# SIEMENS

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Welcome

1

Online documentation

#### Legal information

#### Warning notice system

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

#### A DANGER

indicates that death or severe personal injury will result if proper precautions are not taken.

#### 🛕 WARNING

indicates that death or severe personal injury may result if proper precautions are not taken.

#### 

indicates that minor personal injury can result if proper precautions are not taken.

#### NOTICE

indicates that property damage can result if proper precautions are not taken.

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

#### **Qualified Personnel**

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

#### **Proper use of Siemens products**

Note the following:

#### 🛕 WARNING

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

#### Trademarks

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#### **Disclaimer of Liability**

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

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### Welcome

#### Welcome to Getting Started

This Getting Started shows you the first steps in configuration of the user interface for an HMI device and basic procedures in WinCC Unified. You will become familiar with the most important configuration steps:

- Creating a project
- Adding an HMI device and controller
- Configuring hardware settings
- Creating an HMI connection
- Creating tags
- Configuring screens
- Configuring a screen change
- Manage users and roles
- Downloading and simulating the project

While working on Getting Started, you will create a small project that will be expanded with each completed chapter. You can find the complete project at the Siemens Industry Online Support (SIOS) (<u>https://support.industry.siemens.com/cs/ww/en/view/109813335</u>) website under Entry ID: 109813335

#### **Requirements for working with Getting Started**

To be able to work with the Getting Started, installation of the following software is required:

• TIA Portal V18, especially WinCC Unified.

To be able to test your project in simulation, installation of the following software is required:

• WinCC Unified Runtime V18

To be able to test your project on an HMI device, a Unified Comfort Panel is required.

#### Note

When installing the various TIA Portal products, ensure you use the same versions of service packs and updates.

#### Getting Started guide for WinCC Unified

The Getting Started guide (<u>https://www.siemens.com/global/en/products/automation/simatic-hmi/wincc-unified/getting-started.html</u>) for WinCC Unified supports you in getting started with or migrating to WinCC Unified.

In compact form, you will receive tips on the optimal use of WinCC Unified as well as information on restrictions and free downloads.

## **Creating a project**

The project is the basis for the configuration of the user interface. Projects contain data and programs that are created during the creation of an automation solution.

The data summarized in a project includes, for example:

- · Hardware configuration data and parameter assignment data for modules
- Configuration data for communication over networks
- Configuration data for devices

In the project, you create and configure basic objects that are required to operate and monitor a plant, e.g.:

- Screens for representing and operating a plant
- Tags to temporarily store data or to transfer data between the HMI device and the plant.
- Alarms for displaying errors on the HMI device

#### Creating a new project

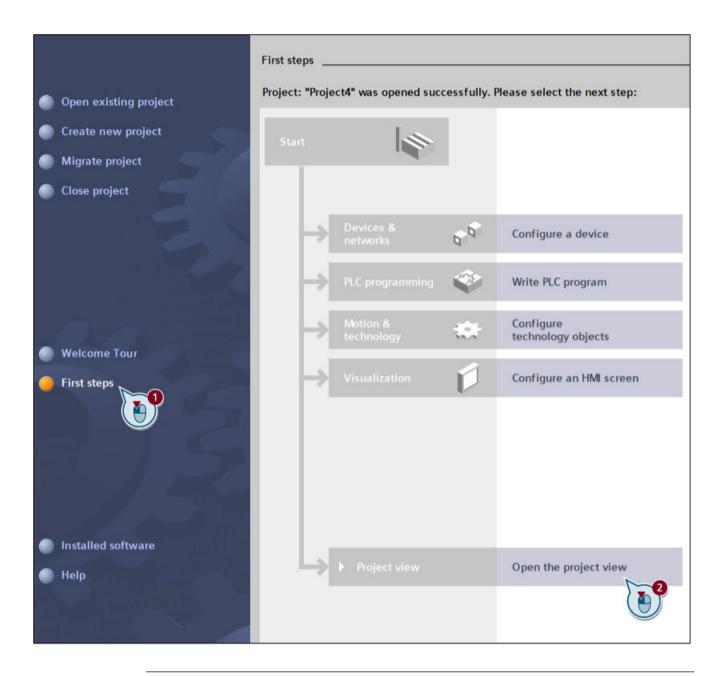
Create a new project for the example project.

- 1. Start TIA Portal V18. The Portal view opens. Create, open and migrate projects in the Portal view.
- 2. Click "Create new project".

- 3. Enter important information about your project in the "Create new project" area:
  - Assign the project name.
  - Specify a folder, e.g. C:\Project, where the project is to be stored.
  - Optionally, enter the author.
  - Optionally, add a comment that helps to understand the documentation of your project, for example.
  - Click the "Create" button.

			_ = ×
		Totally In	tegrated Automation PORTAL
	Create new project		
Open existing project	Project name:		
	Path:	C:\Project V18	
Create new project	Version: Author:	the second se	
Migrate project	Comment:		~
Close project			
Welcome Tour			Create
and the second s			
Eirst steps			

- 4. Open the Project view for the further steps.
  - Click "Getting started".
  - Click "Open the project view"



#### Note

You can reopen a created project at any time via "Open existing project".

# The Project view

The Project view is a structured view of all components of the project.

#### **Project view**

The Project view contains the following areas:

- Project tree
- Detail view
- Work area
- Inspector window
- Task cards

Project tree 🛛 🔲 🖣		Tasks
Devices Plant objects		Options
1 🖬	3	5
		> Find and replace
<ul> <li>Project5</li> </ul>		> Languages & resources
📑 Add new device		
📩 Devices & networks		
Ungrouped devices		
Security settings		
Cross-device functions	011004.1011	
🕨 🙀 Common data		
Documentation settings		
Languages & resources		
Version control interface		
Online access		
Card Reader/USB memory		
✓ Details view	🖳 Properties 🚺 Info 🔒 🖳 Diagnostics 🗖 🗏 🗸	
2	General (4)	
	<u>_</u>	
Name		
	No 'properties' available.	
	No 'properties' can be shown at the moment. There is either no object selected or the selected object does not have any displayable properties.	

#### 1 Project tree

In the project tree, you can see your entire project arranged hierarchically. The project tree provides you access to all components and project data. You can perform the following actions in the project tree, for example:

- Add new components.
- Edit existing components.
- Query and modify the properties of existing components.
- Add folders to clearly group your project data. Note that this is not possible in every area.

#### Detail view

In the Detail view, certain contents of a selected object are displayed in the overview window or in the project tree. Contents might be, for example, text lists or tags.

#### ③ Work area

The work area displays the objects that you open for editing. These objects are, for example:

- Editors and views
- Tables
- (4) Inspector window

The Inspector window shows additional information about a selected object or about performed actions.

- You can view or change properties of a selected object.
- You can get information about performing actions, e.g. compiling the project.
- 5 Task cards

Depending on the edited or selected object, task cards are available for you to perform further actions, e.g.:

- Select objects from a library or from the hardware catalog.
- Find and replace objects in the project.
- Drag pre-defined objects to the work area.

More complex task cards are divided into palettes. The functions available to you depends on the installed products.

# Adding a controller

4

You add a controller to the project.

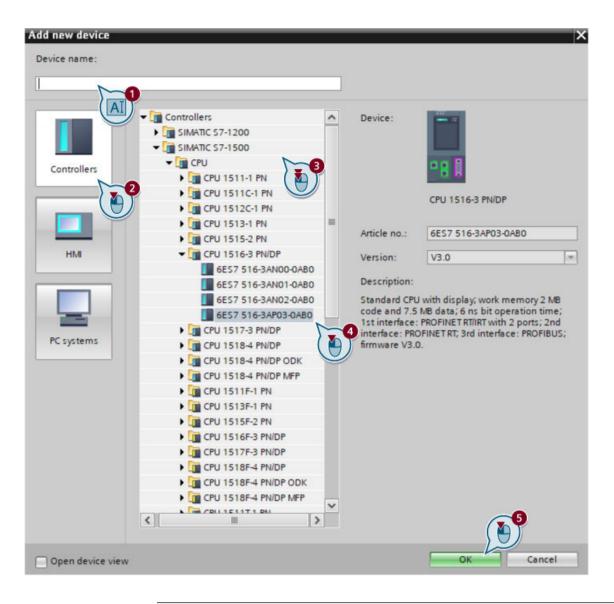
#### Adding a controller

1. Double-click "Add new device" in the project tree.



The "Add new device" dialog opens.

- 2. Enter the device name "PLC\_1".
  - Click "Controller".
  - Double-click on the following folders: "SIMATIC S7-1500", "CPU" and "CPU 1516-3 PN/DP".
  - Click on the "6ES7 516-3AP03-0AB0" device. Pay attention to the desired article number and version.
  - Confirm your selection with "OK".



#### Note

If you have SIMATIC controller other than the "CPU 1516-3 PN/DP" configured here, select your device and version. It has no influence on the further configuration.

The wizard for configuring the PLC Security Settings is opened.

3. To set the protection level and protection class for the controller, follow the instructions of the wizard. Use the "Next>>" button for this. When you have defined all settings, close the wizard with the "Finish" button.

PLC security settings	×					
	Protection of confidential PLC data Select whether your confidential PLC configuration data is to be protected.					
Protection of confidential PLC data	Protection of confidential PLC configuration data activated:					
Mode for PG/PC and HMI communication	<ul> <li>Confidential PLC configuration data (e.g. OPC UA certificates) are protected in the TIA Portal project and during runtime.</li> <li>If the PLC must be replaced with a replacement PLC, the password for the protection of confidential PLC configuration data must also be assigned for the new PLC.</li> </ul>					
PLC access protection						
Overview	Protection of confidential PLC configuration data deactivated: - Confidential PLC configuration data (e.g. OPC UA certificates) are not protected in the TIA Portal project and during runtime.					
	- No special password treatment when replacing the substitute PLC					
	Protects the PLC configuration data from the TIA Portal project and the PLC.					
	Password: Press "Setup" to set the password Reset Setup Change					
	indice Setup change					
	Password TIA project PLC Configuration data					
	🔒 📃 🧮 🎑					
Do not show this dialog again	<back next="">&gt; Finish Cancel</back>					

# Adding an HMI device

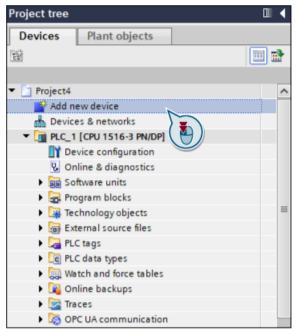
You add an HMI device to the project.

If you already have a Unified Comfort Panel, ensure that the article number of your device matches the article number of the configured device. If you do not know the article number, you have two options:

- You can read the article number on the back of the Unified Comfort Panel.
- You can query the article number in the operating system of the Unified Comfort Panel.

#### Adding an HMI device

1. Double-click "Add new device" in the project tree.



The "Add new device" dialog opens.

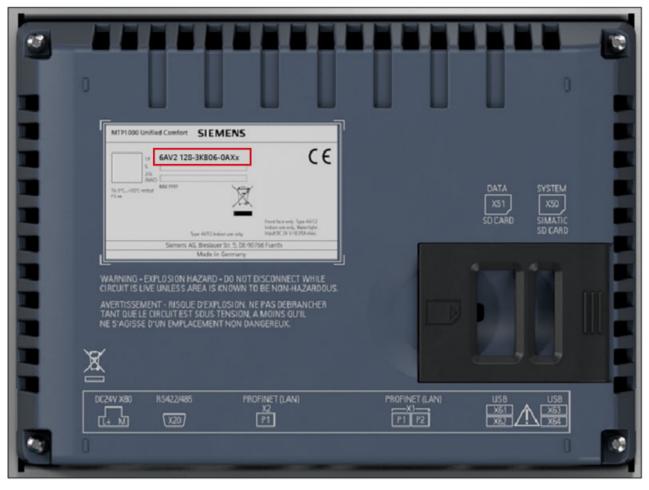
- 2. Enter the device name "HMI\_1".
  - Click "HMI".
  - Double-click on the following folders: "SIMATIC Unified Comfort Panel", "10" Display" and "MTP1000 Unified Comfort"
  - Click on the "6AV2 128-3KB06-0AXx" device. Pay attention to the article number and the Runtime version.
  - Confirm your selection with "OK".

Add new device		_			×
Device name:					
	<ul> <li>HMI</li> <li>SIMATIC Basic Panel</li> <li>SIMATIC Comfort Panel</li> <li>SIMATIC Unified Comfort Panel</li> <li>T' Display</li> <li>10" Display</li> <li>MTP1000 Unified Comfort</li> <li>6AV2 128-3KB06-0AXX</li> <li>12" Display</li> <li>15" Display</li> <li>15" Display</li> <li>21" Display</li> <li>21" Display</li> <li>21" Display</li> <li>SIMATIC Mobile Panel</li> <li>HMI SIPLUS</li> <li>HMI SIPLUS RAIL</li> </ul>		Multi touch; 1 x Ethernet interfa	MTP1000 Unified Comfort GAV2 128-3KB06-0AXX 18.0.0.0 ay, 1280 x 800 pixels, 16M colors (422/485, 1 x PROFINE T/Industria ace with MRP (2 Ports); 1 x bit); 2 x SD card slot; 4 x USB	•
Start device wizard				OK Cancel	

#### Note

If you have a Unified Comfort Panel other than the "MTP1000 Unified Comfort" configured here, select your device and Runtime version. It has no influence on the further configuration.

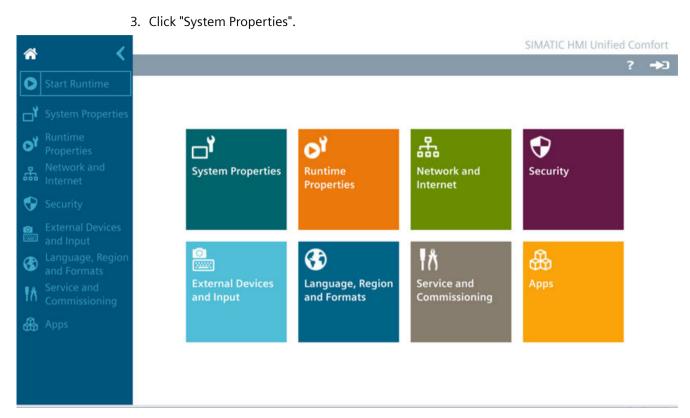
#### Article number on the back of the enclosure



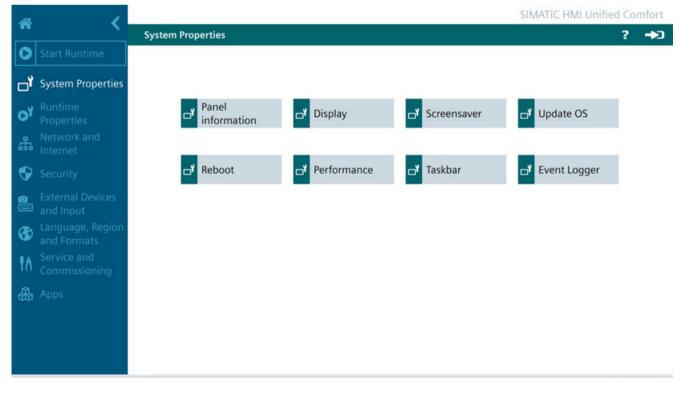
1. Read the article number from the label on the back of the Unified Comfort Panel.

