# **BRAUMAT / SISTAR Operator Manual**

BRAUMAT, SISTAR

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# 1 Introduction

# 1.1 Target Group

This documentation is aimed at persons involved in the areas of operator control.

# 1.2 Intended Audience

This documentation provides detailed instructions for operators who need to control and monitor processes using the software product BRAUMAT / SISTAR.

# 1.3 BRAUMAT / SISTAR Software Structure

The BRAUMAT / SISTAR software consists of the following modules:

- The configuration system:
  - Visualization System
  - Automation System
  - Recipe System
  - Route control
- The runtime system:
  - Visualization
  - Order Management
  - Messages
  - Curves
  - Step protocols

# 1.4 Abbreviations used

Throughout this document, the following abbreviations are frequently used:

Abbreviation	Complete name	Description				
ICM	Individual Control Module	Valves, pumps and motors				
BLR	Binary Logic Result	Configuration and online representation of connection logics				
OP-REQ	Operator Requests	Requests which need interaction and must be confirmed by the operator				
ROP	Recipe Operation	A block/step in the recipe on the recipe server				
EOP	Equipment Operation	An assigned function on the automation system representing the recipe operation				
RCS	Route Control System	Route control				
PCU	Process Control Unit	Responsible for the coupling between AS and OS or OS and OS				
IOS	Information- and Operation System	Server or Client Station				

Table 1-1

# 2

# **BRAUMAT / SISTAR Application Center**

The Application Center is used for the overview and selection of all selectable applications of the system. For the Plant Operations the tabs Production and Archives are used. The Application Center can be started from the desktop by clicking on the following button:



### Table 2-1

Application (Production)	Symbol	Function
Process diagrams	Process diagrams	Used as Runtime System to visualize, operate and control the entire production plant.
Sequence control	Sequence control	Used for the representation of the current state of the process cells. In addition, it is possible to select and to operate the individual units. With this, the user can intervene in the current process and influence the different processes.
Order management	Order management	Used to create, process, track and monitor orders and batches.
RCS online	RCS online	Used for planning, processing and the diagnosis of routes. It allows controlling and monitoring in an easy and transparent manner.
Recipe management	Recipe management	Used for the generation and administration of the recipes, e.g. changing parameter values.
Recipe online	Recipe online	Used to visualize the processing steps of the control recipes. Based on the recipe procedures, the recipe system generates the control recipes by substituting the process/order parameters with the current master recipe/order parameters.
Batch trends	Batch trends	Used for a graphic output of measured values. It enables the time display of archived or running curve values as diagrams on the screen. Measurement value curves can be loaded from different area servers via an area selection dialog.

### 2 BRAUMAT / SISTAR Application Center

Application (Production)	Symbol	Function					
Step protocols	Step protocols	Used to view and print Step log files.					
Changes and messages	Changes and messages	Used to display and print messages as well as any recorded process operations and configuration changes from the same time period.					
Maintenance	Maintenance	The application maintenance data is used for default, checking and acknowledging maintenance intervals, e.g. Maintenance data for ICMs Maintenance data for user aggregates					
Special Values	Special values	The application "Special values" is used to define and edit of up to 511 special values.					

# 2.1 Language Selection

In the delivery version of the system the languages, 'German', 'English', 'Spanish' and 'Chinese' are available. Upon request, other languages can also be created and supplied.

To change the language, navigate to the "Menu > Functions > Language".

A new dialog opens where the new language can be selected and applied with the "OK" button.

After a new language was selected the BRAUMAT / SISTAR system application need to be restarted.





# **3** Process Mode - User Interface

# 3.1 Introduction

This chapter gives you an overview over the basic handling of BRAUMAT / SISTAR and introduces you to the most important functionalities how to control and observe the running process.

# 3.2 Basic Tasks of the User Interface

In principle, the OS user interface provides the following tasks in process mode:

- · Continuous overview of the entire plant and the corresponding units
- Focusing the plant operator's attention to possible problems
- Quick change of pictures and explicit selection of the process pictures, e.g. in which errors have occurred.
- Fast operator control sequences using operator buttons at standardized positions.
- Actual status of the current Batches

# 3.3 Typical Layout of the User Interface

In general, the BRAUMAT / SISTAR user interface is configurable and could therefore vary in different projects. The Screenshot below is showing a typical user interface where all the necessary information's are available to control the process easily. The different sections of the example are described in the next chapters.



## Figure 3-1

# 3.4 Overview Area

The upper part of the screen is divided into 2 area panels:

- The top part is showing the "Message control faceplate" which informs the operator about all relevant Alarms and Messages.
- The bottom part is showing the "Smart unit faceplates". Each faceplate is representing one Unit.

Error messages, warnings, process messages and operation messages are displayed as icons and can be reset and acknowledged.

You can jump directly to process picture of the Unit by clicking on it.



Tir	me	•			T	y	Rec	ipe c	a	Or	der	Batc	n Uni	it	U	Un	it name	P	Мо	dul	Ins	Insta	nce	na	Descrip	tion			^
19	.03	.20	19 1	3:	S		Brev	vhous	e	000	D	000	003		004	BH	Mill	0	Seq	ue	0004	BH_M	ill		monitori	ng time	request recipe		$\sim$
	BH BH	BH_ BH_ H_M L_La	Star _Mill lasht uter	un un				1 1 1 1 1 1 1 1 1 1 1 1	• • • •	SE SE SE	SEQ EQU EQU EQU	PCU3 ENCE ENCE ENCE	_1 002 005 006			£ £ £	<ul> <li>S</li> <li>S</li> <li>S</li> <li>S</li> </ul>	EQUE EQUE EQUE EQUE	NCE NCE NCE NCE	010 011 012 013		1 2 5 1 2 5 2 5 1	•	9 SE 9 SE 9 SE 9 SE	QUENC QUENC QUENC QUENC	E_014 E_015 E_016 E_017			
*	4	<b>)</b>	Þ		1	+	-	<b>8</b> 9	đ.	7	د ۲ ۲		equen 104] BH 1171 BL	ce H_Mill	ohtun	~	Status Starting		+	R 🖪			⊗	0->1				00:	ne :00:00
⊗	4	9	•		' .	+	-	63	£	7	т (/ ні (	9 [l	07] BH	ivia: +_Lai	utertur	v v v	Idle	A	+	2			≫	0	0	F		00:	:00:00

# 3.5 Work Area

The so called "Work Area" is the center part of the process image and visualizes the actual process information for the related units, equipment's and control modules. Additionally, it gives the operator the possibility to interact with the process.





# 3.6 Button Area

The button area allows the operator to access several other Applications, e.g. the Archive System or Step protocol directly from the process picture.

Figure 3-4						
🔏 🕫 🖻 🖻 🗣	🚟 Sequence control	🤤 Recipe editor	i Batch scheduler	\Lambda Message archive	4	+

# 3.7 Appearance of the Cursor during Operation

The operator can interact with the process by moving the mouse cursor to an object, e.g. button, button or faceplate. If the object is operate-able the normal cursor turns into a "Hand" cursor. By left clicking on the object the configured actions will be carried out, e.g. open a Valve faceplate.





By right clicking on an object a further dialog named "Operations and Messages" appears which will guide you directly to application "Message Archive". See chapter 8.2 Message archive for more details.

Figure 3-6		
A start	Operations and messages	
Y —		

# 3.8 ToolTip Function

A Tooltip is a message which appears when a cursor is positioned over an object, e.g. a Block icon. In BRAUMAT / SISTAR context the Tooltip is showing the PCU number and the instance name.



The tooltip functionality can be enabled / disabled from the Process Diagrams "Menu bar > Options > Tooltips".



# 3.9 Common Functions

BRAUMAT / SISTAR consists of several applications. In this section, functions which are common to all of them are described. If needed, the common functions can be displayed or hide from the "Menu bar > Options > Toolbar".

### Exit the program

To exit the current program:

Click the corresponding icon (see image),

### Figure 3-9

😼 BRAUMAT									
Progra	m	File	Process di						
0	₩	0:0	<del></del> 0	<b>2</b>					

or

- Press "Alt" + "F4",
- or
- From the Menu, navigate to "Program" and select the entry "End"

### ICM (Valve, Motor) - acknowledge fault

To acknowledge all pending ICM alarms:

• Click the corresponding icon (see image),

### Figure 3-10

	braumat										
		Prog	ram	Fi	le	Proce	ess dia				
		Ì	₩		9	<del></del> 0	i 🚔				
	. r										
C	Л	_									
•	•	P	ress	s "I	F1	1",					

or

• Select the entry menu item "Acknowledge > Acknowledge ICM errors"

### Acknowledge horn

To reset the alarm device (lamp, horn):

• Click the corresponding icon (see image),

## Figure 3-11

3 BRAUMAT									
Progr	am	File	Ρ	roce	ess dia				
D	M	0:0	1	-0	<b>2</b>				

or

- Press "F12",
- or
- Select the menu item "Acknowledge > Acknowledge horn"

## Log Off

To Log Off from the BRAUMAT / SISTAR System:

• Click the corresponding icon (see image),

## Figure 3-12

😼 BRAUMAT								
Progr	am	File	Proce:	s dia				
D	₩	•	<b>-0</b>	<b>2</b>				

or

• Select the menu item "Functions > Reset Password"

The current user will be logged out, and logged files are not registered under this user anymore.

# 3.10 Symbolic Icons in the Process Picture

Next to the individual devices, one or more additional icons may be displayed in the process picture, indicating the device status.

Priority	lcon	Meaning	
1.	Z	Affected by Maintenance (ABM)	
2.	2	In maintenance	
3.	-	Manual operation active	
4.	Į۴	"Force release" active	
5.	!s	"Simulation feedback" active	
6.	ġ	Interlock is active, Device could not be switched on or operated	

Table 3	3-1
---------	-----

Example for a device status: "Manual operation active, 'Force release' active":

Figure 3-13



# 3.11 Working with Tags and Variables

Tags are names given to various project components, like valves, motors and controllers. A tag uniquely identifies the corresponding object.

## 3.11.1 Searching for Variables and Objects in Project Pictures

With BRAUMAT / SISTAR it is possible to search for objects used in the project by means of their tags. Searches can be performed in scope off the current picture (local tag search) or in scope off all pictures (global tag search).

## Searching within a picture

To start a local tag search, do one of the following:

Click the highlighted icon,

Figure 3-14



or

• Click the menu item "Process diagrams > Tag search > Within picture"

A dialog box opens which lists all tags in the current picture, sorted by their name. You can use the dropdown list "Filter" to limit the displayed tags to specific types.

Selecting one of entries in the main list will highlight the corresponding component in the process picture.

gure 3-15			
ocal tag search w	vithin the image	×	
Select			
Tag type filter:	ICM3 ~		
Instance name	Tag type		
MOTOR	ICM3		
PUMP	ICM3		
			$\sim$
Details			
Lontrol, PLU3, IL	,M3, MUTUR, 150		
		Close	

### **Global Tag search**

To start a global tag search:

• Click the highlighted icon,

## Figure 3-16



or

• Click the menu item "Process diagrams > Tag search > Global"

A dialogue with two tabs "Seek" and "Browser" will open.

Select the "Seek" tab to search for a specific string across the project.

- 1. By entering the tag name in the "Seek" field and clicking on the "Start" button (1), the "Result" section will show matches to the search term.
- 2. Additional filter options will help you to limit the result set.
- 3. Click the button "Goto process diagram" (2) to automatically jump to the Process Diagram in which the tag was found and highlight the object.

## Figure 3-17

Global	tag search				×
Seek	Browser				
Te	xt and options				
PL	JMP			Start	
	Match case				
	Whole word only				
	Search in ICMs on	y			
	Technological clas	ses only			
Re	sult				
N	lame	PCU	Class	Number	
P	UMP	PCU3	ICM3	152	
					2
<					
			Goto p	rocess diagram	Close

Alternatively, select the "Browser" tab to browse through the whole project.

The dropdown list "PCU" (1) and the "Class" list (2) allow you to filter the tags in the project.

The Instances list (3) will be immediately updated with the tags which match the filter criteria.



Click the button "Goto process diagram" (4) to automatically jump to the Process Diagram in which the tag was found and highlight the object.

Click "Goto process image" and the image of the corresponding tag will open.

# 3.11.2 Tag Information

To display the information associated with tags in the current picture:

Click the highlighted icon,

### Figure 3-19



Or

• Click the menu item "Process diagrams > Tag information"

As a result, the tags of all components are superimposed on the current picture:



## 3.11.3 Setting Bit Variables (for Switches and Selections)

Depending on the configuration of the project there are two ways to set/reset a bit variable

• Directly by clicking onto the Button in the process picture,

Or

 Indirectly, by clicking onto the Button in the process picture a further dialog box opens where the operator can set or reset the corresponding bit variable, see below:

You can either set or clear the corresponding bit flag. Confirm your selection by clicking the "OK" button

Figure 3-21

ALI	E	
	Start Sequence	ALE
	OK	Abbrechen

## 3.11.4 Setting Text Variables

Double-clicking on a text variable opens a dialog box.

The "Selection" dialog shows a list of predefined texts for the corresponding variable.

Chose the desired value with a single mouse click and confirm your selection by clicking the "OK" button.

Fi	gure 3-22				
	Source 🚺	ANK	1	_	
	~				
	Select Ta	arget			×
					_ [
	TANK	1			~
	TANK	2			
	TANK	3			
	TANK	4			
	TANK	5			
	TANK	6			
	TANK	7			
	TANK	8			
	TANK	9			
	TANK	10			
	TANK	11			~
			ОК	Abbrechen	

# 3.12 Binary Connection Logic (BLR)

The "Binary Connection Logic" application provides a graphically representation of connection logics to the operator for fast and easy diagnostics and troubleshooting of a logic operation status (inputs, interim results/gate and output) which are typically used for Interlock purposes.

If the input value(s) or the output value of the logical operating results to "FALSE" the element is displayed in red color, otherwise in green color.

Figure below is showing an example of the BLR object where the logical operation results to "FALSE".

## Figure 3-23



Figure below is showing an example of the BLR object where the logical operation results to "TRUE".

### Figure 3-24



Depending on the context of use, it could be opened by one of the following applications:

• From the ICM faceplate by pressing the button "Status" in the release section

## Figure 3-25

PCU3: MOTOR [3.150]	×
General Extende	d 🖾 Maintenance 🕞 Parameter 🛕 B 🕩
-	Control Automatic On
	Auto Manual On Off
ILK - 1	SEQUENCE_A
	24 Reset
	Monitoring time:
	Close

• From the Unit faceplate by using the command "Permanent condition" (Sequence Interlock)

## Figure 3-26

■ Fill Wort ×	
Unit control	
Occupied state	
Order Number 0	
Batch Number 0	
Recipe category RECCAT_1	
Recipe -	
3: @	

 From the Unit faceplate by using the command "Next Step condition" (Step Interlock)

### Figure 3-27

Recipe Operation		
Step	3	
ID/Seq.	682	70
Status	Running	
Name	F_Filling_So	urce_Gully
Time	00:00:04	
<b>B</b> I	e: ef e	: E: #

# 4 Faceplates

# 4.1 Introduction

Faceplates are pop-up windows that appear when the user left-clicks on an object on the image such as a valve or pump. The resulting pop-up window can be used to issue commands to the device or to switch between automatic and manual mode.

