

# **SCE Training Curriculum**

Siemens Automation Cooperates with Education (SCE) | 09/2015

PA Module P02-03 SIMATIC PCS 7 – Archiving and Trend Reporting



#### Matching SCE Trainer Packages for these curriculum

- SIMATIC PCS 7 Software block of 3 packages Order No. 6ES7650-0XX18-0YS5
- SIMATIC PCS 7 Software block of 6 packages Order No. 6ES7650-0XX18-2YS5
- SIMATIC PCS 7 Software Upgrade block of 3 packages
   Order No. 6ES7650-0XX18-0YE5 (V8.0 → V8.1) or 6ES7650-0XX08-0YE5 (V7.1 → V8.0)
- SIMATIC PCS 7 Hardware Set including RTX Box Order No. 6ES7654-0UE13-0XS0

Please note that these trainer packages may be replaced with subsequent packages. An overview of the available SCE packages is provided at: <u>siemens.com/sce/tp</u>

#### **Continuing education**

For regional Siemens SCE continuing education, contact your regional SCE contact partner. <u>siemens.com/sce/contact</u>

#### Additional information relating to SIMATIC PCS 7 and SIMIT

In particular, Getting Started, videos, tutorials, manuals and programming guide. <u>siemens.com/sce/pcs7</u>

#### Additional information relating to SCE

siemens.com/sce

#### Note on Usage

The training curriculum for the integrated automation solution Totally Integrated Automation (TIA) was prepared for the program "Siemens Automation Cooperates with Education (SCE)" specifically for training purposes at public educational and R&D facilities. Siemens AG is not liable for the contents.

This document may only be used for initial training on Siemens products/systems. This means it may be copied entirely or partially and handed to trainees for use within the scope of their training. Passing on or copying this document and communicating its contents is permitted within public training and continuing education facilities for training purposes.

Exceptions require written permission by Siemens AG. Contact person: Roland Scheuerer roland.scheuerer@siemens.com.

Violators are subject to damages. All rights including translation rights are reserved, particularly in the event a patent is granted or a utility model or design is registered.

Usage for industrial customer courses is explicitly not permitted. We do not agree to the commercial utilization of these documents.

We would like to thank the Technical University Dresden, particularly Prof. Dr. Leon Urbas and Annett Krause, MS, as well as the Michael Dziallas Engineering Corporation and those who provided support in preparing this SCE training document.

## **ARCHIVING AND TREND REPORTING**

## **TRAINING OBJECTIVE**

After working through this module, the students know the basic requirements and objectives of archiving. They are able to apply different types of archiving to process data and messages. The students know how suitable cycles can be determined for time controlled archiving and they also know the criteria according to which event controlled data archiving is executed. They know the options that PCS 7 provides.

## **THEORY IN BRIEF**

Archiving process values is an important resource for correct and optimized process management.

The archived data allows for the analysis of historical data to optimize the process, for tracking faults as well as for quality assurance.

However, not only process values are suitable for archiving, but also messages and events. Particularly in the case of fault states, the operator has to handle a large number of messages so that only after a return to normal operation or at a plant standstill is it possible to determine the exact cause. To this end, the messages and events in the archive can be resorted to, as well as the archived process values.

Process values are usually archived cyclically, messages and events event-controlled. In the case of process values, the exact cycle depends on the dynamics of the process it is based on. Selecting a cycle independent of the process has great disadvantages. A cycle that is too short requires a large amount of memory and under certain circumstances records the noise of the signal. A cycle that is too long leads to values that cannot be used since the development of the process value can no longer be reconstructed.

In the case of signals that are barely subject to fluctuations or not subject to them at all, the acquisition of almost identical values does not make sense; for that reason, it is possible to compress the data; for example, by setting a dead zone. Only when the process value exceeds or drops below the limit that was set is the value stored again in the archive.

Trend reporting provides the operator with an overview of process development up to the current time. From the course of the process value he can determine whether and perhaps how soon a fault state threatens to occur. Thus, countermeasures can be initiated before the protection mechanisms have to be activated.

## THEORY

#### INTRODUCTION

Automating, safeguarding and monitoring processes are basic requirements for a process control system. Archiving the data that accrues offers the possibility of storing historical data and making it available for analysis.

There are many reasons for the necessity to analyze data. There are legal regulations on the one hand, safety oriented and performance related causes on the other.

The legal regulations include logging faults -for example, exceeding limits or the occurrence of an event. Another legal reason for archiving is the verification for certificates and for conditions such as emission limits. In connection with product liability and product safety, archiving of all process steps and materials used is required for the gapless tracking of the product. [1].

Product related reasons for archiving data are the statistical evaluation of production quantities statistical long term analysis to optimize the process, determining the performance, and reduction of production and material cost. The data is also very helpful to the subsequent analysis of faults regarding their effect and propagation as well as the assessment and possibly the revision of existing countermeasures. Thus, plant shutdowns can be avoided and the economic efficiency of the plant can be increased at the same time. Likewise, the data can be used to analyze normal operation and to locate optimization potential or identify possibilities to improve quality. The data is also interesting with respect to the optimization of the maintenance of production resources based on the existing data.