Article number and Runtime version in the operating system

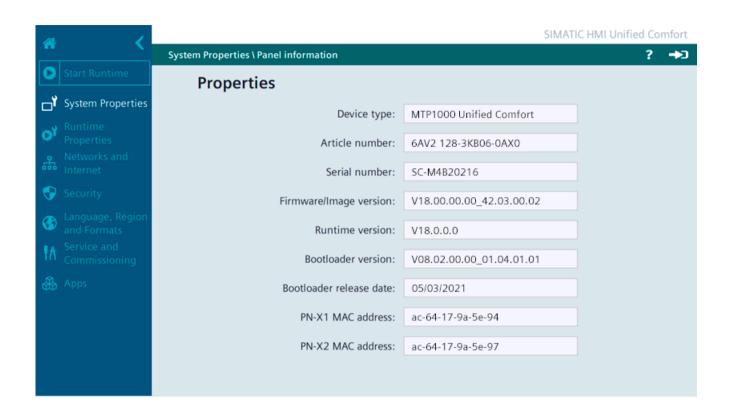
- 1. Switch on the HMI device.
- 2. Open the Control Panel.



4. Click "Panel information".



You can see specific information about your device in the overview.



# **Configuring hardware settings**

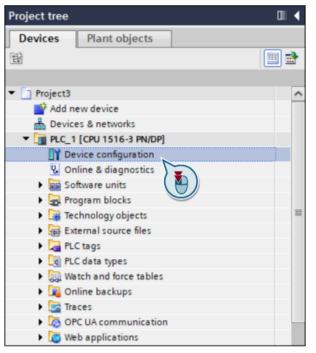
You configure the basis for downloading your project to the HMI device. You configure the hardware settings that are required for the project. Settings for the IP addresses and network structure are important here.

#### Note

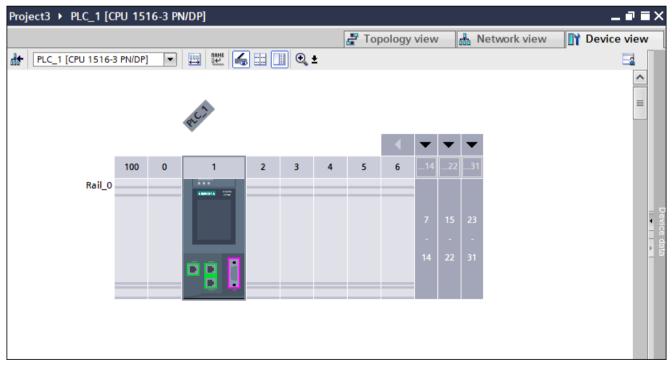
In order for the computer, the HMI device and the controller to be able to establish a connection later, their IP addresses must be within the same network.

#### Configuring the controller

1. Double-click "Device configuration" under "PLC\_1" in the project tree.



The Device view is opened in the work area.

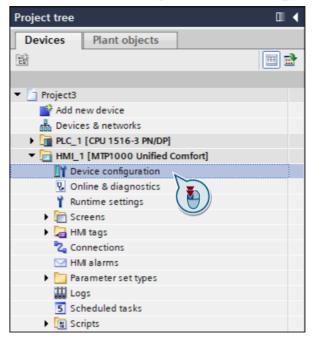


- 2. Click "Ethernet addresses" in the Inspector window.
  - In the "Internet protocol version 4 (IPv4)" area, enter an IP address, e.g. "192.168.10.1".

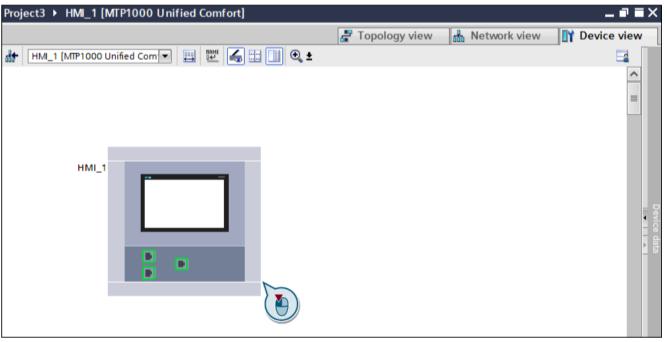
- Properties 🗓 Info 🚺 🗓 Diagnostics System constants General IO tags Texts General Ethernet addresses ~ PROFINET interface [X1] Interface networked with General Ethernet addresses Subnet: Not networked Operating mode Add new subnet Advanced options Web server access Internet protocol version 4 (IPv4) PROFINET interface [X2] General ≣ Set IP address in the project Ethernet addresses Operating mode IP address: 192 . 168 . 10 . 1 Advanced options Subnet mask: 255 . 255 . 255 . 0 Web server access Use router DP interface [X3] Router address: 0 Startup O IP address from DHCP server Cycle Communication load Mode: Use MAC address as client ID System and clock memory Client ID: SIMATIC Memory Card Client ID can be changed during runtime System diagnostics PLC alarms O IP address is set directly at the device
- In the "Internet protocol version 4 (IPv4)" area, enter the subnet mask of the one in which your computer is also located, e.g. "255.255.255.0"

#### Configuring an HMI device

1. Double-click "Device configuration" under "HMI\_1" in the project tree.



The Device view is opened in the work area.



2. Click on the HMI device in the Device view.

- 3. In the Inspector window, double-click "PROFINET interface [X2]".
  - Click "Ethernet addresses".

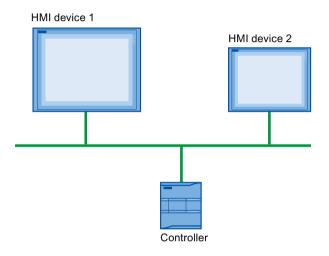
- In the "Internet protocol version 4 (IPv4)" area, enter an IP address, e.g. "192.168.1.2".
- In the "Internet protocol version 4 (IPv4)" area, enter this subnet mask of the one in which your computer is located, e.g. "255.255.255.0"

HMI_1 [MTP1000 Unifie	d Comfort]	🔍 Properties 🚺 Info 🔒 🗓 Diagnostics 👘
General IO tags	System constants Texts	
General     PROFINET Interface [X1]	Ethernet addresses	
General Ethernet addresses	Interface networke	d with
Time-of-day synchroni     Advanced options     PROFINET Interface [X2]		Subnet: Not networked  Add new subnet
General Ethernet addresses Time-of-day synchron	Internet protocol ve	ersion 4 (IPv4) Set IP address in the project
Advanced options     Information		IP address: 192 . 168 . 1 . 2 Subnet mask: 255 . 255 . 0
		Bucket mosk: 255 255 255 20
	•	O IP address is set directly at the device

## **Creating an HMI connection**

You configure a connection between the HMI device and the controller.

The data exchange between two devices is known as communication. The devices can be interconnected directly or via a network. The networked devices in communication are referred to as communication partners.



A connection defines a logical assignment of the communication partners for performing communication services.

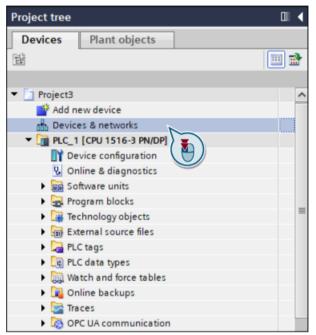
A connection specifies the following:

- Communication partner involved
- Type of connection (e.g. HMI connection)
- Special properties, e.g. whether a connection remains established only temporarily
- Connection path

Each HMI connection is assigned a name that is unique within the project.

#### **Creating an HMI connection**

1. Double-click "Devices & networks" in the project tree.



The "Devices & networks" work area opens.

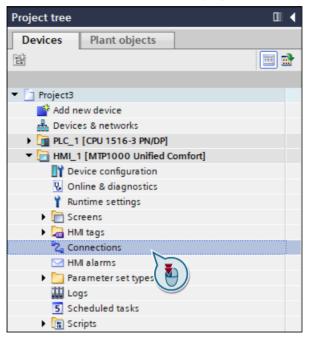
- 2. Click "Network view".
  - Click "Connections". The devices are highlighted in turquoise. Make sure that the "HMI connection" connection type is selected.
  - Click one of the green squares in the "HMI\_1" device and drag a connection to one of the green squares in the "PLC\_1" controller.
  - Release the mouse pointer over the selected green square.

Image: Topology view     Image:	Project3 →	Devices & networks		_∎≡×
	🕞 🖁 Network	Connections HMI connection	Network view	ce view
				Network data

The connection is created. A correctly created HMI connection between both devices is highlighted in blue.

#### Connections in the HMI device

1. Double-click "Connections" in the project tree.



#### The work area for connections opens.

AP Connections to S7 PLCs in Devices & networks								
Со	nnections							
	Name	Communication driver	Station	Partner	Node	Online	Comment	
*	HMI_Connection_1	SIMATIC \$7 1200/1500	S7-1500/ET200MP	PLC_1	CPU 1516-3 PN/DP,			
	<add new=""></add>							

Each table row represents a connection to a controller with its respective properties. If you create a connection in "Devices & networks", it is an integrated connection. The communication parameters are automatically filled correctly. You also create new connections via "<Add>". You have to configure the communication parameters of these connections yourself.

## **Creating tags**

You configure one PLC tag and several HMI tags.

WinCC Unified distinguishes between two types of tags:

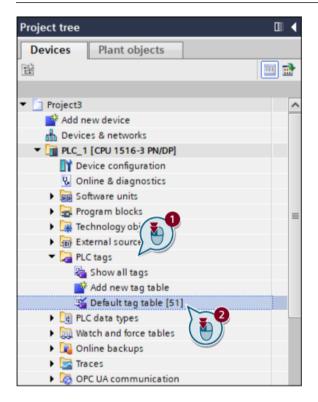
- External tags are the link between WinCC and the automation systems. The external tag reads the process value of the PLC tags from the memory of the automation system or writes a new process value back into the memory of the automation system. For external tags, the properties of the tags are used to define the connection that WinCC uses to communicate with the automation system and how the data exchange takes place.
- Internal tags have no process connection; they are not connected to the automation system and only transport values within the HMI device. The internal tag values are only available in Runtime. For internal tags, "<Internal tag>" is displayed in the "Connection" property instead of a connection. For internal tags, you have to define at least the name and the data type.

#### Creating a PLC tag

- 1. Double-click "PLC tags" in the project tree.
  - Double-click "Default tag table".

#### Note

The name of the default tag table depends on the language in which a project was created.



The work area for tag tables opens.

- 2. Double-click "<Add>" in the work area.
  - Assign the name "tempGetStatus".
  - Click 🔳 in the Data type column.
  - Select the "Bool" data type.

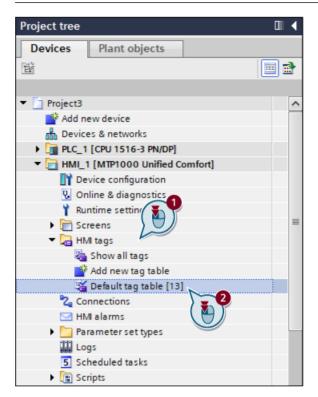
Proje	ect3	PLC_1 [CPU 1	516-3 PN/DP]	<ul> <li>PLC tags</li> </ul>	Default tag	table [51]					_ # # X
						🕣 Tags	ΞU	ser cor	stants	🖉 System o	onstants
<b>#</b> ;	¢ [	) 🗄 🙄 🛃									<b>_</b>
D	efaul	t tag table									
	N	ame		Data type	Address	Retain	Acces	Writa	Visibl	Supervision	Com
1	-00	tempGetStatus		Bool	····	-	<b></b>	<b></b>	<b></b>		
2		<add new=""></add>		Aom_Ident	2 ^		<b>V</b>	<b>V</b>	$\checkmark$		
				Bool							
			9	Byte							
				Char							
				Conn_Any							
				Conn_Ouc							
				Conn_Prg							
				Conn_R_Id	*						

#### Creating an HMI tag

- 1. Double-click "HMI tags" in the project tree.
  - Double-click "Default tag table".

#### Note

The name of the default tag table depends on the language in which a project was created.



The work area for tag tables opens.

2. Double-click "<Add>" in the work area.

Projec	ct4 ▶ HMI_1 [MTP1000 Un	ified Comfort] 🕨 H	MI tags 🕨 Default	tag table [8]		_₽≡×
					🔩 HMI tags	System tags
¥ [	F 2					<b>=</b>
De	efault tag table					
	Name 🔺	Data type	Connection	PLC name		PLC tag
	<add new=""></add>					

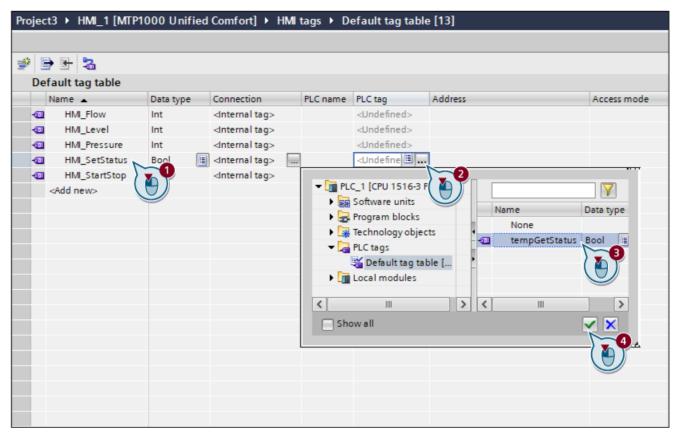
- 3. Create a total of five HMI tags. Assign a name for each tag. Select their data type as follows:
  - The "HMI\_Flow", "HMI\_Level" and "HMI\_Pressure" tags the "Int" type. You use these tags to cache process values that you want to use on the HMI device.
  - The "HMI\_SetStatus" tag is of the "Bool" type. You link this tag with a PLC tag.
  - The "HMI\_StartStop" tag is of the "Bool" type. You use this tag to cache the state of a switch.

Projec	Project3   HMI_1 [MTP1000 Unified Comfort]   HMI-Variablen   Default tag table [13]									
¥.	# B B 3									
	Default tag table									
	Name 🔺	Datentyp	Verbindung	PLC-Name	PLC-Variable	Adresse				
	HMI_Flow	Int	⊲nterne Variabl		<undefiniert></undefiniert>					
	HMI_Level	Int	⊲nterne Variabl		<undefiniert></undefiniert>					
	HMI_Pressure	Int	⊲nterne Variabl		<undefiniert></undefiniert>					
	HMI_SetStatus	Bool	⊲nterne Variabl		<undefiniert></undefiniert>					
	HMI_StartStop	Bool	⊲nterne Variabl		<undefiniert></undefiniert>					
	<hinzufügen></hinzufügen>									

- 4. Click the "HMI\_SetStatus" tag.
  - Click .... in the "Connection" column.
  - Select the HMI connection "HMI\_Connection\_1".
  - Confirm your selection with the green check mark.

Project3   HMI_1 [MTP1000 Unified Comfort]   HMI tags   Default tag table [13]								
🖸 🖻 🗄 🟅								
Default tag table								
Name 🔺	Data type	Connection	PLC name	PLC tag	Address			
HMLFlow	Int	⊲nternal tag>		<undefined></undefined>				
HMLLevel	Int	⊲nternal tag>		<undefined></undefined>				
HML_Pressure	Int	<internal tag=""></internal>		<undefined></undefined>				
HML_SetStatus	Bool 🔳	⊲nternal tag> 🔳		<undefined></undefined>				
HMI_StartStop	Bool							
<add new=""></add>		→ ☐ HMI_1 [MTP1000 U			$\mathbf{\nabla}$			
		Connections	<b>S</b>	Name				
				HMI_Connectio	n_1			
					3			
			-					
		<			>			
					✓ ×			

- 5. Click the "HMI\_SetStatus" tag.
  - Click .... in the "PLC tag" column.
  - Select "PLC\_Tags > Default tag table > tempGetStatus".
  - Confirm your selection with the green check mark.



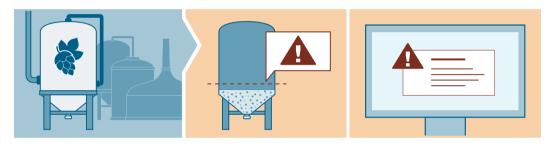
The PLC tag "tempGetStatus" is linked to the HMI tag "HMI\_SetStatus". The HMI tag "HMI\_SetStatus" acts as an external tag due to the link and forwards its state to the controller.