# 4.2 Individual Control Elements (ICM) Faceplate

For the monitoring, control and simulation of Individual Control Elements (valves and motors) a faceplate is available. The faceplate is displayed by double-clicking the corresponding element symbol.

The faceplate dialog provides five tabs:

- General
- Seat lifting (optional)
- Extended
- Maintenance
- Parameter
- Batch
- About

## Tab "General"

The tab "General" gives an overview over the current state of the ICM and allows the basic control of it.

Figure	4-1

PCU3: MOTOR [3.150]			
🗔 General 💽 Extended	d 🗔 Maintenance 📄 📑 Parameter 🗛 B 💶 🕨		
Motor	Release Status		
	Control		
	Auto Manual On Off		
CA - 1	Unit SEQUENCE_A		
ON — 1	Error counter		
MAN - 0	Monitoring time:		
	0 sec		
	Close		

## **Status Overview Section**

In the left part of the faceplate, the status overview of the ICM is displayed by the meaning of six status bits.

### Figure 4-2

Motor	
-(	M
CA	- 1
ILK	- 1
ON	- 1
OFF	— 0
MAN	_ 0
LO	_ 1

Their respective meanings are:

### Table 4-1

Abbrev.	Meaning	Value = 1	Value = 0
CA	Command automatic, Control of the user program or procedure	activate	deactivate
ILK	Operating Interlock	Enabled, ICM can be switched on.	Locked, ICM is automatically turned off and locked.
ON	Feedback ON of ICM	On	
OFF	Feedback OFF of ICM	Off	
MAN	Manual mode	Mode is Manual	Mode is Automatic
LO	Load output	Active	Inactivate

Additionally, the displayed symbol of the ICM is indicating whether the ICM is switched on or off or if a possible error is active. The table below is illustrating the symbols and their meaning.

# **NOTE** Depending on the project configuration the representation of the symbols and their meaning could vary.

## Table 4-2

Symbol	State
	Off
	Command Off
	Command On
	On
	Error Off
-	Error Command Off
	Error Command On
M	Error ON

## **Release Section**

The interlock status of the ICM is shown in the release section.

Possible values are "released" or "locked". By clicking on the status button a separate window opens which displays the binary logic that caused the interlock.

Figure 4-3	
Release	
Released	Status
[PCU=1, Class=BLR1, Instance=11]	- 🗆 ×
Simulate output Simulate output 0 0 0 1 TIMER_01 LT Manhole In = FALSE Starteingang =	
Periodic update	

### **Control Section**

In the control section the operator mode can be switched between automatic and manual mode via the corresponding buttons. The actual operation mode and state of the ICM is displayed. The ICM can be switched to "On" or "Off" by using the corresponding buttons. If active, the current fault of the ICM (for example no feedback or expired timeouts) could be acknowledged by clicking the button "Q".



**NOTE** Depending on the configuration, it may be that Handgroups are used in the project. Handgroups have an influence of the behavior when switching between automatic and manual mode. In this case, a combination of objects can be switched simultaneously. This can affect the current process.

### **Unit Section**

In the unit section the configured units are displayed. Each ICM can be assigned to up to two units. The unit which has requested a route is displayed in the second field when the ICM is occupied by a Route Control Server. When no unit assignment has been configured, the RCS unit is displayed in the left field.

Figure 4-5

Unit	
BH_Mashtun	

### **Error Counter Section**

The number of monitoring time violations is displayed in the error counter section. The counter can be reset by pressing the "Reset" button.

### Figure 4-6

-Error counter-		
2	Reset	

### **Monitoring Time Section**

A monitoring time is the maximum time that can be used to complete an action, e.g. until a valve reaches its end position. After that time a fault for the ICM will be generated. The monitoring time section is providing the number of seconds till the monitoring time expires.

Figure 4-7

-Monitoring tim	ie:		
0	sec		

### Tab "Batch"

The "Batch" tab is providing detailed information about the batch running on the sequence to which this ICM is assigned.

### Figure 4-8

•		
PCU3: 321_15_01P01 [1.40]		×
General Detended	Maintenance Parameter A Batch Number Brewhouse Lager	About
Sequence Status	BH_Mashtun Punning	
		Close

### Tab "Seat lifting" (optional)

The Seat Lifting tab is visible if the ICM control is interconnected to an instance of the class "SLB" (seat lifting). Otherwise this tab is invisible.

In this tab the additional activations of the corresponding seat lifting top and bottom for double seat valves can be visualized and operated.

The following functions are available, while b) to f) is available for top and bottom mode separately.

- a) Block symbol, signaling the seat liftings and display of the operating mode (manual, simulation, error)
- b) Display field seat lifting on, off, locked
- c) Command buttons On, Off, Q (acknowledge error)
- d) Monitoring time in seconds
- e) Pulse time current and setpoint in seconds
- f) Pause time current and setpoint in seconds
- g) "External" selection box for pulse/pause mode

Valve	Pulse-/pause r	mode top		
	O Sect lifting	: Off		Qn
1	Mon. Time:	0.000	5.000 sec	O#
	Pulse time:	0.000	15.000 sec	0
	Pause time:	0.000	15.000 sec	
Manual	Pulse-/pause r	node botto	m B)	
	O Sectlifting	On		On
	D)Mon. Time:	0.000	20.000 sec	Off
Dulco-Ineuso modo	E) Pulse time:	0.000	15.000 sec	0
External	F) Pause time:	0.000	15.000 sec	

### Tab "About"

If configured, the tab "About" is providing additional information's, e.g. description, address and location information. Furthermore, the operator has the possibility to leave free configurable information's by using the "Note" button as displayed below.

\_..

U3: MOTOR [3.150]	$\times$	Note - <motor (icm3.150)=""></motor>	
] Maintenance   🔁 Parameter   🔬 Batch 📴 About	• •	Maintenance was required during NightShift	
Description_ICM3 150 Note	ילדי	>	
Address Area1 Ctrl=A146.5, Fbk1=E210.5, Fbk0=E274.5, Cmd=M210.5, ILock=M338.5		<	, , , , , , , , , , , , , , , , , , ,
Location Location_ICM3 150		Signal note in process diagram	Edit
		Help	Cancel

## Tabs "Extended", "Maintenance", "Parameter"

The above-mentioned tabs are not in scope of a typically operator work and therefore not described in this document.

# 4.3 Digital Faceplate

This faceplate is used for the monitoring and simulation of digital inputs, e.g. for sensors, swing-bend, etc. The digital inputs will be passed through timers to debounce the input signals.

The faceplate dialog provides three tabs:

- General
- Parameter (not in scope of a typically operator work and therefore not described in this document)
- About

### Tab "General"

The tab "General" gives an overview of the state of the digital inputs and outputs as symbol indicators and as trend display. Setting the checkbox "Simulation" allows simulating the input value. While the simulation is running, a red exclamation mark "!" is displayed to indicate that the simulation is currently active.

NOTE

The simulation feature should be handled with care to avoid unwanted behavior.

### Tab "About"

In the tab "About", general configuration information is displayed (description, address, location).



## Symbolic Representation in the Process Image

While the simulation is running, a red exclamation mark "!" is displayed to the right of the device symbol in the process picture.

Figure 4-12



# 4.4 Analogue Faceplate

The faceplate is used to monitor and simulate analogue input and output values, e.g. temperature or pressure measurements.

The faceplate dialog provides four tabs:

- General
- Batch
- Trend
- About

### Tab "General"

In the tab "General", the analogue values are displayed numerically and as a vertical bar graph.



Value Section

In the "Value" section, the current value and the limit values are shown.

Selecting the checkbox "Simulation" will use simulated analogue values. They can be modified manually by direct input or through the buttons to the right of the bar graph:

<b>-</b> .		
Tab	ble	4-3

Button	Effect
"+ +"	Large increase
"+"	Small increase
"_"	Small decrease
"— —"	Large decrease

#### NOTE

The simulation feature should be handled with care to avoid unwanted behavior.

In the "Parameters" section the relevant parameters such as range, limits and flags can be changed if the corresponding checkbox is activated. The "Parameters" section is not in scope of a typically operator work and therefore not further explained in this document.

### Tab "Batch"

The "Batch" tab is providing detailed information about the batch running on the sequence to which this ICM is assigned.

#### Tab "Trend"

The "Trend" tab is displaying a curve of the analogue value.



### Tab "About"

In the tab "About", general configuration information is displayed (description, address, location).

### Symbolic Representation in the Process Image

While the simulation is running, a red exclamation mark "!" is displayed to the right of the device symbol in the process picture.





# 4.5 Controller Faceplate

The faceplate is used to monitor and simulate PID- and Three-Step controllers. The faceplate dialog provides five tabs:

- General
- Parameter
- Batch
- Trend
- About

### Tab "General"

In the tab "General" all the relevant control values and parameters can be displayed and set. In the faceplate, the following variable names are used:

### Table 4-4

Name	Meaning
KP	Proportional gain
ΤV	Rate time
TN	Reset time
Х	Actual value
Y	Process value (output)
W	Set point
XD	Deviation actual value/set point

#### Figure 4-17



Bar Display of Setpoint, actual value and deviation Setpoint, actual value and manipulated value

The "Control" area in the right part of the faceplate is divided into four sections:

- 1. In the top left section, the buttons "Auto" and "Manual" toggle between automatic and manual operation.
- 2. In the top right section, the source of the PID set point is chosen. "External" will use the configured value "Source". "Internal" enables manual control of the set point "W" (see 4).
- 3. In the "Parameters" section, the PID parameters "KP", "TV", and "TN" can be set.
- 4. In the bottom area, the set point "W", actual value "X" and process output value "Y" are displayed. If the intern/extern selector switch at the top (see 1) is set to "Internal", then the set point "W" can also be changed here.

### Tab "Parameter"

The "Parameter" Section is not in scope of a typically operator work. Controller parameters like limits, sampling, dead band, etc. can be changed here. The controller can be set to reverse and X-tracking.

If the YN flag is set the controller switches off and a fixed value defined in the parameter YNF is transferred to the output. In operation mode X-Tracking (XTR = "1") the internal target value is adjusted to the actual value of XIST. This renders possible a smooth transfer from external to internal tracking. If the "Reversing duty"

flag is set an increase of the actual value will result in a decrease of the output and vice versa.

### Figure 4-18

PC0SMCTemp_contr [1]		ſ
General 🗟 Parameter 🛕 Batch 🖉 Tree	tuodA 💟 b	
Parameter		
✓ Change		
Unit [007] BH_Mashtun	v	
Y lower bound 0	Yupperbound 100	
Sampling time 1 sec	Dead band 0.0	
Reversing duty		
X-Tracking		
YN-Marker		
	Close	

### Tab "Batch"

The "Batch" tab is providing detailed information about the batch running on the sequence to which this ICM is assigned.

## Tab "Trend"

The tab "Trend" displays trend curves for:

- Process output value "Y",
- Set point "W", and
- Actual value "X"

Furthermore, the controller parameters "KP", "TV", "TN" and the sampling time are displayed.

### Figure 4-19



## Tab "About"

In the tab "About", general configuration information is displayed (description, address, location).

## Symbolic representation in the process picture

To display the current status of the device in the process pictures, the following icons are used:

Table 4-5

lcon	Controller State
<b></b> ;	"Manual"
•••	"Internal"

# 4.6 Entity Faceplate

The Entity faceplate is providing the following features

- Collection of important values via templates as one dataset
- Read-only or read-write
- Display of value, text or bit-related text
- Customized status display

The faceplate dialog provides two tabs:

- Properties
- Status

## Tab "Properties"



## Tab "Status"

The Status tab is showing bit-related text:

### Figure 4-21

Properties 🗈 Stat	us			
<linestat 0000=""></linestat>		LINESTATUS	16	
Clean		LINESTATUS	17	
Product in pipe		LINESTATUS	18	
Water in pipe		LINESTATUS	19	
]CIP		LINESTATUS	20	
Unclear		LINESTATUS	21	
LINESTATUS	6	LINESTATUS	22	
LINESTATUS	7	LINESTATUS	23	
LINESTATUS	8	LINESTATUS	24	
LINESTATUS	9	LINESTATUS	25	
LINESTATUS	10	LINESTATUS	26	
LINESTATUS	11	LINESTATUS	27	
LINESTATUS	12	LINESTATUS	28	
LINESTATUS	13	LINESTATUS	29	
UNESTATUS	14	LINESTATUS	30	
UNESTATUS	15	LINESTATUS	31	

# 4.7 Tank Faceplate

The faceplate manages the Tank status and provides runtime monitoring information's with interfaces and messages for process and quality status, including an operating and monitoring interface.

The faceplate dialog provides five tabs:

- General
- Times
- Batch
- Trend
- About

The figure below is showing an example of the tank faceplate.

Figure	4-22
--------	------

PCU3: CELLAR_CCT01_1	101 (101)			×
General 🕒 Times	🔺 Batch 🗹 Tren	d 🔽 About		
	00.51	Operation mode		
	58 28 10	Manual	Auto	Manual
		Tank data		
		Name	CELLAR_CCT01_	101
		Group	CELLAR_V7_GR8	TANK
	54 23 0	Type	CCT_TYPE8	
		Tank status	Filled	~
- <b>1</b>	S1 21 °C	Quality status	Approved	~
🕱 🗖 🔍 ⁰	ы	Material movement	t	
avg. Temperature	24 °C	Manual	Auto	Manual
Pressure	998 mbar	Material	32_Wheat_Beer	~
Quantity	250 M	Correction quantity		10 N
Quality	time		Save	*
OT: 00 Days	00.59.04		(	
20.03.19 -	11:44:15	Total quantity	55 hi	Num. 3
				Close
				0.030

# Tab "General"

This tab features four main sections:

- 1. Actual value display
- 2. Control mode
- 3. Tank data section
- 4. Material movement section

### Figure 4-23



The individual sections contain the following displays/control elements:

-iauro	1-21
iguie	<b>T</b> - <b>ZT</b>

PCU3: CELLAR_CCT01_101 [101]			×
General Times & Batch (4, 6)	d A Or anormode Manual Tank data Name Group Type	Auto Menuel CELLAR_CCT01_101 CELLAR_V7_GR8_TANK CCT_TYPE8	5
S1 210 S1 210 avg. Temperature 24 °C	Tank status Quality 2 -risterial movement Manual	Filled Approved Auto Menual	
Pressure         938 mbar           Quantity         250 M           Quality time         Quality time           Q1:00 Deys 00:59 04         200319-11.4415	Material Correr 3 anthy	32_Wheat_Beer 10 N Save 4 55 N Num	
CONV.10*11.79.10	i olar quantity	Close	

- Actual value display
- 1. Visualization of up to 8 temperature zones
- 2. Three standard values: avg. temperature of the temperature zones, pressure and quantity of the tank
- 3. Display for monitoring the remaining time of the material quality after a change of the quality and/ or tank status. Additionally, the start timestamp of the change is displayed.
- Control mode
- Auto/Man operation mode
   In manual mode the quality and tank status of the tank data section could be changed.
   A red hand symbol is indicating that the operating mode is set to manual
- Tank data section
- 5. Tank description displaying the tank name, group and type data. Tank status and quality status information which influencing the Quality, Cleaning and Sterile monitoring timers
- Material movement section
- 6. In manual mode the material and the correction quality value could be set and the Save Button is operable. Otherwise this information will be provided by the automation system.
  - A gray hand/ red M symbol is indicating that Operating mode is set to manual

## Tab "Times"

The monitoring times for the "Quality status" and for the status "Clean" and "Sterile" are displayed and could be activated in this tab.

