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Creating a Standard Recipe View and Recipe Screen

WinCC Runtime Advanced V14 and Comfort Panels



https://support.industry.siemens.com/cs/ww/de/view/109739999

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Table of Contents

Warı	anty and	Liability	2
1	Task		4
	1.1 1.2	Overview Requirements	
2	Solution		
	2.1 2.2 2.3 2.4 2.4.1 2.4.2	Overview Application example 1: "AdvancedRecipe" Application example 2: "RecipeScreen" Hardware and software components Validity Components used	5 6 7 7
3	Basics	· · · · · · · · · · · · · · · · · · ·	
-	3.1 3.2 3.2.1 3.2.2	Recipe structure Recipe view and recipe screen Recipe view Recipe screen	9 . 11 . 11
4	Applica	tion example 1: Standard recipe view	. 14
	4.1 4.2 4.2.1 4.2.2 4.3 4.3.1 4.3.2 4.3.3 4.4 4.4.1 4.4.2 4.4.3	Overview Configuration and settings Opening the example project Creating network Creating the program in STEP 7 Recipe data block [DB1] Compiling the project Loading the project into the CPU Configuring HMI visualization. HMI tag table Recipe editor Configuring a standard recipe view.	. 15 . 15 . 15 . 15 . 20 . 20 . 21 . 21 . 24
5	Applica	tion example 2: Recipe screen	. 33
	5.1 5.2 5.3 5.4 5.4.1 5.4.2 5.4.3 5.4.3	Overview Function description of the application example Program structure of the S7-1500 project Configuring HMI visualization HMI tag table Recipe editor Configuring a text list Configuring a recipe screen	. 33 . 34 . 35 . 35 . 36 . 36
6	Installa	tion and commissioning	. 40
7	Operati	ng the application	. 41
	7.1 7.2 7.2.1 7.2.2 7.2.3 7.2.4	Application example 1: Standard recipe view Application example 2: Recipe screen Selecting an RGB color Operating the mixing tank Operating the conveyor belt Counter reset	. 44 . 44 . 45 . 45
8	Links &	Literature	. 46
9	History		. 46

1.1 Overview

1 Task

1.1 Overview

Introduction

Recipes summarize related data like machine configurations or production data. These data can then, for example, be transferred from the operator panel to the controller in one step to switch the production to another product variant. Vice versa, it is also possible to transfer the configuration data you entered directly at the machine to the operator panel and save them in the recipe.

Automation task

The application shows a simplified filling process using recipe management and clarifies the following topics:

- How to use the standard recipe view
- Using self-made displays to configure recipes

1.2 Requirements

There are two possibilities to display and edit recipes and the involved recipe data records on the operator panel during runtime in WinCC Advanced:

- "Recipe view"
- Recipe screen

Topics not covered by this application

This application does not include a description of

- the engineering tools SIMATIC STEP 7 (TIA Portal) or SIMATIC WinCC (TIA Portal)
- the used operator panels.

Basic knowledge of these topics is assumed.

2.1 Overview

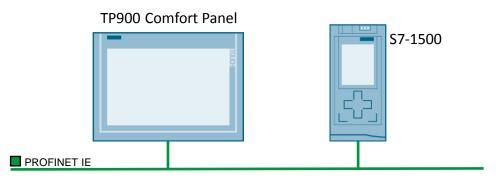
2 Solution

2.1 Overview

The following section describes the automation task using the application example.

The following diagram gives a schematic overview of the hardware configuration





Setup

The included configuration considers a plant with one production line which is operated with a SIMATIC HMI panel.

- SIMATIC HMI TP900 Comfort
- SIMATIC S7-1500

All nodes are connected to one another via PROFINET.

Description of the core functionality

The difference between a standard recipe view and a recipe screen is considered in detail using two application examples. The two examples show how the settings impact the properties of the used recipe tags at the operator panel and at the controller.

2.2 Application example 1: "AdvancedRecipe"

The application example "AdvancedRecipe" shows how to create and configure a standard recipe view in simple steps. The following aspects are considered:

- Creating a recipe data block
- Creating a new recipe, recipe elements and recipe data records
- Configuring a recipe view

2 Solution

2.3 Application example 2: "RecipeScreen"

Recipe Name: No.: [colors(RGB) 1 Data Record Name: No.: LemonGreen 2 Entry Name Value Red 50 Green 205 Blue 50 Color LemonGreen	Application "Adv	anced Recipe"
Data Record Name: No.: LemonGreen Z Entry Name Value Red 50 Green 205 Blue 50		
Entry Name Value Red 50 Green 205 Blue 50		
Red 50 Green 205 Blue 50	LemonGreen	▽ 2
Green 205 Blue 50	Entry Name	Value
Blue 50		50
Color Lemonsreen		

Topics not covered by this application

This application does not contain any descriptions on the following issues:

- Network connection
- Hardware configuration

Assumed knowledge

Basic knowledge of

- S7-1500
- STEP7 (TIA Portal)
- WinCC Advanced V13
- SIMATIC HMI panels

is assumed.

2.3 Application example 2: "RecipeScreen"

The application example "RecipeScreen" describes how to configure an RGB ink mixing system for mixing and filling a previously programmed ink recipe using a self-made recipe screen.

The ink recipe consists of the three RGB colors (red, green and blue).

The filling procedure is carried out as follows:

- Selecting the ink mixture with the recipe function on the HMI panel.
- Filling the selected ink mixture and transporting it with a conveyor belt.

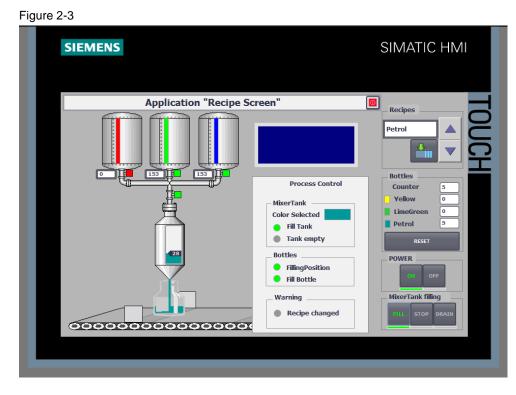
The core of this application example is how to use a recipe screen regarding following topics:

• Creating RGB recipe, recipe elements and recipe data records

2 Solution

2.4 Hardware and software components

- Creating HMI tag and connecting with the PLC tags
- Integrating the RGB recipe in the HMI screen of the ink mixing system



Topics not covered by this application

This application does not include a description of:

- Network connection and hardware configuration
- S7 programs

Assumed knowledge

Basic knowledge of

- S7-1500
- STEP7 (TIA Portal)
- WinCC Advanced V13
- SIMATIC HMI panels

is assumed.

2.4 Hardware and software components

2.4.1 Validity

This application is valid for

- STEP7 (TIA Portal) V14
- S7-1500 V1.7
- WinCC V14

2 Solution

2.4 Hardware and software components

2.4.2 Components used

This application was set up with the following components:

Hardware components

Table 2-1	
-----------	--

Component	Qty	Article number
SIMATIC HMI TP900 COMFORT	1	6AV2124-0JC01-0AX0
CPU 1515-2 PN	1	6ES7515-2AM00-0AB0

Software components

Table 2-2

Component	Qty	Article number
SIMATIC WinCC Advanced V14	1	6AV2102-0AA03-0AA5
SIMATIC STEP 7 V14 Professional	1	6ES7822-103

Example files and projects

The following list includes all files and projects that are used in this example.

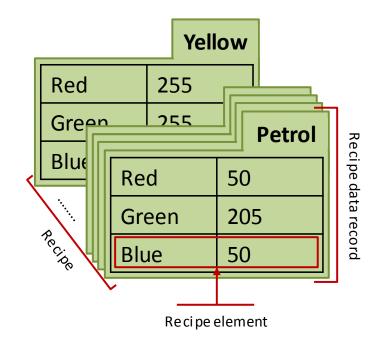
Component	Note
109739999_CODE_Application_AdvancedRecipe.zip	This zip file contains a preconfigured WinCC Advanced project required for Application example No. 1.
109739999_CODE_Application_RecipeScreen.zip	This zip file contains the STEP 7 and WinCC Advanced project required for Application example No. 2.
109739999_Umgang_mit_Rezepturen_v13_e.pdf	This document.

3.1 Recipe structure

3 Basics

3.1 Recipe structure

Figure 3-1



Recipes

Recipes summarize related production data, e.g. mixture ratios.

A recipe contains several recipe data records with a predefined data structure, e.g. for an ink mixing system (RGB colors).