# **Configuring alarms/messages**

# 9.1 Alarms/messages

WinCC ensures that all events, operating states or faults that occur in your plant are recorded. Deviations from the process flow are visualized as an alarm to the plant operator. Alarms can be used, for example, for diagnostic purposes during troubleshooting and they help you locate the cause of the fault immediately. You can adjust your processes through targeted intervention so that compliant products continue to be produced despite the fault, or the process is stabilized, and the fault only causes a minimal loss of production.

WinCC supports complete traceability when processing the cause of an error. An alarm contains the traceable state of the error processing with time stamping. An alarm occurs, for example, when the fill level of a storage tank falls below a limit.



#### Discrete alarms/bit messages

Discrete alarms are also called bit messages and indicate status changes in a plant. A discrete alarm is triggered when the value of a specific bit of a tag changes.

Example: The status of a valve is to be monitored. The state of the valve can be either "open" or "closed". A discrete alarm is configured for each state of the valve. If the state of this valve changes, an alarm is output on the HMI device containing, for example, the following alarm text: "Valve closed".

#### Analog alarms/analog messages

Analog alarms are also called analog messages and indicate limit violations. You define a limit for the trigger tag and the trigger mode. Depending on which mode you have defined, an analog alarm is triggered in Runtime when the defined value is exceeded or not reached. The analog alarm is shown in an alarm control.

Example: The speed of a motor must not be too high or too low. To monitor the speed of the motor, configure two analog alarms. If the high limit or low limit for the speed of the motor is violated, an alarm is generated on the HMI device containing, for example, the following alarm text: "Motor speed too low."

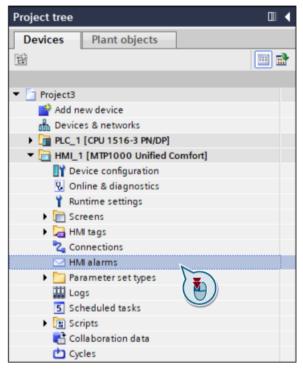
9.2 Configuring analog alarms

# 9.2 Configuring analog alarms

In this example, you create an analog alarm of the "Warning" alarm class, which is triggered when a tag exceeds a limit. When creating alarms, you assign an alarm class to each alarm. The alarm class defines the appearance and the acknowledgment model of the alarm. An alarm of the "Warning" alarm class is displayed with a yellow background and has to be acknowledged.

#### Configuring analog alarms

1. Double-click "HMI messages" in the project tree.



The work area for alarms opens.

- 2. Create an analog alarm.
  - Click "Analog alarms".
  - Double-click "<Add>".

Pro	ject4 → HMI_1 [MTP1000 Unified Comfort] → HMI alarms _ ■ ■ ×									
		🙀 Discrete alarr	ns 🔄 Analog alarms 😽	OPC UA A&C	🛃 System e	events 🛛 🖼 Ala	arm classes			
₽										
	Analog alarms									
	ID	Name	Alarm text	Alarm class	Trigger tag	Connection of t	Limit			
	<add new=""></add>									
		2								

- Enter "Attention\_Flow" as the name of the alarm.
- Enter the text "The flow rate is too high" in the "Message text" column.

#### Configuring alarms/messages

#### 9.2 Configuring analog alarms

			🙀 Discrete alarms	🔄 Analog alarms		CUA A&C	Ę	System e	ever	nts 🛛 🔛 Alarn	n <mark>cla</mark> ss	es
€ [	<u>.</u>			_								
Α	na	alog alarm	s									
	1	ID	Name	Alarm text		Alarm class		Trigger tag		Connection of t	Limit	
	2	1 🌲	Attention flow	The flow rate is too high		Alarm		<no tag=""></no>				
		⊲Add new>	A		IA	2						
l												

- 3. Set the "Warning" alarm class.
  - Click .... in the "Message class" column.
  - Click the "Warning" alarm class under "HMI messages".
  - Confirm your selection with the green check mark.

Project	4 ▶ HMI_	1 [MTP1000 Unified Co	mfort] 🕨 HMI alarms			_ # =×
		🙀 Discrete alarms	🔀 Analog alarms	🙀 OPC UA A8	C System events	🔚 Alarm clas 🖣 🕨
₽ ₽						<b>=</b>
Ana	log alarm	S				
- 1	D	Name	Alarm text			of t Limit Li
2	1 🔷	Attention flow	The flow rate is too high	Alarm 🔳	<no tag=""></no>	Hi
	<add new=""></add>		HMI -		Name SystemInforma SystemNotifica SystemWarning Warning WarningWithRe	tion g WithoutC

- 4. Select the tag to be monitored.
  - Click .... in the "Trigger tag" column.
  - Click the "HMI\_Flow" tag under "HMI\_1 > HMI tags > Default tag table".
  - Confirm your selection with the green check mark.

Pro	ojec	t4 → HMI_1 [	MTP1000 Unified	I Comfort] 🕨 HMI alarm	s						_ 🗗	∎×
			🙀 Discrete alarr	ns 🛛 🔀 Analog alarms	😡 OPC U	JA	A&C	System ever	nts	🖼 Alarm	classe	es
		-										
	An	alog alarms										
		ID	Name	Alarm text	Alarm class		Trigge	-		ection of t	Limit	
			Attention flow	The flow rate is too high	Warning [CPU 1516 tware units gram blocks hnology obj tags al modules [MTP1000 I tags Default tag ta		⊲No ta	Iame @LocalMachineNa @ServerMachineNa @SystemActivatio @SystemHealthInu @UserName HM_Flow HM_Level HM_Pressure HM_SetStatus HM_StartStop	ime lame nState	Data type WString WString UDInt ULInt WString Int Int Int Bool Bool		
										•••		9

- 5. Set the limit at which the alarm is triggered.
  - Enter "40" as the limit.
  - For "Limit mode", select the "Higher or equal".



You have created an analog alarm that is triggered when the limit of the "HMI\_Flow" tag is exceeded.

#### Configuring alarms/messages

#### 9.2 Configuring analog alarms

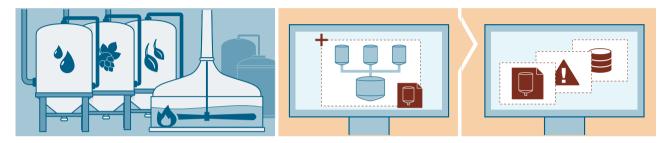
Pro	Project4 → HMI_1 [MTP1000 Unified Comfort] → HMI alarms									
				🙀 Discrete alarms	🔄 Analog al	arms 🛛 🙀 O	PCUA	\&C 🛃	System events	🔚 Alarm cl
₽										
	Analog alarms									
		ID	Name	Alarm text	Alarm class	Trigger tag	Conn	Limit	Limit mode	
	2	1 🌲	Attention flow	The flow rate is too high	Warning	HMI_Flow		40	Higher or equal	
		<add ne<="" th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></add>								

# **Configuring screens**

# 10

# 10.1 Screens

An HMI screen represents the user interface of an operator control and monitoring station. A plant or a process is visualized with pre-defined screen objects in the HMI screen. Operators interact with the process via the HMI screen.



#### Static and dynamic screen objects

A screen consists of static and dynamic screen objects:

- Static screen objects do not depend on the process. Static screen objects include, for example, labels and diagrams.
- Dynamic screen objects change in line with the process. Dynamic screen objects typically visualize process values such as fill levels. Operators interact with the process via dynamic screen objects.

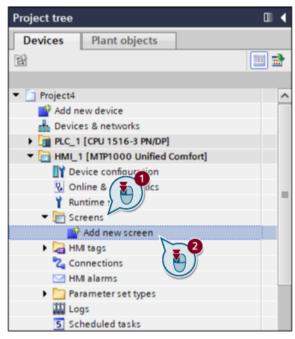
# 10.2 Creating screens

In this example, you create one screen as the start screen and another three screens. You insert different screen objects into the screens and dynamize these objects. In Runtime, the objects display the values of tags, change color based on the value of a tag, or can be operated by you.

The start screen is the screen that is displayed when the project is started in Runtime. Operators navigate to other screens from the start screen. The start screen is indicated by a green triangle in the project tree. To compile a project, you need to set a screen as the start screen in the project. 10.2 Creating screens

#### Creating the start screen

- 1. Create a screen. The first screen that you have configured in a device is set as the start screen for Runtime.
  - Double-click "Screens" in the project tree.
  - Double-click "Add new screen".



The screen editor for the "Screen\_1" opens.

- 2. Rename the screen.
  - Right-click "Screen\_1". The shortcut menu opens.

10.2 Creating screens

- Click "Rename".

Project tree	III ◀ Project4 → HMI_1 [MTP10	000 Unified Con
Devices Plant objects		
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Project4	▲	
📫 Add new device		
Devices & networks		
PLC_1 [CPU 1516-3 PN/DP]		
HMI_1 [MTP1000 Unified Comfort]		
The vice configuration		
😧 Online & diagnostics		
📍 Runtime settings	≡	
- Screens		
Add new sc		
Screen_1		
HMI tags	Open	
Connections	∦ Cut Ctrl-	•X :::::::::
🖂 HMI alarms	E Copy Ctrl-	+C
Parameter set types	Paste Ctrl-	•V :::::::::
Logs	X Delete D	el
5 Scheduled tasks	Rename	2
Cripts	Define as	
📑 Collaboration data		
Cycles	Resize to di	
Text and graphic lists	j∯ Go online Ctrl-	•К (
Ungrouped devices	Go offline Ctrl+	M
Security settings	Change object color	::::::::::::
Cross-device functions		
🕨 🙀 Common data	Start simulation Ctrl+Shift-	•X
Documentation settings	Search in project Ctrl-	+F
Languages & resources	Cross-references	1

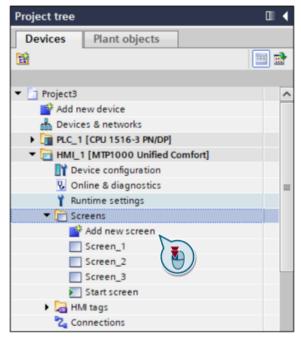
- Enter the name "Start screen".

Configuring screens

10.3 Configuring a start screen

#### **Configuring additional screens**

- 1. Create three additional screens.
  - Double-click "Add new screen".
  - Name the screens "Screen\_1", "Screen\_2" and "Screen\_3".



### 10.3 Configuring a start screen

Insert the "Text box", "Circle" and "Switch" objects from the "Tools" task card into the start screen and dynamize these objects with tags.

When operators press the switch in Runtime, the switch state is stored in the tag. The tag controls the color of the circle. When the switch is set to "Stop", the circle is red. When the switch is set to "Start", the circle is green.

#### "Tools" task card

You can find the objects in the "Tools" task card in the following palettes:

- Basic objects
- Elements
- Controls
- My controls
- Graphics
- Dynamic widgets

You can switch between the Symbol view  $\boxed{11}$  and the List view  $\boxed{11}$  in the "Tools" task card. In the Symbol view, you can switch the labeling of the objects on or off in the shortcut menu.

Toolbox	ĸ								
Options	6								
		-							
✓ Basi	✓ Basic objects								
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	$\bigcirc$	$\sim$	L	•					
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> My o	ontrols								
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> Dyna	amic wio	dgets							

You insert objects from the palettes into the screens using drag-and-drop or a double-click. The selection of objects depends on the HMI device you are currently configuring.

If you hover the mouse pointer over the object, the name of the object is displayed in a tooltip.

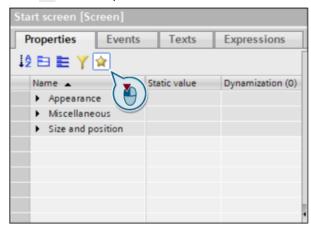
#### **Editing properties efficiently**

The properties of an object are displayed in the property list in the Inspector window. Here you can edit the properties, e.g. change the size and position of an object, or dynamize objects. Two functions are available in the Inspector window that allow you to efficiently edit properties:

- If Filter  $\Upsilon$  is enabled, type the name or parts of the name in the search field. Only the properties that meet the search criterion are displayed.
- If Favorites  $\uparrow$  is enabled, only selected, frequently used properties are displayed.

#### Inserting objects into the start screen

1. Click  $\propto$  in the Inspector window.



- 2. Insert a text box into the start screen.
  - Double-click on the start screen in the project tree. The screen editor opens.
  - Drag-and-drop or double-click the text box onto the start screen.

Project4 🔸	HMI_1 [MTP1	000 Unified Cor	mfort] ► Screer	ns 🕨 Start screen	_ 🖬 🖬 🗙 Toolbo	× 🖬 🗉
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					^ ▼ Bas	ic objects
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3. Enter the label "Start/Stop".

- 4. Insert a circle into the start screen.
  - Drag-and-drop the circle onto the start screen. Blue guide lines appear while you insert the circle.
  - Use the guides to position the circle to the height of the text box.

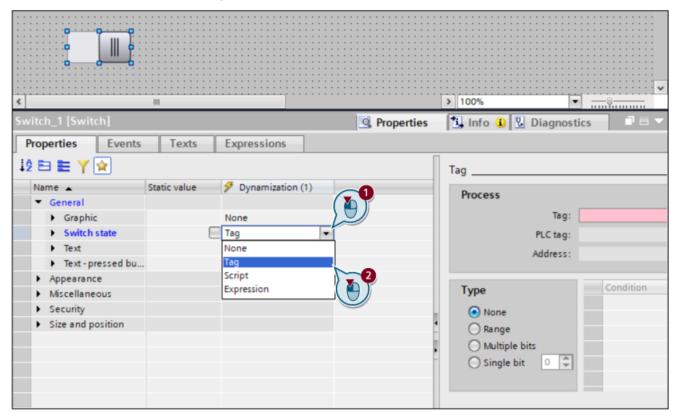
	Toolbox 📑 🗉 🕨
	Options
<b>A</b> 2	
	✔ Basic objects
StartStop	

- 5. Insert a switch into the start screen.
  - Drag-and-drop the switch onto the start screen.
  - Position the switch under the text box. The text box serves as a label for the switch.

_ <b>- - - - - -</b>	Toolbox	<b>- - -</b>
	Options	
	> Basic objects	
	✓ Elements	
StartStop	🔛 🛄 💶 💷	
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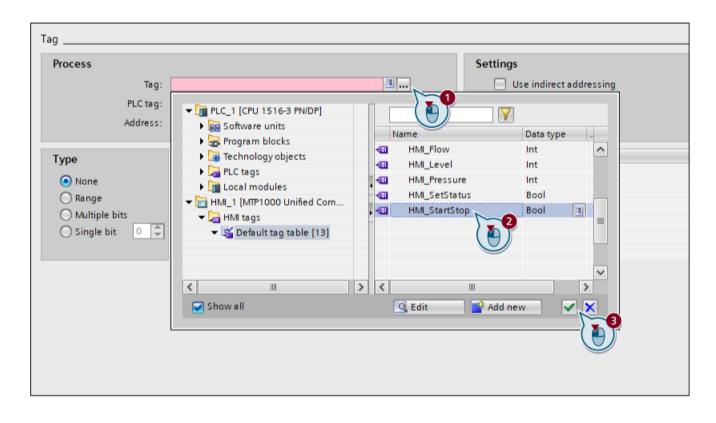
#### Dynamizing a switch in the start screen

- 1. Click on the switch.
  - In the Inspector window, click for the "Switch state" property in the "Dynamization" column.
  - Select "Tag".



The tag selection range opens.

- 2. Set the tag to be used for dynamization.
  - In the "Tag > Process" area, click on ......
  - Click the "HMI\_StartStop" tag.
  - Confirm your selection with the green check mark.



#### Dynamizing a circle in the start screen

- 1. Click on the circle.
  - In the Inspector window, click the "Background color" property.
  - Click 💽 in the "Dynamization" column.
  - Select "Tag".