Safety-oriented reasons refer primarily to the adaptation of operating parameters; i.e., limits and response timing. When performing tests to check safety locks and EMERGENCY STOP functions, recorded data can be used to verify the provided functions. If the data should show safety deficiencies, the cause can be analyzed based on the data.

In addition, storing the data in archives retains the performance capability of the process database and provides for data safety. By storing data in an archive database, it is not necessary to maintain all process runs on paper.

Based on the reasons mentioned, archiving proves to be an important resource for correct and optimized process management. This results in different requirements for archiving. It includes that the data is stored completely uniform and structured. Likewise, access to the data has to be possible in a structured manner, and through filtering, for example, permit a selection of the criteria. This also requires, however, that the data is archived for different time spans or with different cycles, and at different locations.

In principle, two types of data can be distinguished: process data that occurs cyclically, and messages and events that occur acyclically. This topic is discussed in greater detail below.

## **PROCESS DATA**

Process data refers to the analog and digital values that is determined by means of sensors and transmitted to the process control system. It is used to control and visualize the process.

Process data is transmitted cyclically to the process control system. In this case, the changes of the analog process values that take place in a certain interval are very different. The cause for this is the different process dynamics. For example, the process data of flow measurements usually has higher dynamics than temperature measurement; i.e., process data of flow measurement changes within or in fractions of seconds, while the process data for temperature measurement changes rather in time intervals of more than 10s.

Analog values should be archived *time controlled*. It has to be noted in this case that process data of very dynamic processes has to be archived at a considerably higher rate than data of slow processes. One reason for this is that the size of the archive is not unnecessarily increased and the other that representing a slow process in intervals that are too short is inefficient or can contain a strong noise signal.

Binary signals can only switch between two states; they should be archived event controlled.

#### **MESSAGES AND EVENTS**

According to [3], *messages* are reports about the occurrence of an event; i.e., of a transition from a discrete state to another. According to [3] an *event* is the spontaneous occurrence of a defined state. Important information for an unambiguous and complete message is the state that occurred, the time and the location. Additional details regarding messages and events are provided in chapter P02-02.

Messages and events occur acyclically and can therefore not be archived at fixed intervals. Here it is necessary to select the relevant messages and events to ensure efficient archiving. One possibility would be, for example, to archive only safety-critical messages or messages with a certain priority.

Messages and events can only be archived event-controlled.

#### DATA COMPRESSING

The data volume in plants is large; usually, only a limited amount can be archived over a certain interval. The amount of data archived depends largely on the cost for the memory medium and the data transmission rate. On the other hand, acceptable data loss has to be considered. The degree of compression results from weighing these two criteria.

When data is compressed, not only the quantity of the stored data changes but also statistical characteristics such as average and variance. For that reason, such values should be calculated from the original data and if needed, archived also. This should be done time controlled, analogously to the archived process data.

For data compression, direct and mapping methods can be used.

When the direct method is used, the data is archived in real time. There are rules that govern the archiving of individual measured values. The data is reconstructed by connected the data points.

When mapping methods are used, the data is not archived in real time since in the transformation the previous courses are included. The original data is mapped in another area. When this procedure is used it is possible to design the compression adaptively, since the algorithms often have a parameter that decides on the quality of the compression in dependence on the process.

#### **TREND REPORTING**

The term *trend reporting* refers to the representation of process values in trends; i.e. dependent on the time. The time interval for trend reporting includes the present and the recent past. It is important that the trend curves, in contrast to pure history curves, are updated [2].

By representing process values in curves, process values can be monitored, changes identified, actual values compared with setpoints, and faults analyzed. In distinction to the pure display of the process variable, curve diagrams provide information about amplitude, ascents, frequency and the course of a process variable.

## **ARCHIVING IN PCS 7**

In the process control system PCS 7, different data can be archived that was generated during the process mode. These are: process values that are stored cyclically in two different types of system archive, and messages that are written event-controlled to the alarm log. This data is archived on the **OS server** by default for short term archiving as shown in Figure 1. If in addition a **central archive server (CAS)** is configured, OS logs and batch logs can also be archived in addition to the data mentioned above. The data archived on the **CAS** is used for long term archiving and can be transferred periodically to external media. **Storage Plus** is also available; it can be used to generate views to the archived data that can then be viewed using a Web browser [4, 5, 6].



Figure 1: Overview short-term and long-term archiving [Siemens]

## Archiving System on the OS Server

On the OS server, archives for process values and alarms/events can be set up.

As shown in Figure 2, these archives are organized as *circular logs*. They consist of *segments* that are defined either through a time interval or by specifying physical memory. When one of these criteria is met, a segment is closed and a new one is started. If the memory of the server is exhausted, the segment that was set up first is overwritten according to the FIFO principle (First In First Out). In **Fehler! Verweisquelle konnte nicht gefunden werden.**, as an example, time spans are specified that the different archives can have for a cycle. The time specified also is an indication of the time relationships between the individual archives.