Recipe data records

The structure of each register in figure 3-1 is identical and represents one recipe data record in which the mixture ratios, e.g. for producing a specific mixed color (yellow, orange, petrol, ...) are saved.

Recipe elements

Figure 3-1 shows that each register contains identical fields (red, green, blue). Each field represents a recipe element. This means that only the value of the individual recipe elements is different.

Example:

All mixed inks in the recipe "RGB colors" contain the following components or elements

- Red
- Green and
- Blue

and only the value of the individual element is different.

3 Basics

3.1 Recipe structure

E.g.:

Tab	le3-1

	"Color" recipe data records			
		Yellow	Lemon green	Petrol
ents	Red	255	50	0
Recipe elements	Green	255	205	153
Recip	Blue	0	50	153
Recipe "RGB colors"				

Note For further information, please refer to the "WinCC Advanced V14" system manual under <u>Definition and applications.</u>

3.2 Recipe view and recipe screen

3.2 Recipe view and recipe screen

Recipes on the operator panel can be displayed or edited with a recipe view or a recipe screen.

Note For further information, please refer to the "WinCC Advanced V14" system manual, chapter "<u>Display of recipes</u>"

3.2.1 Recipe view

The recipe view is a screen object that you configure in the "Screen" editor and use in runtime to display and edit recipe data records. Figure 3-2

Recipe Name:	No.:
7	✓
Data Record Name:	No.:
	✓
Entry Name Val	ue
Status bar	

The recipe view shows recipe data records in table format. The finished screen object allows you to quickly create a recipe management and save time. The style and design can be adapted to a certain degree.

Note For further information, please refer to the "WinCC Advanced V14" system manual, chapter <u>Description of the advanced recipe view</u>"

3.2.2 Recipe screen

A recipe screen is a custom recipe input screen within the HMI operator panel which is configured using I/O fields and other screen objects in the "Screens" editor. In this example, it is a process image of the ink mixing system. It enables in particular:

• Entering configuration data in the context of, e.g., a graphic representation of the machine.

3 Basics

3.2 Recipe view and recipe screen

_

- Distributing the I/O fields for a recipe over several recipe screens.
- Configuring custom operating functions for the recipe screens in the process images. (→ <u>Custom recipe screen</u>)

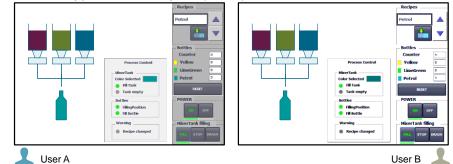
Custom recipe screen

Custom screens enable you to tailor your recipe management to the system. Several examples are shown below.

- Different appearance of the recipe management depending on the logged in user.
 - <complex-block>
 - Different object positions



- Different appearance of objects (colors)

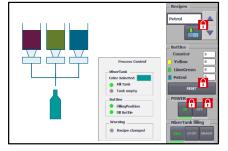


3 Basics

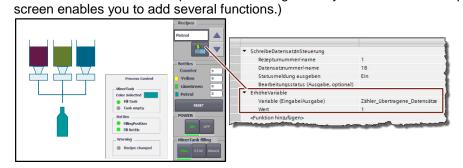
3.2 Recipe view and recipe screen

• Locking buttons with passwords

(Only complete objects can be locked in standard recipe views. A recipe screen enables you to lock individual elements in the recipe management.)



Configuring additional button functions.
 (E.g. setting a status, adding a script or adding a counter for the number of times a recipe function has been used.
 The buttons in standard recipe views are assigned only one function. A recipe



Note For further information, please refer to the "WinCC Advanced V14" system manual, chapter Basics on the recipe screen"

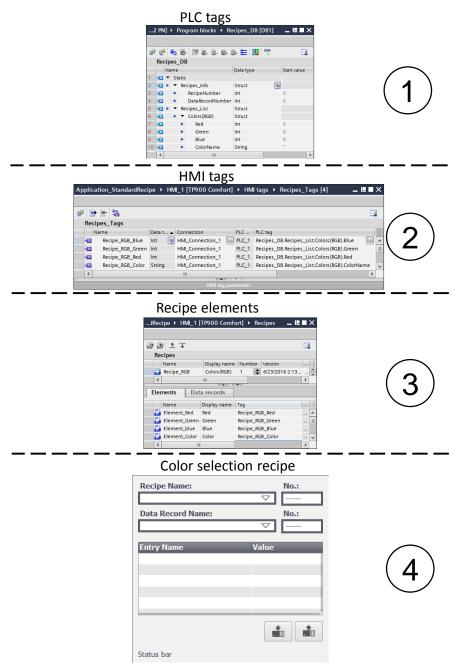
4.1 Overview

4 Application example 1: Standard recipe view

4.1 Overview

The following figure shows the configuration steps for a standard recipe view:

Figure 4-1



4.2 Configuration and settings

4.2 Configuration and settings

This chapter describes details on the configuration of a standard recipe view.

Note At this point, it is assumed that the necessary software has already been installed on your computer and that you are already familiar with handling the software.

4.2.1 Opening the example project

Table 4-4

No.	Description	
1.	Download the project "109739999_CODE_Application_AdvancedRecipe.zip" for this documentation and unzip it.	
2.	Open the contained project "Application_AdvancedRecipe.zap13" with STEP 7 (TIA Portal V13).	

Note For further information, please refer to the "WinCC Advanced V14" system manual, chapter <u>Retrieving compressed project</u>"

4.2.2 Creating network

Note It is assumed that a connection between the S7 controller and the operator panel has been established.

The "WinCC Advanced V14" system manual provides further basics on the following topics:

- Creating a new connection
- PROFINET parameters for the HMI connection
- <u>Creating an integrated HMI connection</u>

4.3 Creating the program in STEP 7

Before the recipe management can be created in WinCC Advanced, a recipe data block for the S7-1500 must be created in STEP 7.

4.3.1 Recipe data block [DB1]

In the navigation pane, select "PLC_1>Program blocks", double-click on "Add new block" and proceed as follows:

Creating a data block

Table 4-1

No.	Procedure	
1.	In the "Add new block" window, click on the "Data block" button. (1)	
2.	Enter a meaningful name in the "Name" field, e.g. "Recipes_DB". (2)	
3.	Then click "OK". (3)	

- 4 Application example 1: Standard recipe view
- 4.3 Creating the program in STEP 7

No.			Proc	edure	
Add new	block				>
Name:					
Recipes	s_DB				
		Type:	📔 Global DB	•	
	_ _	Language:	DB	v	
Orga	-OB nization	Number:	1	÷	
b	lock		() Manual	V	
			Automatic		
	FB	Description:	Ŭ		
Functi	on block	Data blocks (DBs)) save program data.		
-	FC				
Fur	nction				
	DB				
Data	a block	More			
> Addit	ional inrom				
					OK Cancel
Add n	new and open				OK Cancel

Configuring a data block

The recipe tags are declared under the following data structure in the data block window "Recipes_DB":

- Recipes-Info: contains the "RecipeNumber" and "DataRecordNumber" tags.
- Recipes-List: contains the recipes and the recipe element tags.

- 4 Application example 1: Standard recipe view
- 4.3 Creating the program in STEP 7

Data structure: Recipes-Info

Table 4-2	
No.	Procedure
1.	Under "Static", click on "Add new"
	Application_StandardRecipe → PLC_1 [CPU 1515-2 PN] → Program blocks → Recipes_DB [DB1] L ■ X
	# # • • • • • • • • • • • • • • • • • •
	Name Data type Start value Retain Accessible f Visible in Setpoint
	1
2.	Enter "Recipes_Info" as a name and then press "Enter".
	Application_StandardRecipe → PLC_1 [CPU 1515-2 PN] → Program blocks → Recipes_DB [DB1] _ H ■ ×
	# # • ₽ IR & & B B E 10 °°
	Recipes_DB Name Data type Start value Retain Accessible f Visible in Setpoint C
	1 🐨 🗸 Static
	2 Recipes_Info
3.	From the "Data type" drop-down list, select the data type "Struct" and then press "Enter".
	Application_StandardRecipe → PLC_1 [CPU 1515-2 PN] → Program blocks → Recipes_DB [DB1]
	# # ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩ ₩
	Name Data type Start value Retain Accessible f Visible in Setpoint Co
	1 -
	3 • <add new=""></add>
4.	Linder "Decines Info", dick on " <add "decinenumber"="" a<="" and="" anter="" as="" nous"="" th=""></add>
4.	Under "Recipes-Info", click on " <add new="">" and enter "RecipeNumber" as a name in the input field, then press "Enter".</add>
	Application_StandardRecipe → PLC_1 [CPU 1515-2 PN] → Program blocks → Recipes_DB [DB1]
	Recipes_DB
	Name Data type Start value Retain Accessible f Visible in Setpoint Com 1
	2 - Recipes_Info Struct 3 ■ RecipeNumber III
	4 • <add new=""></add>
5.	From the "Data type" drop-down list, select the data type "Int" and then press
	"Enter".
	Application_StandardRecipe + PLC_1 [CPU 1515-2 PN] + Program blocks + Recipes_DB [DB1]
	≠ ≠ • • • • • • • • • • • • • • • • • •
	Recipes_DB
	Name Data type Start value Retain Accessible f Visible in Setpoint C 1 • • • • • • •
	2 40 ■ ▼ Recipes_Info Struct
6.	Repeat steps 4 and 5 for the tag "DataRecordNumber" with "Int" data type.
0.	repeat steps + and s tor the tay Datarcecondition with the data type.