StartStop				
Circle_1 [Circle]				
Properties Events	Texts	Expressions		
12 EI 🖿 🍸 😭			1	ag
Name 🔺	Static value	Dynamization (1)		Process
<ul> <li>Appearance</li> <li>Background - color</li> </ul>	200.20	🔻 Tag 🖵		Tag:
Border - color	125, 125			PLC tag:
Miscellaneous	120,12	Tag		-
Size and position		Script	2	Address:
		Flashing	9)	
		Expression	9	Type Condition
				None
				Range
			Ē	O Multiple bits
				🔵 Single bit 0 🌲

The tag selection range opens.

- 2. Set the tag to be used for dynamization.
  - In the "Tag > Process" area, click on ......
  - Click the "HMI\_StartStop" tag.
  - Confirm your selection with the green check mark.

Circle_1 [Circle]		3	🗟 Properties	🗓 Info	追 🗓 Diagnost
Properties Events Texts Ex	pressions				
Tag					
Process Tag: HMI_StartStop			Settings	se indirect ad	dressing
✓ 1 PLC_1 [CPU 1516-3 PN/DP]				se maneet au	are sold and a sold areas and a sold areas and a sold areas
Software units     Jag Program blocks	Name	Data type	Address	Comment	
Frogram blocks      Formation and the second s	@SystemHealthIndex	ULInt			^
PLC tags	- @UserName	WString			
Local modules	HMI_Flow	Int			
✓ → HMI_1 [MTP1000 Unified Com	HMI_Level	Int			
🕶 🔚 HMI tags	HMI_Pressure	Int			
🕶 💥 Default tag table [13]	HMI_SetStatus	Bool	7	_	
4	HMI_StartStop	Bool 🔳			
					~
Show all		🔍 Edit	Ac	dd new	<b>X</b>

- 3. Specify how the tag is to be evaluated.
  - Select the "Single bit" option in the "Tag > Type" area. The possible values in the "Condition" column are entered automatically.
  - Select red as the background color for the "0" condition and green for the "1" condition.
  - Select the "Read only" option under "Tag > Settings".

#### 10.4 Configuring a screen change

Circle	e_1 [Circle]					🔍 Properties 📃
Pro	perties Events	Texts Expression	ns			
	Tag					
	Process				Settings	
	Tag:	HMI_StartStop	≞	]	📃 Use indire	ct addressing
	PLC tag:			7	Read-only	
	Address:		Bool			
	Туре	Condition	Background - color	Flashing	Alternative value	Frequency
		0	255, 0, 0	No	255, 0, 0	Medium
	O None	1	0, 255, 0	No	255, 0, 0	Medium 💌
	<ul> <li>Range</li> <li>Multiple bits</li> </ul>					
	💽 Single bit 🛛 🌲					
4				1		
-						
<u> </u>				1		
			More colors			
			More colors			

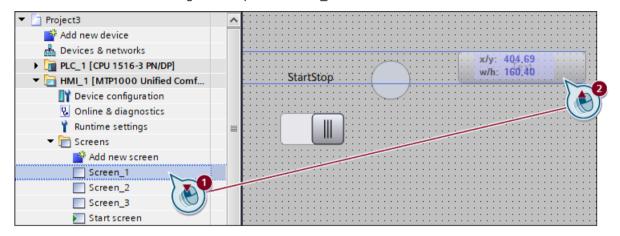
# 10.4 Configuring a screen change

You configure the buttons for the screen change between the start screen and "Screen\_1", "Screen\_2" and "Screen\_3".

In Runtime, the operators use these buttons to switch between the screens.

#### Configuring the screen change in the start screen

- 1. Double-click "Start screen" in the project tree. The screen editor opens.
  - Drag-and-drop the "Screen\_1" from the project tree onto the start screen.
  - When the mouse is in the work area, a button is displayed at the mouse pointer. Blue guide lines appear during the insertion.
     Position the button to the height of the circle using the guide lines.
     When you drag-and-drop a screen into another screen, a button is created and labeled with the name of the screen. The button is dynamized using a system function so that the screen change is executed in Runtime when you release the button.
  - Drag-and-drop the "Screen\_2" onto the start screen.
  - Drag-and-drop the "Screen 3" onto the start screen.



You have created three buttons for the screen change in the start screen.

Project3 > HMI_1 [MTP	1000 Unified Comfort] 🕨	Screens 🕨 Start screen	
◇ マ マ ♂ 目 幸	目前の日本国家	비린데 음료 등 문료 등 등 수	
StartSt	····	Screen_1	
		Screen_2	
		Screen_3	
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#### Configuring the screen change for the start screen

- 1. Double-click "Screen\_1" in the project tree.
  - Drag-and-drop "Start screen" from the project tree onto "Screen\_1".
- 2. Double-click "Screen\_2" in the project tree.
  - Drag-and-drop "Start screen" from the project tree onto "Screen\_1".
- 3. Double-click "Screen\_3" in the project tree.
  - Drag-and-drop "Start screen" from the project tree onto "Screen\_1".

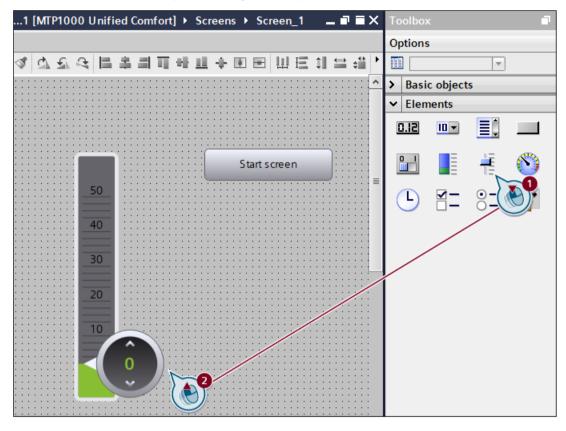
# 10.5 Displaying tag values in Runtime

You configure the "Slider" and "I/O field" objects in the "Screen\_1". You dynamize these objects with the "HMI\_Flow" tag.

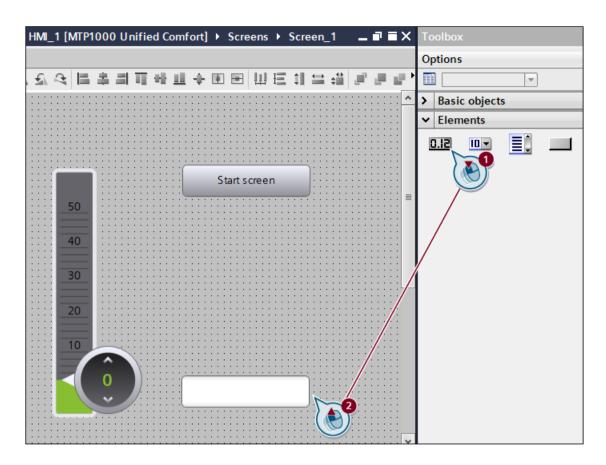
In Runtime, these objects read the value of the tag and visualize it. The slider represents the value graphically, the I/O field represents it numerically. Operators in Runtime write a new value to the tag by moving the slider. The new value is also visualized in the I/O field.

#### Inserting a slider and I/O field into the "Screen\_1"

- 1. Double-click "Screen\_1" in the project tree. The screen editor opens.
  - From the "Elements" palette, drag-and-drop the slider onto the screen.



- Drag-and-drop the I/O field from the "Elements" palette onto the screen.



#### Dynamizing a slider and I/O field in "Screen\_1"

- 1. Click on the slider.
  - In the Inspector window, click for the "Process value" property in the "Dynamization" column.
  - Select "Tag".

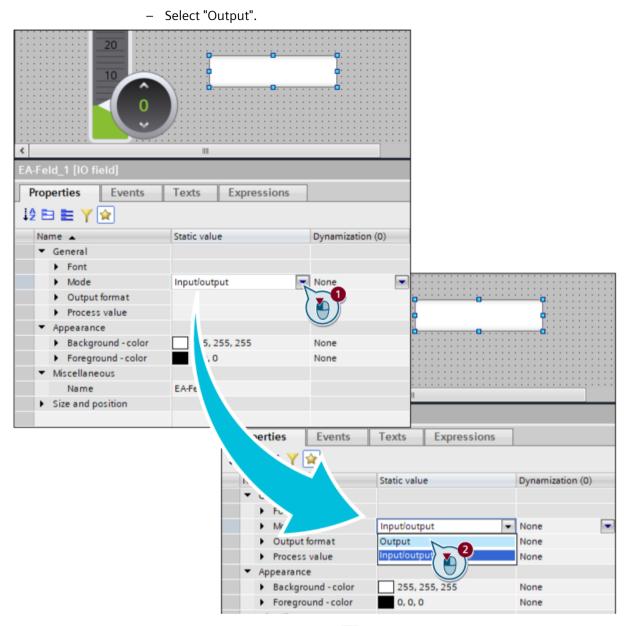
20					
			] :	▶ 100%	▼
Slider_1 [Slider]	- 1		Right Properties	🗓 Info 🔒 🗓 Diagnos	tics
Properties       Events         12       E       Y         Name          ✓       General         >       Label         >       Process value         >       Scale         ✓       Appearance         >       Normal range - color         >       Process value indicat         >       Process value indicat         >       Miscellaneous         >       Size and position	Texts Expr Static value 135, 190, 50 100, 100, 1 242, 244, 2	Pynamization ( Tag None Tag Script Expression None		Tag Process Tag: PLC tag: Address: Type None Range Multiple bits Single bit	Condition

The tag selection range opens.

- 2. Set the tag to be used for dynamization.
  - Click .... in the "Tag" area.
  - Click the "HMI\_Flow" tag.
  - Confirm your selection with the green check mark.

Tag			
Process Tag: PLC tag: Address: Type None Range Multiple bits Single bit	<ul> <li>PLC_1 [CPU 1516-3 PN/DP]</li> <li>Software units</li> <li>Program blocks</li> <li>Technology objects</li> <li>PLC tags</li> <li>Local modules</li> <li>HML_1 [MTP1000 Unified Com</li> <li>HML tags</li> <li>Default tag table [13]</li> <li>Mutic Show all</li> </ul>	Setti Name SubserName	Use indirect addressing Use indirect addressing Data ty WS tring Int Int Bool Bool V

- 3. Click on the I/O field.
  - In the Inspector window, click the "Input/Output" text for the "Mode" property in the "Static value" column.
  - Click 🔽.



In the Inspector window, click for the "Process value" property in the "Dynamization" column.

#### Configuring screens

#### 10.5 Displaying tag values in Runtime

– Select "Tag".

EA-Feld_1 [IO field]			
Properties Events	Texts Expre	essions	
12 🖻 🖿 🍸 😭			Tag
Name 🔺	Static value	🐓 Dynamization (2)	Process
General     Font		-	Tag:
▶ Mode	Output	Tag	PLC tag:
Output format     Process value		None Tag	Address:
<ul> <li>Appearance</li> </ul>		Script	Type
Background - color	255, 255, 255	Expression	Туре
Foreground - color     Miscellaneous	0, 0, 0	None	<ul> <li>None</li> </ul>
Name	EA-Feld_1		Range     Multiple bits
<ul> <li>Size and position</li> </ul>			Single bit

- Click .... in the "Tag" area.
- Click the "HMI\_Flow" tag.
- Confirm your selection with the green check mark.

ocess			Settings
Tag:			Use indirect address
PLC tag: Address:	<ul> <li>✓ Imple PLC_1 [CPU 1516-3 PN/DP]</li> <li>→ Imple Software units</li> <li>→ Imple Program blocks</li> </ul>	Name	Data ty
Image         Oracle         Range         Oracle         Multiple bits         Oracle         Single bit		OUserName     HMLFlow     HMLLevel     HMLPressure     HMLStartStop	
	< Ⅲ >	K III	d new

# 10.6 Generating alarms

You configure the "Alarm control" object in "Screen\_1".

In Runtime, extraordinary operating states are reported to the operators in the alarm control. Operators acknowledge an alarm using "Single acknowledgment" button. The number of unacknowledged alarms is displayed in the green circle on the button.

10.6 Generating alarms

#### Inserting an alarm control into "Screen\_1"

- 1. Double-click "Screen\_1" in the project tree. The screen editor opens.
  - Drag-and-drop the alarm control from the "Controls" palette onto the screen. Position the alarm control under the slider and the I/O field.
  - Drag one of the blue drag points in the object-enclosing rectangle to adjust the size of the Alarm view.

Trojecto / Thvi_T	[MTP1000 Unified Co	omfort] 🕨 Screer	ns ▶ Screen_1			
\land 🕁 🐨 🖉 🗧	우리 피아 보 ·	+∎ ≡ Ш ⊟	: 11 🖴 🖧 🍠 d	i i i iz 🦻		
40 30 20 10		Start screen				
	Alarm class	Origin	Area	Alarm text	Modification time	
1 2 						

- 2. Click on the alarm control.
  - Click 

     for "Miscellaneous > Alarm control".
  - Click 
     for "Columns".
  - Click for "[2] Column" .
  - For "Visibility" in the "Static value" column, click to disable the visibility of the "Message class" column.

#### 10.6 Generating alarms

Project3 > H	MI_1 [MTP1000 Unified	Comfort] ► Sci	reens > Screen_1			
a				Lan an ai ta		
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Alarm control	_1 [Alarm control]					
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▼ Alarm	n view 🧹 🎽					
▼ Co	olumns 💛					
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	[1] Column	Name				
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<b>( ) (3</b>	Alarm colors - use			🗹 None		
	<ul> <li>Alarm text block</li> </ul>	Alarm class		None		
	Background - color	0, 0, 0		None		
	Column header					
	Content					
	Foreground - color	0, 0, 0		None		
	Name	Alarm class				
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	Output format			None		
	Size - width	120		None		
	<ul> <li>Sorting - allow</li> <li>Sorting - direction - dof</li> </ul>			Mone None		
	<ul> <li>Sorting direction - def</li> </ul>			None		
	Sorting order	0		None		
	<ul> <li>Visibility</li> </ul>	-		Mone None		
	Width - maximum	0		None		
	Width - minimum	0 Defective		None		
	[3] Column	Priority				
	[4] Column	Group				

10.7 Limit inputs

# 10.7 Limit inputs

You configure the "Gauge" and "I/O field" objects in "Screen\_2". You dynamize these objects with the "HMI\_Pressure" tag. You define a value range from 0 to 50 for the tag. In this way, you match the value range of the I/O field and the gauge.

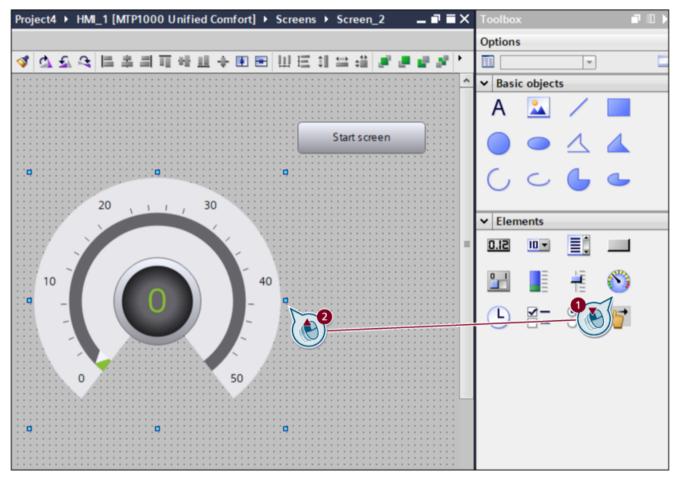
In Runtime, the values entered into the I/O field are displayed in the gauge. Operators cannot enter values outside the value range in the I/O field.