The process values are stored in the database compressed. They are compressed by setting a hysteresis. Depending on the signal change, a compression factor between 2 and 10 is reached. By selecting additional calculation functions, important statistical characteristic values can be retained despite compression.

To estimate the required memory for an archive, the average quantity of process values per second or the average quantity of alarms per second is needed. These averages are multiplied with the typical memory capacity for the data and with the desired archiving interval. The interval has to be specified once for one segment and once for all segments together. Typical memory capacity is between 6 and 16 bytes for process values and 4000 bytes for alarms. For reasons of performance, the number of individual segments should not exceed 200 [4].



Figure 2: Circular logs for short-term archiving [4]

In addition to the archives for the processes, user archives can be set up. There, characteristics from other sources can be entered. The operator can use them to compare the actual course with desired course.

## **Central Archive Server (CAS)**

The central archive server is located on the same level as the OS servers. In distinction to the OS servers, it is not connected to the plant bus, but exclusively to the terminal bus, as shown in Figure 3. By means of the terminal bus, the CAS receives the data designated for *long term archiving* from one or several OS servers and from the batch servers. The data is transmitted from the OS server to the CAS automatically after a segment is completed. The data from the batch server is directed by means of the Batch Control Center (BCC) for archiving. For archiving OS logs, a script can be implemented that transmits the cyclically stored OS logs to the central archive server. To increase data security, the CAS can be operated redundantly.



Figure 3: Classification of the Central Archive Server in the structure of the PCS [Siemens]

**Fehler! Verweisquelle konnte nicht gefunden werden.** shows the organization of the archives of the CAS. These archives also are designed as circular logs and work according to the FIFO principle. To save the data periodically, backup strategies can be configured that allow for the transfer of individual segments to an external medium; for example, DVD or network drive. For that reason, the size of the segments on the CAS has to be less than the external medium.



Figure 4: Archives of the Central Archive Server for long-term archiving [4]

## **Storage Plus**

Storage Plus can be used alternatively or as a supplement to CAS. Storage Plus is always installed on a separate computer and is connected to the terminal bus (Figure 5). In contrast to the CAS, Storage Plus cannot be operated in the redundant mode, but makes possible the display and analysis of the data that is stored in the CAS, in the Storage Plus database or on external media; for example, the display of histories [2]. The archived data is displayed by means of views that filter the needed information from the totality of all data. The data is represented in tables, diagrams or reports [7].



Figure 5: Classification of Storage Plus in the structure of the PCS [Siemens]

## TREND REPORTING IN PCS 7

Below, the two possibilities for representing archived process values in PCS 7 are described. The OS servers are accessed exclusively in that case. This makes it possible to quickly trace the development of one or several process values, and a negative trend can be detected or obviated.

## **Curve Groups**

Curve groups can be called using a button on the PCS 7 operator interface. They don't have to be configured; they are provided as a matter of standard. However, certain curve groups can be pre-configured that will then only have to be displayed at execution time. If curves are not pre-configured or if the process values needed at the moment are missing in these groups, a new group can be set up any time.

## **Online und Function Trend Control**

Within process displays, the following ActiveX Controls can be used to represent process value characteristics. Additional information for designing operating screens with ActiveX Controls is provided in chapter P03-03.

- Online Trend Control represents one or several process values over time
- Function Trend Control represents a process value in dependence on another process value

Online Trend Control corresponds to the curve display (refer to section Trend reporting).

Function Trend Control can be used under certain conditions to display dependent process values in a trend: The process values to be represented have to be archived in the same cycle and the archive has to be located on the same OS server. To facilitate analysis, a setpoint curve can be displayed in addition to the actual curve. The data for the setpoint curve is configured and stored in a user archive [6].

## SUMMARY

To archive process data, alarms and events, always an OS server has to be installed. The expanded archiving capabilities are based on it; the data for CAS and Storage Plus is read by the OS servers.

	Short Term	Long Term	Restrictions
OS Server	Yes	No	-
CAS	No	Yes	Display only by means of OpenPCS 7
Storage Plus	No	Yes	No redundancy

Table 1: Overview of Short Term and Long Term Archiving according to Servers

To display data that is located on the OS servers, curve groups and Online Trend Control can be used. Regarding Function Trend Control, only such value pairs can be displayed that are stored on the same OS server and with the same archiving cycle.

Storage Plus has a Web interface for displaying long term archived data.

