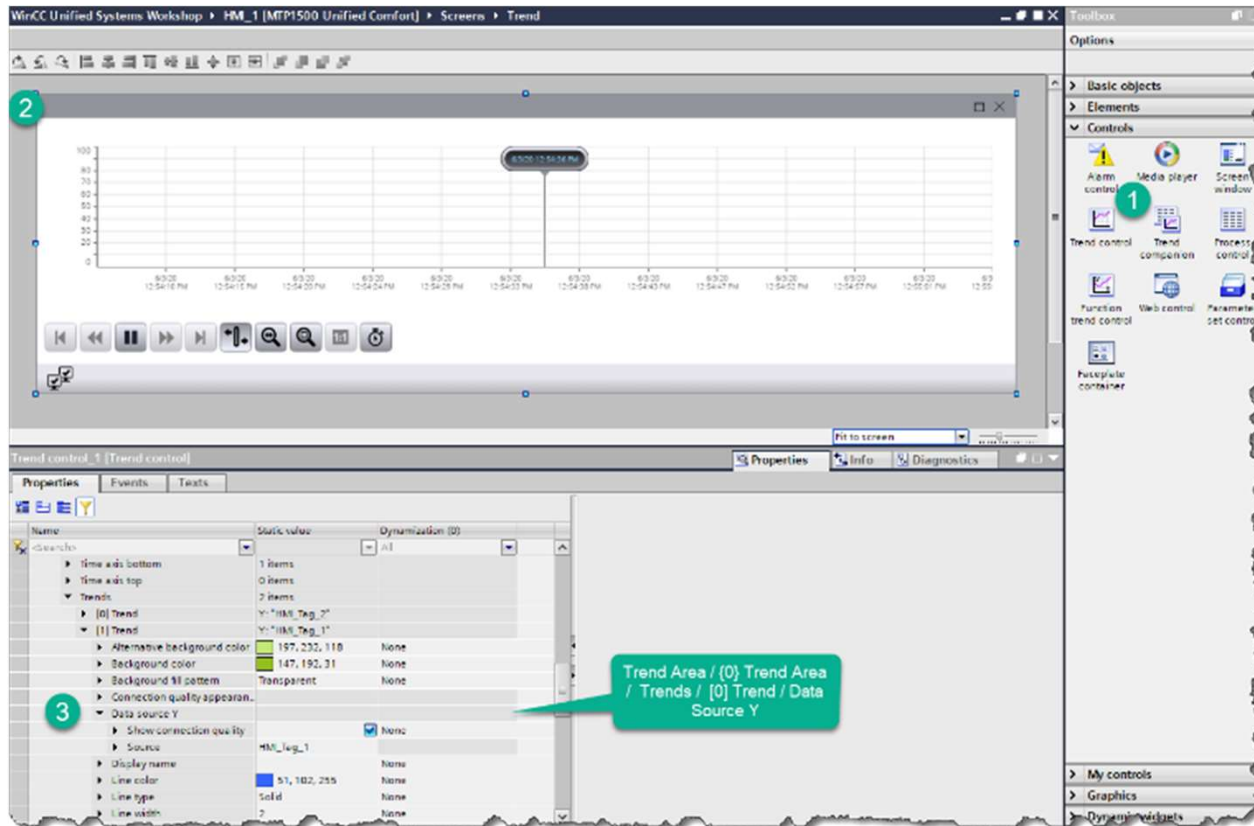


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1. On your trend screen, add a trend control to one of your screens
2. Add the logging tags to your trend control
3. Download the Runtime
4. Start Tag Simulation
Documents\WinCC Unified Tag Simulator
WinCC Unified Tag Simulator
File WorkshopSim.sim

SIMATIC WinCC Unified Hands On: Trend Control

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Drag Trend Control to Screen

In Properties configure 2 trends
General / Trend area / Trends / Data Source

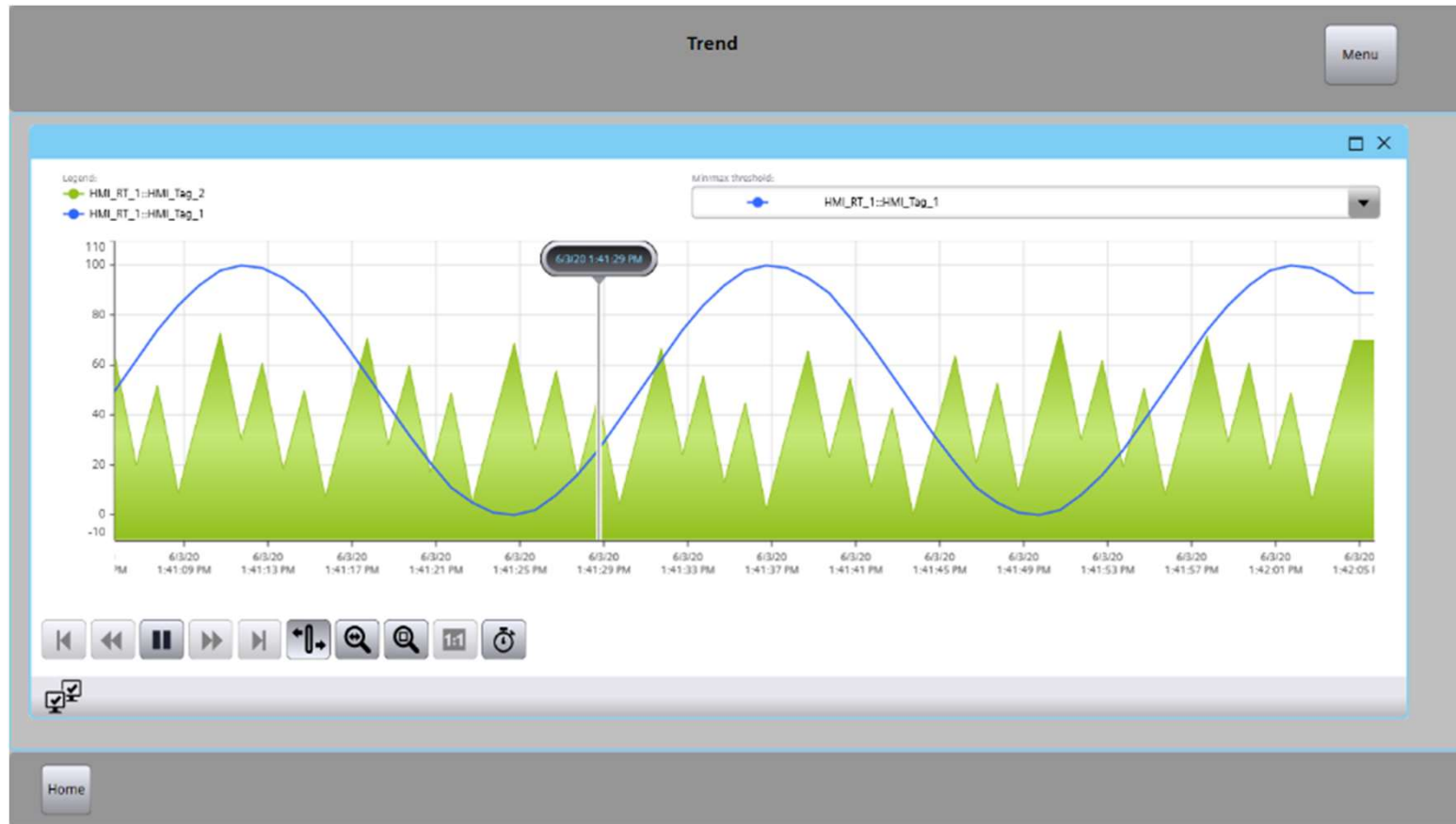
Select HMI_Tag_1 and HMI_Tag_2
as your 2 trend tags

Be sure to start the tag simulator

Documents\WinCC Unified Tag Simulator
WinCC Unified Tag Simulator
File WorkshopSim.sim

SIMATIC WinCC Unified Hands On: Trend Control

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The image features a background of a 3D industrial factory layout with various machinery and conveyor belts. Overlaid on this are several semi-transparent digital panels representing WinCC Unified Faceplates. One panel shows a 'WinCC Unified project' with a 'start Production' button. Another panel displays 'Operator: User Name'. A third panel shows 'Version: Version 1.1'. There are also circular gauges with numbers like '24' and '30'. In the foreground, a laptop screen displays a similar interface with a 'WinCC Unified project' window and a 'start Production' button. The overall aesthetic is clean and modern, with a light blue and white color palette.