- 4 Application example 1: Standard recipe view
- 4.3 Creating the program in STEP 7

1	No.					Proc	edure				
A	pplic	cat	ion	_StandardRecipe 🔸	PLC_1 [CPU 151	5-2 PN] 🕨 Prog	ram blocks	• Recipes_D	B [DB1]	-	∎∎×
1				₽ IR 6. 6. 6. DB	• ■ 🖪 💝						
		Na	me		Data type	Start value	Retain	Accessible f	Visible in	Setpoint	C
1	-00	•	Sta	atic							^
2	-00		•	Recipes_Info	Struct						=
з	-00		•	RecipeNumber	Int	0					
4	-00		•	DataRecordNumber	Int	0					
-	<		•	مىتىغىغا العامى							>

Data structure: Recipes-List

Table 4-3	3	
No.	Procedure	
1.	Under "Static", click on "Add new"	
	Application_StandardRecipe > PLC_1 [CPU 1515-2 PN] > Program blocks > Recipes_DB [DB1]	×
	eripes_DB	4
	Name Data type Start value Retain Accessible f Visible in Setpoint Common Town 1 ◀□ ▼ Static ▼ Static Static ▼ Static Static	m
	2 🖅 🔹 🕨 Recipes_Info Struct	
	3 Add new>	
		>
2.	Enter "Recipes_List" as a name and then press "Enter".	
	Application_StandardRecipe → PLC_1 [CPU 1515-2 PN] → Program blocks → Recipes_DB [DB1]	×
	# # to b R & & b & E D ♥ E Recipes_DB	4
	Name Data type Start value Retain Accessible f Visible in Setpoint Comm	m
	1 •□ > Static 2 •□ ▶ Recipes_Info Struct	
	3 Recipes_List	
		>
3.	From the "Data type" drop-down list, select the data type "Struct" and then press "Enter".	S
	Application_StandardRecipe → PLC_1 [CPU 1515-2 PN] → Program blocks → Recipes_DB [DB1]	×
		4
	Name Data type Start value Retain Accessible f Visible in Setpoint Co	~
	2 Car = > Recipes_Info	=
	3	
	5 • <add new=""> (AI)</add>	*
		1

4.3 Creating the program in STEP 7

No.	Procedure
4.	Under "Recipes-List", click on " <add new="">" and enter "Colors(RGB)" as a</add>
	structure name in the input field, then press "Enter". Application_StandardRecipe → PLC_1 [CPU 1515-2 PN] → Program blocks → Recipes_DB [DB1]
	Recipes_DB Name Data type Start value Retain Accessible f Visible in Setpoint Co
	1 € Static 2 € A Recipes_Info Struct
	3
	S Add news All I I I I I I I I I I I I I I I I I I
5.	From the "Data type" drop-down list, select the data type "Struct" and then press "Enter".
	Application_StandardRecipe > PLC_1 [CPU 1515-2 PN] > Program blocks > Recipes_DB [DB1]
	2 U = a a a a a a a a a a a a a a a a a a
	Recipes_DB Name Data type Start value Retain Accessible f Visible in Setpoint Co
	1 🚭 🔻 Static
	3 🕢 ■ 🔻 Recipes_List Struct
	5 Add new>
	< <u> </u>
6.	Under "Colors(RGB)", click on " <add new="">" and enter "Red" as a tag name in the</add>
	input field, then press "Enter". Application_StandardRecipe → PLC_1 [CPU 1515-2 PN] → Program blocks → Recipes_DB [DB1] _ L ■ X
	Recipes_DB Name Data type Start value Retain Accessible f Visible in Setpoint Co
	1
	3 4 ■ ✓ Colors(RGB) Struct
7.	From the "Data type" drop-down list, select the data type "Int" and then press "Enter".
	Application_StandardRecipe → PLC_1 [CPU 1515-2 PN] → Program blocks → Recipes_DB [DB1]
	2 * * * * * * * * * * * * * * * * * * *
	Recipes_DB Name Data type Start value Retain Accessible f Visible in Setpoint Co
	1
	3
	5 • Red Int ise · · · · ·
8.	Repeat steps 6 and 7 for the following tag:
	• Green(Int),
	Blue(Int) and ColorName(String)
	ColorName(String)

- 4 Application example 1: Standard recipe view
- 4.3 Creating the program in STEP 7

١	lo.				Pro	cedure				
		gure ratio	shows how n:	the comp	leted recipe	data blo	ck table l	ooks aft	er	
Ap	plicat	ion_S	tandardRecipe 🕨	PLC_1 [CPU 1	515-2 PN] 🕨 Prog	ram blocks	Recipes_D	B [DB1]	-	·∎∎×
2		🎝 🛃	· [# 6. 6. 6. 6	6 🖿 🔣 🖱	2 1					
	Na	ame		Data type	Start value	Retain	Accessible f	Visible in	Setpoint	Co
1		Static								^
2	-	▼ Re	cipes_Info	Struct						
3	-	•	RecipeNumber	Int	0					=
4		•	DataRecordNumber	Int	0		Image: A start and a start and a start a st			
5		▼ Re	cipes_List	Struct						
6		• •	Colors (RGB)	Struct						
7			Red	Int	0		Image: A start and a start and a start a st			
8	-		Green	Int	0					
9	-		Blue	Int	0					
10	-		ColorName	String						*
	<				1111					>

4.3.2 Compiling the project

The following table shows how to compile the project:

Table 4-4

No.	Procedure
1.	Select the CPU "PLC_1[CPU1515_2 PN]" from the navigation pane.
2.	Open the context menu with the right mouse button and select the command "Hardware and software (only changes)".

Note For further information, please refer to the "WinCC Advanced V14" system manual, chapter <u>Basic information on compiling blocks</u>"

The project has been compiled and is ready for loading.

4.3.3 Loading the project into the CPU

The following table shows how to load the project into the CPU:

Та	ble	4-5

No.	Procedure
1.	Select the CPU "PLC_1[CPU1515_2 PN]" from the navigation pane.
2.	Open the context menu with the right mouse button and select the command "Download to device>Hardware and software (only changes)".
3.	In the "Extended download to device" window, select the interface and the subnet connection from the "PG/PC interface type" drop-down list.
4.	Select the CPU in the "Compatible devices in the subnet" section and then click on "Load".
5.	Confirm the two "Assign IP address" dialogs with "Yes" and "OK".
6.	In the "Load preview" dialog, select the alternative entry for all entries in the drop- down list set to "No action" and confirm open options.

4.4 Configuring HMI visualization

No.	Procedure			
7.	Click on "Load".			
8.	Confirm the "Start all" option and click "Finish".			
9.	The project has been loaded to the CPU.			

Note For further information, please refer to the "WinCC Advanced V14" system manual, chapter <u>Introduction on downloading blocks</u>"

4.4 Configuring HMI visualization

After having crated the PLC tag structure for the "Colors"RGB" recipe in chapter 4.3, the next step is to create the HMI tags and connect them to the PLC tags. This enables the recipe elements to be created in chapter 4.4.2 to access the tags in the controller.

The following table shows how the tags are assigned to each other: Table 4-6

PLC tag	HMI tag	Recipe element
Recipes_DB.Recipes_List.Colors(RGB).Red	Recipe_RGB_Red	Element_Red
Recipes_DB.Recipes_List.Colors(RGB).Green	Recipe_RGB_Green	Element_Green
Recipes_DB.Recipes_List.Colors(RGB).Blue	Recipe_RGB_Blue	Element_Blue
Recipes_DB.Recipes_List.Colors(RGB).Color	Recipe_RGB_Color	Element_Color
Recipes_DB.Recipes_Info.RecipeNumber	RecipeNumber	-
Recipes_DB.Recipes_Info.DataRecordNumber	DataRecordNumber	-

4.4.1 HMI tag table

HMI tag tables contain the definitions of the HMI tags for the devices. With the HMI tags connected with the controller, you can access the addresses of the controller.