Table 2: Overview of Short Term and Long Term Archiving

	Short Term	Long Term	Restrictions
Storage Plus	No	Yes	Additional computer, only from Storage Plus Server
Online Trend Control or Curve Groups	Yes	No	Only from OS servers
Function Trend Control	Yes	No	Value pair only from an OS server and with the same archiving cycle

## LITERATURE

- [1] TU Dresden: Vorlesung Prozessrechen- und –leittechnik, July 2010.
- [2] VDI/VDE 3699, Teil 4: Prozessführung mit Bildschirmen-Kurven, August 1997. (sheet 4: Process control using display screens – Curves)
- [3] VDI/VDE 3699, Teil 5: Prozessführung mit Bildschirmen-Meldungen, Februar 1998. (sheet 5: Process control using display screens - Alarms/messages)
- [4] Siemen AG: Configuration Guidelines Compendium Part A, June 2009.
- [5] Siemens AG: Configuration Manual Engineering System (V7.1), March 2009.
- [6] Siemens AG: Configuration Manual Operator Station (V7.1), March 2009.
- [7] Siemens AG: MDM Storage Plus Information System, November 2008.

## **STEP BY STEP INSTRUCTIONS**

#### TASK

This task deals with process value and message archives for the operator station (OS) and their variants and setting possibilities.

As an example, set up archiving of the level for reactor A1T2R001 and display the archived values in *WinCC Runtime* as a curve using curve groups, and as printout using the Report Designer for display.

#### **TRAINING OBJECTIVE**

In this chapter, the student is familiarized with the following:

- Activating the archiving of process variables in CFCs
- The settings for alarm characteristics and alarm archiving in CFCs
- The process object view as tool for archive configuring
- Archive settings for messages in Alarm Logging of WinCC
- Archive settings for process variables in Tag Logging of WinCC
- Curve groups for displaying archive variables in WinCC runtime
- Report Designer for printing curves with archive variables

These instructions are based on 'PCS7\_SCE\_0203\_Ueb\_R1505\_en.zip'.

#### PROGRAMMING

- 1. To program the archiving of the process variable level of reactor A1T2R001 using level monitoring, first open the existing CFC A1T2L001.
  - $(\rightarrow A1\_multipurpose\_plant \rightarrow T2\_Reaction \rightarrow A1T2L001)$



2. To adapt the properties, the object properties of monitor block 'MonAnS' are opened. (MonAnS  $\rightarrow$  Object Properties)



- 3. First, for the block MonAnS enter the comment Level monitoring A1T2L001. By clicking on the button 'Messages', we can perform the settings to configure the messages. These settings are retained. Here, we see the relationship of the text for Event through key word + Text, for example: \$\$BlockComment\$\$ Alarm above; after compilation of the OS, this becomes Monitoring level A1T2L001 Alarm above.
  - $(\rightarrow \text{Comment} \rightarrow \text{``Monitoring level A1T2L001''} \rightarrow \text{Messages} \rightarrow \text{Event} \rightarrow \text{Save})$

		Properti	es - Block A	1T2L001\Monitor_A1T2L001	X
		Gener	al I/Os		
		Тур	e:	Mon.An.S BI	ock group:
		Na	me:	Monitor_A1T2L001	
		Cor	nment:	Monitoring level A1T2L001	<u>^</u>
		Inp	uts:	45	OCM possible
		Inte	emal identifier:	FB1912	OCM
		Inst	ance DB:	DB180	
		Nar	me (header):	MonAnS	Create block icon:
PCST	7 Message Configuration	n - PCS7_SCE_Prj\AS1\CPU 414-3 DP\S	7 Program(1)	.C\A1T2L001\Monitor_A1T2L001	🛥 ' 🔤
La	st changed 04/20/2015 02	2:35:34 PM Type: FB1912		Display language: Englisch (US	A)
	Message identif	Message class	Priority	Event	
旧	MsgEvid1	Alarm - high	0	SSBlockCommentSS RV - Alarm full	Special properties
H	- 5162	Warning - high	0	SSBlockCommentSS PV - Warning full	-
$ $ $ $	- SIG3	Warning - low	0	SSBlockCommentSS PV - Warning empty	Messages
	- SIG4	Alarm - low	0	SSBlockCommentSS PV - Alarm empty	
	- SIG5	PLC Process Control Message - Failure	0	\$\$BlockComment\$\$ External error has occurre	d Iv Readback enabled
	- SIG6	PLC Process Control Message - Failure	0	\$\$BlockComment\$\$ External message 1	-
	- SIG7	PLC Process Control Message - Failure	0	\$\$BlockComment\$\$ External message 2	
1	- SIG8	< no message >	0		
					•
				More>>	Cancel Help
	Save			Cancel Help	1