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WinCC Unified Faceplates

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www.usa.siemens.com/wincc-unified

Agenda



1 General Information

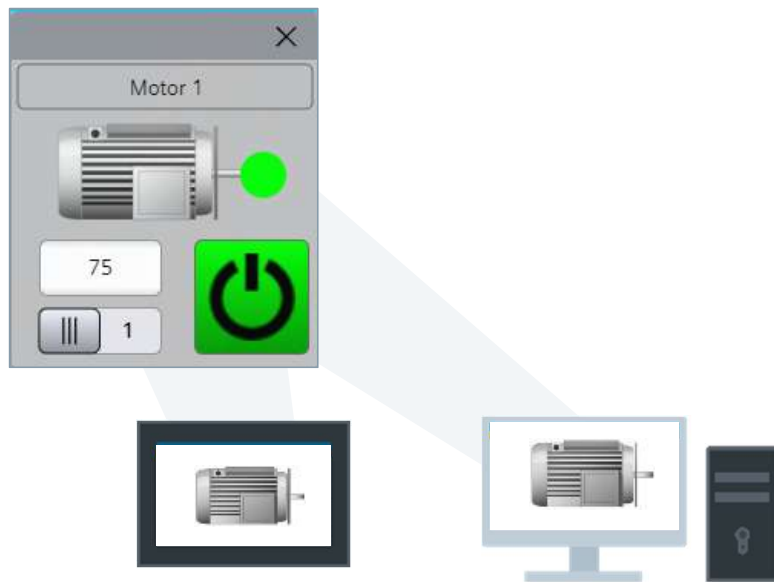
2 Working with Faceplates

SIMATIC WinCC Unified Unified Faceplates as enclosed graphical objects

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Unified Comfort Panel ✓

PC ✓



Create individual library templates (master copies) with dynamic process connection

Use the same Faceplates

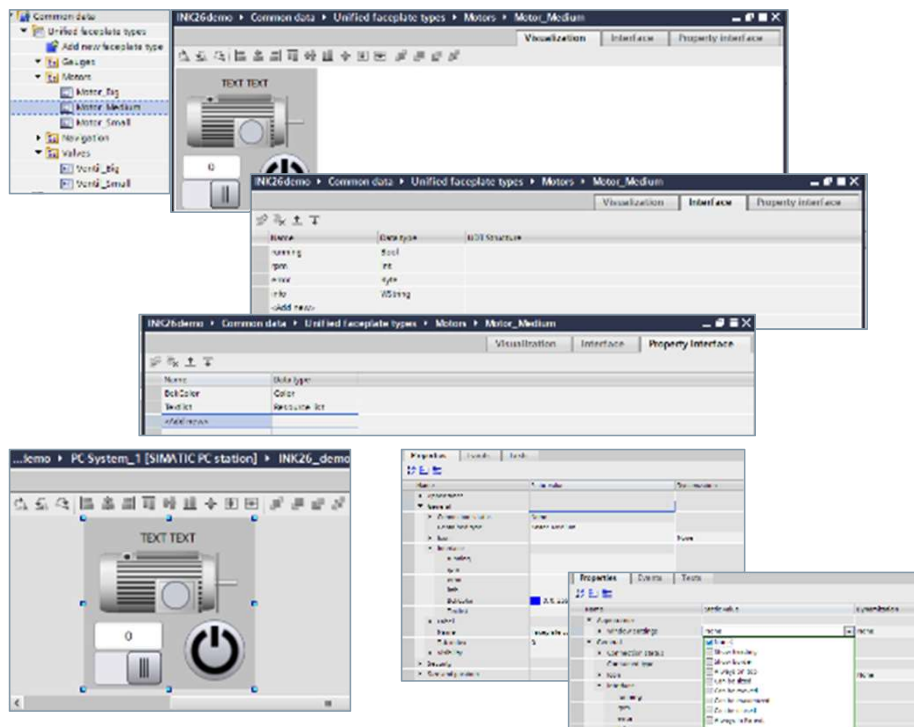
for panel and PC systems using a Faceplate container control

Standardized operation elements for **flexible reuse** in all Unified devices and projects

Efficient operation window (popup) for assets e.g., motor, pump

SIMATIC WinCC Unified Faceplates – Engineering

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TYPE-INSTANCE-Concept

Define Faceplates (Common data)

- Interfaces – project independent (simple tag types, PLC UDT types)
- Property interface (colors, text resource lists)
- Visualization for object and operation window, engineering like a screen (without advanced controls) including dynamization via Scripting