Depending on the value of the tank status and quality status the according monitoring time will become active.

The target time is displaying the set point value how long the according state material is valid. The remaining time is displaying the actual value until the according state expires.

### Figure 4-25

	Qualitymonit	indiana fianza	
	o and a second	oring arres	
Remaining time	O Deys	00.58.18 hhommoss	
Targettime	0 Deys	01:00:00 hhommoss	
Aonitoring active		1	
	Cleaning mon	Aoring time	
Remaining time	Deys	01:00:00 hhommous	
Targettime	0 Deys	01:00:00 Mommoss	
Aonitoring active		R	
	Sterile monit	oring time	
Remaining time	O Days	01:00:00 hhommosis	
Targettime	0 Devis	01:00:00 hhommoss	
facilitation and a	r		
ronironing active		192	

### Tab "Batch"

The "Batch" tab is providing detailed information about the batch running on the sequence to which this ICM is assigned.

### Tab "Trend"

The "Trend" tab could display tank values, temperature, pressure, quantity as curve display.



## Tab "About"

If configured, the tab "About" is providing additional information's, e.g. description, address and location information. Furthermore, the operator has the possibility to leave free configurable information's by using the "Note" button.
# 4.8 Line Faceplate

The Line faceplate is visualizing pipeline states and provides a runtime monitoring function with interfaces and messages for the process status, including an operator and monitoring user interface for this purpose. Furthermore, the operator has the possibility to leave free configurable information's by using the "Note" button.

#### Tab "General"

The "General" tab is providing the following functionalities:

- Displaying and switching the operating mode
- Displaying and switching the line status parameters, Name, Group and Type
- Displaying the process status, writeable in manual mode The manual mode is indicated by a red hand symbol next to the line icon in the faceplate.

#### Figure 4-27



- Displaying the Monitoring time for the predefined process status During activated monitoring this field shown the remaining time for a predefined process status. The field below it contains the start time of this process status. After the monitoring time has expired, the field for the remaining runtime is colored red
- Displaying and selecting the material used for the Material Movement
- **NOTE** After pressing the "Save" button, the material is set or changed in the dataset. The revert button is grayed out and the procedure cannot be undone.

igure 4-28			
Control Sec	tion, Auto/Manual	Mode	
			1
PCU3: Transfer-Line [72]	1	×	
🗔 General 🕒 Times 🔥	Batch 🔀 About		
	Operation mode		
_	Automatic	Auto Manual	Line Descripti
	Line status		
	Name	Transfer-Line	
	Group	CELLAR_V7_GR8_LINE	
	Type	TRANSFER_TYPE8	
	Process status	Unclear v	
Monitoring time	Material movement	nt	
MT: 00 Days 01:00:00	Automatic	Auto Manual	
-	Material	34_IPA_Beer V	
		Sauo 🏟	
<b>↑</b>		0010	
		Close	
Monitoring Time	Cur	rent Material in Line	

#### Tab "Times"

The monitoring time for the defined process status is displayed and activated in this view. Depending on the value of the process status and the checkbox "Monitoring active" the monitoring time will become active. The target time is displaying the set point value how long the according state is valid. The remaining time is displaying the actual value until the according state expires and become invalid. After the monitoring time has expired, the field for the remaining runtime is colored red.



PCU3: Wort-Line [70]	Batch 🔽 About	×
	Monitoring time	
Remaining time Target time Monitoring active	Days	01:00:00 hhmm:ss 01:00:00 hhmm:ss
		Close

#### Tab "Batch"

The "Batch" tab is providing detailed information about the batch running on the sequence to which this ICM is assigned.

#### Tab "About"

If configured, the tab "About" is providing additional information's, e.g. description, address and location information. Furthermore, the operator has the possibility to leave free configurable information's by using the "Note" button.

#### 4.9 Unit Control Faceplate

The Unit Control faceplate can be used for the operation and monitoring of a sequence which is assigned to one recipe unit procedure (1:1 relation).

The faceplate is available in a small and large version.

The faceplate can perform the following functions for a unit:

Recipe selection, start, stop, step selection, hold, restart, manual/automatic, auxiliary equipment On/Off and operator prompt.

Additionally, separate windows for the Unit Set points and the ROP Set points can also be viewed and hidden.

#### Symbolic Representation in the Process-Image

The "Unit Control" can be represented symbolically in several ways.

- Line representation
- Block icon, Unit faceplate opens by clicking the corresponding icon
- Window representation, embeds the Unit Control directly in the process picture
- Small Representation

#### 4.9.1 Unit Control Small

The small representation of the unit control is providing a quick overview of the assigned Unit (sequence). See figure below for more information.





#### 4.9.2 Unit Control Large - Line representation

The line representation of a unit control appears as below:

Figure	4-31
--------	------

S	ID Sequence Sta	atus I	Display		S	tep	ID	Name	Time	0No	BNo	R. Type	Recipe
♦ 0 > ■ + - Ø Ø H 1	00 SEQUENCE_A	lunning	A +	-:O (		4	150	GRINDER	24:18:45	45	50	Slury	CreateSkuryFast

From left to right, the individual control components have the following functions:

Icon/Display	Function	Note					
× •	Display sequence-related actual values /set points	Name         Unit         Setpoint         Actual val         Diff.           ♥ Time         Hr         00:00:05         00:00:06         -00:00:01           ▼ DFM1         7         Min.         0.0         0.0         0.0					
× •	Automatic/Manual Mode Switch						
× •	Start sequence						
* -	Stop sequence						
- + -	Resume sequence	The sequence is resuming from a former Hold command.					
÷ -	Hold sequence	The currently executed step is set to hold. The recipe unit procedure does not proceed to the next step. Depending on the configuration of the project Pumps and valves remain active.					
<b>4</b> 8 <i>B</i> <sup>1</sup> H	Manual Step-Selection	A dialog opens which allows the manual selection of the next step:					
<ul> <li>✓</li> <li>✓</li></ul>	Operator request acknowledge	A dialog opens which allows the acknowledgment of an operator request, see chapter. 5.3.4 for more information's.					
	Switch additional Device on or off						
SID Sequence Status 6 [006] Mash tun 1 💌 <b>Running</b>	Sequence name, number and status	Sequence status (idle, running, hold)					
Ţ	Sequence displays						
Display	AM	Auto / manual – mode					
At n 🔍		Switch to next step / stop after current step finished					
	÷ +	Synchronization met / waiting					
	击 击	Alternative met / not met					
	0	Permanent condition missing					
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	User flag active / inactive					
	<b>€</b> 7	Operator request is active					
	0	EOP monitoring time expired					

Table 4-6

lcon/Display	Function	Note					
	R	Recipe load error					
	🔺 🛆 🖂	Error / Warning / Process Message active					
		Possibility to change the set point values					
Display	Step-related actual values/set points are shown	Name         Unit         Setpoint         Actual value         Diff.           ■ Mt_Steamvalve         -         with FV03                                                                                                   -					
A)         B)         C)         D)           Step         ID         Name         Time           16         71         Transfer         00:03:27	Step-related information	<ul> <li>A) Current number of recipe operation</li> <li>B) Absolute EOP number in the PLC</li> <li>C) Current Step Name (EOP name)</li> <li>D) Current Step running time</li> </ul>					
A)         B)         C)         D)           0No         B-No         R-Type         Recipe           11         1         RCAT1         Export	Batch-related information	<ul> <li>A) Current order number</li> <li>B) Current batch number</li> <li>C) Current recipe category name</li> <li>D) Current master recipe name</li> </ul>					

# **NOTE** Changing the set points for the current batch will only affect the current batch. For the next batch, the values from the Master recipe will be used again.

#### Block Icon

To open the "Unit Control Large" faceplate, click on the sequence icon in one of the process pictures.

Figure 4-32



The Unit Control opens as window and displays the most relevant process information's. Additionally, it allows the basic control of the unit. See next section for details.

#### Unit Control Large - Window representation

The line representation of a unit control appears as below:

■ SEQUENCE_A ×
Unit control
- <u>1</u> H
Occupied state
Order Number 36
Batch Number 35
Recipe category Slury
Recipe CreateSlurySlow
8: 🗊 📎
Sequence control
Sequence [100] SEQUENCE_, ~
Status Running
Display M 🛨 🖻 🏵
Recipe Operation
Step 4
ID/Seq. 150  100
Status Running
Name GRINDER
Time 765:21:55
0 //

From left to right, the individual control components have the following functions:



lcon/Display	Function	Note
Unit control	Opens the application "Sequence Control"	See chapter <u>5.3</u> for more information
Unit control	Permanent condition (Sequence Interlock)	Depending on the configuration a BLR Object or S7-Status Dialog is displayed which helps the operator to identify the root cause of the interlock, refer to chapter 3.12 for more details. Note: In case that the sequence is processed by a S7-1500 PCU and no BLR Object is configured the following message will be displayed: BH_Lautertun No status view for the AS-1500 possible. No binary logic result object OK

#### 4 Faceplates

lcon/Display	Function	Note
Unit control	Switch additional device on or off	
Occupied state Order Number 36 Batch Number 35 Recipe category Slury Recipe CreateSlurySlow	The order number, batch number, recipe and category of current batch running on the unit	
8: 0	Opens the application "Online recipe"	Surv. Year: 18, Order: 00016 / 00035           Nr.         EOP-Info         PCU3 / 101           SEQUENCE_A         Nr.         EOP-Info         PCU3 / 101           1         SEQUENCE_A         Nr.         EOP-Info         PCU3 / 101           2         NOP         grant.10         grant.10         grant.10         grant.10           4         rc1160(160)         GRINDER         2         rc1150(150)         REDOSING         grant.11           6         rc1164(164)         Cleaning         grant.11         grant.11
		See chapter <u>5.4</u> for more information
8: 07 >>	Opens the order parameter list	Order parameters - Slury Order: 18 / 00036 / 00035       ×         Parameter       Value       Actual value       Dimension         Cooling_Time       50       #       •         See chapter       5.2       for more information
8: 10 >>	Sequence-related set points and actual values are displayed	Name       Unit       Setpoint       Actual value       Diff.         Time       Hr.Mi       0001:00       766:44:41       -766:43:41         SturyTimetB       Min.       0.0       0.0       0         If Needed, set point value could be changed in this dialog for the online recipe.       Actual value       0.0       0.0
Sequence control Sequence [100] SEQUENCE_, ~ Status Running Display M + ~ 🖓 🛞 (100) SEQUENCE_, ~	Sequence display and control	For element description see chapter <u>4.9.2</u>
Recipe Operation Step 4 ID/Seq. 150 100 Status Running Name GRINDER Time 765:21:55	Step display and control	Commands for recipe operation: Continue, Hold, Pause, Stop, Termination
	Display of next-step-condition logic	Depending on the configuration a BLR Object or S7-Status Dialog is displayed which helps the operator to identify the root cause of the interlock, refer to chapter 3.12 for more details

lcon/Display	Function	Note				
	Step related set points	Possibility to Name Mt_Steamvalve TMt_Temp_FV03 TMt_Temp_FV02 TMt_Temp_FV01 TMt_Speed_Agg T 3_20_SRPROT_S	Unit - *C % % % %	Setpoint with FV03 20 0 0 0 100 101	Actual value with FV03 21 0 0 0 0	/alues

# **NOTE** Changing the set points for the current batch will only affect the current batch. For the next batch, the values from the Master recipe will be used again.

# 4.10 Date-Time Control

The Date-Time control is providing a clock which could be displayed in analogue or digital representation. Typically, the Date-Time control is located on the Top right Pane of the Process Screen.

Furthermore, it is possible to display/change the current BRAUMAT / SISTAR user by clicking on the User button of the control.

Figure 4-34



# 5 Batch and Order System

# 5.1 Introduction

The BRAUMAT / SISTAR system offers the Order Management for creating, starting and monitoring orders and batches.

## 5.2 Order Management

The Order Management has the task of processing a list of batches. This list can be created, either by the ordering system on the IOS, e.g. by the operator, or by a higher-level system (MES). Basic tasks of the Order Management are to schedule the orders, rearrange the order sequence, changing order parameters or changing the order sequence of the batches. In addition, the progress of batch processing can be tracked online, e.g. by jumping directly to the linked specific online recipe.

Alternatively, it is possible to directly start, control and monitor the recipes for individual Units with the usage of the Sequence Control.

The Order Management can be found in the "Production" tab in the Application Center, indicated by the following icon:

Figure 5-1



#### 5.2.1 Structure of the User Interface

The Order Management is divided into several views.

Batch list - Slury - Order 12 - BRAUMAS	T V7.5 (Area1)	- Batch	Manager							
File Edit View Adknowledge Help										
urrent Onders	• × 7		and a Share - Coder 5	a o La	Line allocat	an - Share - Ondar 30	· Batch pa	rameters 15/15/10	1	
N 14 E			Contra Calendaria	0.0	Eat/ch	Take	21 6	1.0		
E Areal			Under Category	Crow	DARCH	Steve	No	Name	Setpoint	Actual val
12 - Exer-Production		10	(Dury)	10		Martine .	7 001	Cooling Time	444	
- 14 - Cellar, Filling		10	Sur	10	1	Externed		cond the second		
- T5 - Cellar, Empty			any			receives.				
- El 16 - Cellar_Transf										
- 1 - ORDTYPE_1										
- B - ORDTYPE_B										
11-Suy										
Order 10 CD										
- 2 CHAR 14 CO										
Director Director				_						_
Current Orders 🔛 Anthine	۶ ا						· · ·			

#### The Left Tree Pane (blue frame)

Gives an overview of all available order categories with their assigned orders. From this panel it is also possible to switch between current and archive view (see bottom).

#### The Middle Pane (green frame)

This is tab-oriented and can contain multiple worksheets. A worksheet shows the filtered batch list or the unit allocation to the batches as per the selection in the navigation area.

A new worksheet can be added by Select "Menu > File > New Batch List" or "New Unit allocation" or using the Toolbar Elements (green Frame).

- Selection root node "Production <AREA x>" → all batches of this AREA are displayed
- Selection order category → all batches/all orders of this order category are displayed
- Selection order  $\rightarrow$  all batches of this order/these orders are displayed

Additionally, it is possible to move a batch to a new table position, e.g. to change the execution order of the created batches.

To do this, select a batch from the list. By dragging (left mouse button) the batch to the new table position, a dialog opens which presents the source and target position. By confirming the query, the selected batch is moved and the processing order will be changed.

#### The Right Pane (orange frame)

This is showing all Order Parameters of the selected batch.

#### 5.2.2 Open Order/Batch related Applications

Select one batch from the "Batch list" or "Unit list" to jump directly to further batch related applications which will provide further information's and traceability regarding the running process.

From the "Menu > File" you can navigate directly to every order/batch related application.