10.7 Limit inputs

#### Inserting a gauge and I/O field into "Screen\_2"

1. Double-click "Screen\_2" in the project tree. The screen editor opens.

- Drag-and-drop the gauge from the "Elements" palette onto the screen.



- In the Inspector window, click for the "Process value" property in the "Dynamization" column.
- Select "Tag".

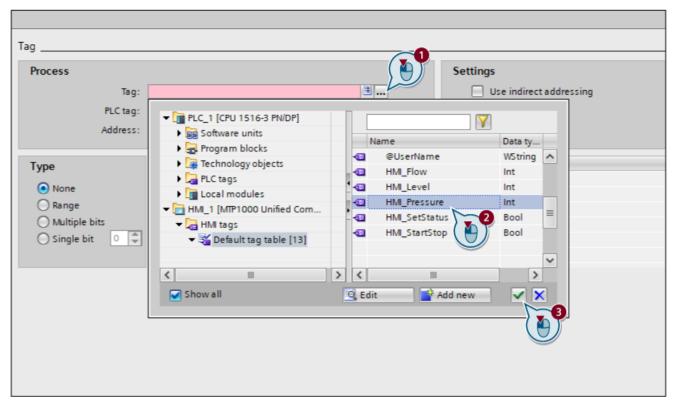
#### Configuring screens

#### 10.7 Limit inputs

Gauge_1 [Gauge]	40	¢	Start screen	
i2 ⊡ E Y 🔄	Static value	Dynamization (1)		Tag
▼ General	Static value	/ Dynamization (1)		Process
Process value		Tag		Tag:
<ul> <li>Scale</li> </ul>		None	1	PLC tag:
<ul> <li>Appearance</li> </ul>		Tag		Address:
Normal range - color	135, 190, 50	Script	2	Address:
Process value indicat	🗾 100, 100, 1	Expression		
Process value indicat		None	9	Type Condition
Miscellaneous				None
<ul> <li>Size and position</li> </ul>				Range
				O Multiple bits
				Single bit

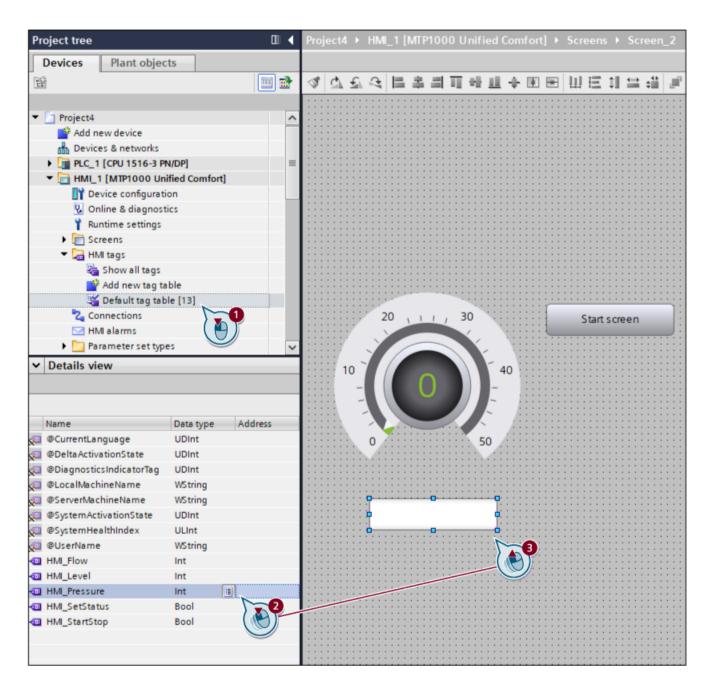
- 2. Set the tag to be used for dynamization.
  - Click .... in the "Tag" area.
  - Click the "HMI\_Pressure" tag.
  - Confirm your selection with the green check mark.

10.7 Limit inputs



- 3. Create an I/O field.
  - Click "Default tag table" in the project tree.
  - From the Detail view of the default tag table in the project tree, drag-and-drop the "HMI\_Pressure" tag onto the screen.
     When you drag-and-drop a tag onto a screen, an I/O field is created and linked to the tag.

10.7 Limit inputs



10.7 Limit inputs

### Limiting the value range of the input

- 1. Double-click the "Default tag table" under "HMI tags" in the project tree.
- 2. Click the "HMI\_Pressure" tag.
  - Click "Range" under "Properties" in the Inspector window.
  - Click Int. Select the "Constant" option.
  - Enter "50" as the high limit.

Project3 ▶ HMI_1 [MTP1000 Unif	ied Comfort] 🕨 HMI ta	gs 🕨 Default t	ag table [13]	_ <b>=</b> = ×	Ta	sks
			🖳 HMI tags	System tags	Op	otions
🥩 🖻 🗄 🚵						
Default tag table					>	Find a
Name 🔺	Data type	Connection	PLC name	PLC tag	>	Langu
- HMI_Flow	Int			<undefined></undefined>		
- HMI_Level	Int			<undefined></undefined>		
I HMI_Pressure	Int 🔳	⊲nternal tag>		<undefined></undefined>		
📲 HMI_SetStatus	Bool			<undefined></undefined>		
I HMI_StartStop	Bool	⊲nternal tag>		<undefined></undefined>		
<add new=""></add>						
<				>		
		parameter				
HMI_Pressure [HMI_Tag]		Properties	🗓 Info 🚺 🏆 Diagr	nostics 🗖 🗏 🤜		
Properties Events Text	S					
Range	e					
General	·				B	
Settings Set	ttings			( 🍋	T	
Range					/	
Linear s 2	Upper 2: 50			Const +		_
Values	Lower 2: 0			Ø None		
				Const Consta		
Comment					9	
Good Manufacturing Pra						

- Click ன. Select the "Constant" option.
- Enter "0" as the low limit.

Project3 • HMI_1 [MTP10	00 Unified Comfort] 🕨 HMI ta	gs 🕨 Default tag	g table [13]	_∎≡×	Ta	sks
			💺 HMI tags	System tags	Ор	tions
🥩 🖻 🗄 🐍						
Default tag table					>	Find a
Name 🔺	Data type	Connection P	LC name	PLC tag	>	Langu
HML_Flow	Int			<undefined></undefined>	-	Langu
HMLLevel	Int	<internal tag=""></internal>		<undefined></undefined>		
HM_Pressure	Int 🔳	<internal tag=""></internal>		<undefined></undefined>		
HML_SetStatus	Bool	<nternal tag=""></nternal>		<undefined></undefined>		
HML_StartStop	Bool	<nternal tag=""></nternal>		<undefined></undefined>		
<add new=""></add>		-				
<				>		
	-			· · · · · · · · · · · · · · · · · · ·		
	HMI tag j	parameter				
HMI_Pressure [HMI_Tag]		🔍 Properties	🗓 Info 🚺 🗓 Diagr	nostics 💿 🗆 🥆		
Properties Events	Texts					
	Range					
General	C-min-					
Settings	Settings				0	
Range	Upper 2: 50			Cont +	J	
Linear scaling					1	
Values	Lower 2: 0			Cont +		-
Comment				Ø None		
Good Manufacturing Pra				Consta		
-					g	
				)		

# 10.8 Configuring SVG graphics

WinCC provides large number graphics and symbols for industrial automation. These include motors, pumps, valves, tanks, as well as technical components for numerous industrial sectors. You can find these graphics in the "Graphics" and "Dynamic widgets" palettes in the "Tools" task card.

- The "Graphics" palette contains graphics and symbols in various formats, such as \*.svg, \*.wmf, \*.png.
- The "Dynamic widgets" palette contains dynamic SVG graphics. Dynamic SVG graphics have an interface for changing pre-defined properties of the graphic, such as colors or levels.

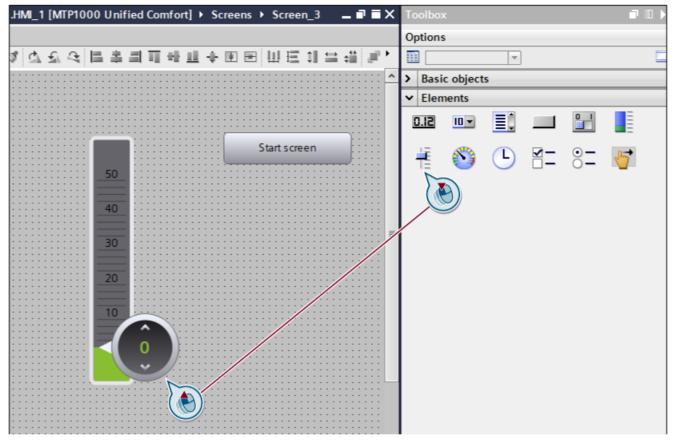
You configure the "Slider" object and the graphic for lauter tank of a brewery in "Screen\_3". You dynamize these objects with the "HMI\_Level" tag.

In Runtime, these objects read the value of the tag and visualize it. Operators in Runtime write a new value to the tag by moving the slider. The new value is displayed as the fill level in the lauter tank.

### Inserting screen objects into "Screen\_3" screen

1. Double-click "Screen\_3" in the project tree. The screen editor opens.

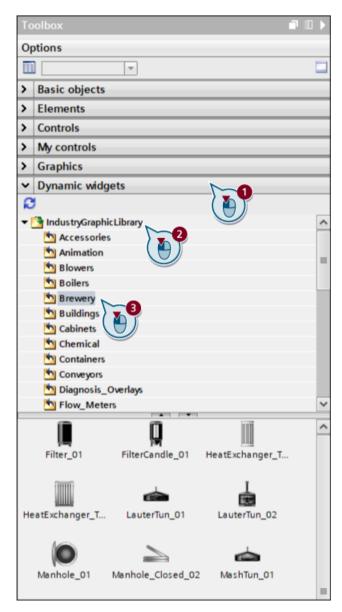
- From the "Elements" palette, drag-and-drop the slider onto the screen.



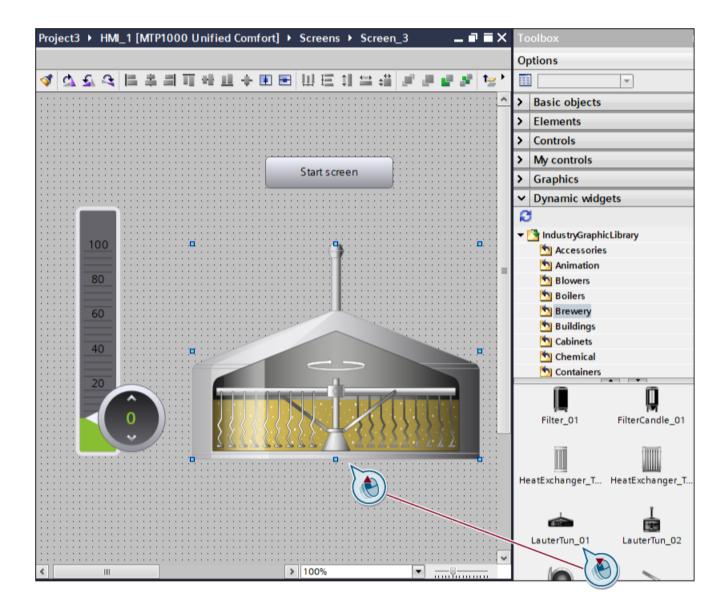
- 2. Click on the "Dynamic widgets" palette.
  - Click "IndustryGraphicLibrary".
  - Click "Brewery".

#### Configuring screens

#### 10.8 Configuring SVG graphics

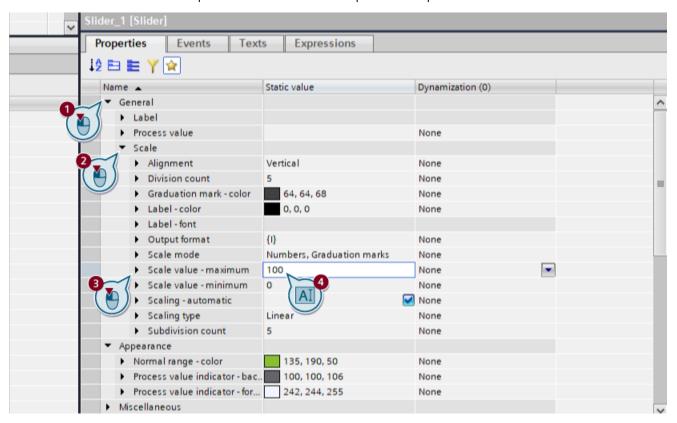


- 3. Paste into the lauter tank.
  - Drag-and-drop "LauterTun\_01" onto "Screen\_3".
  - Drag one of the blue drag points in the object-enclosing rectangle to adjust the size of the lauter tank.



### Dynamizing a slider

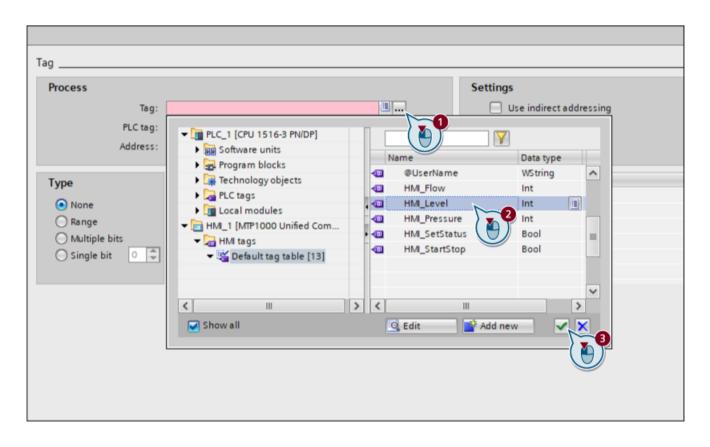
- 1. Click on the slider.
  - In the Inspector panel, click "General > Scale".
  - For the "Scale value maximum" property, click the field in the "Static value" column.
  - Enter the value "100".
     This input causes the slider to output values up to 100.



- 2. Set the tag to be used for dynamization.
  - In the Inspector window, click for the "Process value" property in the "Dynamization" column.
  - Select "Tag".

Slic	ler_	_1 [S	lider]						
P	rop	pertie	es Events Te	exts	Expressions				
12	E	• 🖿	Y 🚖				[	Tag	
		me 🔺		Static v	alue	🐓 Dynamization (1)		Process	
	•	Gene					<b>A</b>	Tag:	
		► Pr	rocess value			Tag		PLC tag:	
		▼ Se	cale Alignment	Vertica	1	None Tag		Address:	
			Division count	5		Script			
			Graduation mark - colo		, 64, 68	Expression	 - 1	Туре	Conditio
			Label - color Label - font	0,0	0, 0	None		None	
			Output format	{I}		None		Range	
			Scale mode		ers, Graduation marks			Single bit	
			Scale value - maximum Scale value - minimum			None			
			Scaling - automatic			None			
			Scaling type Subdivision count	Linear 5		None			
	•		arance	, , , , , , , , , , , , , , , , , , ,		None			
			ormal range - color		5, 190, 50	None			
			rocess value indicator - b rocess value indicator - f.		0, 100, 106 2, 244, 255	None			
	<						× >	<	

- 3. Click .... in the "Tag" area.
  - Click the "HMI\_Level" tag.
  - Confirm your selection with the green check mark.



### Dynamizing a lauter tank

- 1. Click on the lauter tank.
  - In the Inspector window, click 

     for "Interface".
  - For the "FillLevel" property, click the field in the "Static value" column.
  - Enter the value 100. The value of the fill level corresponds to the scale value of the slider.

DynamicSVG_1 [DynamicSVG]		
Properties Events Te	exts Expressions	
i2 🖻 🖿 🍸 😭		
Name 🔺	Static value	Dynamization (0)
<ul> <li>Miscellaneous</li> </ul>		
<ul> <li>Interface</li> </ul>		
FillingColor	252, 224, 102	None
FillLevel	100	None
Gas Gas		None
Rotation		None
TankColor	249, 249, 254	None
Name	DynamicSVG_1	
<ul> <li>Size and position</li> </ul>		

With this setting, the maximum fill level of the lauter tank corresponds to the maximum value of the slider.