Use Faceplates in screens

- Drag and Drop
- Assign interface and properties

Agenda

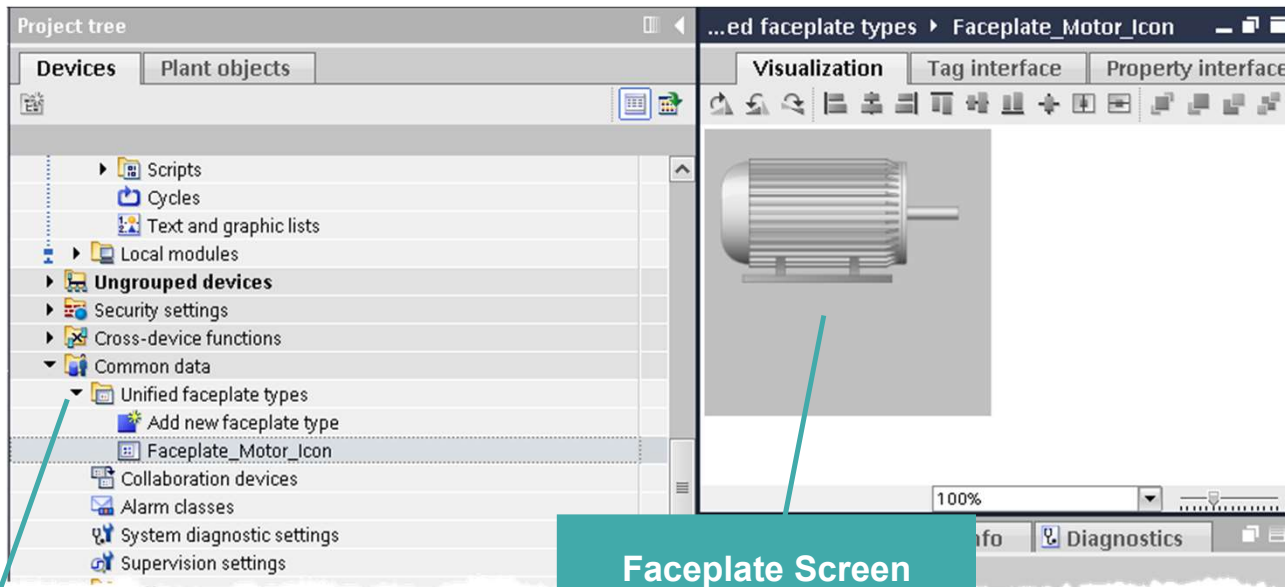


1 General Information

2 Working with Faceplates

SIMATIC WinCC Unified Faceplate Editor

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Faceplate Screen
Editor

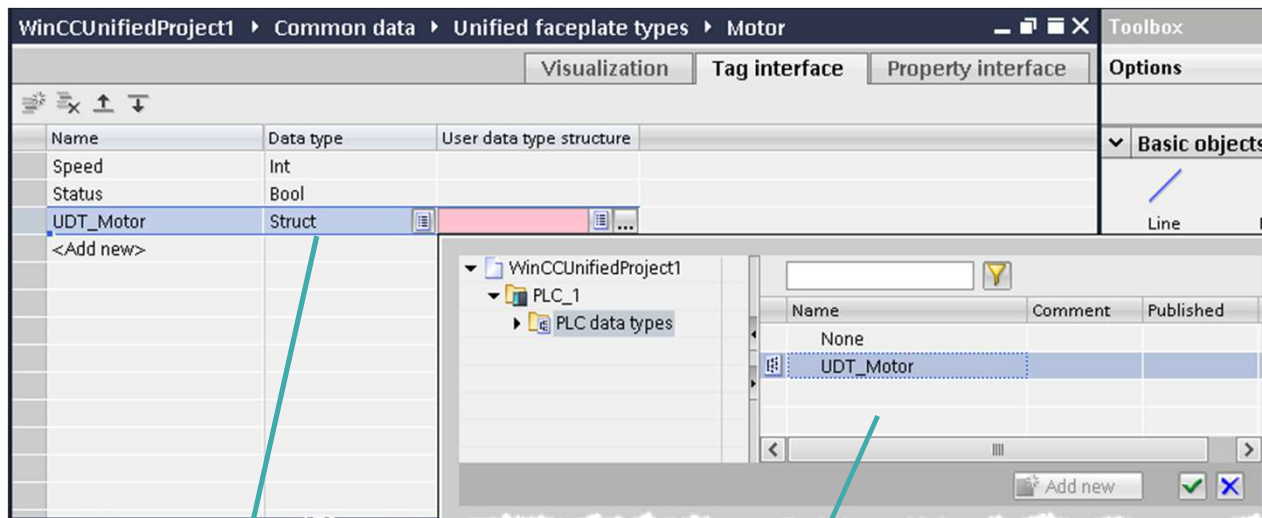
Location: folder
„Common data“ in
the project tree

Hints:

- Dynamic SVGs are not supported
- Controls are not supported
- System functions work only in the JavaScript context
- Versioning in the library is not supported in V16

SIMATIC WinCC Unified Faceplate Editor – Tag interface

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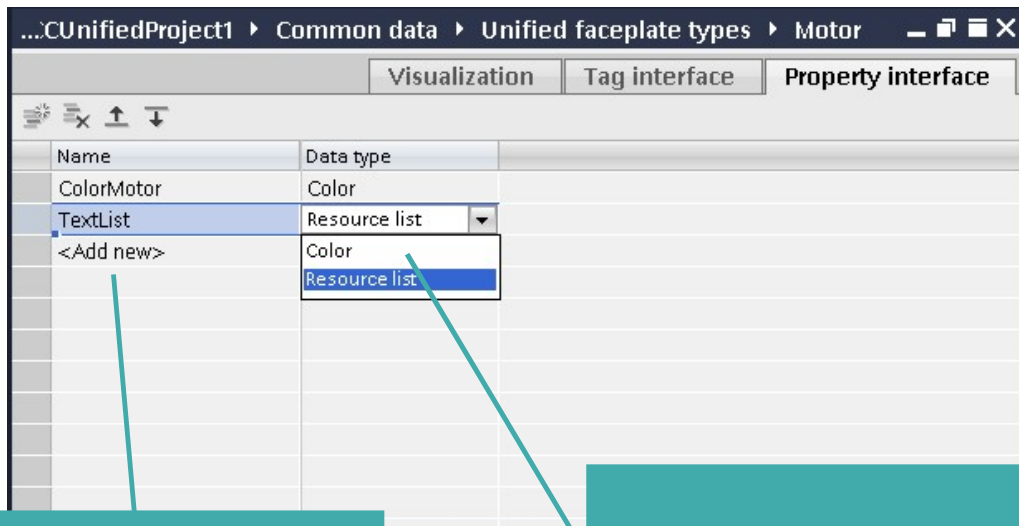
Hints:

- Only tags from the Interface can be connected
- UDT in UDT works
- a UDT containing a Struct does not work!

For PLC UDT use the
Data Type „Struct“

Selection of the
necessary PLC data
type

SIMATIC WinCC Unified Faceplate Editor – Property interface



Add a new tag for
property

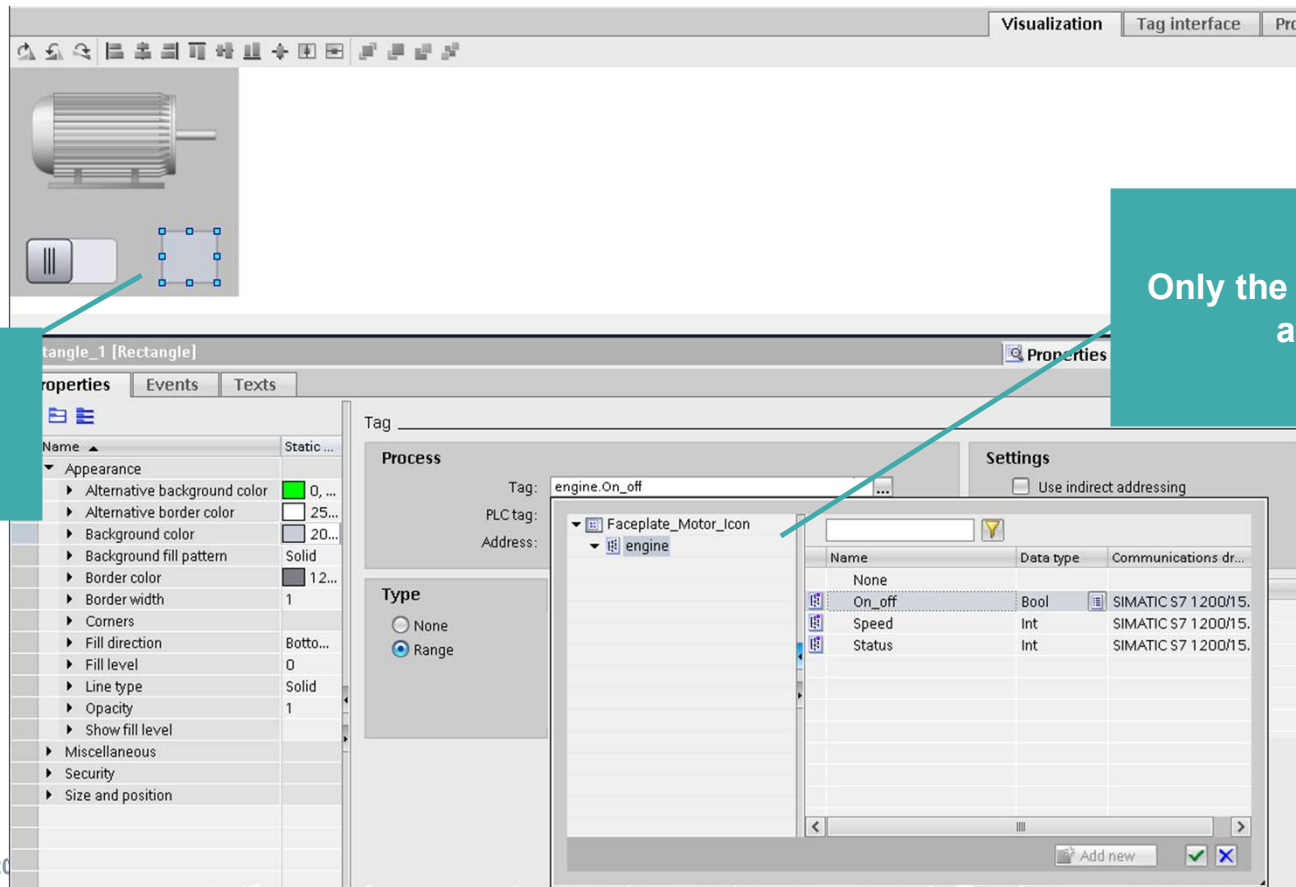
There are two data types
available: „Color“ or
„Resource list“

Hints:

- Graphic list does not work in Faceplates
- The Text list works only on the symbolic IO field
- no other properties supported in V16

SIMATIC WinCC Unified Faceplate Editor – Connection of tags

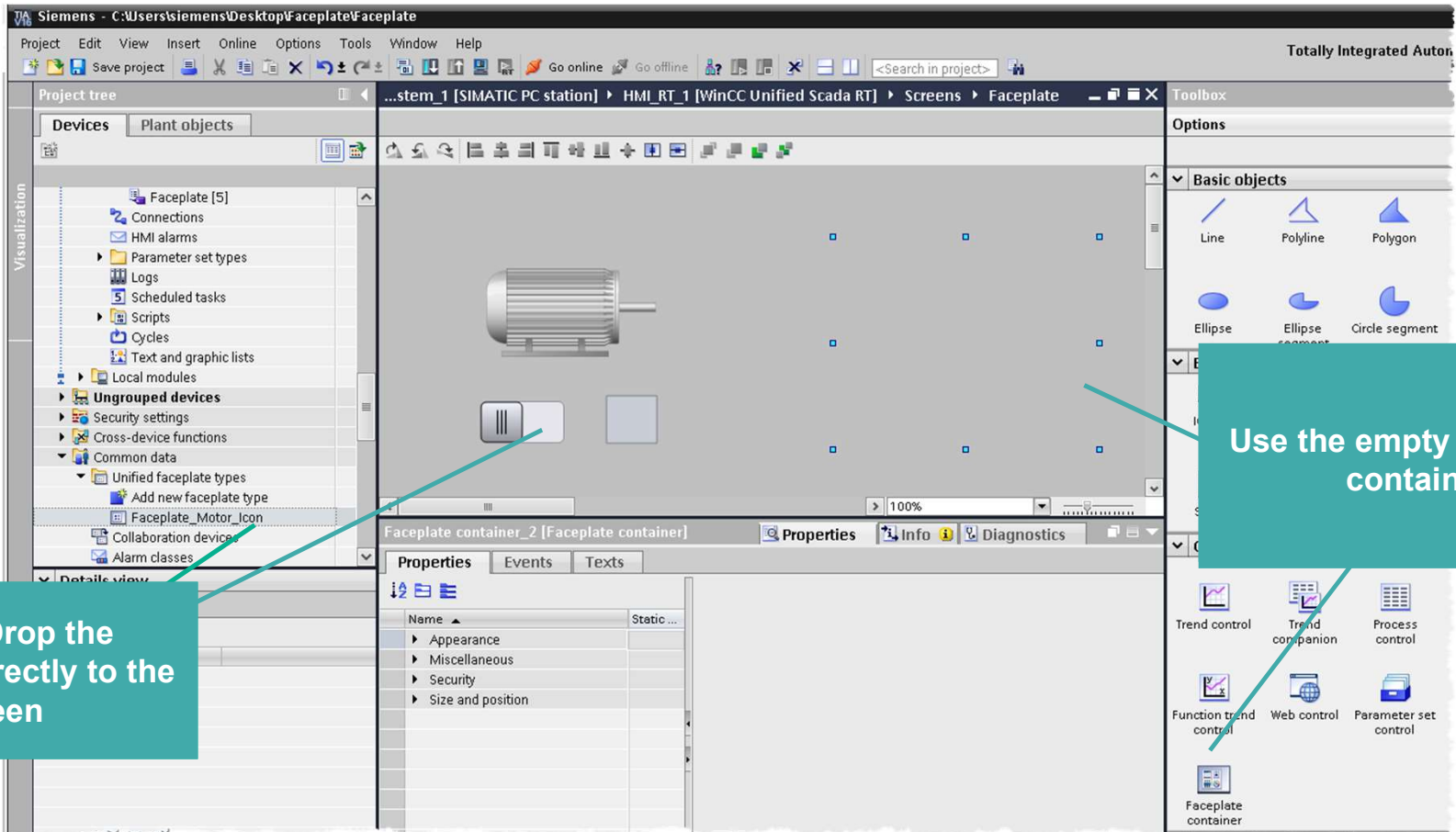
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Object in Facplate

Only the Tag Interface is available

SIMATIC WinCC Unified Faceplate Editor – working with instances



Drag & Drop the Faceplate directly to the Screen

Use the empty Faceplate container

SIMATIC WinCC Unified Faceplate Editor – connect instances

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The screenshot shows the SIMATIC WinCC Unified Faceplate Editor interface. On the left is the Project tree, and on the right is the main workspace showing a motor icon on a faceplate. Below the workspace is the Properties window for 'Faceplate container_1'. The Properties window has tabs for 'Properties', 'Events', and 'Texts'. The 'Properties' tab is active, showing a tree view of properties. The 'Interface' section is expanded, showing the 'engine' property set to 'DB_Engine_Engine_1' and the 'Color' property set to '0, 0, 255'. A teal arrow points from the 'Color' value to the 'Faceplate instance interface' callout box.

Faceplate type interface

The screenshot shows the configuration window for 'Faceplate_Motor_Icon'. It has three tabs: 'Visualization', 'Tag interface', and 'Property interface'. The 'Tag interface' tab is active, showing a table with columns for 'Name' and 'Data type'. A teal arrow points from the 'Textlist' row to the 'Faceplate type interface' callout box.

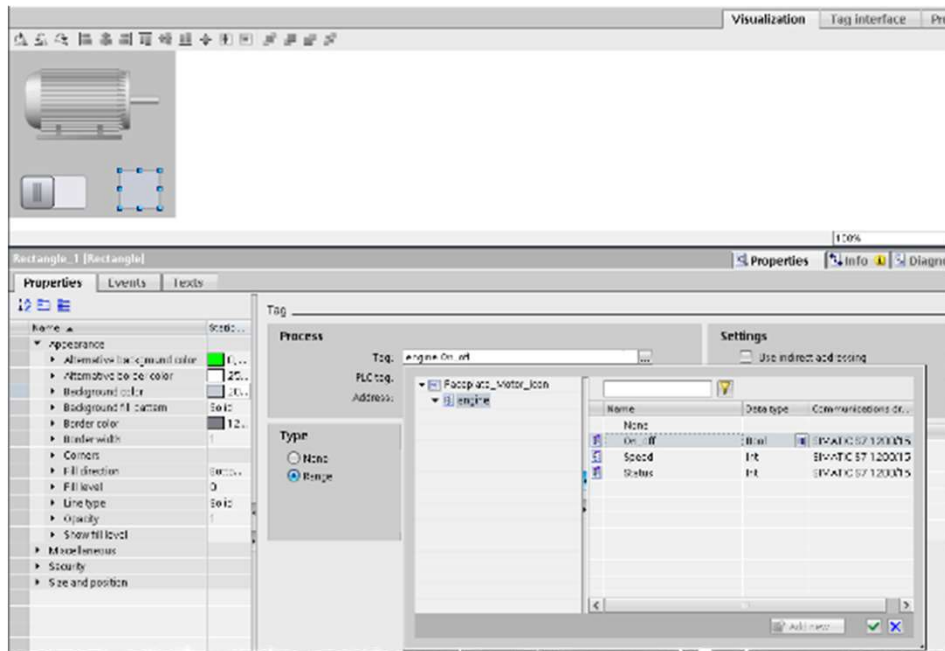
Name	Data type
Color	Color
Textlist	Resource list
<Add new>	