Application		Shortcut
Process Parameter Editor (Recipe Offline)	BRUANT V12 (Jeest) Incore eltor - Manter nocipe: Central Lay Auto: Program fate dat mergening Wander Http: Program fate dat mergening Wander Http: Program fate data fate da	Strg+F7
Process Cell Overview (Sequencer), see Chapter <u>5.3</u>	BRAUMAT V3 5 (Ares1) - Process cell overview - dP000000         →         →         →         →         →         →         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×         ×	Strg+F8

#### Table 5-1

#### 5 Batch and Order System

Application		Shortcut
	■ BRAUMAT V75 [Ares1] Control recipe editor - [Sury, Year 18, Order: 00010 / 00001]         -         ×           ¥g, Program Batches         Window Help         -         ●           Nr.         EOP-Info         PCU3 / 100         Nr.         EOP-Info         PCU3 / 101	
	SEQUENCE_A SEQUENCE_B	
Control Recipe (Recipe	2 NOP 5ynch.10 5ynch.10	FQ
Online), see Chapter <u>5.4</u>	4 FC1150(150) ORINDER C 2 FC1152(152) PUMPIN 3 FC1152(153) REDOSING C	15
	Synch.11 Synch.11	
	Sequence Related Setpoints SEQUENCE B' (DFM - Online) Step Related Setpoints Step:3 REDOSING	
	Name Unit Setpoint Ac Name Unit Setpoint	
	Time Hr:Min:Sec 00:00:00 02 Redosing_Material kg 10	

#### 5.2.3 Creating a new Order

The following procedure describes how to create a new order. The described procedure can vary depending on the on-site requirement. Open the Order Management and right click from the given Order Categories and select "New Order". Alternatively select "Strg+N" or use the menu edit.

#### Figure 5-3

Batch list - Slury - All batches - BRAUMAT V7.5 {Area1} - Batch Manager	
File Edit View Acknowledge Help	
Current Orders	•
2 [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [	
■       Mea1         12 - Beer-Production         14 - Cellar_Filling         15 - Cellar_Empty         16 - Cellar_Transf         11 - ORDTYPE_1         8 - ORDTYPE_8         18 - ORDTYPE_8         18 - ORDTYPE_N	

The "Enter New Order" Dialog appears where the order can be configured. The Dialog is divided into several areas which are described afterwards. The following figure is showing the "Enter New Order" Dialog.

#### Figure 5-4

Enter new order: Slury Recipe data Recipe CreateSluryFast Line	Batch ID     Batch year:     18        Order number:     7        First batch number:     1	3
Product 02_Wiener_Malt 2	Start as soon as possible ~	
Order paramters Template: Batch 18/18/10/1	09:08:2018 09:55:35         ••         01:00:00           Batch generation         Number         Order size           1         ···         100.00 kg           1 * 100.00 kg         ···	5
	Create order Cancel	

- 1. "Recipe Data": In the "Recipe Data" area, the operator can select the recipe for the new order and if enabled the line and product
- 2. "Batch ID": If enabled, the operator can define the year, order number and the first batch number for this order.
- 3. "Start": If enabled, the operator can select the start options for the new order e.g. immediately after creation
- 4. "Batch Generation": If enabled, the operator can define the amount of produced material (Order size) and/or the number of batches per order.
- **NOTE** The calculations of how many batches per order are created by the system and the size of the individual batches are depending on configurable algorithms!
  - 5. "Order Parameter": If "Order Parameters" are configured for the recipe the values can be customized if needed.

#### Figure 5-5

Order paramters	
Template:	_
Batch 18/18/8/1	

By clicking into the setpoint field a further Dialog opens where you can add the value.

#### Figure 5-6

٩v	Name	Setpoint	Unit
₹ 001	Cooling_Time	0	-
	Cooling_Time		×
		30  -	
	Value r	ange: -32767 32767	,
		ОК	Cancel

# **NOTE** If an order is divided into multiple batches the inserted value is used for all batches.

/#	Batch	list - Slury - All batc	hes X 🔻	Batch para	amete	ers: 18/18/10/1		
No	Year	Order Category	Order	<sup>A</sup> z↓ ↔	Ø			
44	18	Slury	10	No	1	Name	Setpoint	Actual value
Ŧ	18	Slury	10	7 001		Cooling_Time	444	#
#	18	Slury	10					
						Cooling_Time		×
						Value r	444 -	57
							ОК	Cancel

The values for each batch can be changed if needed as displayed on the right-side figure

#### 5.2.4 How to release a Batch from a Batchlist

Depending on the project configuration of the "Default Batch Status", an order can be "locked", "ready for release" or "released". If the batch state is "locked" or "ready for release", the operator need to Release it first before the Order Management can queue the batch and start it.

To release a batch, you need to select it from the batch list first. From the context menu (right click) select release. Alternatively select "Edit > Release" from the Menu Bar.

#### Figure 5-7

E 64 00 🕫 🙀 🕂 💭		8 Batc	h list - Slury - Order 3	3 X		
Ma E	No	Year	Order Category	Order	Batch	Status
12 - Beer-Production	*	18	Sury	33	17	Lock Prepare for release
- 14 - Cellar_Filling						Release
- 16 - Cellar_Transf - 1 - ORDTYPE_1	E					Cancel Delete Entf
8 - ORDTYPE_8 18 - Slury 2 Order 33 (1)	E					Starting Mode Change Starting Time
						Edit Batch Size
						Change Stream
						Add batches
						New order Stro+N
	-					Process Input List F8

#### 5.2.5 How to start a Batch from a Batchlist

Starting batches depends on the configured start mode. The Order Management has no start or play button. The starting mode can be changed from the context menu (right click) as long as the status is not "Started" and the concerning starting modes are enabled for the Order Category.

In general there are four different starting modes available.

1. "As soon as possible"

The batch is started as soon as the required "start unit" is free, in automatic mode, not stopped and not disabled and the batch is released. If several batches are released and are waiting for the same unit, the topmost batch in the list is started.

2. "By event"

Order start is triggered by the Automation system.

3. "By time"

The batch is started when the batch start time is reached or exceeded and the unit itself is not occupied.

4. After time/auto"

This start mode is like start mode "by time" with the exception that the start times of the follow-on batches are automatically adapted if there are delays in starting the batch. This adaptation is only for batches with this start mode and batches that have the same "start unit".

### 5.3 Sequence Control

The Application "Sequence Control" can be found in the "Production" tab in the Application Center, indicated by the following icon:

Figure 5-8



Basically the application "Sequence Control" is used to control and monitor the units in the process cells. With that the user can intervene in the current process and influence the different processes.

#### 5.3.1 Structure of the User Interface

The Sequence Control is divided into three areas.

#### Figure 5-9

8 + + +	ð >		· 1 8	B 19	1. Dr. 18.	14 1	- 10	▲ ▲	= <i>0</i>	•						
No Sequence	5+4.5	afue	Display	,			Step	EOP	EOP Na	ne	EOP Status	Time	Reck	e calegory	Recipe	
100 SEQUENCE_A	Runni	e .	Α.*		- O -	<u>î.</u>	4	150	GRINCE	R	Running	001410	Stay		CeateSkayStow	
101 SEQUENCE_B	Rumi	9	A #		40 <i>8</i>		3	153	REDOS	NG	Running	0013:20	Skey		CedeSkoFat	
Sequence Related	Setpoints St	QUENCE_A	(PCU3.100)					Step Re	lated Se	tpoints GRINOE	n (PCU:3.150)					
Name	Unit	Setport	Actual	value	DW.			Name		Unit	Selpo	et		Actual value		
🕑 Tase	Hr Min Sec	00.01.00	0014	10	-00.13.10			U Grind	ng_Dege	e Mesh	Lapak	5		< 14AK.0000-		
SkeyTeneA.	-	0	0		0			T Motor	Setpoint	Mn	200			0		
SuyTine0	Min	0.0	0.0		0.0											
• Time		Туря	Recipe cat	Order	Eatch	UnitP	Unit	Unit-A-	PCU	Module name	Inc.	Instance	name	Descriptio		
15 08 2018 16:00:12			Skey	000033	000017	003	100	SEQUE	003	SEQU	0100	SEQUEN	A_30	Unit message	pr. Cancel	
15.08.2018 16:00.32		× .	Skay	000033	000017	003	100	SEQUE	003	Sequences	0100	SEQUEN	(X,A	Monitoring	ine fault start	
15.08.2018 16:17:12			Shary	000033	000017	003	100	SEQUE	003	SEQU	0100	1 SEQUEN	A_30	Unit messa	pr. Sequence itop	
K 08 2018 16 17 20			11 m	000010	1 100000 1	0015	1.00	10000	1000	1000	00.00	1. EXC: 0 100	DE A	Link manual	the selection	

#### The Top Pane (blue frame)

This pane is displaying the sequence table which lists all sequences with additional information's like sequence status, EOP status, recipe and order information. From the "Menu bar > Options" it is possible to display only the running sequences.

#### The Middle Pane (green frame)

This pane is showing sequence and step related set point data.

#### The Bottom Pane (orange frame)

This pane is showing sequence related messages.

#### 5.3.2 Start, Stop, Hold, Resume a Sequence



If order parameters are used in the recipe then the default value is loaded when you start the recipe via the sequencer, e.g. Value "0". This can lead to unwanted behavior!

The following list gives an introduction of the basic operations for a sequence. All the tasks shown here can be also carried out from the Unit Control faceplate in Process Runtime.

1. Select the desired Process Cell from the menu bar "Process-cell".

Figure	-igure 5-10												
🚟 BF	BRAUMAT V7.5 {Area1} - Process cell overview												
Prog	Program Process cell Functions Options Acknowledge Help												
0	₩	~	Brewho	use		-	CS			E		₩' ⊨	
No	Seq		Cellar			Displa	Ŋ						
4	BH_		Test_V7					Α+		щ			
7	BH_		Test_V7_PCU4					Α -		м			
9	BH_		Slury					A +		м			
100	SEQ	UEN	CE_A	Idle				A +		м			
101	SEQ	UEN	JENCE_B Idle					A +		щ	$\searrow$		

2. To start a sequence, select the desired sequence from the available process cells and press the "Start" button from the Toolbar. If more than one recipe is available for this sequence, a dialog box opens and the operator needs to select the recipe of interest.

After you press the Start button the sequence will become active.

#### Figure 5-11

📰 Bl	RAUMAT V7.5 {Area1} -	- Process cell overview - E	Brewhouse	
		► = + - «	enovneuge Heip	• 🌃 H H H 🛦 🔺 🖂 🖉 🖉
No 4 7 9 100 101	Sequence BH_Millstar BH_Mashtun BH_Lautertun SEQUENCE_A SEQUENCE_B	Seq. Status Idle Idle Idle Idle	Display A + M' A - M' A + M' A + M' A + M' A + M' A + M'	Recipe selection       ×         Batch data       Recipe category         [018] Slury       •         Recipe       [0011] CreateSlurySlow         [0032] CreateSluryFast       •         Order Number       33         Batch Number       17         Batch year       2018

3. To abort a sequence, press the Stop button from the Toolbar.

#### Figure 5-12



4. To hold a sequence, press the Hold button from the Toolbar ("-" Symbol).

#### Figure 5-13

🚟 BRAUMAT V7.5 {Area1} - Process cell overview - Bri										
Program Process cell Functions Options Ackno										
₽   ₩	0≈ =≎	⊕ ▶ ■	+ -	<b>8</b> 8						

5. To resume a sequence, press the Resume button from the Toolbar ("+" Symbol).

#### Figure 5-14

🚟 BRAUMAT V7.5 {Area1} - Process cell overview - Bri							
Program	Process cel	I Functions	Options	Ackne			
₽   ₩	0⊶ =≎		+ -	CS			

#### 5.3.3 Changing Setpoint Values in the Online Recipe

With BRAUMAT / SISTAR it is possible to change setpoint values of the active step of the respective online recipe. To change setpoint values open the corresponding Unit Control faceplate or change the setpoint values directly from the Sequence Control Application. The change is valid only for this batch. For the next batch the original recipe parameter set point values are used again.

Change Setpoint Values from the Unit Control faceplate:

SID Sequence	Status Display	0 М	Step ID	Name Mash in 1	Time 0No 00:00:03 49
	Name Timer 01 Content Temperature Steam FV03 Speed agitator	Unit Min % °C % %	Setpoint 2.0 (85.0 50:0 50 100	Actual Diff. 0.0 2.0 0.0 85.0 20.6 29.4 50 0 100 0	

Figure 5-15

Change Setpoint Values from the Sequence Control Application:

Fig	jure 5-16															
20	IRAUMAT V7.5 (Area	1) - Proces	s cell overvi	ew											- 0	×
Prog	ram Process cell	Functions	Options	Acks	owledge	Help										
Ð	H D4 10 E	) > <b>•</b>	+ =	ψ	8.5	GA 6	0 B	5 4	4 10	۵.	= Ø 🔍	🔥 B	ter Redosing	Amount		
No	Sequence	Seq. Sta	Aus .		Display				Step	EOP	EOP Name		EOP Status	Time	Recipe cate	909
4	EH_Milotar	Ide			A +	×γ			0	0	-		Ide	00:17:20	Drevhouse	
7	BH_Machtun	Ide			A -	2			0	0	-		Ide	00.19.10	Brevhouse	
9	BH_Lautertun	ide			A +	-5			0	0	-		ide	00:00:10	Brevhouse	
100	SEQUENCE_A	Bunnin	a		M +	-61	0	4	4	150	GRINDER		Bunning	00:07:43	Sharp	
101	SEQUENCE_B	Runnin	a		A +	~ 1	06	<u> </u>	3	153	REDUSING		Running	00:06:53	Skary	
Seq	vence Related Sets	points SEQ	UENCE_B (	003.1	01)					Step Re	elated Setpoint	<ul> <li>REDOSI</li> </ul>	NG (PCU3.153)	1		
Name	• U	nit	Selpoint		Actual value	e Di				Name		Unit	Set	vini	Achu	al value
0	ine H	Min:Sec	00.00.00		00:06:53	-00	106.53	)		T Reda	cing_Material	kg	10		12	
<b>T</b> 5	kayTime® M	in.	0.0		0.0	0.0	)									

#### 5.3.4 Operate and Acknowledge Operator Requests

In order to inform the plant operator about a manual operating instruction, the BRAUMAT / SISTAR System uses so called Operator Requests. The Operator Requests are indicated by a "Hand" Symbol in the Unit Control or Sequence Application.

Depending on the configuration of the Operator Requests, the operator must either acknowledge the dialog without entering a Setpoint Value or he must first entering a Setpoint Value and acknowledges the request afterwards.

The figure below is showing an example of an Operator Requests displayed in the Sequence Application.

Fig	jure 5-17 RAUMAT V75 (Area nom Process cell	1] - Proces Functions	s cell overvi Options	iew Ackno	owledge	. Help					×
Ð	H D0 10 2	) ÷ •	+	42	8.0	6 6	9.8	4.	1 10	🔺 🛕 🚍 🔗 🔹 🔥 Enter Redoxing Amount	ור
No 4	Sequence BH_Militar	Seq. Str Ide	hus		Diplay	1.0			Shep 0	R Operation request X	î
7 9	BH_Mashkun BH Lautethun	lde Ide			A -		4	1	0	User: no user	
100	SEQUENCE_A	Bunnin			M +		84	1	4	Sequence: SEQUENCE_B Batch: 10101000055100023	1
<					_			-		Enter Redosing Amount	
Seq	uence Related Set;	points SEC	UENCE_B (	PCU3.10	JT]					Name Dim SP AV Dill	
Name		nit .	Setpoint		Actual	value	Diff.			T Redoxing 10 12 -2	
01	ine H	Min:Sec	00:00:00		00.09.4	4	-00:09:44			_	
ŦS	luyTine® M	lin.	0.0		0.0		0.0				>
• Tim	he		Type	Recipe	e cat	Order	Batch	UnitP_	Unit		ini A
15.08 15.08	2018 17:25:58 2018 17:25:59		0	Skey		000055	000023	003	101	Acknowledge Cancel	1
۲.										· · · · · · · · · · · · · · · · · · ·	>

#### 5.3.5 Order and Batch Numbers

Order and batch numbers are needed to:

- plan a process (for example filtration)
- get a report as a step protocol
- Tracking and Tracing of Material

When a process is started by the batch list the system will automatically increase the batch number or order number (depending on the selected algorithm). One order can contain one or more batches with different batch numbers and can be therefore seen as a grouping element. In a Brewhouse for example, the batch

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number can count up for one year and then restart. Order number can be automatically increased or derived from the calendar week.