The following table shows how to create HMI tags and how to connect them with the controller via the respective PLC tags:

Note For further information, please refer to the "WinCC Advanced V14" system manual, chapter <u>Creating external tags</u>"

4.4 Configuring HMI visualization

No.	Procedure					
1.	Under the operator panel "HMI_1", open the folder "HMI tags" folder and create a new tag table by double-clicking on "Add new tag table". The tag table opens up.					
2.	Rename the tag table to "Recipes_Tags".					
3.	Double-click the tag table to "Recipes_Tags" to open it.					
4.	In the "Name" column in the table, double-click on " <add new="">" to create a new tag.</add>					
5.	Enter a tag name in the "Name" column, e.g. "Recipe_RGB_Red".					
	Application_StandardRecipe + HMl_1 [TP900 Comfort] + HMl tags + Recipes_Tags [1]					
	Recipes_Tags Name Data type Connection PLC tag Recipe_RGB_Red Int					
6.	In the "Connection" column, click on the [] button and select the connection to					
	the desired controller. Application_StandardRecipe > HML_1 [TP900 Comfort] > HMI tags > Recipes_Tags [1] _ III > X					
	Image: Section and Sectio					

4.4 Configuring HMI visualization

No.			Procedur	e
7.				on and select the respective PLC colors(RGB)>Red"
	PLC tag	Addre	ess	
	<enter plc="" tag:<="" th=""><th></th><th></th><th></th></enter>			
			_	
		[CPU 1515-2		7
		gram blocks	N	lame Co
	🛨 🚽 🖬	Recipes_DB [DB1]		None
	▶ ◄	Recipes_Info		Red
	▼	Recipes_List		Green
		Colors (RGB)		Blue
	🔹 🕨 🙀 Tec	hnology objects		ColorName
	🔹 🕨 🌄 PLC	tags		Colonvarile
	🔹 🕨 📴 PLC	data types		
	🔹 🕨 🛅 Loc	al modules	-	
			<	
	Show a	П		
8.	Repeat the ste	ps 4-7 for the rem	aining HMI t	ags:
	-	RGB_Green		
	-	RGB_Blue		
	=	RGB_Color		
	Recipe			
	=	RecordNumber		
	Note:			
	Please note, th	at the PLC tags fo	or the HMI ta	gs (RecipeNumber and
	RecipeRecord	Number) can be fo	ound under	
	"Recipes_DB[D	0B1]>Recipes_Info	o>".	
Applicatio	on_AdvancedRecipe	HMI_1 [TP900 Comf	ort] 🕨 HMI tags	→ Recipes_tags [6] _ L ■ X
🥩 🖻 🖻	+ 🍡			=
	s_tags		p: -	D. C. L.
	ne 🔺 RecipeNumber	Data type Connection Int HMI_Connection	PLC name on_1 PLC_1	PLC tag Recipes_DB.Recipes_Info.RecipeNumber
	DataRecordNumber	Int HMI_Connection		Recipes DB Recipes Info DataRecordNumber
	Recipe_RGB_Red	Int HMI_Connection		Recipes_DB.Recipes_List.Colors(RGB).Red
	Recipe_RGB_Green	Int HMI_Connection		Recipes_DB.Recipes_List.Colors(RGB).Green
	Recipe_RGB_Blue Recipe_RGB_Color	Int HMI_Connection String HMI_Connection		Recipes_DB.Recipes_List.Colors(RGB).Blue Recipes_DB.Recipes_List.Colors(RGB).ColorName
<	neepe_nob_color			Recipes_DB.Recipes_List.Colors(RGB).ColorName
		HMI	tag parameter	

4.4 Configuring HMI visualization

4.4.2 Recipe editor

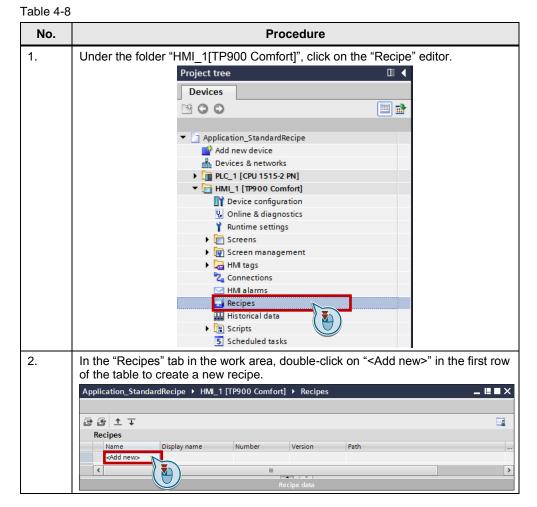
The following tables show how to

- create a new recipe
- assign recipe elements to the newly created recipe and
- set the respective values in a recipe data record

Note For further information, please refer to the "WinCC Advanced V14" system manual, chapter <u>Creating a new recipe</u>"

Creating a new recipe

The following table shows how to create a new recipe with the name "Recipe_RGB":



⁴ Application example 1: Standard recipe view

4.4 Configuring HMI visualization

No.	Procedure							
3.	For a better overview, assign a meaningful name in the "Name" column, e.g. "Recipe_RGB".							
	Application_StandardRecipe + HMI_1 [TP900 Comfort] + Recipes _ L X							
	Recipes Name Display name Number Version Path Recipe_RGB Recipe_1 1 6/23/2016 2:13 IFlash\Recipes Image: Root of the state o							
4.	Enter a meaningful name in the "Display name" field, which will be displayed in the recipe view, e.g. "Colors(RGB)".							
	Application_StandardRecipe → HMI_1 [TP900 Comfort] → Recipes							
	æ æ							
	Name Display name Number Version Path Recipe_RGB Colors(RGB) 1 © 6/23/2016 2:13 IFlashIRecipes <							

Note For information on the "Synchronization" configuration, refer to the WinCC Advanced V14 system manual under "<u>Configuration of recipes</u>"

For further information on the "Synchronization of recipes", refer to the application example "Automatic synchronization of recipes on several panels".

Creating recipe elements

The following table shows how to assign recipe elements (red, green, blue) to the previously created recipe "Recipe_RGB".

First, select the recipe in the "Recipe" tab and the proceed as follows:

4.4 Configuring HMI visualization

Table 4-9									
No.	Procedure								
1.	In the "Elements" tab in the work area, double-click on " <add new="">" to create a new recipe element.</add>								
	Application_StandardRecipe > HML_1 [TP900 Comfort] > Recipes _ LE X								
	Image: Control of Control								
	Elements Data records								
	Name Display name Tag Data type Data length Default value Minimu cAdd new>								
2.	For a unique identification of the recipe element, double-click on the "Name" column in the "Recipe element_1" field and enter a meaningful name for the recipe element, e.g. "Element_Red". Application_StandardRecipe > HMI_1 [TP900 Comfort] > Recipes								
	Image: Constraint of the second se								
	Recipe_RGB Colors(RGB) 1 ¢6/23/2016 2:13 VFlashRecipes Add new> V								
	Elements Data records Name Display name Tag Data type Data length Default value Minimu Recipe_element_1 Add new> AII III								
3.	Double-click on the "Display name" column in the "Recipe element_1" field and enter a meaningful name for the recipe element, e.g. "Red". Application_StandardRecipe > HML1 [TP900 Comfort] > Recipes								
	Image: Colors (RGB) 1 Image: Colors (RGB) 1 Image: Colors (RGB) 1 Image: Colors (RGB) Image: Colors (RGB) Image: Colors (RGB) 1 Image: Colors (RGB) Image: Colors (RGB)								
	Elements Data records								
	Name Display name Tag Data type Data length Default value Minimu Image: State								
	Note This display name will be displayed in the recipe view.								