- 2. Set the tag to be used for dynamization.
  - Click 💽 for the "FillLevel" property in the "Dynamization" column.
  - Select "Tag".

DynamicSVG_1 [DynamicSV	/G]		
Properties Events	Texts Expressions	5	
i2 🖻 🖿 🎽			Tag
Name  Miscellaneous	Static value	Dynamization (1)	Process
✓ Interface     FillingColor     FillLevel     Gas	252, 224, 102	None	Tag: PLC tag: Address:
Rotation TankColor Name	249, 249, 254 DynamicSVG_1	Script 2 Expressic	Type Cond
Size and position			Range Multiple bits Single bit

- 3. Click .... in the "Tag" area.
  - Click the "HMI\_Level" tag.
  - Confirm your selection with the green check mark.

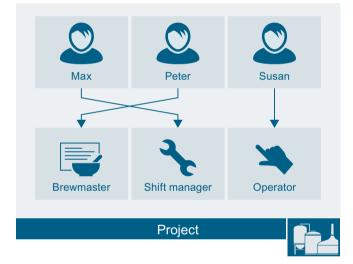
ocess			Settings	
Tag: PLC tag: Address:	<ul> <li>✓ Imple PLC_1 [CPU 1516-3 PN/DP]</li> <li>→ Imple Software units</li> <li>→ Imple Program blocks</li> </ul>	Name	Data type	
ype None Range Multiple bits Single bit	<ul> <li>Technology objects</li> <li>PLC tags</li> <li>Local modules</li> <li>HMI_1 [MTP1000 Unified Com</li> <li>HMI tags</li> <li>Upfault tag table [13]</li> </ul>	OUSerName     OUSerName     HMI_Flow     HMI_Level     HMI_Pressure     HMI_SetStatu     HMI_StartStop	is 🕒 Bool	
	Show all		Add new	•

# 11.1 User management

User management enables you to manage users centrally throughout the plant. The user management forms the basis for an efficient and integrated management of personalized access rights in the plant. The person-specific assignment of roles and rights minimizes the maintenance work and reduces security risks.

### Basics

Only local user management is considered in the context of this Getting Started. You configure the local user management in the project. You create users, define the rights of the individual roles and assign the users their roles.



WinCC allows you to restrict security-relevant operator actions to certain users. In this way, you protect data and functions in Runtime from unauthorized access.

- You set up the users and assign roles to them.
- Each role has specific rights.
- You configure the rights required for operation on security-relevant objects.
- The users have to identify themselves by entering user name and password in Runtime.

#### Note

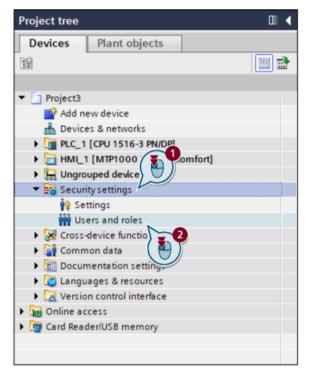
You must create at least one user in WinCC to be able to simulate your project or operate it in Runtime.

# 11.2 Configuring a local user management

In this example, you configure the local user management. You create a user and assign a role to it.

### Creating a local user

- 1. Create a local user.
  - Double-click "Security settings".
  - Double-click "Users and roles".



The "Users and roles" work area opens.

- Close the information window in the upper part of the work area by clicking **1**.
- Double-click "Add new user".
- Select "Add new local user".

Projec	t4 )	Security settings 🕨 Users a	nd roles			
<b>i</b>						
8 <u>.</u> is						
Us	ers					
		User name	Password	Authentication	Runtime timeout	UM domain ID
Ŷ		Anonymous				
		Add new User>	ocal user I user			

- Enter "Siemens" as the user name.
- Click r in the "Password" column. The dialog for entering the password opens.
- Enter "Siemens1234\*" as the password and press "<Return>".
- Enter "Siemens1234\*" as the password confirmation and press "<Return>".
- Confirm your entries with the green check mark.

Proje	ct4 ♪	Security settings 🕨 Us	ers and roles
1			
₽_	8		
U	sers		<b>2</b>
Ì		User name Anonymous	Password Authentication Runtime timeout UM domain ID
Ì		Siemens	Password 💌 🖂 Min 🖨
		<add new<="" th=""><th>Password: ************************************</th></add>	Password: ************************************

# Assigning a role

- 1. Click "Assigned roles."
  - Assign the role "Siemens" to the user "HMI Administrator".

Proje	ct3 →	Securi	ity settings 🕨 Us	ers and ro	les								
1													
Q_ 1	3												
U	sers												
		User nan	ne	Password			Authentication		Run	itime ti	imeout		UM domain ID
Ŷ		Anonym	ious										
Ì		Siemen	<sup>5</sup> \	******		-	Password	•		30	Min	\$	
		<add ne<="" th=""><th>w ( 🔊 🍸</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></add>	w ( 🔊 🍸										
Δα	lano	d user g		ned roles	Assigned rig	bto							
-	-			fied foles	2	ints		_				_	
As	-	ed roles	1										
	-	ned to	Name		escription			_		me tim	neout		
ţ,			HMI Administrator				e "HMI Administ						r Management, Monitor, Opera
ļ,			3 MI Operator				e "HMI Operato						nitor, Operate, Remote access
÷1			HMI Monitor				e "HMI Monitor"		30				nitor, Remote access - Monitor
÷,			HMI Monitor Client		System-define	d rol	e "HMI Monitor .	3	30		Min	Win	CC Unified Client Monitor - limi
÷,			NET Administrator		System-define	d rol	e "NET Administ	3	30		Min		
i i	1 (		NETStandard		System-define	d rol	e "NET Standard	r s	30		Min		
÷,			NET Diagnose		System-define	d rol	e "NET Diagnos	e" 3	30		Min		
						-		-	-				

- 2. There are specific rights associated with each role. Click "Assigned rights".
  - Click for "Runtime rights".
  - Click for "WinCC Unified Comfort Panel".

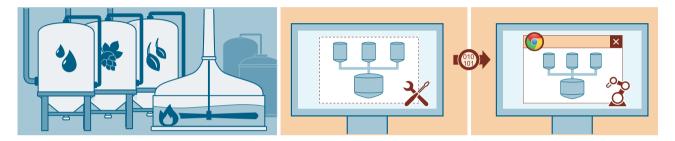
Pro	jec	t3 ▶	Security settir	ngs ► Us	ers and roles										
ſ															
8	Îs	ž.													
_		ers													
			User name		Password			Authenticatio	on	Run	ntime ti	meout		UM domain ID	
	i		Anonymous												
	Ì		Siemens		******		-	Password	-		30	Min	\$		
			<add new="" user=""></add>												
										_					
F	ss	igne	d user groups	Assig	ned roles	Assigned rig	hts								
-		-	ed rigt			5 5		2	_	_			_		
			its cater			List of rights					Rie	ahts der	rived	from the role	
			rights			2.01 01 1.9.10						9.112.000			
			Unified Comfort P	anel device	es V18 or newer										
			/I_1	-4							н	MI Admi	inist	rator	
			(			User managem	nent								
						Monitor									
						Operate									
						Remote access									
						Remote access	- M	onitor only							
						Openness Runt	time	- Read and w	rite a	cces	ss				
						OPC UA - Read a	and	write access							
						Import & export	t use	ers							
						Reset UMC pas	swo	rd							
						Control Panel a	cces	55							

# Compiling, simulating and loading

# 12.1 Function test

The environment for operator control and monitoring your plant is referred to as "Runtime". To generate a Runtime project from the configuration data of an HMI device, you need to compile the device.

Regardless of the configured HMI device, WinCC offers the possibility to test the configuration in a simulation. After the successful test, you transfer the Runtime project to the HMI device.



### Requirements for compiling, downloading and simulating the project

The following requirements must be met to successfully compile or download a project to the device:

• The setting for encrypted transfer is configured identically in Unified Runtime and the engineering system.

The following requirements must be met to simulate a compiled project:

- WinCC Unified Runtime is installed.
- The setting for encrypted transfer is configured identically in Unified Runtime and the engineering system.

# 12.2 Configuring encrypted transfer

You can select encrypted transfer to protect the data of the executable Runtime project during transfer. A password you assign is used as the key. The transfer type and password must be configured and match both on the HMI device and in engineering. The executable Runtime project is also transferred during simulation. In this case, the transmission mode and the password must be configured in WinCC Unified Runtime as well as in engineering and must match.

How you configure the encrypted transfer on a Unified Comfort Panel is explained when transferring the project to the panel.

12.2 Configuring encrypted transfer

### Enabling encrypted transfer in WinCC Unified

1. Double-click "Runtime settings" in the project tree. The work area opens.

Project tree			
Devices	Plant objects		
Ê			🔲 🖻
🔻 📄 Project3			~
📑 Add ne	ew device		
n Device	es & networks		
PLC_1	[CPU 1516-3 PN/DP]		
👻 🗖 НМІ_1	[MTP1000 Unified C	omfort]	≡
📑 De	vice configuration		
😵 On	line & diagnostics		
🍟 Rur	ntime settings	<b>N</b>	
🕨 🕨 📄 Sci	reens		
🕨 🕨 🖌	ll tags		
🔁 Cor	nnections		
🖂 HN	11 alarms		
🕨 📄 Par	rameter set types		
Log	gs		
5 Scl	heduled tasks		
🕨 🕨 🔝 Scr	ripts		

- 2. It is recommended to enable encrypted transfer for plant operation. Encrypted transfer is therefore enabled by default. The setting and password you select must match the settings in WinCC Unified Runtime.
  - Enter the password. Confirm your entries with <Return>.
  - Enter the password again for "Confirm password". Confirm your entries with <Return>.

12.2 Configuring encrypted transfer

General Alarms	General
Language & font Remote Access Storage system Tag settings	Identification Runtime ID: a80cdbb9-74f5-4cf0-997c-04c3542b7530
Good Manufacturing Pr User administration OPC UA Server Layers Reporting	Encrypted transfer Password: Confirm password: After you have typed in your password, please press Enter to confirm. Allow initial password transfer via unencrypted download
	Screen Start screen: Start screen Selected style: Extended style Screen resolution: 1280x800 (Default)

#### 12.2 Configuring encrypted transfer

### Enabling encrypted transfer in WinCC Unified Runtime

The setting for encrypted transfer and the password to be used for this were defined during the installation of WinCC Unified Runtime. If you do not know the setting or the password, do the following:

1. Start "WinCC Unified Configuration". WinCC Unified Configuration opens.

WinCC Unified Configuration	
SIEMENS	Totally Integrated Automation
WinCC Unified	Computer and website configuration
Website settings	Addressing the website and the identity provider
O User management	Use IP address instead of computer name
Archive settings	
Reporting	Create or select a certificate for the website
Secure download	O Install a certificate later
<ul> <li>Apply settings</li> </ul>	<ul> <li>Select an existing certificate</li> <li>EVC00078NB.ad001.siemens.net</li> <li>Create a new certificate</li> <li>evc00078nb.ad001.siemens.net_SelfSi</li> </ul>
English V	
	Cancel Next >

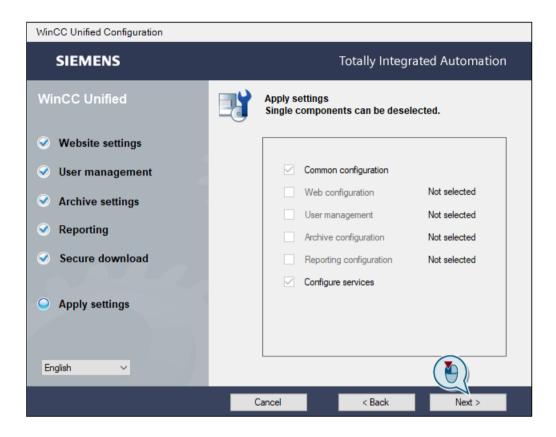
- 2. Click the "Next >" button on the "Website settings" page.
- 3. Click the "Next >" button on the "User management" page.
- 4. Click the "Next >" button on the "Archive settings" page.

- 5. Click the "Next >" button on the "Reporting" page.
  - On the "Secure download" page, set the usage and password for encrypted transfer.
  - On the "Secure download" page, press the "Activate secure download" button. Enter the password.
  - Enter the password for "Password (Repeat)".
  - Click the "Next >" button.

WinCC Unified Configuration	
SIEMENS	Totally Integrated Automation
WinCC Unified	Set a password to use secure download.
✓ Website settings	Keep the existing configuration
User management	Activate secure download
✓ Archive settings	Password Unsecure but valid
Reporting	Password (Repeat)
<ul> <li>Secure download</li> </ul>	
Apply settings	
English ~	
	Cancel < Back Next >

6. Click the "Apply" button on the "Apply settings" page.

### 12.3 Compiling a project



# 12.3 Compiling a project

During compiling, the configuration data is converted so that it can be processed by Runtime of the target device.

The following configuration data must be compiled before downloading:

- Hardware project data, e.g. configuration data of devices or networks and connections
- Software project data, e.g. program blocks or process screens

Hardware and software project data can be compiled separately or together.

If your project has not been compiled without errors, you receive corresponding messages in the Inspector window.

You can use a link to go directly to the object that triggered the message. After you have corrected the error, you have to compile the project again.

- Errors must be corrected.
- Warnings should be corrected. However, the project can be simulated with warnings or loaded into the device.

12.3 Compiling a project

General 追 Cross-referenc	es Compile				
😧 🛕 🚺 Show all messages	▼				
Compiling finished (errors: 1; warnir	ngs: 2)				
! Path	Description	Go to ?	Errors	Warnings	Time
😢 👻 НМІ_1		7	1	2	16:53:39
🚹 🔹 Hardware configuration		7	0	0	16:53:39
0	Hardware was not compiled. The configuration is up-t	?			16:53:39
	Software compilation started.	<b>A</b>			16:53:39
0	Number of tags : 5	7			16:53:41
	Number of used tags: 4	7			16:53:41
😢 🔻 HMI alarms		7	1	0	16:53:44
😢 🔻 Attention flow			1	0	16:53:44
8	Trigger tag: The data type of the tag is not permitted f	- Z < 🍋 ).			16:53:44
<u> </u>	The configured runtime language for the HMI device d				16:53:44
🗼 🔻 Screens		<b>N</b>	0	1	16:53:44
Screen_2		7	0	1	16:53:44
L ▼ IO field_1		7	0	1	16:53:44
<u> </u>	Using simple dynamics for property 'Process value' onl	×			16:53:44
8	Compiling finished (errors: 1; warnings: 2)				16:53:44

12.3 Compiling a project

# Compiling a device

- 1. Right-click "HMI\_1" in the project tree.
- 2. Select the "Compile > Hardware and software (only changes)" command in the shortcut menu.