If batches are started manually via Sequence Control or the Unit control faceplate or from inside the PLC with a special-order start block ("ASTA") it is possible to use the same batch ID more than once. Although it may be necessary to manually restart a batch, e.g. after an error. This may lead to a situation that all of this the production data is assigned to the same batch.

Therefore, the manual assignment of Batch IDs must be done with a maximum attention.

A complete ID of a batch consists of the following parts:

- Site number
- Area number
- Recipe category
- Batch year
- Order number
- Batch number

This is because a BRAUMAT / SISTAR installation may span over multiple areas of a site and even more than one site.

**NOTE** If one of the above-mentioned ID parts is not considered when manually creating a batch, the generated batch data can only be identified clearly by their time stamps.

#### 5.4 Online/Control Recipe

The task of the control recipe visualization function is to visualize the processing steps of control recipes which were generated by the recipe system and downloaded to the PCU. Based on the recipe procedures, the recipe system generates the control recipes by substituting the process/order parameters with the current master recipe/order parameters.

When the recipe procedure contains weighing recipe operations, the control recipe dynamically generates weighing and interim draining operations, depending on the volume of process input materials to be weighed.

The online recipe can be found in the "Production" tab in the Application Center, indicated by the following icon:

Figure 5-18



#### How to open the Online Recipe

The following options are available to open an online recipe.

• Open the online recipe from the Application Center directly.

#### Figure 5-19



• Open the online recipe from Order Management. Select a running batch from the batch list and double-click on it or press "F9".

#### Figure 5-20

🐵 Batch list - Slury - Order 36 - BRAUMAT V7.5 {Area1} - Batch Manager

File Edit View Acknowledge	Help				
🕅 🙌 🚥 🖚 🛱 🖨 😂	↔				
Current Orders 🔷 👻	<b>#</b> Ba	atch list - Slury - Order 36	×		
🞜 🔚 🗄	No Yea	ar Order Category	Ord	Batch	Status
Area1	* 10	8 Slury	36	35	Started

• Open the online recipe from the Sequence Control Application. Select a started sequence from the Process Cell List and press "F9"

#### Figure 5-21

🚟 BRAUMAT V7.5 {Area1} - Process cell overview - Brewhouse

Prog	ram Processicell Fi	unctions Options	Acknowled	ge Help				
0	₩ 🕶 🕶 🖑	▶ ■ + -	68 🗐		🕅 H H H		é 🗐	🖉 🛛 💿 🚺 Enter Red
No	Sequence	Seq. Status		Display		Step	EOP	EOP Name
4	BH_Millstar	Idle		Α -	щ	0	0	
7	BH_Mashtun	Held		A - +	Η,	1	32702	Synchronization
9	BH_Lautertun	Idle		A +	θ¦	0	0	
100	SEQUENCE_A	Running		A + +	θ,	2	32722	NOP
101	SEQUENCE_B	Running		A +	H 😗	3	153	REDOSING

• Open the online recipe from the Unit Control faceplate. Therefore press the button "Current recipe" displayed on the figure on the right side.

■ SEQUENCE_A ×							
Unit control							
· · · · · ·							
Occupied state							
Order Number 36							
Batch Number 35							
Recipe category Slury							
Recipe CreateSlurySlow							
8: 🗊							
Sequence control							
Sequence [100] SEQUENCE ~							
Status Running							
Display 🗛 + 🛉 써							

# 6 Graphic system – Display and Operation

# 6.1 Process Images, Visualization

The application "process diagrams" offer a plant overview based on the configured full graphic images by viewing process data from the Automation system. Via control elements, the user can control the running process and access the different sequences. The following chapters give an overview to the operator how the navigation can be done easily and efficiently.

# 6.2 Navigation

#### 6.2.1 General Navigation in the Process Diagrams Application

There are various means to navigate between the pictures of a project:

• From the Menu bar, click the "General Overview" menu to navigate to the start screen. Typically, the start screen is showing the whole Plant Overview, give a quick overview over the major elements and give the possibility to navigate quickly to the several areas.

#### Figure 6-1

😼 BRAUMAT V7.5 {Area1} - Process diagrams Program File Process diagrams Options Acknowledge Help General overview ₩ 👀 h Previous process diagram Ctrl+F12 \* Time Open process diagram ni 13.08.2018 10:0 Note F10 13.08.2018 10:0 Tag search > Tag information

• From the Menu bar, click the "Open process diagram" menu to open the process picture of interest from the Picture Tree.

#### Figure 6-2



• If configured in the project, you can use the navigation buttons, displayed on the Figure on the right, to jump to the specific process picture.

Figure 6-3



• To move back to the previously opened process picture, click on the icon highlighted to the right, or use the keys "Ctrl" + "F12".

#### Figure 6-4



#### 6.2.2 Navigation Panel

The system provides a panel faceplate which allows you to navigate through the process pictures and areas. Typically, the Navigation Panel is located at the bottom of the process screen, see chapter. 3.6. The following schema illustrates the hierarchical Process picture tree which is divided into 3 levels. With the navigation panel you can navigate through the Tree. Additionally, it is possible to open further BRAUMAT / SISTAR applications, e.g. the Trending System or Order Management.



The following table describes all elements from the navigation pane.

lcon	Action
<b>6 9 1 1</b>	Navigate to the Start Picture: Left click the Home button from the Navigation Panel. The name of the start picture is displayed by right click the home button
	Navigate to previous/next PCell: Left click the "Previous" (arrow left) or "Next" (arrow right) button to navigate directly to previous or next PCell from the Hierarchy Tree. Right click to see all available PCell's in the project. The actual displayed PCell is marked by 2 angle brackets
>>Brewhouse overview Malt transport Malt silos 1-8 MILL	Navigate to previous/next image: Left click the "Previous" (arrow left) or "Next" (arrow right) button to navigate directly to previous or next Process Image within the current PCell. Right click to see all available images within the PCell. The actual displayed picture is marked by 2 angle brackets



#### 6.2.3 Printing of Process Images

To print the view of the currently opened process picture with the online values, do one of the following:

 Click on the highlighted printer symbol icon, press "CTRL + P" on the keyboard,

#### Figure 6-6

😼 BRAUMAT V7.5 (Area1) - Process diagrams

Program	m	File	Proce	ss clia	grams	$= O_{\beta}$	stions	Ackr	ovuleo	ige	Help
	<b>Þ4</b>	<b>0.0</b>	-0	S	F	E.		9	<b>3</b> 44	州	4

#### or

• Select the menu item "File > Print".

# 7 Logging system - Analysis of processes

# 7.1 Step Protocols

The application "Step Protocols" is used to display and print a list of step protocols. Chronologically the set points and actual values occurred during processing of the units such as

- times,
- quantities,
- temperatures, etc.
- information about the executed equipment operations

#### are stored.

The application can be found in the "Archives" tab in the Application Center, indicated by the following icon:

Figure 7-1



#### 7.1.1 Open a specific protocol

To open a Step protocol select "File > Open" from the menu or click the corresponding button  $\mathbf{B}$  from the Toolbar.

In the dialog "Select step Protocol" the available step protocols can be selected by year, recipe category, order number, batch number and unit.

When all selections are made and the "OK" button is pressed the step protocol is displayed. The screenshot below is showing the "Select step Protocol" dialog.

Figure 7	7-2
----------	-----

Select step protoc	lo:		×
Yea:	Recipe: Crea	teSkeyFact	
Recipe category:			
008 RECCAT_8_P 012 Brewhouse 014 Celar_Filing 015 Celar_Engly 016 SLay	CU4_3_Mix		^
			~
Order number :		Batch number:	
00001 00010 00002 00031 00003 00032 00004 00033 00005 00035 00006 00036	00055	1	
C	)	<	>
Uve / PCU-			
SEQUENCE A		POU3	
SEQUENCE_B		PCU3	
			×
Help		0K.	Cancel

The following figure is showing the elements of the Step Protocol:

#### Figure 7-3



NOTE

The Step Protocol is displaying data for one Unit.

# 7.2 Batch Trends – Curve Output

The system can log measurements of specific values over a certain period, creating so-called "Trends". These curves can be displayed with the application "Curve Output". The values which should be archived and displayed within the trend need to be defined by the engineering team in the application "Trending definition" from the tab "Engineering-Tools" first.

The application can be found in the "Archives" tab in the Application Center, indicated by the following icon:

Figure 7-4



#### 7.2.1 Types of Trends

BRAUMAT / SISTAR supports three types of trend curves:

- Short term trends: User-selected collections of trend curves which are not stored on the hard disk. The values are stored in a cyclic buffer in the memory and will be overwritten permanently when the buffer exceeds.
- Weekly archives (stored on hard disk) are running cyclically in the scope of the current week.
- Batch archives (stored on hard disk) typically displaying trends in scope of a batch, e.g. the logging is enabled when the batch starts and disabled when the batch ends.

#### 7.2.2 Features of the Trend display

- Each trend group file (a so called "Trend Picture") may contain up to eight analogue and sixteen digital curves with their units in one picture. Each curve can be individually shown or hide.
- The operator can print views of the curves.
- A zoom function allows a deeper and more accurate analysis of the trend values.
- A ruler shows the exact process values and time.
- The scaling of the curve, physical units etc. are configured in the application "Trending definition".

#### 7.2.3 Selection of Trends

To display a trend open the "Batch Trends" application. From the menu select "File > Open" and the archive type of interest.

Fig	uro	7-5
гig	ure	1-0

😼 BRAU	MAT	/7.5 {Area1} ·	- Cı	irve output
Program	File	Functions	0	ptions Acknowledge Help
		New		s frign
		Open	>	Short-term archive
		Edit	>	Batch archive
		Print		Weekly archive

Alternatively you can use the corresponding buttons from the toolbar.



The "Open Image" dialog opens were the operator can select the image of interest and the options for display.

The following options are available:

- Normal View: The measured values are related to a batch ID. In a second step the user selects the batch ID.
- Compare Curves: The curve of the current batch is compared to the curve of a previously saved batch. Again, the user selects the batch ID in a second step.
- Free Selection: It is possible to visualize up to eight batch curves in a single display. The selection is specific to the measured value and will be used as reference for the selection "reference curves".

The figure below is showing the scenario how to configure a normal view for a Batch Archive. Select the year, recipe category, order and batch number from the Batch Selection dialog and press the OK button afterwards.



#### 7.2.4 Working with the Trend Display

The Trend Display is providing the following functionality

• Zoom In

To zoom into the Trend Area press and hold the left mouse button, drag the area of interest and release the mouse button.

**NOTE** The Ruler must not be activated to use the zoom function

 Show/Hide individual curves To show/hide individual curves just click on the curve name on the upper left pane of the Trend Display. To display all curves you can use the button from the toolbar.

Figure 7-8



Ruler To enable/disable th

To enable/disable the Ruler functionality, just click on the button from the toolbar.

Figure 7-9

.



Print To print out the collection, e.g. as a pdf file, just click on the printer button from the toolbar.

Figure 7-10



# 8 Message system

# 8.1 Alarm System

#### 8.1.1 Overview

The Message and Alarm System provides information's about operating states and system or process faults within the process. This allows the operator to detect critical situations at an early stage and avoiding errors and failures.

For each message separate texts for incoming and outgoing messages are available. Additionally, the messages will be archived on the hard disk of the BRAUMAT / SISTAR Server. The messages and alarms can be displayed on several ways.

• The Application "Message archive" is displaying archived messages.

#### Figure 8-1

0														
🔠 BRAUMAT V	7.5												-	
File Edit View	r Help													
💦 Archi	ive viev	wer												
Begin	13.08.2018	8 Select	:		0 🖸 On	anges (	0 Elem	ents)						
End	24.08.2018	3		5	🛛 📢 me	ssager	(1083	8 Elerne	nts)					
Date and time	t - Ty_	Recipe categ	Or_	Batc	Unit.	Un_	Uni_	PCU	Modul	Objec	Object name	Description		
\$ 20.08.2018	10.2 5	PCU Status	0	0		0	105	4	PCU	1		PCU is offline		
\$ 20.08.2018	10.2 5	PCU Status	0	0		0	105	3	PCU	1		PCU is on STOP		
\$ 20.08.2018	10.2 P	Recipe Control	0	0		0	105	0	REDU	0		IOS is set to stand	by	
\$ 20.08.2018	10.2. B	RECCAT_1	0	0	003	1	SE	3	SEQU	1	SEQ_PCU3_1	Unit message:	Perm. cor	nd. off
\$ 20.08.2018	10.2. B	RECCAT_1	0	0	003	2	SE	3	SEQU	2	SEQUENCE_002	Unit message:	Perm. cor	nd. off
\$ 20.08.2018	10.2. B	RECCAT_1	0	0	003	3	8H	3	SEQU	3	BH_Start	Unit message:	Perm. cor	nd. off
\$ 20.08.2018	10.2. B	RECCAT_1	0	0	003	4	8H	3	SEQU	4	BH_Milistar	Unit message:	Perm. cor	nd. off
\$ 20.08.2018	10.2. B	RECCAT_1	0	0	003	7	8H	3	SEQU	7	BH_Mashtun	Unit message:	Perm. cor	nd. off
e 30.00 3010	10.2 0	DECENT 1	0		000	0	011		0000	0	ALL LADING MARKING	Dark second and	D	H

• The Message Control faceplate is displaying messages in the process images.

#### Figure 8-2

BRAUMAT V7.5 (Area1)

8 + 00 +0	2	8 🛯 🖷	8	n M	9								
Time	Ty_	Recipe ca	Order	Batch	Unit_	U.,	Unit name	P	Modul	Ins	Instance na	Description	
9.03.2019 13:	8	RECCAT_1	000	000	003	063	SEQUENC	0	SEQU	0063	SEQUENCE	Unit message:	Sequence stop
9.03.2019 13:	8	RECCAT_1	000	000	003	063	SEQUENC	0	SEQU	0063	SEQUENCE	Unit message:	Perm. cond. off
9.03.2019 13:	s	Brewhouse	000	000	003	004	BH_MII	0	Seque	0004	BH_MII	monitoring time rec	quest recipe

**NOTE** With the Message Control faceplate, it is possible to configure filter settings. Therefore, the output can vary in different projects depending on the project requirements.

• The application "Sequence Control" is displaying Unit related Messages.