4.4 Configuring HMI visualization

No.					Proce	dure				
4.	In the "Tag created in	chapter 4.	<mark>3.1</mark> , e.g				ect the	e HMI ta	ag previo	ously
		1 [CPU 1515-: 1 [TP900 Com MI tags Standard-Va Recipes_tag	nfort] riablent	6 6 6 6	Recipe Recipe Recipe Recipe Recipe	cordNumber RGB_Blue RGB_Color RGB_Green RGB_Red Number		Add ne	Data typ Int String Int Int w	
	Note This tag se record in r	erves for sa untime.	aving th	ie va	lue of the	recipe el	emen	t storec	l in a reci	ipe data
		ma· "Elama	ant Cro	on"	-	pe elemei ame: "Gri			.	
	"F • Nai "F • Nai "F	Recipe_RG me: "Eleme Recipe_RG me: "Eleme Recipe_RG	B_Gre ent_Blu B_Blue ent_Col B_Colo	en" e", d e" or", (or"	display n lisplay nar display na	ame: "Gre me: "Blue" ame: "Colo	een", ", HM or", H	l tag:	-	
	"f • Nai "f • Nai "f tion_Standard	Recipe_RG me: "Eleme Recipe_RG me: "Eleme Recipe_RG	B_Gre ent_Blu B_Blue ent_Col B_Colo	en" e", d e" or", (or"	display n lisplay nar display na	ame: "Gre me: "Blue" ame: "Colo	een", ", HM or", H	l tag:	-	_ 12 0 >
Applica	"f • Nai • Nai • Nai tion_Standard	Recipe_RG me: "Eleme Recipe_RG me: "Eleme Recipe_RG	B_Gre ent_Blu B_Blue ent_Col B_Colo	en" e", d e" or", (or"	display n lisplay nar display na	ame: "Gre me: "Blue" ame: "Colo	een", ", HM or", H	l tag:	-	_ III III >
Reci	"f • Nai • Nai • Nai tion_Standard	Recipe_RG me: "Eleme Recipe_RG me: "Eleme Recipe_RG	B_Gre ent_Blu B_Blue ent_Col B_Colo	en" e", d e" or", (or"	display n lisplay nar display na) Comfort]	ame: "Gre me: "Blue" ame: "Colo	een", ", HM or", H	l tag:	-	
Recip	"f • Nai "f • Na ftion_Standard tion_Standard pes lame lecipe_RGB	Recipe_RG me: "Eleme Recipe_RG me: "Eleme Recipe_RG Recipe > F	B_Gre ent_Blu B_Blue ent_Col B_Colo	en" e", d e" or", o or"	display n lisplay nar display na) Comfort]	ame: "Gre me: "Blue ame: "Cole Recipes	een", ", HM or", H	I tag: MI tag:		
Recip	"f • Nai "f • Na fition_Standard tion_Standard pes lame	Recipe_RG me: "Eleme Recipe_RG me: "Eleme Recipe_RG Recipe > H	B_Gre ent_Blu B_Blue ent_Col B_Colo	en" e", d e" or", o or" P900	display n lisplay nar display na) Comfort]	ame: "Gre me: "Blue ame: "Cole Recipes	een", ", HM or", H	I tag: MI tag:		
Recip	"" • Naı "" • Nai "" tion_Standard 1 ∓ pes lame lecipe_RGB Add new>	Recipe_RG me: "Eleme Recipe_RG Recipe_RG Recipe > H	B_Gre ent_Blu B_Blue ent_Col B_Colo MI_1 [T	en" e", d e" or", o or" P900	display n lisplay nar display na) Comfort]	ame: "Gre me: "Blue ame: "Cole Recipes	een", ", HM or", H	I tag: MI tag:		
Recip Recip N Recip N R R C C	<pre>"" Nai "" Nai "" tion_Standard tion_Standard tion_RGB lame lame lame lame lame lame lame lame</pre>	Recipe_RG me: "Eleme Recipe_RG Recipe_RG Recipe > H Display name Colors (RGB)	B_Gre ent_Blu B_Blue ent_Col B_Colo MI_1 [T	en" e", d e" or", o or" P900	display n lisplay nar display na 0 Comfort] ber	ame: "Gre me: "Blue ame: "Cole Recipes	een", ", HM or", H	l tag: MI tag: Path IFlashIRec	tipes	
Recip Recip N R R C C Eleme	<pre>"" Nai "" Nai "" tion_Standard tion_Standard tion_RGB Add new> ents Data lame</pre>	Recipe_RG me: "Eleme Recipe_RG Recipe_RG Recipe_RG Recipe > H Display name Colors (RGB)	B_Gre ent_Blu B_Blue ent_Col B_Colo MI_1 [T	en" e", d e" or", o or" P900	display n lisplay nar display nar display na Comfort]	ame: "Gre me: "Blue ame: "Colo Recipes Version 6/23/2016 2	een", ", HM or", H	I tag: MI tag:	cipes Data	length
Recip Recip Recip Recip R C C C Eleme N Eleme	""f • Nai "f • Nai "f tion_Standard tion_Standard "f • Nai "f • Nai Nai "f • Nai "f • Nai 'f • Nai 'f • Nai 'f · Nai 'f · Nai 'f · Nai 'f · Nai 'f · Nai ' ' · Nai ' ' · ' ' · · Nai ' ' · ' · · · · · · · · · · · · · · ·	Recipe_RG me: "Eleme Recipe_RG Recipe_RG Recipe_RG Recipe > H Display name Colors (RGB)	B_Gre ent_Blu B_Blue ent_Col B_Colo MI_1 [T	en" e", d e" or", o or" P900	display n lisplay nar display nar display nar o Comfort] ber tag Recipe_RGB.	ame: "Gre me: "Blue ame: "Colo ▶ Recipes Version 6/23/2016 2	een", 7, HM or", H 2:13 1 2:13 1 Data Int	l tag: MI tag: Path IFlashIRec	cipes Data 2	length
Reci N Reci N Eleme	<pre>"" "" " " " " " " " " " " " " " " " "</pre>	Recipe_RG me: "Eleme Recipe_RG Recipe_RG Recipe_RG Recipe > H Display name Colors (RGB) records Display n Red Green	B_Gre ent_Blu B_Blue ent_Col B_Colo MI_1 [T	en" e", d e" or", o or" P900	display na lisplay nar display na 0 Comfort] ber tag Recipe_RGB, Recipe_RGB,	ame: "Green me: "Blue ame: "Colo • Recipes Version 6/23/2016 2 _Red _Green	een", ", HM or", H 2:13 Data Int Int	l tag: MI tag: Path IFlashIRec	cipes Data 2 2	length
Recij N Recij N Eleme E E E E E E E E E E E E E E E E E E	""f • Nai "f • Nai "f tion_Standard tion_Standard "f • Nai "f • Nai Nai "f • Nai "f • Nai 'f • Nai 'f • Nai 'f · Nai 'f · Nai 'f · Nai 'f · Nai 'f · Nai ' ' · Nai ' ' · ' ' · · Nai ' ' · ' · · · · · · · · · · · · · · ·	Recipe_RG me: "Eleme Recipe_RG Recipe_RG Recipe_RG Recipe > H Display name Colors (RGB)	B_Gre ent_Blu B_Blue ent_Col B_Colo MI_1 [T	en" e", d e" or", o or" P900	display n lisplay nar display nar display nar o Comfort] ber tag Recipe_RGB.	ame: "Green me: "Blue ame: "Colo > Recipes Version 6/23/2016 2 _Red _Green _Blue	een", 7, HM or", H 2:13 1 2:13 1 Data Int	l tag: MI tag: Path IFlashIRec	cipes Data 2	length

Creating recipe data records

After having created the recipe elements, they are displayed in the "Data records" tab. The values of the recipe elements are determined for each recipe data record.

- 4 Application example 1: Standard recipe view
- 4.4 Configuring HMI visualization

Figure 4-2 _ II II X 🔁 🚰 🛨 ∓ Recipes Type .. Name Display name Number Version Path Colors (RGB) ♦ 6/23/2016 2:13... \Flash\Recipes 🔁 Recipe_RGB 1 <Add new> • < > 1111 Elements Data records Name Display name Element_Red Element_Green Element_blue Element_Color Number <Add new> <

The following table shows how to create the recipe data records (yellow, lemon green, petrol) and how to set the values for the recipe elements:

No.	Procedure								
6.	In the "Recipes of the table to	create a ne	ew recipe	data reco		dd new>" ir			
	Application_StandardR	ecipe ► HMI_T	[TP900 Comfort]	 Recipes 			_ !!		
	Recipes								
		Display name Colors (RGB)	Number	Version 6/23/2016 2:13	Path . \Flash\Recipes		Type Limited		
	<add new=""></add>								
	Elements Data r	ecords							
	Add new>	Display name	Number	Element_Red	Element_Green	Element_blue	Element_Color		
7.	For a unique io	lentificatio	n of the re	cipe elem	ent, double-c	lick on the	"Name"		
<u>,</u> .	For a unique ic column in the ' recipe element Application_StandardR	"Recipe da t, e.g. "Dat	ata record_ aRecord_`	1" field an Yellow".	,				
	column in the ' recipe element	"Recipe da t, e.g. "Dat	ata record_ aRecord_`	1" field an Yellow".	,		ame for the		
<u>,</u>	Column in the ' recipe element Application_StandardR	"Recipe da t, e.g. "Dat	ata record_ aRecord_`	1" field an Yellow".	nd enter a me		ame for the		
	Column in the ' recipe element Application_StandardR Recipes Name p Recipe_RGB C	'Recipe da t, e.g. "Dat tecipe → HMI_1	ata record_ aRecord_` [TP900 Comfort] Number	1' field an Yellow''. • Recipes	nd enter a me		ame for the		
·	Column in the ' recipe element Application_StandardR Recipes Name D Recipe_RGB C <dd new=""> <</dd>	'Recipe da t, e.g. "Dat tecipe → HMI_1	ata record_ aRecord_` [TP900 Comfort] Number	1" field ar Yellow". • Recipes	nd enter a me		ame for the		
	Column in the ' recipe element Application_StandardR Recipes Name D Recipe_RGB C <dd new=""> <</dd>	*Recipe da t, e.g. "Dat t, e.g. "Dat tecipe > HM_1 >isplay name Colors (RGB) records	Ata record_ aRecord_ [TP900 Comfort] 1 ¢	1" field ar Yellow". • Recipes	nd enter a me		ame for the		

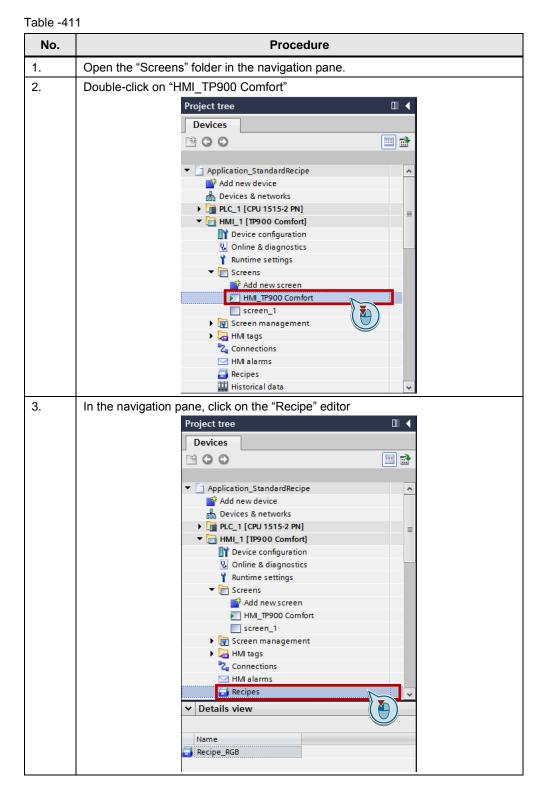
4.4 Configuring HMI visualization

No.				Proced	ure		
8.					in the "Recip		I_1" field
	Application_Standa	rdRecipe → HMI_	_1 [TP900 Con	nfort] → Recipes			_ !! ■ ×
	Image: Constraint of the section	Display name Colors (RGB) ta records	Number 1	Version 6/23/2016 2:13	Path 3 VFlashIRecipes		Type Limited
	Name DataRecord_Ye <add new=""></add>	Display nam		iber Element_Red	Element_Green 0	Element_blue O	Element_Color
	Note This display	name will I	be displa	yed in the r	ecipe view un	der "Data rec	cord name".
9.		ed, Elemer	nt_Green	, Element_E	llow) for each Blue, Element	•	ent _ ∎∎×
	Recipes Name Recipe_RGB <dd new=""> <</dd>	Display name Colors (RGB)	Number 1	Version	Path 3 IFlashIRecipes]	Type Limited V
	Name DataRecord_Ye	Display nam Ilow Yellow	e Num 1	iber Element_Red	Element_Green 255	Element_blue	Element_Color Yellow
10.	• Name 50,	e: DataRec LemonGre	ord_Len een)	nonGreen, d	pe data recore lisplay name: name: Petrol,	LemonGreer	
Application	n_StandardRecipe >					(-,,,	_ II ■ ×
₽ 🛃 ± Recipes	Ŧ						
Name				ersion Path 23/2016 2:13 \Flas			Type Limited
<	1						>
Elements					-	el	
Name		splay name llow	Number 1	Element_Red 255	Element_Green 255	Element_blue 0	Element_Color Yellow
📑 Data F	Record_LemonGreen Le	monGreen	2	50	205	50	LemonGreen
☐ DataF <add< p=""></add<>	-	trol	3	0	153	153	Petrol
۲.							>

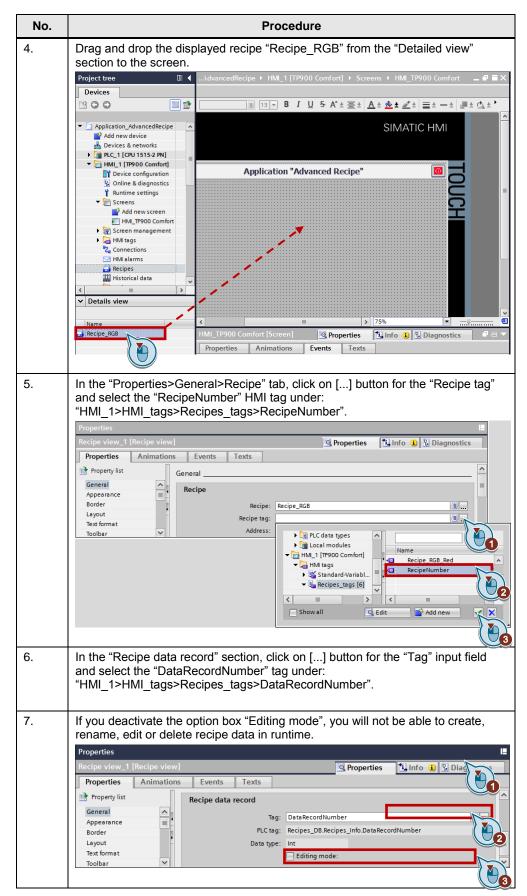
4.4.3 Configuring a standard recipe view

The standard recipe view is a preconfigured display and operating object used for managing recipe data records.

4.4 Configuring HMI visualization



4.4 Configuring HMI visualization



4.4 Configuring HMI visualization

No.	Procedure
8.	Click the "Save" button to accept the changes.

Note For further information on configuration, please refer to the "WinCC Advanced V14" system manual, chapter "<u>Configuration options of the advanced recipe view</u> (V13 or higher)"

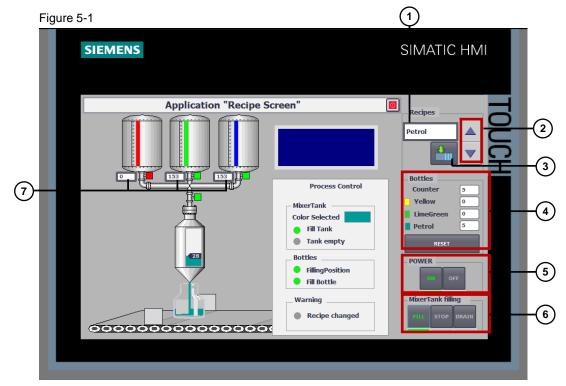
5.1 Overview

5 Application example 2: Recipe screen

5.1 Overview

Instead of the standard recipe view, this "RecipeScreen" application example uses a custom recipe screen to operate the system.

5.2 Function description of the application example



The following functions have been configured:

Table 5-1

No.	Description
1.	A "RecipeList" text list has been configured containing the desired mixed color names "Yellow, LimeGreen and Petrol".
2.	You can use the buttons to scroll up and down the text list. When pressing the "scroll buttons", a script is called up assigning the relevant data record number to the "RecipeList" text list.
3.	When pressing the button, the selected data record is transferred to the PLC.
4.	The number of produced bottles in total and the individual numbers for each color are displayed.
5.	The entire system can be switched on and off using the buttons
6.	The mixing tank can be controlled (fill, stop, discharge) with the respective buttons.
7.	All recipe tags from the configured recipe are not configured using a "table", but directly in the system screen.
	A graphical representation with the system screen provides an overview of the system.

5.3 Program structure of the S7-1500 project

5.3 Program structure of the S7-1500 project

The following table lists and explains the key S7 blocks.