Faceplate instance interface

SIMATIC WinCC Unified Faceplate

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LIVE DEMO

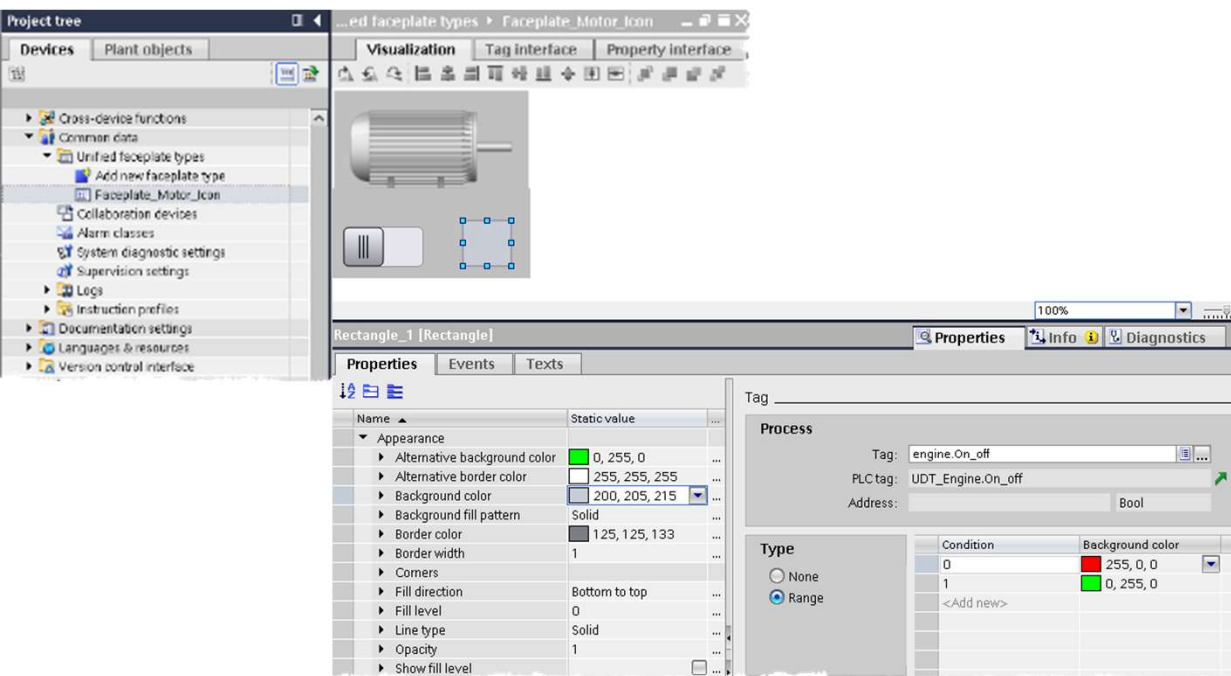


- Create a Faceplate
- Use the tag & property Interface
- Create Instances
- Connect the Instances

SIMATIC WinCC Unified Hands On: FacePlates

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HANDS ON in 20 min

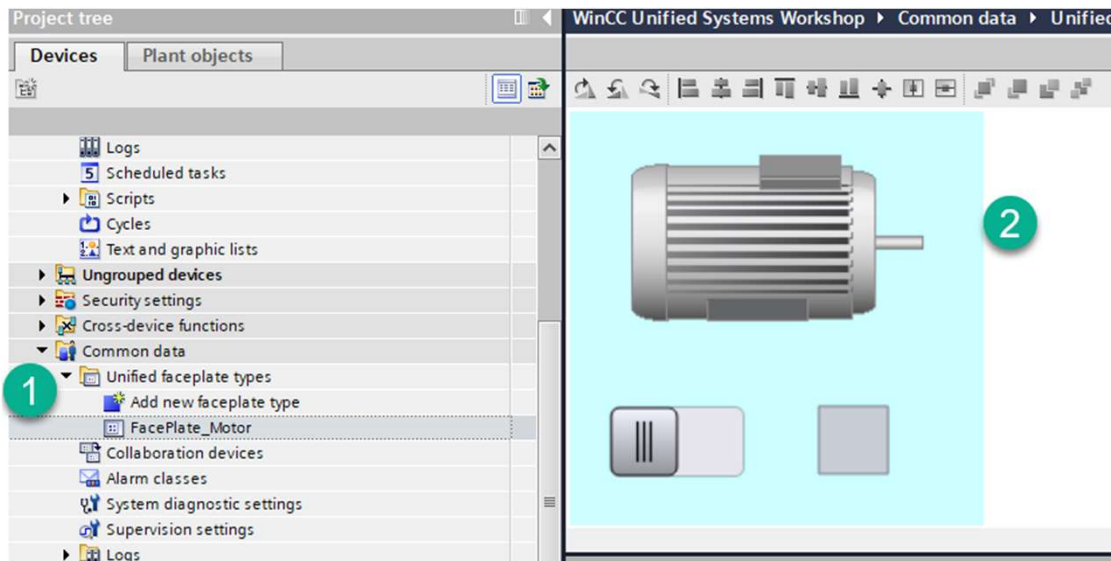


Goal: create a new Faceplate for an engine

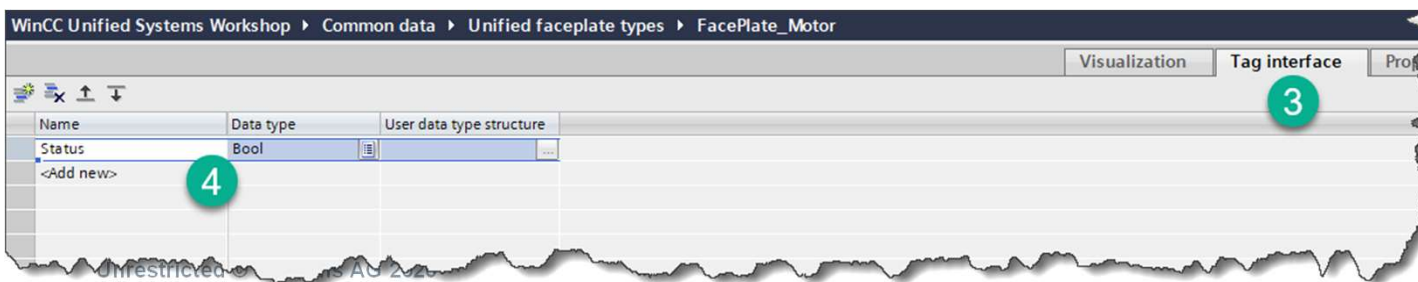
1. Open the Faceplate editor and design a Faceplate for an motor
2. define the tag interface (you can also use UDTs from the controller)
3. Connect the switch and the rectangle to a status tag "Bool"
4. Create an instance of the Faceplate on Overview Screen, assign tags and properties
5. Compile & start the RT

SIMATIC WinCC Unified Hands On: FacePlates

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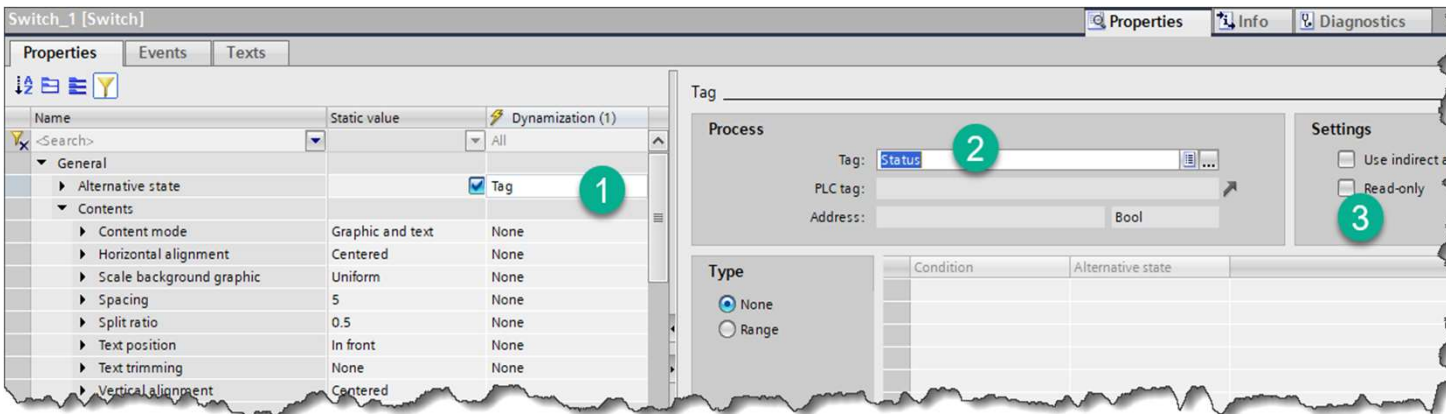