#### Figure 8-3

Program	Proces	ss cel	Fund	tions	Option	is Ackno	wledge	Help										
9 H	00 V <sup>0</sup>	Ð	۰	+	- 49	8.5	19 D	18 4	н	0 ▲	A 1	= @   •						
lo Sequ	ence		Seq Stat	he Die	şkay			Step	EOP	EOP No	ne	EOP	Status	Time	Recipe calleg	ory	Recipe	
E BU	Militar		lde	A	+	~	-	0	0	-		Ide		00.00.00	RECCAT_1			
BH	Mashhun		1de	A	+	-	-	0	0	-		Ide		00.00.00	RECCAT_1			
EHU	Lautertun		Ide	A	+	-1	2	0	0	-		Ide		00:00:00	RECCAT_1			
t																		>
Sequence	Related	Setpo	into BH.)	Miletar (*	CU3.4]				Step I	lelated Set	points							
Varie		Unit		Selpo	et	Actual valu	e Diff.	0	Name			Unit	Selpo	int .	Actual value	Diff.		
¢								>										
Time	Type	Rec	ipe c	Orde	Bato	h Unit	Unit	Unit	PCU	Modul_	In.,	Instance na	me	Descrip	tion			
3.08.20	в	REC	CAT	0000.	0000		004	BH_M.	003	SEQU	00	BH_Millstor		Unitme	ssage: Per	m. cond	. on	4
23 08 20	8	RE(	CAT	0000	0000	003	004	BH M	003	SEQU	00	BH Million		Unitme	ssage: Per	m. cond	Lot	

#### 8.1.2 Message Classes and Types

There are different classes and types of messages in the BRAUMAT / SISTAR system available which are displayed in the following table:

Message Class	Description	Message type	Description	Color
E	Error/failure	F	User fault message	Violet
		S	System fault message	Red
W	Warnings	W	Warning	Orange
М	Process Messages	М	User status message	Green
		В	Operator message	Blue
0	Operation Request	0	Operation Request	Dark green
	No Class	Р	IOS Message	Light Brown

Table 8-1

#### 8.1.3 Reset Messages

The application "Sequence Control" can be used to reset the Error, Warnings and Process Messages, which are displayed in the following figure.

#### Figure 8-4



To reset the messages within the Process Picture the Unit Control faceplate can be used.

#### Figure 8-5

Time	Ту	Recipe ca	Order	Batch	Unit	U	Unit na
19.03.2019 13:	S	Brewhouse	000	000	003	004	BH_Mill
BH_Start			SEQ	PCU3_	1	A 🖂	0 9
BH_Mill		A 🖂 🖉 😲	SEQU	ENCE_0	02	10	8 9
BH_Mashtun		APRO	CEOU	ENCE A	≏5 🖄	1 🖂	9
BH_Lautertun		A Keset pr	ocess m	essage:	N 60	A 🖂	9

#### 8.1.4 Loop in Alarm

You can use the following applications to jump directly from the message into the responsible source object in the process diagram (Loop in Alarm).

- Message faceplate from the Process Picture
- Application Sequence Control
- Application Message Viewer (Archive)

This can be done by double-click into the message of interest or by using right click and select "Goto Process Diagram".

#### 8.2 Message archive

The application allows you to display and print

- messages
- process operations
- changelogs
- configuration changes

within a selected time period. You can add your own filter criteria and column settings for searching and displaying the associated archive files for the selected type and period (based on days). It is also possible to sort the archive files by column within this context.

The currently selected settings for archive selection, column selection and sorting are saved for the next call of the application.

1. Open menu "Archives > Changes and messages"

# Figure 8-6 Production Archives Engineering Administration Diagnostics Archives Batch trends, protocols, and archives Batch trends Step protocols Changes and messages

2. From the Archive Viewer tick the "Messages" checkbox and specifying the report period by double-click the begin/end date fields in the main view or select the Open button from the toolbar.

#### Figure 8-7

	9		-															
1	RAUM	AT VTS	Area10															
föe	Edit 1	new H	eip .															
	af 62	011	03	8														
N	An	hive	vie	wer														
-			_	_														
Be	yn.	26	02.201	9	Sek	tell (		000	Nanges	(15.6k	(ann)							
£rel	0	26	02,200	9				1	essage	s (32 f	lements	5						
D	fie and	tree -	- 3	Recipe	celeg.	. o.	Det.	Unt	Isn.	UN.	PCU .	Modul.	Otier.	Object name	Description		RUNNE	Book rumb.
4			14	Distantini,	and in	4	11	(00)	1	- DH	1	Sec.	+	Bit Masteria	-Michileting term	Instant.	10001-00	
4	34.00.0	11111	. W	Errotun	-		TL	3003		fer.	1	Segre.		The Manheum	Munduing treat	Test Mart		
4	M (2.0	111.15.3	W	Breve face		8.		301		DL.	1.	Seare.		Wr.Lawrence	Monthered time	Next Hart		
4	25.02.2	111 153	. 8	Breeho	uie .	.9	11	003		BH.	3	SEQU		BH Lautertun	Unit message:	Step selection.		
4		119 152	W	- Simulat	-		11	.007		DH.	1	Sec.	1	SPI Mailtin	Mindunes, Line	Tault start		
4	8.02.0	11 152	W	Entertor		1			14.	DA.	1	Seat-	4	and Adoption	Monteeng time	Anut Mart		
-	26.02.2	019 152		Breato	use :	8	19	001	.7	BH_	3	SEQU.	2	BH_Mashtun	Livit message:	Step selection		
4	75.02.2	019 152		Breeho	and i	9	11	003	-4	DH.	1	SEQU	4	BH,Milstar	Unit message:	Step selection.		
4		its sed	W	Destroy	-	1	1		1	DH.	1.	Section.	2	Mit Nummer	Mennaning term	fault start		
4			W	States	-		1.	1018		514	1	Same.		BH, Masterie	Ministering Server	And State		

3. To filter the output data, select the "Filter Output" button from the toolbar.

Figure 8-8

	Ē	9	<u>à</u>	[	Y	8
-						

4. Set the filter of interest and click OK.

#### Figure 8-9

3			
)efine filter			×
Filter output			
Property	Filter	^	OK
🍬 Object number	*		Cancol
🔃 Old value	*		Caricei
🔖 Order Number	*		
🔃 PCU name	*		
🔖 PCU number	3		
🔖 Recipe category name	Brewhouse		
🔖 Recipe category number	*		
< Status	*		
┥ Туре	*		
🦠 Unit name	*		
🦠 Unit number	*		
📢 UnitPCU	*		
🕞 User	*		Pocot

**NOTE** The batch number must be padded with leading zeroes. E.g. to filter for the batch number "3" enter "000003".

# 8.3 Change Protocol

All user activity is logged together with the user ID in the change protocol. The Change Protocol can be opened from the Message Viewer like the Message Archive, see above.

From the Archive Viewer select "Changes" instead of Messages and specify the report period by double-click the begin/end date fields in the main view or select the Open button from the toolbar. To filter the output data, select the "Filter Output" button from the toolbar.

Figure 8-10

BRAUMAT V7.5 (Area1)																-
ile Edit View Help	8															
😹 Archive view	ver															
Begin 26.02.201	5ek	đ	8	Changes	(15 Ek	ments)										
End 26.02.2019	(			< message	s (32 E	kements)										
Date and time - Ty.	Recipe categ.	Or	Batc.	Unit. Un.	Uni_	PCU_	Modul.	Objec.	Object name	Description	PCU name	Block numb	Data word	Bit number	Attribute na	Entry type
26.02.2019 15:2	Brewhouse	9	11	0		0	Batch	2	Pils	New batches		0	0	0		Order syste
26022019 135.		0	0	0		3	DFM1	7	DFM1 7	Value changed online	PCU3	737	920	20	Setpoint	Change val
26022019 135	Brewhouse	1	1	7	BH.	3	Secue.	2	RM Machine	Makes channed online	8010	1914			A	-
									and mannan	varie changed online	PC03	743	1506	20	901me,5P	Change val
26022019135.		0	0	4	BH.	3	Seque.	4	BH_Militar	Value changed online	PCU3	725	1506	20	NewStep	Change val Change val
26.02.2019 13.5. 26.02.2019 13.5.		0	0	4	BH.	3	Seque.	4	BH,Milstar BH,Milstar	Value changed online Value changed online	PCU3 PCU3	725 725	1506 880 888	20 16 16	NewStep BA,RecNo	Change val Change val Change val
26.02.2019 135. 26.02.2019 135. 26.02.2019 135.		0	0	4 4 4	BHL BHL BHL	3 3 3	Seque. Seque. Seque.	4 4	Br(Mistar Br(Mistar Br(Mistar	Value changed online Value changed online Value changed online	PCU3 PCU3 PCU3	725 725 725	1506 880 888 888	20 16 16 19	NewStep BA,RecNo BA,RecType	Change val Change val Change val Change val
26.02.2019 13.5.           26.02.2019 13.5.           26.02.2019 13.5.           26.02.2019 13.5.           26.02.2019 13.5.		0 0 0	0 0 0 0	4 4 4 4	BHL BHL BHL	3 3 3	Seque Seque Seque	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	BH,Milster BH,Milster BH,Milster BH,Milster	Value changed online Value changed online Value changed online Value changed online	PCU3 PCU3 PCU3 PCU3 PCU3	725 725 725 725	1506 880 888 887 886	20 16 16 19 19	Schme,SP NewStep BA,RecNo BA,RecType BA,Near	Change val Change val Change val Change val Change val
<ul> <li>№ 26/02/2019 13.5</li> </ul>		0 0 0 0	00000	4 4 4 4 4 4	民民民民	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Seque Seque Seque Seque	4 4 4 4 4 4	Br(Milstar Br(Milstar Br(Milstar Br(Milstar Br(Milstar Br(Milstar	Value changed online Value changed online Value changed online Value changed online Value changed online	PCU3 PCU3 PCU3 PCU3 PCU3 PCU3	725 725 725 725 725 725 725	1506 880 888 887 886 890	20 16 16 19 19 19	Schme,SP NewStep BA,RecNo BA,RecType BA,Year BA,ONo	Change val Change val Change val Change val Change val Change val
24022019135.           24022019135.           24022019135.           24022019135.           24022019135.           24022019135.           24022019135.           24022019135.           24022019135.           24022019135.		0 0 0 0 0	00000	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	記記記記	3 3 3 3 3 3 3	Seque Seque Seque Seque Seque	4 4 4 4 4 4 4 4 4	BH,Milstar BH,Milstar BH,Milstar BH,Milstar BH,Milstar BH,Milstar	Value changed online Value changed online Value changed online Value changed online Value changed online Value changed online	PCU3 PCU3 PCU3 PCU3 PCU3 PCU3 PCU3	725 725 725 725 725 725 725 725	1506 880 888 887 886 890 892	20 16 19 19 19 56 56	Stime,SP NewStep BA,RecType BA,Tear BA,ONo BA,BNO	Change val Change val Change val Change val Change val Change val Change val

# 9 Replay Mode

# 9.1 Introduction

The main scope of the Replay mode is to identify error statuses that occurred in the past. Those events can be totally and conveniently observed and localized in terms of their origins and their potential effects.

# 9.2 Starting the Replay Mode

The Replay Mode can be started from the Process diagrams application.

In the title bar navigate to Options and activate the Replay Mode. Alternatively, you can activate/deactivate the Replay Mode from the symbol bar by clicking on the camera button.

Figure 9-1



After the Replay mode was activated, an additional operator panel is displayed at the bottom edge of the process diagram that allows the following input:

- Preselection of the replay time (date, time)
- Slider for fast changing of the replay time (min:sec)
- Entry of the replay interval (in sec where n = 1 ... 60)
- Stop / Pause buttons
- Jump Forward/Backward buttons

#### Figure 9-2



# 9.3 How to Preselect the Starting point for the Replay Mode

Additionally, the Replay Mode is intended to help the operator to identify exceptional statuses or events quickly. Therefore, it is necessary to establish a simple and intuitive connection between the specific event (signal/status in the process diagram or message in the message window or message archive) and the replay time.

The next chapter describes typically uses cases how to preselect the Replay Mode with the time stamp when the specific event occurred, e.g. an Alarm Message.
## 9.3.1 Setting the Replay Time via process picture

- 1. Select the object of interest from the process picture, e.g. a valve or pump.
- 2. Right click on the object and select "Operations and Messages".

The archive viewer appears and is showing messages of the selected object in the scope of current day. For changing the display period see .8.2.

3. Select the message of interest, right click and select "Set Replay Time".

#### Figure 9-3 문 -File Edit View Help Archive viewer 05.07.2018 🔃 🔯 Changes (22 Elements) Red End 06.07.2018 🖂 🚭 messages (51 Elements) Date and time Type Reci Geti 06.07.2018 14:32:0 P

## 9.3.2 Setting the Replay Time via message system

Similar to the previous use case it is possible to set the Replay Time from a specific message in the message archive directly, see also chapter 8.2 Message archive

- Open the Archive Viewer and define your display period by select "File > Open".
- 2. Define additional filter settings if needed by select "View > Filter settings".
- 3. Select the message of interest, right click and select "Set Replay Time".
- 4. Setting the replay time from a specific message in the message view control.
- 5. Select the message of interest, right click and select "Set Replay Time".

#### Figure 9-4

Program Fi	De v	rocess diagrams	Options	Acknowled	pe Help H SA												
Time	Type	Recipe catego	Order	Batch	UwaPCU	Unit	Unit nar	me P	CU Module_	Inst.	Instar	ice name	. (	Description			
06.07.7		Breshouse, V7	000027	000001	007	5	at Replay	Time		27.1	324.3	1,0010		orong Druble activated	5		
06.07.2.	M.				1		Benecita	able infor	mation	23	21_13	000002	1	11_11_01002 /Seton 11_11_01003 /Seton	0401		0
Halt into	NR.S	TAAB	9	Milet	н2	1.00		2	Lauter Parameter	123	(R) 🛤	17 13	2	Whetpos	NA PA	82	0
Mat out	lake -	A 19 00 27	9	Mush t	tin 1	201		9	Wort prerun	1 B		63	8	Trublank	BVA	12.7	0
Sei Nash	then.	- AA	0	Masht	tin 2	1.11	- C C	9	Which het the	10	AL	0013	5	CP Brewhouse	1VAVA	80.7	D
Mastar	1	0.0.00	10	Laute	rturi	AA		9	Hop Dosing	123		100	Σ	CP MakeupDowing	AA	B .7	0

## 9.3.3 Setting the Replay Time via batch archive

- 1. Open the "Order Management" from the Application Center
- 2. From the left navigation pane select the "Archive" List from the bottom to display all finished batches.
- 3. Select the "Year" and the Order Category of interest
- 4. Select the Order of interest, right click and select "Set Replay Time"

### Figure 9-5

•	* # B	atch list	- Brewhouse - Orde	Archive	2018 - Brewhouse ×	
の施設	No	Year	Starting time	Order Category	Order Batch	Status
Production AREA 1     2018     2018	# 001	18	06.07.18 13:28:37	Brewhor	t Replay Time	Finished
Σ Order 27 (2)	+	_				
2016						

# 10 Route Control System

## 10.1 General information

The route control system ("RCS") is primarily a tool by which the planning, processing and the diagnosis of routes can be performed in environments with many different routes, like in the tank farm of a brewery. It allows controlling and monitoring in an easy and transparent manner.

# 10.2 Switch RCS servers

In a redundant RCS server environment, only one RCS server could be active at one time. The server can be set to "Active" like the recipe server.

In order to switch over from one server to another, the menu "Program > Activate Route Control of PCU-Server" should be selected. You can also click the icon from the PCU-Server toolbar which is displayed in the figure below.

Figure 10-1



The RCS server status (active/passive) is displayed through an icon in the PCU Server. The RCS server is starting up properly, if all connections are established for each PCU. This can be checked with the PCU-Server, navigate to "Options" ► "route-control".