Table 5-2	Evaluation
Block	Explanation
OB1	Organization block (called by the operating system) for cyclic program processing.
FB1	Simulation program:
	This function block is the processing block of the actual application and is called in OB1.
	It simulates the procedure for the filling and transport.
FB2	Simulation program:
	This function block checks if the mixing tank is empty when a new recipe data record is selected. This bit is processed further in the program.
FB1001	Serves for the cyclic detection of a positive signal edge.
FC1	Simulates the number of filled bottles in total and the number of individual colors filled.
FC2	Checks general conditions for the following:
	Machine status "ON/OFF"
	Valve for tank filling
	Bottle transport
	Valve for bottle filling
DB1	Declaration data block for pulse generation during tank filling; it is called in FB1001.
DB2	Declaration data block for pulse generation during bottle filling; it is called in FB1001.
DB3	Declaration data block for pulse generation during bottle transport; it is called in FB1001.
DB4	Instance DB for the FB1
DB5	Instance DB for the FB2
DB7	This data block serves as counter for the filled bottles and is called in FC1.
DB8	This data block serves as counter for the filled bottles with "Yellow" and is called in FC1.
DB9	This data block serves as counter for the filled bottles with "LemonGreen" and is called in FC1.
DB10	This data block serves as counter for the filled bottles with "Petrol" and is called in FC1.
Color_UDT	This data type is a user-created data type and consists of the following structure:
	ID: contains the data record number.
	Color: contains the color name.
	• Red: contains the proportion of red for the selected color.
	Green: contains the proportion of green for the selected color.
	Blue: contains the proportion of blue for the selected color.

5.4 Configuring HMI visualization

5.4 Configuring HMI visualization

This application example already contains the PLC tags, the HMI tags and the recipe elements.

5.4.1 HMI tag table

The following table shows the HMI tags required for this application:

Table 5-3

PLC tag	HMI tag	Recipe element
recipes_process_DB.color_recipe.red	recipe_red	red
recipes_process_DB.color_recipe.green	recipe_green	green
recipes_process_DB.color_recipe.blue	recipe_blue	blue
recipes_process_DB.color_recipe.color	recipe_color	color
recipes_process_DB.color_recipe.ID	recipe_ID_No	ID_No

The following figures shows how the tags are assigned to each other:

Recipes HMI tags

olica	tion_RecipeScree	en ▶ HMI_1	[TP900 Comfort]	HMI tags	recipe_tags [18]	_ 12
:						
	· 🗄 者					
reci	pe_tags					
N	lame	Data type	Connection	PLC name	PLC tag	Address 🔺
1	recipe_ID_No	Int	HMI_Connection_1	PLC_1	recipes_process_DB.color_recipe.ID	%DB5.DBW528
•	recipe_red	Int	HMI_Connection_1	PLC_1	recipes_process_DB.color_recipe.red	%DB5.DBW786
1	recipe_green	Int	HMI_Connection_1	PLC_1	recipes_process_DB.color_recipe.greer	%DB5.DBW788
•	recipe_blue	Int	HMI_Connection_1	PLC_1	recipes_process_DB.color_recipe.blue	%DB5.DBW790
-	recipe_color	String	HMI_Connection_1	PLC_1	recipes_process_DB.color_recipe.color	%DB5.DBX530
<						

Text list HMI tags

Figure 5-3					
Application_RecipeScreen + HMI_1	[TP900 Com	fort] 🕨 HMI tags 🕨	HMI_tag_ta	ble [20]	_ 12 =
🖸 🖻 🗄 🚵					-
HMI_tag_table					
Name 🔺	Data type	Connection	PLC name	PLC tag	Address
RecipeList_DataRecord	Int 🗉	HMI_Connection_1	PLC_1	recipes_process_DB.color_recipe.ID	%DB5.DBW528
<					>
			parameter		

5.4 Configuring HMI visualization

5.4.2 Recipe editor

The following figures show the recipes, recipe elements and recipe data records configured in the recipe editor:

Recipe

Figure 5-4								
Application_Recip	peScreen ► HMI_1 [TP900 Comfort]	 Recipes 				_ !!	∎×
日田十千								
Recipes								
Name	Display name	Number	Version	Path	Туре	Maximum number of d	Communication type	
📑 color	color	1	\$ 6/7/2016 3:53:	\Flash\	 Limited 	500	Tags	
<								>

Recipe elements

pplication_Recip	peScreen 🕨 HMI_1 [TP	900 Comfort] >	Recipes				12 _
							E
Recipes							
Name	Display name	Number	Version	Path	Туре	Maximum number of d.	Communication type
📑 color	color	1	6/7/2016 3:53:	\Flash\	Limited 💌	500	Tags 💌
<							;
Elements [Data records		•	-			
Name	Display name	Tag	Data type	Data ler	oth Default	alue Minimum val	ue Maximum value
📑 red	red	recipe red	Int	2	0	-32768	32767
📑 green	green	recipe_gree	n Int	2	0	-32768	32767
📑 blue	blue	recipe_blue	Int	2	0	-32768	32767
📑 color	color	recipe_color	String	254			

Recipe data records

pplication_Recipe	eScreen ▶ HMI_1	[TP900 Comfort]	Recipes				_ 12
			_				
🛃 🛨 ∓							
Recipes							
Name	Display name	Number	Version	Path	Туре	Maximum number of d	Communication type
📑 color	color	1	\$ 6/7/2016 3:53:	\Flash\	Limited 💌	500	Tags
<							
	ata records			1			
Name	Display name	Number	red	green	blue	color	ID_No
J Yellow	Yellow	1 🖨	1	255	0	Yellow	1
ᡖ Limegreen	Limegreen	2	50	205	50	Limegreen	2
🔒 Petrol	Petrol	3	0	153	153	Petrol	3
<add new=""></add>							

5.4.3 Configuring a text list

The following "RecipeList" text list was configured to integrate a recipe in a recipe screen with the same texts as used in the "Color" recipe under the "Data record" parameter.

- 5 Application example 2: Recipe screen
- 5.4 Configuring HMI visualization

Figure 5	5-7					
Applicat	tion_R	ecipeScreen 🔸	HMI_1 [TP900 Com	fort] 🕨 Text and gra	aphic lists	_ ⊫ ■ ×
					E Text lists	🚡 Graphic lists
₽.						
Text	lists					
Na	ame 🔺			Selection	Comment	
1 <u>2</u> Re	cipeLis	st		Value/Range 💌	J	~
Text	list en	tries		▲ ▼		
De	efault	Value 🔺	Text			
1-	\bigcirc	1	Yellow			^
1	\bigcirc	2	LimeGreen			
1-	\bigcirc	3	Petrol			*

5.4.4 Configuring a recipe screen

The following tables show how to integrate a recipe in a recipe screen:

Integrating text lists

The texts contained in the text list are displayed in the recipe screen using an I/O field. The figure below shows the configuration of the I/O field:

Figure 5-8							
Application_Re	cipeScreen	HMI_1 [TP900 Columnation]	omfort] 🕨 Screens 🕨 System_	Process		_ ∎∎×	
Tahoma	🗏 13 🔻 E	I <u>U</u> SA'±	<u>≣ ± A ± № ± ∠</u> ± ≡ ±	± " =± ⊈± ≛	±Ш±≌± 🤯	' t <u></u> ± 🗔	
			ion "Recipe Screen"	:		cipes	
<				> 1	00%	······································	
Properties						E	
Symbolic I/O fie	eld_1 [Symb	olic I/O field]		🔍 Prope	erties 🗓 Info	3 Diagnostics	
Properties	Animatio	ns Events	Texts				
Property list		General					
General Appearance		Process		Conte	ents		
Design		Tag:	RecipeList_DataRecord		Text list:	RecipeList 🔳 🖊	
Layout		PLC tag:	recipes_process_DB.color_recipe.ID	×	Field length:	20	
Text format		Address:	%D85.D8W528		Visible entries:	3	
Flashing Limits	•	Bit number:				- +	
Style/Designs		bienumber.	✓ ▼				
Miscellaneous		Mode					
Security							
		Mode:	Output	•			

Integrating scroll buttons

The buttons on the side can be used to "scroll" up and down the "RecipeList" text list. When pressing the "scroll buttons", a script is called up assigning the relevant data record number to the "RecipeList" text list.