Project tree	□ <	Project	3 ▶	Security setting	ps ► Users and roles
Devices Plant objects		1			
1	🔳 🚵	e, io	2		
		Use	rs		
▼ 🚺 Project3				User name	Password
📑 Add new device		1		Anonymous	
Devices & networks	1	î		Siemens	*******
PLC_1 [CPU 1516-3 PN/DP]				<add new="" user=""></add>	
<ul> <li>HML 1 [MTP1000 Unified Comfort]</li> <li>Device configuration</li> <li>Online &amp; diagnostics</li> <li>Runtime settings</li> <li>Screens</li> <li>HMI tags</li> <li>Connections</li> </ul>	Change device / version Open Open in new editor Cut Copy Paste	Ctrl+X Ctrl+C Ctrl+V			
HMI alarms	X Delete Rename	Del F2	-	d user groups	Assigned roles
Logs Scheduled tasks Scripts Collaboration data Cycles Text and graphic lists Ungrouped devices Security settings	Go to topology view Go to network view Compile Download to device Go online Go offline Online & diagnostics HMI Device maintenance	Ctrl+D	ssig	Name HMI Admin HMI Opera Hardware and soft Hardware (only chi Hardware (rebuild Software (only cha Software (rebuild a	ator ware (only changes) anges) all) nges)

3. The result of the compiling is displayed in the Inspector window:

				🔍 Pro	perties	🗓 Info 🔒
General 🚺	Cross-references Compile					
🕄 🛓 🕕 Show	v all messages					
Compiling finishe	d (errors: 0; warnings: 0)					
! Path	Description	Go to	?	Errors	Warnings	Time
1 ▼ HMI_1		- <b>X</b> -		0	0	2:23:57 PM
0	Software compilation started.	- <b>X</b>				2:23:57 PM
0	Number of tags: 5	- <b>X</b>				2:23:57 PM
0	Number of used tags: 4	- <b>X</b>				2:23:57 PM
0	Software compilation completed.	<b>N</b>				2:23:58 PM
<b>e</b>	Compiling finished (errors: 0; warnings: 0)					2:24:25 PM

In the simulation, you test the behavior of your project on the configuration PC. This allows you to quickly locate any logical configuration errors before productive operation. You can also see whether the design of your screens suits this device or needs to be adapted. For the simulation, the project is compiled and downloaded to the Runtime installed on the configuration PC.

Access to the web server of WinCC Unified is made with HTTPS. The first time you connect, you may receive a warning "Your connection is not private" because no valid certificate has been installed yet. You have the option to install a valid certificate on your device after the initial access. To do this, follow the steps in Chapter 6 of the "SIMATIC WinCC Unified SCADA Certificate Manager".

### Requirement

- The device is compiled without error.
- WinCC Unified Runtime is installed
- The setting for encrypted transfer is configured identically in Unified Runtime and the engineering system.

# SIMATIC WinCC Unified SCADA Certificate Manager

You can find information and explanations about installing root certificates in the browser in Chapter 6 of the manual "SIMATIC WinCC Unified SCADA Certificate Manager (<u>https://support.industry.siemens.com/cs/ww/en/view/109779117</u>)". You can find this at the Siemens Industry Online Support (SIOS) website under the Entry ID: 109779117

### Simulating a device

- 1. Right-click "HMI\_1" in the project tree.
- 2. Select the command "Compile > Start simulation" in the shortcut menu.

Project tree		
Devices Plant objects		
Project3		
Add new device	-	
Devices & networks		
Devices a networks Im PLC_1 [CPU 1516-3 PN/DP]		
<ul> <li>HML_1 [MTP1000 Unified Comfort]</li> </ul>		
Device configuration	Change device / version	
Q. Online & diagnostics	Open	-
Runtime settings	Open in new editor	
Screens	Cut Ctrl+X	
HMI tags	© Copy Ctrl+C	
Connections	Paste Ctrl+V	
HMI alarms		
Parameter set types	X Delete Del Rename F2	
Logs		_
5 Scheduled tasks	Go to topology view	
▶ 🔚 Scripts	Go to network view	
Collaboration data	Compile	
Cycles	Download to device	
Text and graphic lists	Ø Go online Ctrl+K	
Ungrouped devices	Go offline Ctrl+M	
💌 🚰 Security settings	Q Online & diagnostics Ctrl+D	
🙀 Settings	HMI Device maintenance	
👬 Users and roles	Receive alarms	
Cross-device functions	Change object color	
🕨 🙀 Common data	Start simulation Ctrl+Shift+X	
Documentation settings	Stop runtime/simulation	
🕨 🐻 Languages & resources	-	
Version control interface	Search in project Ctrl+F	
Image: Continue access	Cross-references F11	
🕨 🣴 Card Reader/USB memory	Print Ctrl+P	
	A Print preview	

The "Load preview" dialog opens. The simulation is prepared.

Load pro	eview				
<b>?</b>	ompil	ing before downlo	ading to device		
Status	1	Target	Message		Action
+[]	<b>%</b>	HMI_1	Ready for loading.		Load 'HMI_RT_1'
		Prepar	re download to device. Check before loading		
				Ca	ancel
<					
					Re
				Finish	Load C

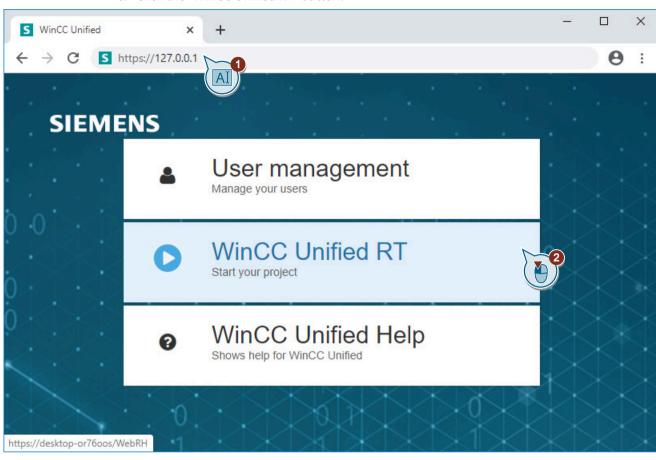
- 3. When the preparations are complete, configure the download for simulation.
  - Click the symbol in front of "Runtime values".
  - Disable "Keep current user administration data in runtime" during initial download for the new user settings to take effect.
  - Click the "Load" button.

Load pre	eview				×
30	heck l	before loading			
Status	1	Target	Message	Action	
+0	<u> </u>	▼ HMI_1	Ready for loading.	Load 'HMI_RT_1'	^
	0	Simulation mode	Load Runtime in simulation mode		
	0	Load Runtime	Full download to target system	Full download	
	0	Runtime start	Start Runtime after download to target system.	Start runtime	ш
	9	Runtime values	Keep current values in runtime or reset to start values from the er	n Keep current values	
	0		Keep values of tags, active alarms and user management data.		
	0		Keep current values of tags and pending alarms in the runtime	2	
	0	•	Keep current user administration data in runtime		
<	•	<ul> <li>Posstlass</li> </ul>	Poset all loss in the suntime	No rocot	~
				Refresh	
			Finish	Load Cancel	

- 4. When loading is complete, open your browser.
- 5. Enter "https://127.0.0.1" in the URL bar of your browser and confirm with <Return>.

🕥 New Tab	× +	
$\leftrightarrow$ $\rightarrow$ C $\bigcirc$	S https://127.0.0.1	

- 6. If you get the message "Your connection is not private", click the "Advanced" button. In the Advanced view, click the "Proceed to" button.
- 7. The Runtime view opens.



8. Click the "WinCC Unified RT" button.

- 9. Log on to Runtime:
  - Enter the user name "Siemens" and the password "Siemens1234\*".

S WinCC Unified	× S WinCC Unified	×	+	-	
$\leftrightarrow$ $\rightarrow$ C $\square$ des	sktop-or76oos/WebRH			<b>0-</b> Q	☆ \varTheta :
	User Login master brewer English US Use your cur Login	rent Windows session t			

- Click the "Sign in" button.

10. You see the start screen of your project and can now test your project.

12.5 Downloading the project

S WinCC Unified	×	S WinCC Unified RT	×	+	_			×
$\leftrightarrow$ $\rightarrow$ C $$	win10/WebRH					☆	θ	0
Start/Stop					Screen_1 Screen_2 Screen_3	2		

# 12.5 Downloading the project

With a download, the data of the Runtime project generated during compilation is loaded into the device. The first time download load all the project data. Subsequent downloads only loads changes. You can also load the project data to memory cards.

You have the following options for downloads to an HMI device:

• Software (only changes)

If there are differences between the online and offline versions, only the changes to the configuration are loaded into the target device. Values for tags and pending messages are always retained.

• Software (all)

The complete configuration including all screens, data types, scripts, etc. are loaded into the target device. During the configuration of the download, you determine if the values of tags and pending messages are to be retained.

#### 12.5 Downloading the project

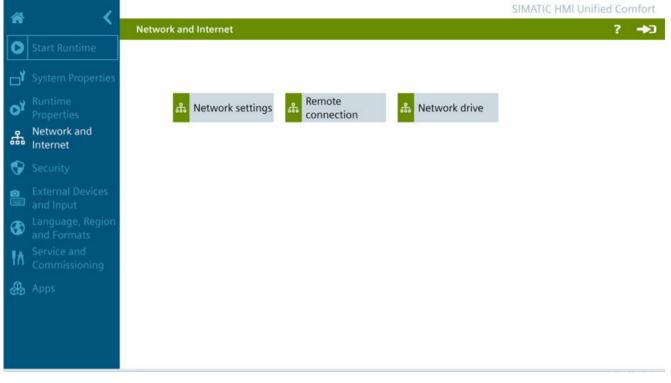
### Requirement

- The device is compiled without error.
- The Unified Comfort Panel is connected to the engineering system via the X2 interface with the highest bandwidth. You can find detailed information on commissioning a Unified Comfort Panel in the operating instructions. This can be found at the Siemens Industry Online Support (SIOS) website under Entry ID 109810754. (https://support.industry.siemens.com/cs/ww/en/view/109810754)
- The same IP addresses are configured in the engineering system and on the panel.
- The setting for encrypted transfer is configured identically in Unified Runtime and the engineering system.

# Settings on the panel

Make the following settings on the panel. If a desired setting is not visible, scroll in the input area.

- 1. Click "Network and Internet" in the control panel of the HMI device.
  - Click "Network settings".



- 2. Click the "PN-X2" button and scroll down to the "IP address" area.
  - Select "Specify an IP address".
  - Enter the "192.168.1.2" for the "IP address".
  - Enter the value "255.255.255.0" for "Subnet mask".
  - Click "Set IP address".

### Compiling, simulating and loading

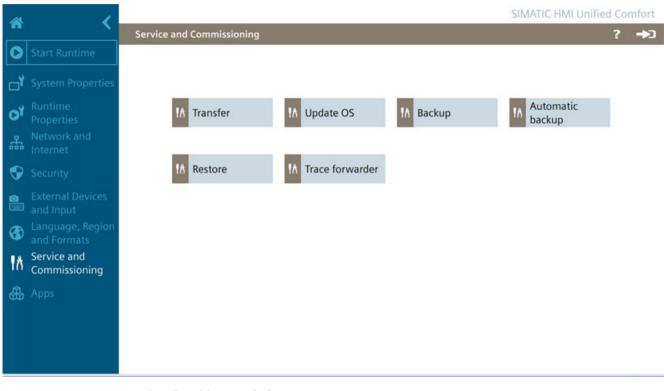
### 12.5 Downloading the project

*	1	SIMATIC HM	II Unified Comfort
_		Networks and Internet \ Network settings	? 🖚
0			
ď		PN-X1 PN-X2 General	
oï		Converted name: mtp1000	
ሔ	Networks and Internet	MAC address: ac-64-17-9a-5e-97	
•		IP address	
3		Obtain an IP address via DHCP	
ŧ٨			
m		<ul> <li>Specify an IP address</li> </ul>	
000		IP address: 192.168.1.2	
		Subnet mask: 255.255.255.0	
		Default gateway:	
		Set IP address	

- 3. Scroll down to the "Ethernet parameters Port" area.
  - Make sure that "Activate this port for use" is selected.

*	1	SIMATIC HMI Unified Comfort
		Networks and Internet \ Network settings ? 🔸
0	Start Runtime	
ď	System Properties	PN-X1 PN-X2 General
<b>റ</b> ്	Runtime Properties Networks and Internet	Ethernet parameters Port
•	Security Language, Region	Mode and speed: Automatic
3	and Formats	
ŧ٨	Service and Commissioning	Name servers
畿	Apps	Name server address may be automatically assigned if DHCP is enabled on this adapter.
		Primary DNS:
		Secondary DNS:

4. Click "Service and Commissioning > Transfer" in the control panel of the HMI device.



- Click "Transfer".

- 5. Select "Enable Transfer".
  - If the transfer is to be encrypted, enter the password that you have also configured in engineering and click "Set Password".

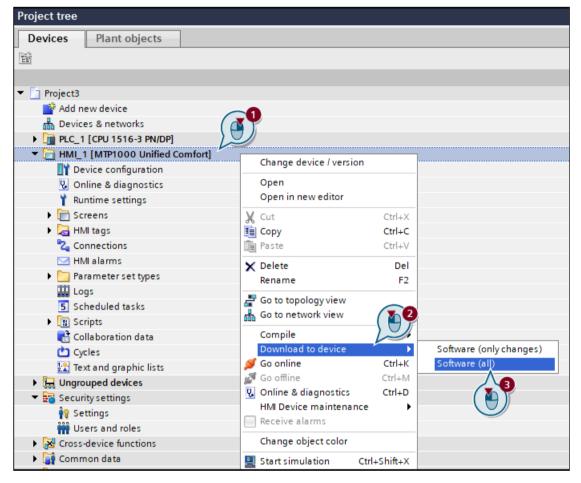
## Compiling, simulating and loading

## 12.5 Downloading the project

*	1	SIMATIC HMI Unified Comfort	t
_		Service and Commissioning \ Transfer ?	þ
0	Start Runtime	Transfer mode	
٦ř	System Properties	Enable transfer	
OY	Runtime Properties		
**	Networks and Internet	Encrypted project transfer	
•	Security	Password:	
€	Language, Region and Formats	Set Password	
łð	Service and Commissioning		
畿	Apps		

### Downloading the project

- 1. Right-click "HMI\_1" in the project tree.
- 2. Select the command "Download to device > Software (all)" in the shortcut menu.



#### 12.5 Downloading the project

- 3. If there is no connection to the HMI device yet, the "Extended download to device" dialog opens.
  - Select the type of PG/PC interface to "Ethernet".
  - Select "Configured IP address".
  - Click "Connect".
  - Click "Load".

tended download to (	levice					
	Configured access	nodes of "HMI_1"				
	Device	Device type	Slot	Interface type	Address	Subnet
	HMI_1	MTP1000 Unified		Ethernet	192.168.0.2	
	HMI_1.IE_CP_1	PROFINET Interface	5 X1	PN/IE	192.168.0.2	PN/IE_1
	HMI_1.IE_CP_2	PROFINET Interface	6 X2	PN/IE	192.168.1.2	
		Type of the PG/PC inte	rface:	Lethernet		<b>•</b>
		PG/PC inte		HMI Ethernet		
	-	onnection to interface/su		Direct at slot "		
				Direct at slot		
		1st gat	eway:			
Flash LED	<ul> <li>Configured IP /</li> <li>Use other IP IP address:</li> <li>Use device na Device name:</li> </ul>	192 . 168 . 1 . 2 me (DNS)	- <	<b>A</b>	_	Connect
nline status information:				(	Display only error	messages
						d <u>C</u> ancel

The "Load preview" dialog opens. The transfer is prepared.

12.5 Downloading the project

Load pro	eview					
		ing before downlo	ading to device			
Status	1	Target	Message			Action
+Ū	<b>%</b>	HMI_1	Ready for loading.			Load 'HMI_RT_1'
		Prepar	e download to device. Check before loading		Cance	e1
<				1111		
						Re
					Finish	Load

#### 12.5 Downloading the project

- 4. When the preparations are complete, configure the load to the device.
  - Click the symbol in front of "Runtime values".
  - Disable "Keep current user administration data in runtime" during initial download for the new user settings to take effect.
  - Click the "Load" button.

Load pr		before loading			>
Status		-	11	Action	
status +	<u></u>	Target ▼ HMI_1	Message Ready for loading.	Load 'HMI_RT_1'	^
	0	Simulation mode	Load Runtime in simulation mode		
	0	Load Runtime	Full download to target system	Full download	
	0	Runtime start	Start Runtime after download to target system.	Start runtime	
	0	Runtime values	Keep current values in runtime or reset to start values from the er Keep values of tags, active alarms and user management data.	Keep current values	1
	000		Keep current values of tags and pending alarms in the runtime	✓ 2	
	0		Keep current user administration data in runtime		~
<		<ul> <li>Deset leas</li> </ul>	Decet all lease in the suntime		_
				Refresh	
			Finish	Load Cancel	

The project is transferred to the HMI device If errors or warnings occur during the transfer, corresponding alarms are displayed under "Info > Load" in the Inspector window. After the successful transfer, the message "Loading complete (Error: 0; Warnings: 0)" is displayed.