#### Figure 10-2

Functions Option	no (Production AREA 1) Routing System - Transfe.
Status PCUs	Routes
105 T	Status SERVER
Server 1	Standby 0 PCUs 1, 3
	Close

By selecting the tab "PCU" all configured connections are displayed.

Fi	ia	ur	е	1	0-	-3
	ч	u	~		0	0

1E	Braumat Demo	(Production /	AREA 1	Routing S	System - Tra	ansfer BBT>Fille	r 🗶
Functions 0	ptions						
Status P	CUs Routes						
PCU Type	MasterFor	Supervising	FIFO	Svr	Stdby	State	Last Error
1:001 \$7	1-10	77 - 0/10/15	1	1	102	SERVER	
1:003 \$7	11-13	77 - 0/10/15	1	1	0	SERVER	
L							

All PCUs must be in the state "server" to be able to receive telegrams. If this is not the case select the command "Restart" from the menu "Functions".

**NOTE** If the PCU was in "stop" mode or the power supply was off a restart of the PCU-Server is always required.

## 10.3 RCS Online

The RCS Online application consists of two sections

- The Route view offers an overview of Routes which are created in the engineering tool
- The view of the participating elements or request details of the selected Route.

#### **Route view**

Route view displays all projected routes and their current states.

- Inactive: white
- Requested: yellow
- Active: green
- Error: red

#### Figure 10-4

•									
Ele C	ontrol ⊻iew Q	ptions ?							
0	è H ≯		<ul> <li>Image: A set of the set of the</li></ul>						
Route	Master PCU	FuncID	Mode Table	Material	Unit	RT / Order / Batch	Source	Destination	Description
H 001	PCU 001 V5.x	Transfer	Transfer 88T>FILLER	(0)	(0)	000 / 00000 / 00000	B8T3	FILLER02	Route ready for start
D05	PCU 001 V5.x	Transfer	Transfer B8T>FILLER	(0)	(0)	000 / 00000 / 00000	B8T1	FILLER01	Route started
1 003	PCU 001 V5.x	Transfer	Transfer B8T> FILLER	(0)	(0)	000 / 00000 / 00000	88T1	FILLER01	Fault Time Error
004	PCU 001 V5.x	Transfer		(0)	(0)	000 / 00000 / 00000	B8T7	FILLER03	Route inactive
005	PCU 001 V5.x	Route5		(0)	(0)	000 / 00000 / 00000			Route inactive
006	PCU 001 V5.x	Route6		(0)	(0)	000 / 00000 / 00000			Route inactive
007	PCU 001 V5.x	Route7		(0)	(0)	000 / 00000 / 00000			Route inactive
008	PCU 001 V5.x	Route8		(0)	(0)	000 / 00000 / 00000			Route inactive
009	PCU 001 V5.x	Route9		(0)	m	000 / 00000 / 00000	70 WORT LL-	BBT3	Route inactive

The selected Route can be controlled manually with the buttons from the toolbar or from the menu "Control"



## **Route Settings**

Open the property dialog from the menu "Control > Route Settings".

**NOTE** Changes via the property dialog will only be allowed if the Route is in manual mode and not requested or active.

On this tab, parameters for source, via 1...10 and destination are located. The display of the locations results in a tree view, which views the plant hierarchy and distinguishes between Process Cell/Unit-related locations and so-called general locations.

Figure	10-6

	Route Settings: Route 001
Locations General settings	
Source:	BBT1 (1) ~
Destination: Via 1:	BBT06-07-T1 (14)     BBT06-07-T2 (15)     BBT06-07-T2 (15)     BBT06-07-T2 (15)
Via 2:	
Via 3:	BBT4 (4)
Via 4:	B8T6 (6)
Via 5:	No Location V
Via 6:	No Location V
Via 7:	No Location 🗸
Via 8:	No Location V
Via 9:	No Location V
Via 10:	No Location V
	OK Cancel

## **Details view**

The second part provides information about the elements and their states of the selected route in "Elements View".

The "Modes View" is providing information's regarding the configured modes and their respective states.

Figure	1	0-7
--------	---	-----

Elements	Modes								
Name		PCU	No.	Mode	Mode No.	Partial Route	Op. Mode	Feedback	Command
× 81_10_01P	01	PCU 001 V5.x (1)	100	Baseposition	1	B8T06-07-T1>T1-FILLER	Auto	OFF	OFF
×81_10_01P	01	PCU 001 V5.x (1)	100	Pump	7	88T06-07-T1>T1-FILLER	Auto	OFF	ON
×81_10_01X	V09	PCU 001 V5.x (1)	777	Baseposition	1	88T01>88T01-T1	Auto	CLOSE	CLOSE
×81_10_01X	V09	PCU 001 V5.x (1)	m	Source open	3	88T01>88T01-T1	Auto	CLOSE	OPEN
×81_10_01X	V10	PCU 001 V5.x (1)	778	Baseposition	1	88T01>88T01-T1	Auto	CLOSE	CLOSE
×81_10_01X	V11	PCU 001 V5.x (1)	779	Baseposition	1	B8T01>B8T01-T1	Auto	CLOSE	CLOSE
281_10_01X	V11	PCU 001 V5.x (1)	779	Source open	3	88T01>88T01-T1	Auto	CLOSE	OPEN
×81_10_01X	V11	PCU 001 V5.x (1)	779	Baseposition	1	88T01-T1>88T02-03-T1	Auto	CLOSE	CLOSE
×81_10_01X	V12	PCU 001 V5.x (1)	780	Baseposition	1	88T01>88T01-T1	Auto	CLOSE	CLOSE
×81_10_01X	V13	PCU 001 V5.x (1)	781	Baseposition	1	88T01>88T01-T1	Auto	CLOSE	CLOSE
* 81_10_020	V11	PCU 001 V5.x (1)	792	Baseposition	1	B8T02-03-T1>B8T04-05-T1	Auto	CLOSE	CLOSE
×81_10_03X	V11	PCU 001 V5.x (1)	805	Baseposition	1	88T02-03-T1>88T04-05-T1	Auto	CLOSE	CLOSE
*81_10_0400	V11	PCU 001 V5.x (1)	818	Baseposition	1	88T04-05-T1>88T06-07-T1	Auto	CLOSE	CLOSE
×81_10_05X	V11	PCU 001 V5.x (1)	831	Baseposition	1	88T04-05-T1>88T06-07-T1	Auto	CLOSE	CLOSE
×81_10_06X	V11	PCU 001 V5.x (1)	844	Baseposition	1	B8T06-07-T1>T1-FILLER	Auto	CLOSE	CLOSE
×81_10_07X	V11	PCU 001 V5.x (1)	857	Baseposition	1	B8T06-07-T1>T1-FILLER	Auto	CLOSE	CLOSE
×81_10_07X	V15	PCU 001 V5.x (1)	861	Baseposition	1	88T06-07-T1>T1-FILLER	Auto	OPEN	CLOSE
×81_10_07X	V15	PCU 001 V5.x (1)	861	Route	2	88T06-07-T1>T1-FILLER	Auto	OPEN	OPEN
291 10 010	V11	PCU 001 V5x (1)	864	Reseposition	1	RRT06-07-T1>T1-FILLER	Auto	CLOSE	CLOSE

The symbols used for the Element types are described in the following table.

Table 10-1	
Symbol	Element Type
×	Control
~	Sensor
٢.	Parameter
j.	Link

In manual mode, activation and deactivation of modes is possible.

Figure 1	0-8
----------	-----

Elements Modes												
Bement	PCU	No.	Op. Mode	Feedback	C Baseposition	R Route	C Source open	E Pushout	G Filler	S Drain	G Pump	S 7Source Empt
2 81_10_07XV11	PCU 001 V5.x (1)	857	Auto	CLOSE	d?							
2 81_10_07XV15	PCU 001 V5.x (1)	861	Auto	OPEN	d?	ð						
2 91_10_01XV11	PCU 001 V5.x (1)	864	Auto	CLOSE	d?					а		
2 91_10_01XV12	PCU 001 V5.x (1)	865	Auto	CLOSE	d?							
2 91_10_01XV02	PCU 001 V5.x (1)	869	Auto	CLOSE	d?				a			
2 91_10_01XV03	PCU 001 V5.x (1)	870	Auto	CLOSE	d?							
2 91_10_01XV06	PCU 001 V5.x (1)	873	Auto	OPEN	d?	a						
2 91_10_01XV07	PCU 001 V5.x (1)	874	Auto	CLOSE	d?							
2 91_10_01XV08	PCU 001 V5.x (1)	875	Auto	CLOSE	d?							
291_10_01XV09	PCU 001 V5.x (1)	876	Auto	CLOSE	d?							
2 91_10_02XV06	PCU 001 V5.x (1)	882	Auto	CLOSE	d?		1					
2 91_10_03XV06	PCU 001 V5.x (1)	892	Auto	CLOSE	d?		-					1
2 81_10_01XV15	PCU 001 V5.x (1)	1010	Auto	CLOSE	d?			a				
START-EMPTYING	PCU 001 V5.x (1)	1020	Auto	OPEN	a							
SBBT01-EMPTY	PCU 001 V5.x (1)	1	Auto	TRUE								a?
VOL BBT01	PCU 001 V5.x (1)	1	Auto		E							1

## Diagnostic for route request errors

The cause of request errors is displayed in the view of request details.

🗿 Brau	mat Dem	o (Pi	oduction	AREA	1) Rout	e Contr	ol Online	e - Tran	sfer BBT>Filler -	Serve	er: Productio	n AREA 1/SLS	TESTV	•
jile <u>C</u> o	ontrol View	v Q	otions ?											
ถ 😒	1	Elen	ient List											
er E	- N. V	Requ	est Details		Table		Material	Heit	RT / Order / Batch	Sec	rce D	ertination	Descri	ntion
001	PCL	Relo	əd		r BBT	FILLER	(0)	(0)	000 / 00000 / 00000	BBT	B FIL	LER02	Router	eady for start
D02	PCU 001	/5.x	Transfer	Transf	er BBT	FILLER	(0)	(0)	000 / 00000 / 00000	BBT	I FL	LER01	Routes	tarted
1 003	PCU 001	/5.x	Route3				(0)	(0)	000 / 00000 / 00000	BBT1	1 FL	LER01	Elemer	t(s) or partial
004	PCU 001	/5x	Transfer				(0)	(0)	000 / 00000 / 00000	BBT	7 FIL	LER03	Routei	nactive
005	PCU 001	/5x	Route5				(0)	(0)	000 / 00000 / 00000				Routei	nactive
006	PCU 001	/5x	Route6				(0)	(0)	000 / 00000 / 00000				Routei	nactive
007	PCU 001	/5x	Route7				(0)	(0)	000 / 00000 / 00000				Routei	nactive
800	PCU 001	/5x	Route8				(0)	(0)	000 / 00000 / 00000				Routei	nactive
009	PCU 001	/5.x	Route9				101	(0)	000 / 00000 / 00000	70 V	VORT II RR	TR	Routei	nactive
Locke	d Elements		Locked Part	ial Router	;		1.0	100		74 4	NUKT 11	13	KOLEP	nactive.
Name			PCU		No.	Mode	Mo	de No.	Partial Route		Op. Mode	FuncID	Sum	Command
81_10	_01XV09		PCU 001 V5	.x (1)	777		3		88T01>B8T01-T2		Auto	Transfer (301)		OPEN
STAR	T-EMPTYIN	G	PCU 001 V5	.x (1)	1020		1		88T01>88T01-T2		Auto	Transfer (301)		OPEN
91_10	_01XV02		PCU 001 V5	x (1)	869		5		T2-FILLER>FILLER	01	Auto	Transfer (301)		OPEN

# **10.4 RCS Faceplate (for route control)**

The faceplate is used to display and control the status and operation of the routes for one function ID.

## Icon representation of the RCS Faceplate in process picture

The current status of the route is indicated by a symbol in the detailed view:

lcon	Route state
0	Route is in state "idle" (inactive)
	Route is requested (the route is checked)
•	Route is ok and active (control elements are checked and activated)
H	Route is in stop (route is still active, outputs are not active)
	Route is active, but an error has occurred
▶   👙	Route is in manual mode

Table 10-2

**NOTE** Hover with the mouse pointer over the RCS icon to receive a tool tip with detailed information about the current element.



## **RCS** Faceplate dialog view

This faceplates dialog view consists of three sections, from top to bottom:

- Route view
- Element view
- Message view

#### Figure 10-10

Route-View >> Fi	inctD = Transf	(100) ++	5									- 2
Elle Control Opti-	ors 1											
0 0 1	1	11										
Route Marte	Manda Table	Mater		linia	RT /	Order / Robels	1 fee		Destination		Decolution	-
	State as	- Marce		De la P	0001	Constant of States	1,100	PCR.	Fallance		Could Date	-
										_		
i i					*					_		
Farment   all Bandre B.	-											-
Deserve Later, House 1				_								_
Name	PCU	No.	Mode		Partial Ro	ute	0	p. Mode	Feedback	Comm	and	
81_10_030011	PCU1(I)	805	Basepoort	on GJ	88702-03-	T1>88704-05	-11 Au	#o	CL058	CLOSE		
41_50_01XV11	PCU1(I)	779	Basepool	on (2)	88701-11-	-> BET02-08-T3	- 44	80	OPEN	CLOSE		
K.81 30 01 x008	9C01(0)	112	Period of	on GI	88 001> 8	16/101-11	A	R0.	CIPEN	CLOSE.	<u> </u>	_
ressages (PCU 1 (1))	RET FILLER	148	4		T							
Time T. Recipe	type Order	Betch	U. U.	U	Name	P., Module	No	Name			feit :	-
151:15 8 Transfer	000001	000001	001 064	88T	FILLER	UD32 100	0064	BOT> FR.	LER partplan	t meisage	Step selection	
15119 B Transfer	000001	000001	001 064	80T+	FILLER	001 RCS_Svd	0000	Master Weg	1 REQ Star	1 0011	+ FILLERO2	
131/22 II Transfer	000001	000001	001 064	III>	FILLER	001 RCS_Svd	00001	Master Weg	1 REQ OK;	GETL	> FOLLERO2	
4.5513 B Transfer	000002	000001	001 004	111-0	FILLER	OOL SEQU	0064	BUT P FL	LIR partiglar	e massage	Step selection	
40010 B TANDA	000002	000001	001 064	mp1 )	PRACE.	out wessive	0.000	Market Weg	T KEG SEN	1 10011	> FELLING	
	000000	Another .	WH 004			we we and	0000	and the second second		10011	- ALLINCE	
4.1												

## Table 10-3

View	Screenshot	Note
Route view	Route     Maste     Mede Table     Material     Unit     RT / Order / Batch     Source     Destination     Description       101     FCU1 (1)     Transfer, BBT     (0)     BBT> FL     005 / 00004 / 00001     BBT1     FILLER02     Route started       Source:     Source:     BT1 (1)     Source:     BT1 (1)     BUT     FILLER02     Route started       Source:     BT1 (1)     Destination:     FLLER02 (28)     III     III     III       Ement Ust:     Route 1     T     III     IIII     IIII     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	In this view the active routes are displayed. The full name of the element, name of source and destination are displayed as tool tips.
Element view	Exament Lat: Route 1         V           Name         PCU         No.         Mode         Partial Route         Op. Mode         Feedback         Command         *           \$*Start-HMPTNIG         PCU 10 (1)         1000         Bargenetics(1)         Route         OpN         OPN         OPN         OPN         OPN         Feedback         Command         *           \$*Start-HMPTNIG         PCU 10 (1)         155 Succ. Empty 008 BIGU 88101-11         Audo         OPN         OPN         OPN         OPN         *         Feedback         Command         *         external         *         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #         #<	The element view is like the element view of RCS-online tool.