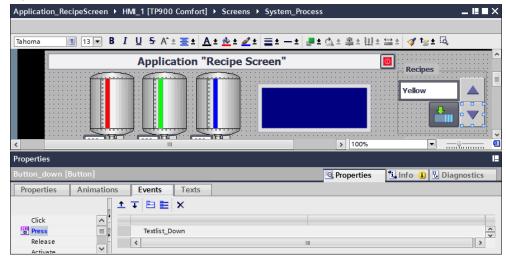
The following figures shows how the two scroll buttons have been configured:

- 5 Application example 2: Recipe screen
- 5.4 Configuring HMI visualization

Figure 5-9

Application_RecipeScreen > HMI_1 [TP900 Comfort] > Screens > Syste	m_Process _ L ■ X
Tahoma 🗐 13 ▼ B I U S A [*] ± Ξ± A± ± ± ≡±	━± ▮±⊈±≌±Щ±≌± ∢t⊌±⊑
Application "Recipe Screen'	• Recipes
	Vellow
Properties	12
Button_up [Button]	🖻 Properties 🚺 Info 👔 🗓 Diagnostics
Properties Animations Events Texts 1	
Click Click Textist_Up Release Artivate	m

Figure 5-10



Sending data to the PLC

The following figures shows how the "Send data record to PLC" button has been configured:

- 5 Application example 2: Recipe screen
 - 5.4 Configuring HMI visualization

Figure 5-11			
Application_RecipeScreen	HMI_1 [TP900 Comfort] Screens Sys	tem_Process	_ ∎∎×
Tahoma 🔳 11 💌 🖪	<i>I</i> <u>U</u> S A [*] ± <u>≣</u> ± <u>A</u> ± <u>A</u> ± <u>A</u> ± <u>Z</u> ± <u>≡</u> ±	: * 📕 # 스토 후 프 비 * 음 * 🛷 1달 # 🕻	a,
	Application "Recipe Screer	n" 🙍 Recipes -	^
<		▶ 100%	
Properties			L
Button_SPS [Button]		🖸 Properties 🚺 Info 🔒 🗓	Diagnostics
Properties Animations	s Events Texts		
	±∓ E E ×		
Click			
Press -	 SetDataRecordToPLC 		
Release	Recipe number/name	color	=
Activate	Data record number/name	RecipeList_DataRecord	
Deactivate	Output status message	On	
Change	Processing status (Output, optional)		~
	٢	III	>

6 Installation and commissioning

Note At this point, it is assumed that the necessary software has already been installed on your computer and that you are already familiar with handling the software.

Installing the application software

The following table shows how to transfer the S7 configuration to the S7 controller and how to transfer the WinCC Advanced configuration to your operator panel: Table 6-1

No.	Action
1.	Download the project "109739999_CODE_Application_RecipeScreen.zip" for this documentation and unzip it.
2.	Open the contained project "Application_RecipeScreen.zap13" with STEP 7 (TIA Portal V13).
3.	Select the CPU "PLC_1" in the project tree and click on the "Download to Device" button for download into the CPU.
	When downloading, the hardware configuration as well as the blocks (software) are transferred.
4.	The "Load preview" window shows whether all of the download conditions are met. Click the "Load" button.
5.	The "Load results" window shows you a summary of the load process. Activate the "Start all" check box and click on the "Finish" button.
6.	Select the operator panel "HMI_1" in the project tree and click on the "Download to Device" button for download into the CPU.
	When downloading, the hardware configuration as well as the blocks (software) are transferred.
7.	The "Load preview" window shows whether all of the download conditions are met. Click the "Load" button.
8.	The "Load results" window shows you a summary of the load process. Activate the "Start all" check box and click on the "Finish" button.

7 Operating the application

It is assumed that you have transferred the Sz configuration and the WinCC Advanced configuration to the relevant hardware as described in chapter "Installation and commissioning" and that a connection between the S7 controller and the operator panel has been established.

Note For testing the example configuration, you can, whenever necessary, also use the PLC simulation integrated in WinCC (TIA Portal).

7.1 Application example 1: Standard recipe view

The enclosed example configuration helps you get an impression of how a standard recipe view can be used.

Note It is assumed that you have carried out the configuration steps from chapter 4.

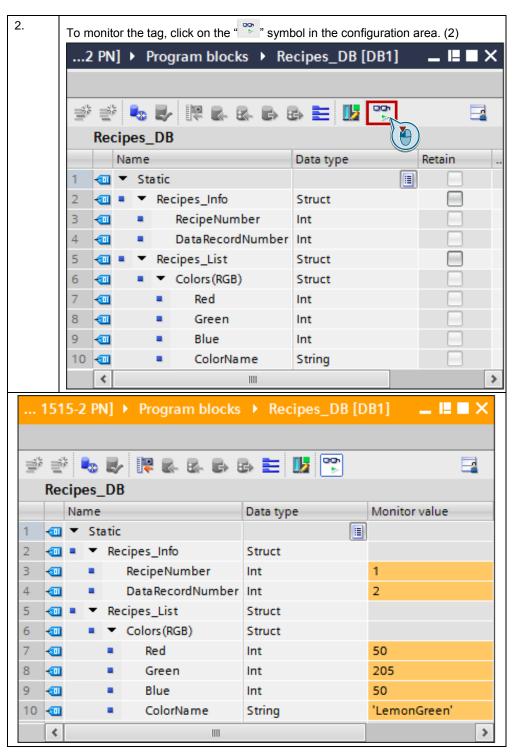
Monitoring a tag in the PLC

For an improved display of the data transfer to the PLC, proceed as follows: Table 7-1

No.	Description					
1.	In the navigation pane, select "PLC_1>Program blocks" and the "Recipes_DB [DB1]" data block.					
	Project tree					
	Devices					
	Application_StandardRecipe					
	Add new device					
	m Devices & networks					
	▼ []] PLC_1 [CPU 1515-2 PN]					
	Device configuration					
	Conline & diagnostics					
	▼ 🕞 Program blocks					
	Add new block					
	Main [OB1]					
	Recipes_DB [DB1]					
	Getain a source files					
	Comparison of the second					
	La PLC tags Lit PLC tags Lit PLC tags					
	Generation of the second					
	Gag watch and loce tables					
	Taces					
	P Los Iraces					

7 Operating the application

7.1 Application example 1: Standard recipe view



7 Operating the application

7.1 Application example 1: Standard recipe view

Operating standard recipe views

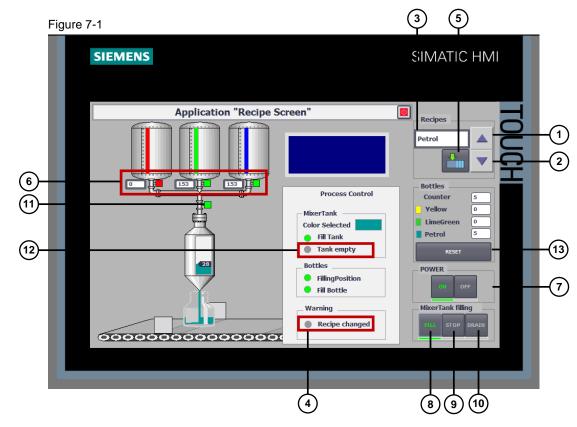
The following table shows how to operate the application in runtime from the operator panel or from the simulation integrated in WinCC (TIA Portal): Table 7-2

No.	Description
1.	Select the desired color from the drop-down list under "Data record name". (1)
2.	Click on the " button to transfer the data of the desired color to the PLC. (2)
	SIEMENS SIMATIC HMI
	Application "Advanced Recipe"
	Recipe Name: No.:
	Colors(RGB)
I	Data Record Name: IcmonGreen IcmonGreen IcmonGreen IcmonGreen IcmonGreen
	Data record read

7.2 Application example 2: Recipe screen

7.2 Application example 2: Recipe screen

The key functions have already been described in the previous chapters.



7.2.1 Selecting an RGB color

Table 7-3

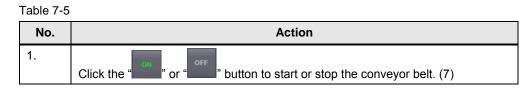
No.	Action
1.	Click the " (1) or " (2) button to select an RGB color.
2.	The selected RGB color is displayed in the output field (3).
3.	Click on the " (5) button to transfer the data of the desired color to the PLC.
4.	The new data record parameters of the selected RGB color are displayed in the output fields (6).

7.2 Application example 2: Recipe screen

7.2.2 Operating the mixing tank

Table 7-4	
No.	Action
1.	After having selected a new RGB color and having transferred the data to the PKC, click on the """ (8) button to fill the mixing tank with the selected color.
2.	If the mixing tank is not empty, the selected RGB color is only accepted, if the mixing tank has been discharged. This is done if first the " ^{STOP} "(9) button and the the " ^{DRAIN} " (10) button is clicked.

7.2.3 Operating the conveyor belt



7.2.4 Counter reset



8 Links & Literature

Table 8-1

	Торіс
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Reference to the entry https://support.industry.siemens.com/cs/ww/en/view/109739999
/3/	"WinCC Advanced V14" system manual https://support.industry.siemens.com/cs/ww/en/view/109091876/69349905035

9 History

Table 9-1

Version	Date	Modifications
V1.0	08/2016	First version