1. Create Faceplate Instance
2. Configure Picture
 1. Size background 250x250
 2. Motor Icon
 3. Switch
 4. Rectangle
3. Go to Tag interface
4. Configure Status tag (bool)



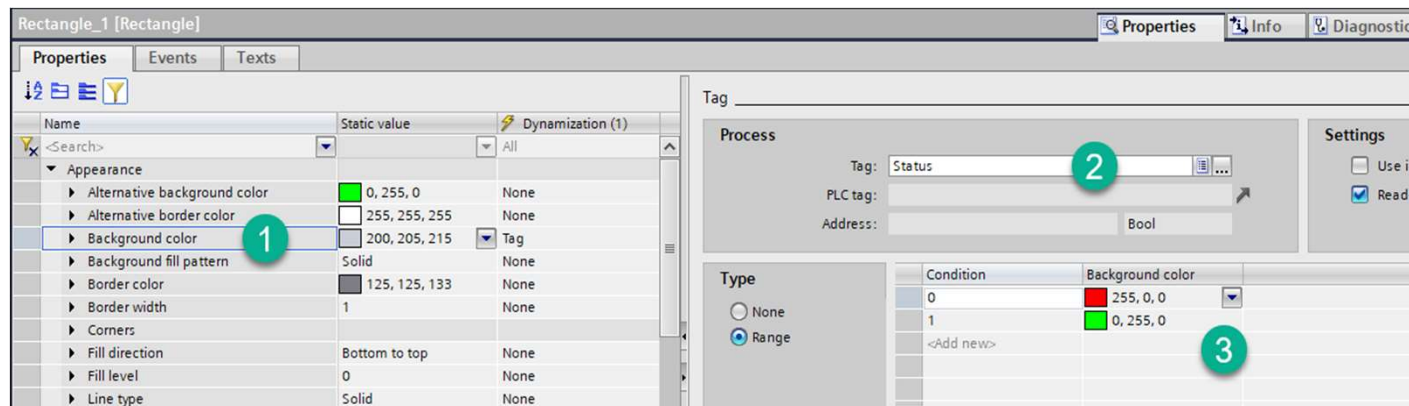
SIMATIC WinCC Unified Hands On: FacePlates

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Switch

1. Set Dynamization to Tag
2. Select Status Tag
3. Clear Red-only

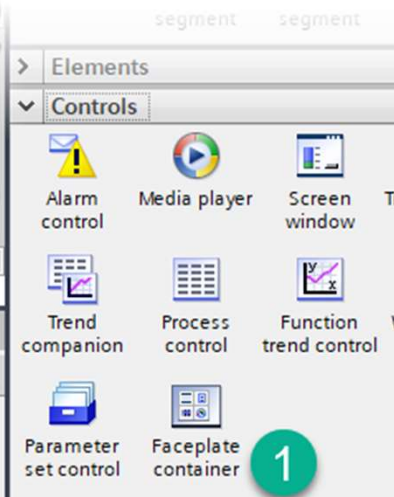
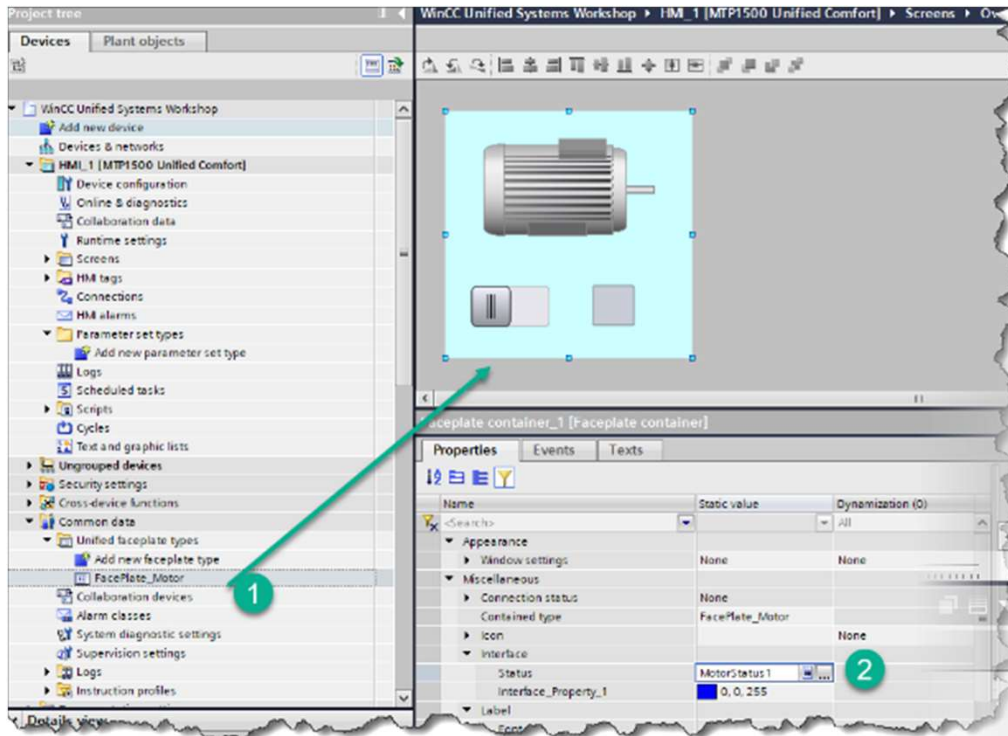


Rectangle

1. Set Dynamization for Background to Tag
2. Select Status tag
3. Set colors for state

SIMATIC WinCC Unified Hands On: FacePlates

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Place faceplate on screen

1. Drag faceplate from tree structure

Or

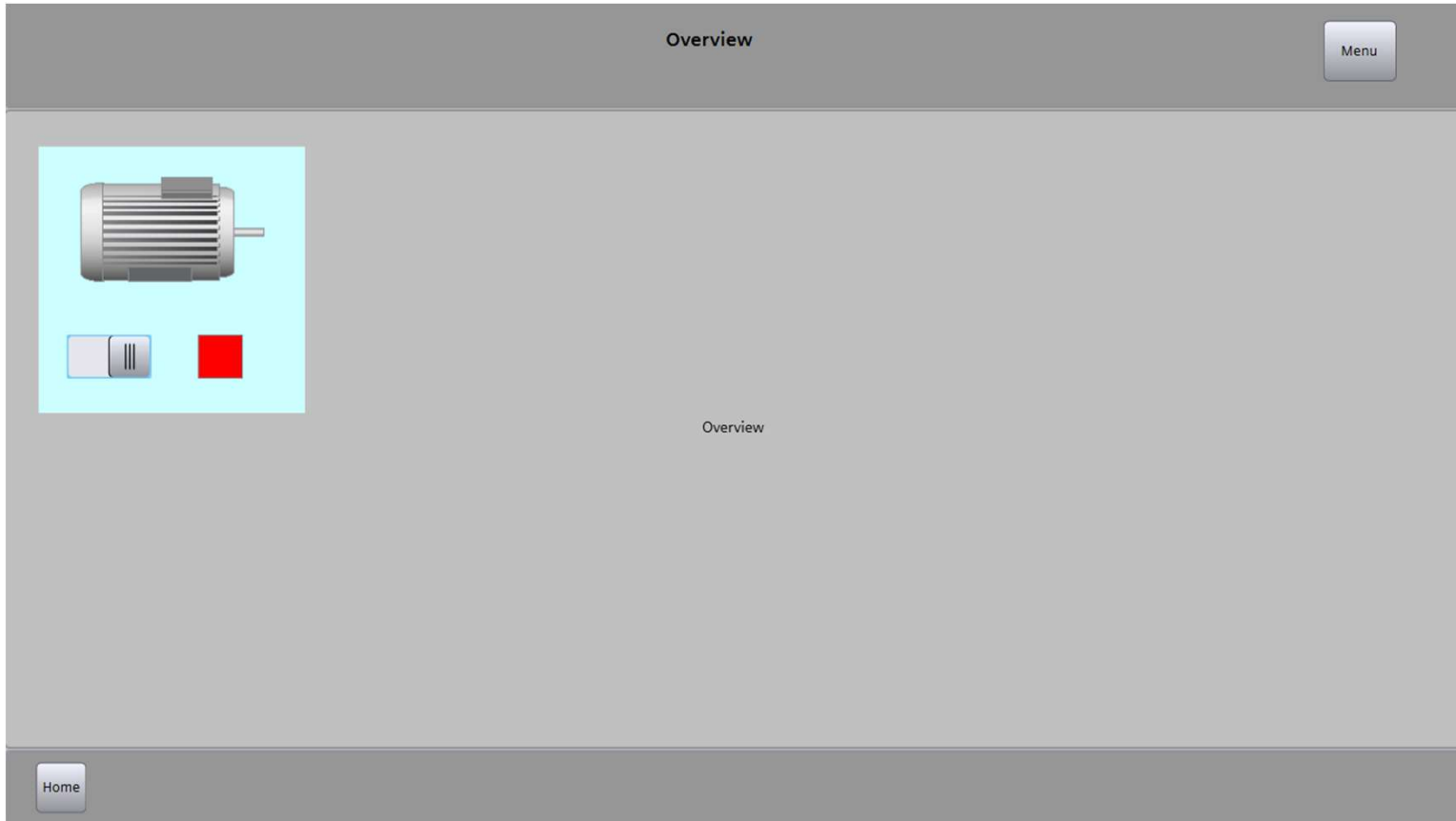
Drag Faceplate Container and define container type