## 10 Route Control System

View	Screenshot	Note
Element view (filtered output)	Route         Mode Table         Material         Unit         RT / Order / Batch         Source         Destination         Description           RV01         IRCU1 (0) Trender Bata         (0)         (81 →> FL         (005 / 00005 / 00001         (881 →> FL         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00000)         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00005 / 00001         (005 / 00005 / 00001         (005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 / 00005 /	For diagnostic a filter can be set to display only the faulty elements. Click the funnel icon on the window.
Message view	Imessages (POU 1 (1)/BBT -> FLLER (64))         Image: Construct and the state of the stat	In the message window alarms are shown that originated in the plant section of the selected route. Filtering by clicking on the funnel icon reduces the displayed error messages again.

# 10.5 RCS Troubleshooting

This section deals with problems which can occur in connection with step processing.

## 10.5.1 Process hangs because of Route Errors

**NOTE** If a plant unit does not step to the next step although the error is acknowledged, then probably the activated route is not working properly.

Open the RCS-faceplate dialog and navigate to the faulty route element.

Figure 10-11

¥1			Rou	rte-View >> Fu	nclD	Transfer (3	01)				x
File Cor	ntrol Opt	tions ?									
0 1	ы п.	/ 🦻 👯									
Route	Maste	Mode Table	Mater	ial Unit		RT / Order / Ba	itch	Source		Destinat	tion
1 001	PCU 0	Transfer BBT	(0)	(0)		000 / 00000 / 00	000	38T3		FILLER02	
II 002	PCU 0	Transfer BBT	(0)	(0)		000 / 00000 / 00	000 1	188T1		FILLER01	
<											>
Element Li	at Doute 2	7.									_
Clement C	or movie z	9									
Name		PCU	No.	Mode	Part	ial Route		Op. Mode	Fee	dback	^
× 81_10	07XV15	PCU 001	861	Route (2)	BBT	06-07-T1>T1-l	FILLER	Auto	CLC	)SE	
2 81_10	02XV11	PCU 001	792	Baseposition (1)	BBT	02-03-T1>BBT	04-05-T1	Manual	OPE	IN .	
× 81_10	01P01	PCU 001	100	Baseposition (1)	BBT	06-07-T1>T1-I	FILLER	Auto	OFF		
× 81_10	01P01	PCU 001	100	Pump (7)	BBT	06-07-T1>T1-I	FILLER	Auto	OFF		
× 81_10	06XV11	PCU 001	844	Baseposition (1)	BBT	06-07-T1>T1-I	FILLER	Auto	CLC	SE	
× 81_10	07XV11	PCU 001	857	Baseposition (1)	BBT	06-07-T1>T1-I	FILLER	Auto	CLO	SE	
2 91,10	01XV06	PCU 001	873	Baseposition (1)	BBT	06-07-T1>T1-I	FILLER	Auto	CLO	SE	
\$ 91_10	02XV06	PCU 001	882	Baseposition (1)	BBT	06-07-T1>T1-I	FILLER	Auto	CLO	SE	
× 91_10	03XV06	PCU 001	892	Baseposition (1)	BBT	06-07-T1>T1-I	FILLER	Auto	CLC	SE	¥
<										>	
messages	PCU 001	V5.x (1)/ (0)]		A = 3							_
Time	Тур	e Recipe cate	gory nar	me Order Ba	rtch	UnitPCU	Unit	Unit name	PCU	Mod	~
08.01.201	91 S			000000 00	00000	001	000		001	RCS	~
											1000

A double click on the faulty route element will directly open the process picture where the element is located. From there the operator can analyze the Control Element.



## 10.5.2 Acknowledge Alarms of RCS

Figure 10-13

**NOTE** The route error must be acknowledged after correction of the faulty element.

Set the route to manual mode and acknowledge the error.

12 C			Route-Vie	ew >> Funct	D = T	ransfer	(301)				×
File Contro	ol Opt	tions ?									
Q 🕘	)ı (	2 🦻 🔋									
Route N	laste	Mode Table	Material	Unit	RT	/ Order /	Batch	Source		Destinat	tio
1001 PC	CU 0	Transfer BBT	(0)	(0)	000	/ 00000 /	00000	BBT3		FILLER02	
D02 P0	CU 0	Transfer BBT	(0)	(0)	000	/ 00000 /	00000	BBT1		FILLER01	
Element List: PCU	Route 1 No.	Mode	Partial F	loute		Op. Mod	le I	Feedback	Comm	and	Т
PCU 001	. 792	Baseposition (	<ol> <li>BBT02-0</li> </ol>	3-T1>BBT04-	05-T1	Auto	0	LOSE	CLOSE		1
PCU 001	. 100	Baseposition (	<ol> <li>BBT06-0</li> </ol>	7-T1>T1-FILL	ER	Auto	0	)FF	OFF		1
PCU 001	. 100	Pump (7)	BBT06-0	7-T1>T1-FILL	ER	Auto	0	)FF	ON		T
PCU 001	. 844	Baseposition (	<ol> <li>BBT06-0</li> </ol>	7-T1>T1-FILL	ER	Auto	0	LOSE	CLOSE		1
PCU 001	. 857	Baseposition (	<ol> <li>BBT06-0</li> </ol>	7-T1>T1-FILL	ER	Auto	0	LOSE	CLOSE		1
	0.72	Descent Street &		7 74 . 74 604	CD	A		ADDAL	CL 005		1

The Route will be restarting after the error was acknowledged and can be switched to automatic again.

## Figure 10-14

			Deute	Manua - Francis					x
+4			Koute-	view >> Fund	ID = 16	anster (301)			
File Cont	rol Option	s ?							
Q 🔁	) 🗸	y 👯							
Route	Maste M	ode Table	Material	Unit	RT /	Order / Batch	Source	Destinat	tion
▶ 001 P	CU 0 Tra	nsfer BBT	(0)	(0)	000 /	00000 / 00000	BBT3	FILLER02	
D02 P	CU 0 Tra	nsfer BBT	(0)	(0)	000 /	00000 / 00000	BBT1	FILLER01	
<			ш						>
Element List	Route 1	Y							_
PCU	No.	Mode	P	artial Route		Op. Mode	Feedback	Command	^
PCU 0	01 100	Basepositio	on (1) B	BT06-07-T1>T1	-FILLER	Auto	OFF	OFF	
PCU 0	01 100	Pump (7)	B	BT06-07-T1>T1	-FILLER	Auto	OFF	ON	
PCU 0	01 844	Basepositio	on (1) Bi	BT06-07-T1>T1	-FILLER	Auto	CLOSE	CLOSE	
00110	01 057	Onconsciele	(1) P	0TO6 07 T1 ST1	CII I CD	Auto	CLOSE	CLOSE	1

# 11 Troubleshooting

This section gives you a few hints to solve simple troubles which may occur during operating of the process.

# 11.1 Problems starting a Unit

If the sequence of a plant unit doesn't start up properly check the following points:

- The sequence-status must be "A" (automatic) and "+" (step forwarding active). (see note 1 in the figure below)
- In case that an order parameter is used in the recipe, the sequence can only be started from the order system. When trying to start the sequence directly a "Recipe load" error will appear in the message system.
- The permanent condition must be ok. If the object is displayed in red. The system is locked and can't be started.



When pressing the button "permanent condition" (see note 2 in the figure below) the "Binary Logic Result" dialog opens (see note 3 in the figure below) which is displaying the reason of the lock.



## Figure 11-2

# 11.2 Sequence Control Issues

If the program doesn't proceed with the next step, the operator should check if all transition conditions, the so called "Next Step Condition" are successfully fulfilled. Typical errors are quantities which are not yet reached their set point values,

Figure 11-3

Synchronization Lines which are not yet reached or tanks which are not yet empty, etc. Depending on the configuration of the project the following procedure differs.

- In case that the Next Step Condition was engineered with a binary logic result object you can use the following procedure.
  - Open the corresponding Unit faceplate and press the button "Next Step condition", the BLR dialog opens
  - Check which logically element was not fulfilled the condition

The example below is illustrating the scenario. In the example 1) the dosing of "Sparging water" is not finished yet. Therefore the "Next Step Condition" is not valid. In the example 2) the dosing of "Sparging water" is finished and the "Next Step Condition" is valid.

	1
🏶 [PCU=1, Class=8LR6, Instance=91] 🛛 🗖	>
Smulete output	
- 00 01	
DFM0 DFM0 Sparging water Besult = FALSE	
Result flag	
Priodic update	
1	
	2
	~
A boost conservat supercented = 0	
- Contractor	
€0 O1	
DEM0 DEM0 Sparging water	
Result = IRLE =	
Reput flag	
	(PCU=1, CleareRLP6, Instance=99)   Image: Simulate output   Image: Simulate output

- In case that the automation layer was engineered with Step 7 classic and no "Binary Logic Result" Object was configured as next step condition, you can use the following procedure to identify why the next step condition will not become active.
  - Activate the S7-Code viewer of the relevant basic operation with the "Detail" button in the Unit faceplate.
  - Use the "+" button to go to the last network.
  - The display shows the relevant commands for the transition condition.

Figure 11-4

The example below is illustrating the scenario.

Terre Typ, Asciptys Ode Scott U Market Same Market Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same Same	Math UP, that Defane ROU Man 1	Model No Kerrer Tell Model No Kerrer Statistics Subjects Market Statistics Subjects Subjects Market Subjects Subjects Subjects Market Subjects Subjects Market Subjects Subjects Market Subjects Subjects Market Subject	
	Son 	Comment of all Mighteed States 17 - KC1000, Inc (1998)     Angenes Anto 1 - Angenes (Spaces Angenes Ange     Angenes (Spaces Angenes Angenes Angenes Angenes (Spaces Angenes Angenes Angenes Angenes (Spaces Angenes Angenes Angenes (Spaces Angenes Angenes Angenes (Spaces Angenes Angenes (Spaces Angenes Angenes (Spaces Angenes Angenes (Spaces Angenes (Spaces Angenes Angenes (Spaces Angenes (Sp	Comment of
	Image: [2++0]         M           Image: Standard         M </td <td>A         A         B         T2         RE3           Verial         L         Dev         T12         4000           Verial         L         Dev         T12         4000           Verial         L         Dev         T12         4000           Verial         L         Dev         2140         420           Verial         L         Dev         POUI00         1           THelip         ZOper         ZAddz         Market 5         8</td> <td>Inclusion Inclusion Particle Particle 2 Planeol 2 11 Planeol 10 10</td>	A         A         B         T2         RE3           Verial         L         Dev         T12         4000           Verial         L         Dev         T12         4000           Verial         L         Dev         T12         4000           Verial         L         Dev         2140         420           Verial         L         Dev         POUI00         1           THelip         ZOper         ZAddz         Market 5         8	Inclusion Inclusion Particle Particle 2 Planeol 2 11 Planeol 10 10
		Workettige	

In case that the Next Step Condition is fulfilled but does not proceed the Sequence, the operator can check the following items from the list below:

- Is any transition condition (temperature, time) not fulfilled?
  - Chose the sequence and select "Program", "Step-on-condition" or press F4 to see the transition conditions.
- Is there an operator request pending?
- Is the program waiting for another sequence (synchronization line)?
  - Check the corresponding icon in the Sequence Control Faceplate as displayed in Figure 11-5
  - Or check the corresponding online recipe.
    - Select the correct sequence from the Sequence Control and press F9.
    - Or press the corresponding Button from the Faceplate.

The graphical recipe will come up and synchronizations are displayed.

#### Figure 11-5

<b>3</b>					
🗈 Lauter Tun 🛛 🕹					
Unit control					
<u>а</u> м					
Occupied state					
Order Number 11	Heat up	<ul> <li>Image: A second s</li></ul>			
Batch Number 1	\$year.12	<u> </u>		Symon 12	=
Recipe category RCAT1	Deut	1 .	EC1080-001	17 Page Periti	
Recipe Export	Kess	<b>Y</b> (	PUTVIN(IN)	Li Base Positi	
8: 😰 📎	Sample Synch.10	<u>⊀</u> ,	PC1091(91)	Water underlet	O
Sequence contro	i				
Sequence Law				11	
Status Rue				_	
Cushoà la su - Q a					

- Are there relevant entries in the Alarm list?
- Is the sequence in "automatic" mode?
  - The automatic mode of the sequence must be set to "A" in the column "Status".
- Is the Step set to hold, indicated by status "A –"?
  - In that case the "Status" column must be set to "+".
- Are there any error messages from one of ICM's used in this area?

# 11.3 Troubleshoot Recipe Server

In case of a redundant server configuration there is an "active" and a "passive" recipe server. The recipes are stored on both servers but only one server will download the control recipes to the PCU when starting an unit. A recipe-load error may occur if both recipe servers having the status "passive". In that case the recipe server can set to status "active" manually.

To identify and change the state of the recipe navigate to the PCU Server and check the corresponding symbols in the toolbar.

**NOTE** The PCU Server must not be closed. Otherwise the connection to the process will be lost!

The PCU Server can be found in the Taskbar indicated by the following symbol



By clicking on the symbol, the PCU Server Dialog appears on the foreground.

#### Figure 11-7



The icons are explained in the following table

### Table 11-1

Icon	Note
ji F	The recipe server has the state "active".
臺 \$	The button to activate the Recipe Server is grayed out in that case.
	By pressing the button "Activate the Recipe Server" a further dialog opens. By pressing the "Yes" Button the Recipe Server will become "Active"
\$ <b>5</b> ∳	PCU server ×
	Yes No

NOTE

E If configured an automatic switch-over of the recipe servers occurs when the active server fails.

## Troubleshooting

The recipe server can only operate properly when all of the following conditions are met, see also Figure 11-4.

- All connections must be established for each PCU in the PCU-Server. (To verify this, switch the PCU-server with the pull-down menu to "View", "couplingstatus".)
- The connection state for the PCUs is green.
- The network cables must be connected properly.
- The PCU must not be in state "STOP".

# 12 Appendix

# 12.1 Service and Support

## **Industry Online Support**

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

The Industry Online Support is the central address for information about our products, solutions and services.

Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks at: <u>https://support.industry.siemens.com</u>

## **Technical Support**

The Technical Support of Siemens Industry provides you fast and competent support regarding all technical queries with numerous tailor-made offers – ranging from basic support to individual support contracts. You send queries to Technical Support via Web form: www.siemens.com/industry/supportrequest

## Service offer

Our range of services includes, inter alia, the following:

- Product trainings
- Plant data services
- Spare parts services
- Repair services
- On-site and maintenance services
- Retrofitting and modernization services
- Service programs and contracts

You can find detailed information on our range of services in the service catalog: https://support.industry.siemens.com/cs/sc

### Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The app is available for Apple iOS, Android and Windows Phone:

https://support.industry.siemens.com/cs/ww/en/sc/2067

# 12.2 Related literature

### Table 12-1

	Торіс
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Download page of this entry https://support.industry.siemens.com/cs/ww/en/view/80142364

# 12.3 Change documentation

## Table 12-2

Version	Date	Modifications
V1.0	01/2014	First version
V1.1	03/2019	Second Version adopt to BRAUMAT / SISTAR V7.5
V2.0	07/2019	Various changes