4. By clicking on the button 'OCM', the variables of the MonAnS block Monitor\_A1T2L001 which are set up there during OS compilation are displayed as variables. Only such variables of a CFC block can be archived. ( $\rightarrow$  OCM  $\rightarrow$  WinCC Attributes  $\rightarrow$  OK)

operties - Block	A1T2L001\Md	onitor_A1T2L001		15 2	
General I/Os					
Tuno:	MapAp				
Type.	Monitor		Block group:		
Name:	Internitor	ATT2LUUT			
Comment:	Monitor	ing level A1T2L001			*
					$\overline{\mathbf{v}}$
Inputs:	45		OCM possible —		
Internal identifie	er: FB1912				-1
Instance DB:	DB180			.m	
Name (header):	MonAns	5	Create block	icon:	
Faaribu	Manaa				
Family:	Wonitor		MES-relevan	t	
Author:	AdvLib8	\$1			
To be inserted i	in OB/tasks:		Special properties		
✓ OB100 [Wa	arm restart]				
			Mess	ages	
			Readback e	nabled	
ОК		Print	1	Cancel	Help
ОК		Print		Cancel	Help
ОК		Print		Cancel	Help
OK erator Control and	d Monitoring	Print		Cancel	Help
OK erator Control and General WinCC Att	d Monitoring	Print		Cancel	Help
OK erator Control and General WinCC Att Parameter	d Monitoring tributes     PLC Data Type	OS Data Type	Adapt Format	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value	d Monitoring tributes     PLC Data Type   REAL	OS Data Type 32-bit floating-point number IEEE 75	Adapt Format 4 FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst	d Monitoring Iributes   PLC Data Type REAL REAL	OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75	Adapt Format 4 FloatToFloat 4 FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_AH_Lim	d Monitoring Inbutes PLC Data Type REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75	Adapt Format FloatToFloat FloatToFloat FloatToFloat FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_AH_Lim PV_WH_Lim	d Monitoring tributes PLC Data Type REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75	Adapt Format FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat	Cancel	
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_AH_Lim PV_WH_Lim PV_WL_Lim	d Monitoring ributes PLC Data Type REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75	Adapt Format FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Pv#Value PV_Hyst PV_H4_Lim PV_WL_Lim PV_WL_Lim PV_WL_Lim	d Monitoring PLC Data Type REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75	Adapt Format 4 FloatToFloat 4 FloatToFloat 4 FloatToFloat 4 FloatToFloat 4 FloatToFloat 4 FloatToFloat 4 FloatToFloat 4 FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att PV#Value PV_Hyst PV_Hyst PV_AH_Lim PV_WL_Lim PV_VAL_Lim PV_OpScale#High	d Monitoring mbutes PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75	Adapt Format FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_WH_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#Low	d Monitoring ributes PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75	Adapt Format FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Parameter PV_Hyst PV_Hyst PV_HLLim PV_WH_Lim PV_WL_Lim PV_UDScale#High PV_OpScale#Low PV_Unit	d Monitoring PLC Data Type REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75	Adapt Format FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat ShortToFloat ShortToFloat	Cancel  Length  4  4  4  4  4  4  4  4  4  4  4  2	Help
OK erator Control and General WinCC Att Pv#Value PV_H4_Lim PV_W4_Lim PV_W4_Lim PV_W4_Lim PV_W4_Lim PV_OpScale#High PV_OpScale#Low PV_Unit DeadBand	d Monitoring PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL NT REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Signed 16-bit value	Adapt Format FloatToFloat ShortToSignedWord FloatToFloat	Cancel  Length  4  4  4  4  4  4  4  4  4  4  4  4  4	Help
OK erator Control and General WinCC Att Parameter PV_Hyst PV_Hyst PV_HyLim PV_WL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unt DeadBand MS ReIOn	d Monitoring PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL REAL REAL NT REAL BOOL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Signed 16-bit value	Adapt Format FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat ShortToSignedWord FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att PV_Alue PV_Hyst PV_AL_Lim PV_QL_Lim PV_OpScale#High PV_OpScale#Low PV_Unit DeadBand MS_RelOp OnOn	d Monitoring tributes PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL REAL NT REAL BOOL BOOL	Print OS Data Type 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable	Adapt Format FloatToFloat Float	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_WH_Lim PV_WH_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unit DeadBand MS_RelOp OnOp OnSoD	d Monitoring ributes PLC Data Type REAL REAL REAL REAL REAL REAL REAL NT REAL BOOL BOOL BOOL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable	Adapt Format FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat ShortToSignedWord FloatToFloat FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Parameter PV_Hyst PV_Hyst PV_Hyst PV_WH_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#Low PV_OpScale#Low PV_Unit DeadBand MS_ReIOp OnOp OosOp SimOn	d Monitoring PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Bigned 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable Binary variable	Adapt Format FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat ShortToSignedWord FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Parameter PV_Hyst PV_Hyst PV_HLim PV_WL_Lim PV_WL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unt DeadBand MS_RelOp OnOp OnOp OnOp SimOn SimOn	d Monitoring PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable Binary variable Binary variable Binary variable	Adapt Format FloatToFloat Float	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_HLim PV_WL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unit DeadBand MS_RelOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp	d Monitoring Tributes REAL REAL REAL REAL REAL REAL REAL REAL REAL NT REAL BOOL BOOL BOOL BOOL BOOL BOOL REAL PURC Data Type Type REAL	Print OS Data Type 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable Binary variable Binary variable 32-bit floating-point number IEEE 75	Adapt Format FloatToFloat Float	Cancel	
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_AL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#Low PV_Unit DeadBand MS_ReIOp OnOp OosoOp SimOn SimPV BatchID	d Monitoring Tributes PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable Binary variable 32-bit floating-point number IEEE 75 Dinary variable 32-bit floating-point number IEEE 75 Unsigned 32-bit value	Adapt Format FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat FloatToFloat ShortToFloat FloatToFloat FloatToFloatFloat FloatToFloat FloatToFloatF	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_WH_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unit DeadBand MS_ReIOp OnOp OnOp OosOp SimON SimPV BatchID BatchName	d Monitoring PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Binary variable Binary variable Binary variable Binary variable Binary variable 32-bit floating-point number IEEE 75 Unsigned 32-bit value Text variable 8-bit character set	Adapt Format FloatToFloat DwordToUnsignedDword	Cancel	Help