2. Define tags for Interface (you will have an interface for each tag defined)

3. Download and test

SIMATIC WinCC Unified Hands On: FacePlates

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WinCC Unified SIPEC Workshop Technological Hierarchy

WinCC Unified V16 – Technological Hierarchy Object oriented plant modelling

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The screenshot displays the WinCC Unified V16 software interface. On the left, a 'Project tree' window shows a hierarchical structure of plant objects. The main window is titled 'Interface' and contains a table with the following data:

Name	CommunicationDriver	Data type	PLC name	PLC tag	Access mode	Acquisition cycle
Mixing	SIEMENS 7 1200/1500	Struct	PLC1	Mixing		1s
Start	SIEMENS 7 1200/1500	Bool	PLC1	Mixing_Start		1s
Stop	SIEMENS 7 1200/1500	Bool	PLC1	Mixing_Stop		1s
Status	SIEMENS 7 1200/1500	Word	PLC1	Mixing_Status		1s
Speed	SIEMENS 7 1200/1500	Real	PLC1	Mixing_Speed		1s
Temperature	SIEMENS 7 1200/1500	Real	PLC1	Mixing_Temperature		1s

Below the table, there are sections for 'Discrete alarms', 'Analog alarms', and 'Logging tags'. The 'Discrete alarms' section shows a table with columns for ID, Name, Alarm class, Trigger tag, Trigger bit, Trigger mode, Priority, Info text, and Origin.

Enable central changeability of all instances
due to plant object type instance concept

Reduced effort for engineering and maintenance
(e.g., configuration of logging tags, alarms direct
at the object)

Reduced avoidable mistakes
due to consistent model

Improved overview and maintenance due to
plant model and object-oriented engineering



WinCC Unified V16 – Technological Hierarchy Object oriented plant operation

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Unified Comfort Panel ✂ PC ✓

	Alarm class	Origin	Area	Event text	Alarm state
1					
2					
3					
4					
5					
6					

Easy orientation in the plant
via technological hierarchy

Create screen navigation in no
time with plant overview control

Fast overview the plant status based on
hierarchical alarm propagation and filtering





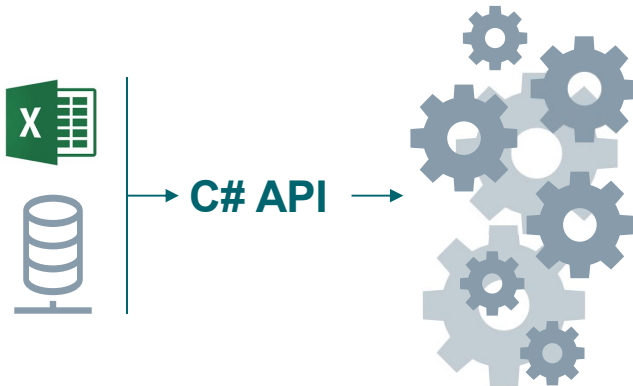
WinCC Unified SIPEC Workshop Openness

WinCC Unified – Openness Engineering

Shorten Time to Market using automated engineering

Unified Comfort Panel ✓

PC ✓



Generate, alter, validate or analyze WinCC Unified Projects

- Tags
- Alarms/Archives
- Screens
- Technological hierarchy of plant objects

Openness (C#) provides full access to the WinCC Unified object model.

Automated project creation or adaption of existing projects e.g., for OEMs

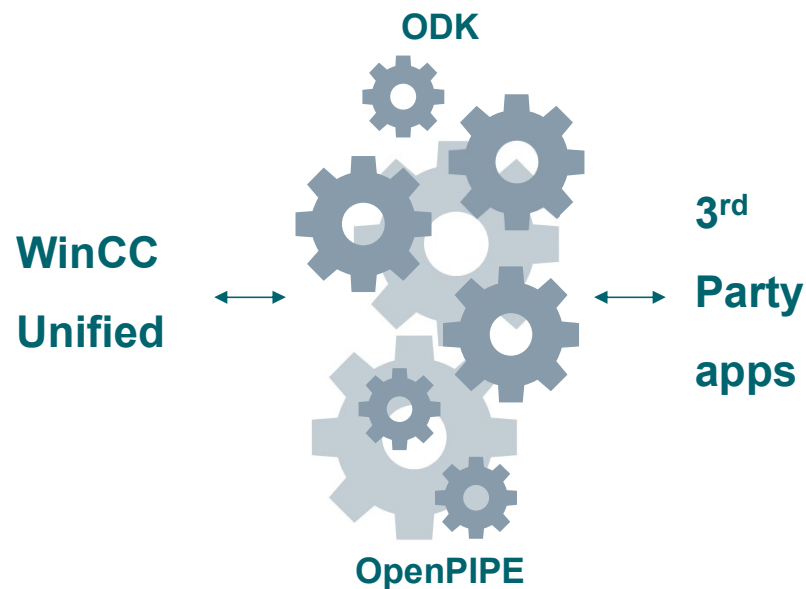
Project validation e.g., regarding compliance to company standards

Project analysis and statistical evaluation e.g., used tag trigger cycles, search screen items of certain type, missing translations, ...



WinCC Unified – Openness Runtime

Extensive possibilities to expand runtime functionality



Read/write access via the WinCC Unified object model to runtime data using standard programming languages for customer specific solutions

Create custom solutions based on an extensive C#/C++ runtime object model – **Open Developer Kit (ODK)**

Integrate 3rd party systems based on a lightweight and language independent interface – **OpenPIPE**



ODK vs. OpenPIPE

What are the differences?