- 5. Protect the device from unintentional transfer.
  - Open "Service and Commissioning > Transfer" in the control panel of the HMI device.
  - Disable "Enable Transfer".

# **Useful information**

# 13.1 Changing the start screen

The first screen you configure in a device is set as the start screen for Runtime. You have the following options to change the start screen:

- In the project tree
- In the Runtime settings

#### Changing the start screen in the project tree

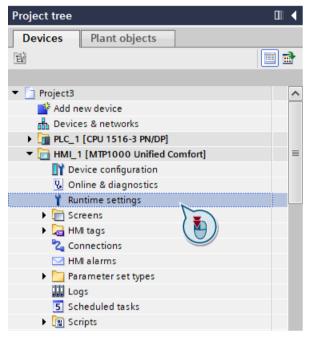
- 1. Right-click "Screen\_1" in the project tree. The shortcut menu opens.
  - Click "Define as start screen".

Project tree			
Devices Plant objects			
_			
▼ T Project3			
Add new device			
🚠 Devices & networks			
PLC_1 [CPU 1516-3 PN/DP]			
- 🔚 HMI_1 (MTP1000 Unified Com	fort]		
Device configuration			
Online & diagnostics			
📍 Runtime settings			
<ul> <li>End Screens</li> </ul>			
📑 Add new screen	201		
Screen_1	Open		
Screen_2	· · · · · · · · · · · · · · · · · · ·	CHL Y	
Screen_3	X Cut III Copy	Ctrl+X Ctrl+C	
Start screen	Paste	Ctrl+V	
HMI tags			
2 Connections	X Delete	Del	
MIII a la rms	Rename	F2	-2
Parameter set types	🗲 Define as start screen	$\leq$	
Logs 5 Scheduled tasks	🔣 Resize to display		
Scripts	💋 Go online	Ctrl+K	
Collaboration data	Go offline	Ctrl+M	
Cycles	Change object color		
Text and graphic lists			
Increased devices	Start simulation	Ctrl+Shift+X	

13.1 Changing the start screen

#### Changing the start screen in the Runtime settings

1. Double-click "Runtime settings" in the project tree.



The work area opens with the "General" page.

- 2. Click .... in the "Screen" plant complex.
  - In the selection list, select the screen you want to use as the new start screen.
  - Confirm your selection with the green check mark.

Project3 > HMI_1 [MTP1	000 Unified Comfort] > Runtime settings
General Alarms	General
Language & font	Identification
Remote Access	
Storage system	Runtime ID: a80cdbb9-74f5-4cf0-997c-04c3542b7530
Tag settings	
Good Manufacturing Pra	Encrypted transfer
User administration	Activate encrypted transfer
OPC UA Server	
Layers	Passwora:
Reporting	Confirm password: ******
	After you have typed in your password, please press Enter to confirm.
	Allow initial password transfer via
	unencrypted download
	Screen
	Start screen: Start screen
	- 🔁 HML_1 (MTP100
	▼ Screens
	Name Nam
	None
	Screen_1
	Screen_2
	Screen_3
	Start screen
	📑 Add new 🔍 🗙
	3
<	

# 13.2 Configuring in multiple languages

A distinction is drawn between two different language levels in WinCC:

• User interface language

The texts in the menus and dialogs of WinCC are displayed in the user interface language during configuration. The labels of the operating objects or the parameters of the system functions are also displayed in the interface language.

• Project languages A project contains language-dependent texts such as labels or messages. In a multilingual project, these texts must be compiled. Project languages are all languages that exist in a project.

The following languages are differentiated within the project languages:

• Reference language

During configuration, you select one of the project languages as the reference language. You create the project in this language. The reference language is the basis for compiling the project texts.

• Editing language

Once you have created your project in the reference language, you can compile the texts into the remaining project languages. Select one project language at a time as the editing language. Edit the texts for this language. You can change the editing language at any time.

• Runtime languages

The Runtime languages are the project languages that are transferred to the HMI device. Depending on the requirements of your project, you decide which of the project languages are to be transferred to the HMI device.

## Creating project languages

1. Double-click "Runtime settings" in the project tree.

Project tree	
Devices Plant objects	
1 de la companya de la compa	🔲 🖻
▼ 🔄 Project3	^
💣 Add new device	
💼 Devices & networks	
PLC_1 [CPU 1516-3 PN/DP]	
▼ 📄 HMI_1 [MTP1000 Unified Comfort]	≡
Device configuration	
🛂 Online & diagnostics	
🍸 Runtime settings	
🕨 🛅 Screens	
🕨 🔚 HMI tags 🖉 🌔	
🍫 Connections	
🖂 HMI alarms	
Parameter set types	
Logs	
5 Scheduled tasks	
Scripts	

The work area opens with the "General" page.

2. Click "Language & font".

Project3  HMI_1 [MTP1000 Unified Comfort]  Runtime settings								
General Alarms	Language	& font						
Language & font	Runtime	language a	ind font selectio	n				
Remote Access	± ∓							
Storage system	Or	der Enable	Language	Fallback Font	Enable for logging			
Tag settings		0	English (United					
Good Manufacturing Practice					-			
User administration								
OPC UA Server								
Layers								
Reporting -								

The table of Runtime languages is displayed.

- 3. Click "Languages & resources" in the "Tasks" area.
  - Click on 📑.

Tasks			
Options			
> Find and replace	2		
> Languages & resources			
	Tasks		
	Options	Į.	
			Tasks
	> Find and replace		ŝ
	✓ Languages & resources		
	Editing language:		Lib
	English (United States)	•	Libraries
	Reference language:	-	
	English (United States)	•	Add-Ins
			dd-l
			SU

The work area for project languages opens.

oject3 • Languages & resources • Projec	ct languages	_ # =
General		
Editing language: English (United Stat	Reference language: English (United State	s) 💌
Afrikaans (South Africa)	French (France)	Russian (Russia)
Albanian (Albania)	French (Luxembourg)	Sanskrit (India)
Armenian (Armenia)	French (Principality of Monaco)	Serbian (Cyrillic, Serbia an
Azeri (Cyrillic, Azerbaijan)	French (Switzerland)	Serbian (Latin, Serbia and
Azeri (Latin, Azerbaijan)	Galician (Galician)	Slovak (Slovakia)
Basque (Basque)	Georgian (Georgia)	Slovenian (Slovenia)
Belarusian (Belarus)	German (Austria)	Spanish (Argentina)
Bulgarian (Bulgaria)	German (Germany)	Spanish (Bolivia)
Catalan (Catalan)	German (Liechtenstein)	Spanish (Chile)
Chinese (Hong Kong S.A.R.)	German (Luxembourg)	Spanish (Colombia)
Chinese (Macao S.A.R.)	German (Switzerland)	Spanish (Costa Rica)
Chinese (People's Republic of China)	Greek (Greece)	Spanish (Dominican Repu
Chinese (Singapore)	Hindi (India)	Spanish (Ecuador)
Chinese (Taiwan)	Hungarian (Hungary)	Spanish (El Salvador)
Croatian (Croatia)	Celandic (Iceland)	Spanish (Guatemala)
Czech (Czech Republic)	Indonesian (Indonesia)	Spanish (Honduras)
Danish (Denmark)	Italian (Italy)	Spanish (Mexico)
Dutch (Belgium)	Italian (Switzerland)	Spanish (Nicaragua)
Dutch (Netherlands)	Japanese (Japan)	Spanish (Panama)
English (Australia)	Kazakh (Kazakhstan)	Spanish (Paraguay)
English (Belize)	Kiswahili (Kenya)	Spanish (Peru)
English (Canada)	Konkani (India)	Spanish (Puerto Rico)
English (Caribbean)	Korean (Korea)	Spanish (Spain)
		=
English (Ireland)	Kyrgyz (Kyrgyzstan)	Spanish (Uruguay)
English (Jamaica)	Latvian (Latvia)	Spanish (Venezuela)
English (New Zealand)	Lithuanian (Lithuania)	Swedish (Finland)
English (Republic of the Philippines)	Macedonian (Former Yugoslav Republic of Macedonia)	Swedish (Sweden)
English (South Africa)	Malay (Brunei Darussalam)	Tatar (Russia)
English (Trinidad and Tobago)	Malay (Malaysia)	Thai (Thailand)
English (United Kingdom)	Marathi (India)	Turkish (Turkey)
English (United States)	Mongolian (Cyrillic, Mongolia)	Ukrainian (Ukraine)
English (Zimbabwe)	Norwegian, Bokmål (Norway)	Uzbek (Cyrillic, Uzbekista
Estonian (Estonia)	Norwegian, Nynorsk (Norway)	Uzbek (Latin, Uzbekistan)
Faroese (Faroe Islands)	Polish (Poland)	Vietnamese (Vietnam)
Finnish (Finland)	Portuguese (Bra)	
French (Belgium)	Portuguese (Por	
French (Canada)	🗌 Romanian (Roman	

4. Select all the languages you want to add as project languages, for example, Polish.

- 5. Click X. The work area for project languages closes. Select the languages to be loaded on the device.
  - Set the order of the language using the  $\pm$   $\mp$  buttons. Order 0 defines the language with which Runtime is started.

Project3 🕨 HMI_1 [MTP1000 U	nified C	omfort]	Runt	ime settings			_₽≣×
General							
Alarms	Langua	ige & fo	ont				
Language & font	Runt	ime lan	guage a	nd font selectio	n		
Remote Access	1 1 7	7					
Storage system Tag settings		Order	Enable	Language	Fallback Font	Enable for logging	
Good Manufacturing Practice		0		English (United			
User administration		1		Chinese (People			
OPC UA Server		2		German (Germ French (France)			
Layers	ŏ	4		Italian (Italy)			
Reporting	ŏ	5		Spanish (Spain)			
	0			Polish (Poland)	Siemens Sans		
			5				

### Setting Runtime languages

- 1. Select the languages to be loaded on the device.
- 2. Set the order of the language using the 1 to buttons. Order 0 defines the language with which Runtime is started.

Project3 → HMI_1 [MTP1000 U	nified Co	omfort]	Runt	time settings			_ # # X
General Alarms Language & font Remote Access Storage system Tag settings Good Manufacturing Practice User administration OPC UA Server Layers Reporting		ime lan	ent guage a Enable	nd font selectio Language English (United Chinese (People German (Germ French (France) Italian (Italy) Spanish (Spain)	Fallback Font Siemens Sans Siemens Sans Siemens Sans Siemens Sans Siemens Sans	Enable for logging	

#### Setting the editing language

- 1. In the "Tasks" area, click the 🔽 under "Languages & resources > Edit language".
  - Select the new editing language from the list.

Ta	Tasks 🖬 🕅				
O	Options				
>	Find and replace				
~	Languages & resources	$\sim$			
6	Editing language:				
	English (United States)	· · ·			
	Chinese (People's Republic of China)				
14	English (United States)				
	French (France) German (Germany)				
	Italian (Italy)	-			
	Polish (Poland)				
	Spanish (Spain)				

## Setting the reference language

- 1. In the "Tasks" area, click the 🔽 under "Languages & resources > Reference language".
  - Set the reference language.

Tasks		a 🖬 🕨 🕨			
0	Options				
>	Find and replace				
~	Languages & resources				
	Editing language:				
	English (United States)				
	Reference language:				
	English (United States)	•			
	Chinese (People's Republic of China) English (United States)				
	French (France) German (Germany)				
	Italian (Italy) Polish (Poland)				
	Spanish (Spain)				

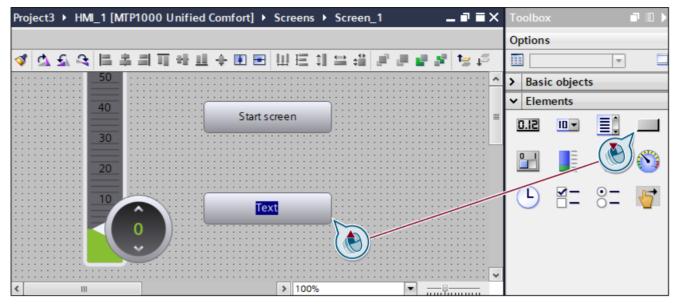
13.3 Configuring language switching

# 13.3 Configuring language switching

If you have created a project with several Runtime languages, you must give the operator in Runtime a way to switch between the Runtime languages.

#### Configuring language switching:

- 1. Double-click: on "Screen\_1". The screen editor opens.
  - From the "Elements" palette, drag-and-drop a slider onto the screen.
  - Write the text "Toggle language" in the "Text" highlighted in blue.



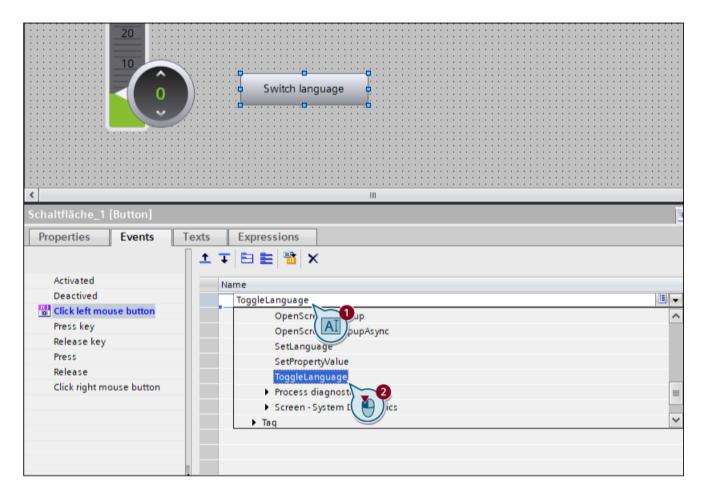
- 2. Click "Events" in the Inspector window.
  - Click "Click left mouse button".
  - Double-click "<Add function>".

# 13.3 Configuring language switching

Project3 > HMI_1 [MT	[P1000 Unified Comfort] → Screens → Sc	een_1
ଏ ଦ ଫ ଟ 🗏 🛢	1.11日本日本日田 田田 11日日	化 医胆酸 化
40		
30	Start screen	
20		
	0 Switch language	
p		
Button_2 [Button]		
Properties Ever	Texts Expressions ↓ ∓ ⊟ ≣ 🗟 ×	
Activated	Name	
Deactived Click left mouse butt	<add function=""></add>	
Press key		
Release key		
Press		
Release		
Click right mouse bu	utton	

3. Enter the text "ToggleLanguage".

13.3 Configuring language switching



The "ToggleLanguage" system function does not require any further parameters. It toggles through the Runtime languages according to the sequence defined in the Runtime settings.

#### Useful information

13.3 Configuring language switching

# Keyword

By transferring the project to the HMI device, you have successfully completed the steps in Getting Started and created an executable project.

If you want to further deepen your experience with WinCC Unified, you can use "WinCC Runtime Unified" Getting Started. The document uses the example of a medium-sized brewery to show you how to implement operator control and monitoring solutions for the brewing.

You will learn the following configuration steps in "WinCC Runtime Unified" Getting Started:

- Configuring the visualization of the brewing process
- Monitoring and logging the brewing process
- Configuring parameter sets
- Configuring user management
- Configuring screen navigation
- Testing functions in Runtime

You can find "WinCC Runtime Unified Getting Started (<u>https://</u> <u>support.industry.siemens.com/cs/ww/en/view/109783212</u>)" at the Siemens Industry Online Support (SIOS) website under the Entry ID: 109801175.