OK erator Control and General WinCC Att Parameter PV_Hyst PV_Hyst PV_HLim PV_WL_Lim PV_WL_Lim PV_WL_Lim PV_UPScale#High PV_OpScale#High PV_OpScale#Low PV_Unt DeadBand MS_RelOp OnOp OnOp OnOp SimOn SimPV BatchID BatchID BatchName StepNo	d Monitoring PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable Bina	Adapt Format FinalToFinat DwordToUnsignedDword DwordToUnsignedDword	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_Hyst PV_WL_Lim PV_WL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unit DeadBand MS_ReIOp OnOp OnOp OnOp OnOp OnOp SimOn SimPV BatchID BatchID BatchID BatchIName StepNo UserStatus	Honitoring Houtes PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL REAL NT REAL BOOL BOOL BOOL BOOL BOOL BOOL STRING DWORD BYTE	Print OS Data Type 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary var	Adapt Format FloatToFloat DuordToUnsignedDword ByteToUnsignedByte	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_AH_Lim PV_OPSCale#Lim PV_OpSCale#Lim PV_OpSCale#Liow PV_Unit DeadBand MS_RelOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp SimOn SimPV BatchID BatchIName StepNo UserStatus PV_Out#Value	d Monitoring rbutes PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL BOOL	Print OS Data Type 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable Binary variable Binary variable 32-bit floating-point number IEEE 75 Unsigned 32-bit value Text variable 32-bit character set Unsigned 32-bit value 32-bit floating-point number IEEE 75 Unsigned 32-bit value 32-bit floating-point number IEEE 75 Summer Variable Binary vari	Adapt Format FloatToFloat DwordToUnsignedDword DwordToUnsignedDword ByteToUnsignedDyte FloatToFloat FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_HL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#Low PV_LUnit DeadBand MS_ReIOp OnOp OnOp OnOp OnSOP SimOn SimPV BatchID BatchID BatchIName StepNo UserStatus PV_Out#Value OosAct#Value	d Monitoring  PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable Binary variable 32-bit floating-point number IEEE 75 Unsigned 32-bit value Text variable 8-bit character set Unsigned 32-bit value 32-bit floating-point number IEEE 75 Binary variable 32-bit floating-point number IEEE 75 Binary variable 32-bit floating-point number IEEE 75 Binary variable	Adapt Format FloatToFloat DwordToUnsignedDword DwordToUnsignedDword ByteToUnsignedByte FloatToFloat FloatToFloat	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_HLim PV_WL_Lim PV_WL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unt DeadBand MS_RelOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp SimON SimPV BatchID BatchID BatchName StepNo UserStatus PV_Out#Value OosAct#Value OosAct#Value	d Monitoring PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Signed 16-bit value Binary variable Binary variable 32-bit floating-point number IEEE 75 Unsigned 32-bit value Text variable 8-bit character set Unsigned 32-bit value Unsigned 32-bit value Unsigned 32-bit value	Adapt Format FloatToFloat DwordToUnsignedDword ByteToUnsignedByte FloatToFloat DwordToUnsignedDword ByteToUnsignedDword DwordToUnsignedDword DwordToUnsignedDword ByteToUnsignedDword DwordToUnsignedDword DwordToUnsignedDword DwordToUnsignedDword DwordToUnsignedDword DwordToUnsignedDword FloatToFloat DwordToUnsignedDword FloatToFloat FloatToFloatFloat FloatToFloatFloatFloatFloatFloatFloatFloatFloa	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_Hyst PV_WL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unit DeadBand MS_ReIOp OnOp OnOp OnOp OnOp OnOp OnOp SimPV BatchID BatchID BatchID BatchID BatchID BatchID BatchIName StepNo UserStatus PV_Out#Value Os_PermOut OS PermIon	Honitoring Houtes PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL REAL NT REAL BOOL BVYTE REAL BOOL BVYTE REAL BOOL DWORD DWORD DWORD DWORD	Print OS Data Type 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Unsigned 32-bit value	Adapt Format FloatToFloat DwordToUnsignedDword ByteToUnsignedDword DwordToUnsignedDword FloatToFloat FloatToFloatFloat FloatToFloatFloat FloatToFloatFloatFloatFloatFloatFloatFloatFloa	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_HLim PV_UH_Lim PV_UL_Lim PV_UDSCale#High PV_OpScale#Low PV_UIT DeadBand MS_RelOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp SimON SimPV BatchID BatchID BatchName StepNo UserStatus PV_OUt#Value OosAct#Value OosAct#Value OS_PermLog	d Monitoring PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Binary variable Binary variable 32-bit floating-point number IEEE 75 Unsigned 32-bit value Unsigned 32-bit value Unsigned 32-bit value Unsigned 32-bit value Unsigned 32-bit value	Adapt Format FloatToFloat DwordToUnsignedDword ByteToUnsignedDword DwordToUnsignedDword DwordToUnsignedDword DwordToUnsignedDword DwordToUnsignedDword DwordToUnsignedDword FloatToFloat FloatToFloatFloat FloatToFloat FloatToFloatFloatFloatFloatFloatFloatFloatFloa	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_Hyst PV_WL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unt DeadBand MS_ReIOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp SimON SimPV BatchID BatchID BatchID BatchID BatchID BatchID StepNo UserStatus PV_Out#Value Os_PermOut OS_PermLog	Honitoring Houtes PLC Data Type REAL REAL REAL REAL REAL REAL REAL REAL REAL NT REAL BOOL BOVORD BYTE REAL BOOL DWORD DWORD DWORD	Print OS Data Type 32-bit floating-point number IEEE 75 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Binary variable 32-bit floating-point number IEEE 75 Unsigned 32-bit value Unsigned 32-bit value Unsigned 32-bit value Unsigned 32-bit value Unsigned 32-bit value	Adapt Format         4 FloatToFloat         5 hortToSignedWord         4 FloatToFloat         0 wordToUnsignedDword         DwordToUnsignedDword         ByteToUnsignedDword         DwordToUnsignedDword         DwordToUnsignedDword         DwordToUnsignedDword	Cancel	Help
OK erator Control and General WinCC Att Parameter PV#Value PV_Hyst PV_Hyst PV_Hyst PV_WL_Lim PV_WL_Lim PV_OpScale#High PV_OpScale#High PV_OpScale#Low PV_Unit DeadBand MS_RelOp OnOp OnOp OnOp OnOp OnOp OnOp OnOp OsOp SimOn SimPV BatchID BatchID BatchID BatchID BatchID BatchID BatchID BatchILD BatchILD StepNo UserStatus PV_Out#Value OS_PermOut OS PermLog OK	d Monitoring ributes REAL REAL REAL REAL REAL REAL REAL REAL REAL NT REAL BOOL BOOL BOOL BOOL BOOL BOOL BOOL BOOL STRING DWORD BYTE REAL BOOL DWORD BYTE REAL BOOL DWORD DWORD	Print OS Data Type 32-bit floating-point number IEEE 75 Signed 16-bit value 32-bit floating-point number IEEE 75 Binary variable Unsigned 32-bit value	Adapt Format         4 FloatToFloat         5hortToSignedWord         4 FloatToFloat         0	Cancel	Help