Unified Comfort Panel ✕ PC ✓

Unified Comfort Panel ✓ PC ✓

Open Developer Kit (ODK)

OpenPIPE

Extensive runtime object model	Type	Lightweight interface
Large quantities	Data quantity	Low to medium
High	Data throughput	Low to medium
C#/C++	Programming languages	Language independent e.g.: C#, C++, JavaScript, PowerShell, ...
Online and Logging Tags, Archives, Alarms, Users, Technological Hierarchy plant objects	Read/Write access to data of WinCC Unified data	Online Tags, Alarms (read only)



Project tree

- MyOpenPipe
 - PC-System_1 [SIMATIC PC station]
 - HMI_RT_1 [WinCC Unified Scada RT]
 - Collaboration data
 - Screens
 - HMI tags
 - Parameter set types
 - Scripts
 - Global module
 - Local modules
 - Ungrouped devices
 - Security settings
 - Cross-device functions
 - Common data
 - Documentation settings
 - Languages & resources
 - Version control interface
 - Online access
 - Card Reader/USB memory

MyOpenPipe > PC-System_1 [SIMATIC PC station] > HMI_RT_1 [WinCC Unified Scada RT]

Details List Thumbnails

Actions

- Device configurat...

Screens

Tags && connections

- Connections (0)
- HMI tags

Properties Info Diagnostics

General Cross-references Compile

Show all messages

Message	Go to	?	Date	Time
Project closed.			6/16/2020	3:18:40 PM
Project MyOpenPipe opened.			6/16/2020	3:18:49 PM
Start downloading to device.			6/16/2020	4:11:13 PM
PC-System_1			6/16/2020	4:11:44 PM
HMI_RT_1			6/16/2020	4:11:44 PM
Loading completed (errors: 0; warnings: 0).			6/16/2020	4:11:46 PM

Details view

Name

Tasks

Options

Find and replace

Find:

Whole words only
Match case
Find in substructures
Find in hidden texts
Use wildcards
Use regular expressions

Down
Up

Find

Replace with:

Whole document
From current position
Selection

Replace Replace all

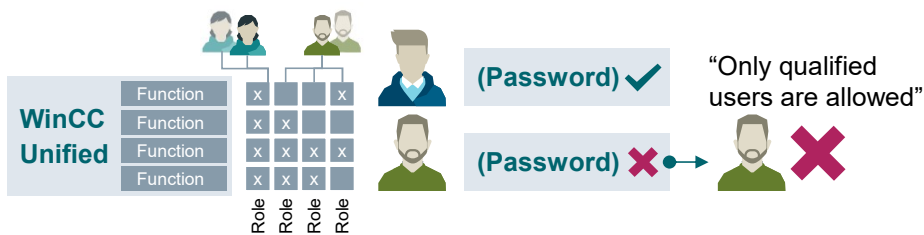
Languages & resources

Loading completed (errors: 0; warning...

WinCC Unified User Administration

SIMATIC WinCC Unified Integrated user management and access control

Unified Comfort Panel PC



SIEMENS WinCC Unified user management

+ Add User Details Unlock User

User Name	Password	Full Name	Group	Enabled	Can Change Password	Must Change Password	
WINCCUNIFIED/Siemens	*****		WINCCUNIFIED	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit Delete
WINCCUNIFIED/System	*****		WINCCUNIFIED	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Edit Delete

Local user management and access control (UMAC) using pre-defined functional rights and definition of users and password policies during engineering

Protection against unauthorized access of single objects or entire production units

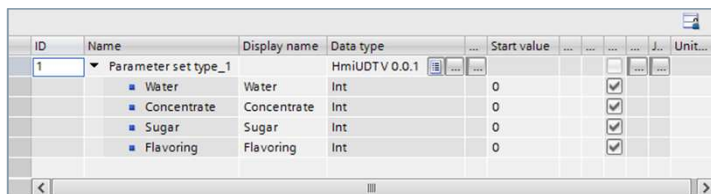
Define user roles and rights to your demand for privacy and integrity in terms of authentication and authorization

Add, remove users, assign roles and change passwords during runtime

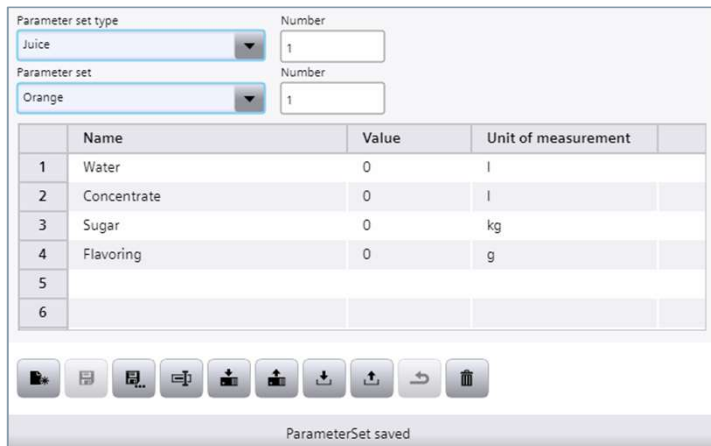
WinCC Unified SIPEC Workshop Parameter Control

SIMATIC WinCC Unified Parameter Control handling and operation of machine or production parameters

Unified Comfort Panel ✓ PC ✓



ID	Name	Display name	Data type	Start value	...	...	...	...	Unit...
1	Parameter set type_1		HmiUDTV 0.0.1						
	Water	Water	Int	0				<input checked="" type="checkbox"/>	
	Concentrate	Concentrate	Int	0				<input checked="" type="checkbox"/>	
	Sugar	Sugar	Int	0				<input checked="" type="checkbox"/>	
	Flavoring	Flavoring	Int	0				<input checked="" type="checkbox"/>	



Parameter set type: Juice (Number: 1)

Parameter set: Orange (Number: 1)

	Name	Value	Unit of measurement
1	Water	0	l
2	Concentrate	0	l
3	Sugar	0	kg
4	Flavoring	0	g
5			
6			

ParameterSet saved

Extend parameters with unit of measurement.

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Efficiency due to **reuse of structural definition** of “User Data Types” (PLC/HMI UDT) for parameter sets

Central changeability of parameter set types by using a new version of PLC/HMI UDT from library

Consistent bi-directional PLC/HMI transfer of parameter sets (manually/automatically)

WinCC Unified SIPEC Workshop Reporting

WinCC Unified – Reporting Flexible reporting based on Office tools

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Unified Comfort Panel 

PC 



Flexible assignment and planning of report execution at runtime.
Consistent documentation of production data for all levels of production (product or quality report)

Create **fully customized report templates** with a tool you already know – Microsoft Excel¹

On Demand Generation – Trigger a report manually whenever you need it

Automated generation – Time-scheduled or event-triggered **reports** – fully automatic (optional)

¹ Please note the system requirements



WinCC Unified SIPEC Workshop Scripting

WinCC Unified – Scripting

Extensive scripting possibilities for Runtime

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Ingenuity for life

Unified Comfort Panel ✓

PC ✓

```
1 function Button_1_OnTapped(item, x, y, modifiers, trigger) {
2   let myDate = new Date(); //create a Date object
3   let strTime, strDate, tagVal, strToWrite;
4   strDate = myDate.toLocaleDateString(); //get Local date to script internal tag
5   strTime = myDate.toLocaleTimeString(); //get Local time to script internal tag
6   let tag1 = Tags('AnimationTag');
7   let tagValue1 = tag1.Read(); //read the value of tag AnimationTag
8   //Build the string to be written into file
9   strToWrite = strDate + " " + strTime + ": TagValue = " + tagValue1 + "\r\n";
10
11  //write the entry to the file
12  //in case the folder does not exist, an error will occur,
13  //if the file does not exist, it will be created
14  HMIRuntime.FileSystem.AppendFile('D:\\MyFiles\\textfile.txt', strToWrite, 'utf8').then(
15    function() {
16      HMIRuntime.Trace('Write file finished successfully');
17    }
18  ).catch(function(){
19    HMIRuntime.Trace('Error writing File');
20  });
21 }
```

Efficient scripting for custom solutions with direct access to Unified runtime objects (tags, logging tags, alarms, screen objects, technological hierarchy)

State-of-the-art and well-known programming language **JavaScript** (local and global scripts)

Local scripts for e.g., screen dynamics, events and scheduled tasks. Support of global script functions

Direct access to WinCC Unified JavaScript object model e.g., access to file-system or databases



WinCC Unified V16 Workshop



Siemens AG Digital Industries Factory Automation Visualization

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