5. Now, we specify in the block properties the archiving of analog input values PV. To this end, select the input PV and in its structure the connection 'Value'. In the properties of 'Value' archiving is activated.

🔣 CFC - [A1T2L001 -	- PCS7_SCE_Prj\A1_mu	ltipurpose_plant\T2_read	tion\reactor R001]		
🖸 Chart Edit In:	ert CPU Debug \	/iew Options Windo	w Help	-	8 ×
D 🚅 🎒   X 🖻	a 🖻   🖪 🖼 🗧	₽│ฅ ◄│0% 🏜│			
<b>8</b> & X = 4	X 🔳 🔲 1	-   0, 0,   = =	<b>™ №</b> ?		
				Ini Analogue Valu	e 1 *
	Monitor_A1T: MonAnS	2L001		\reactor R001\ In1 Analogue Valu	\A1:
	Monitori	OB35 5/2		\reactor R001\	\A1:
	1000.0- PV A	MS Relea		In1 Analogue Valu	e 1 \A1:
	900.0-PV_W	extual Interconnection	55	Ini Analogue Valu	e 1
	150.0- PV_W V 50.0- PV_A	excual interconnection		In1 Analogue Valu	\A1: e 1
	100.0 PV_0 D	elete Interconnection(s)	D	el\reactor R001\ In1 Analogue Valu	\A1:
	0.0 - Dead O	bject Properties	Alt+Retu	n\reactor R001\	\A1:
	0-OosLix 0-CSF		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	In1 Analogue Valu	<u>e 1</u> \A1:
		Select Struct	ure Element		
		Structure:			
			CT1 'Process Value (/	nalog loput)'	
		Value	(REAL) ' Value'	malog mputj	
		ST [B'	'TE] ' Signal Status'		
Press F1 for help.					
Properties - Input/Output			X		
Block	MonénS Monitor A1T2L001				
1/0:	Value - IN(REAL)				
Value					
value.	1		:d		
			e		
		Watch	ed		
Comment:	Value				Properties
		Archive: Arch	niving 💌		Help
Operator authorization low		OS additional text: Arch	archiving		
operator autionization reve	n.  °	Lon	g-term archiving 68		
Force		Process ob	ject view		
Add forcing		Param	eter		
Forcing active		🗖 Signal			
Force value:					
		I MES-IEE	warit		
OK		Cancel	Help		
UK		Carleer			

 $(\rightarrow PV \rightarrow Value \rightarrow Archiving \rightarrow OK \rightarrow Close)$ 

#### Note:

Here, we could also select a variable for long term archiving on the CAS.

6. To see and also further edit these changes also have to be compiled in the process object view, AS and OS. To do this and download the AS at the same time, highlight the project in the component view of the *SIMATIC Manager*. Then select for the PLC 'Compile and Download Objects'.

🕼 SIMATIC Manager - [PCS7_SCE_MP (Plant View) C:\Program Files\Siemens\STEP7\S7Proj\PCS7_5_1\PCS7_MP]							
😼 File Edit Insert PL	C View Options Window Help	_ <i>B</i> ×					
🗋 🗅 🛩   🎛 🛲   👗 🖻	a 🖻 🕍 🔍 🗣 🔚 📴 🗮 🔳 🖻	)   < No Filter > 💽 🍞   🞇 🎯   🖷 🚍 🗂 📢					
PCS7_SCE_MP	Shared Declarations	🗃 A1_multipurpose_plant 🙀 Global labeling field					
PCS7 SCE Pil	Open Object Ctrl+Alt+	0					
⊡	Cut Ctrl+	x					
⊡ <u>6</u> T2_r	Copy Ctrl+	c					
	Paste Ctrl+	v					
	Delete D	el					
⊕- ♦ PCS7_SCE_I	Insert New Object	•					
	Multiproject	>					
	PLC	Compile and Download Objects					
	Access Protection	•					
	PCS 7 License Information						
	Shared Declarations	•					
	Plant Hierarchy	•					
	Process Tags	•					
	Models	•					
	Control modules	•					
Compiles/downloads th	SIMATIC BATCH	•					

 $(\rightarrow SCE\_PCS7\_MP \rightarrow PLC \rightarrow Compile and Download Objects)$ 

 Next, select -as shown here- the objects to be compiled and start the process as you learned in previous chapters. (→ Start)

Compile and Download Objects			ł	- <b>X</b>
Selection table:				
Objects	Status	Operating Mode	Compile	Download
E-B PCS7_SCE_Prj			<b>V</b>	<b>V</b>
⊡-m AS1			1	1
Hardware Hardware	undefined		1	✓
□- CPU 414-3 DP		PLC not available	1	V.
Blocks				
Charts	undefined		✓	
Connections	undefined		×	×.
	undefined			<u> </u>
	undefined			<u> </u>
Connections	undefined	Not open		
<b>3</b> US(1)		Not open	⊻	
			- 01 - 1	
Settings for Compilation/Download Update	View L	og Sele	ct Ubjects	
Edit Test Status Operating Mode	Sin	gle Object AlL	Select All	Deselect All
Status during Open				
☐ Compile only				
Start Close				Help

 For performing several or even very many changes at the same time in one or different blocks, you have become acquainted with the **process object view**. Archive entries can be edited here, too. (→ View → Process Object View)

File Edit Insert PLC	View	Component view	Filter >	- V	198 M	sem.		
PCS7_SCE_MP		Plant View	E A1	 multipurpose_plar	t 🔤	Glo	bal labeling field	
PCS7_SCE_Pri		Process Object View				0.00047		
Shared Declaratio     Shared Declaratio		Process Device Plant View Process Device Network View						
	~	<b>Offline</b> Online						
E      E      E      E      E      E      PCS7_SCE_Lib	g Large Ico Small Ico List Details Filter Define Co	Large Icons Small Icons						
		List Details						
		Filter Define Columns						
		Show All Levels Num* Hide All Levels Num-						
	V Toolbar							
	×	Update F5						

 Next, in the process object view, select the CFC 'A1T2L001'. After you have selected the option 'Messages', change the entries for 'Event' as shown here. (→ CFC 'A1T2L001' → Messages → Event)

File Edit Insert PLC View Options Window Help         Image: State Declarations         Image: State De
PCS7_SCE_MP     PCS7_SCE_MP     Constant Signals     PCS7_SCE_MP     PCS7_SCE_MP     Constant Signals     PCS7_SCE_MP     PCS7_
PCS7_SCE_MP     PCS7_SCE_Pi     PCS7_SCE_Pi     Shared Declarations     Shared Declaratin     Shared Declarations     Sha
Press F1 to get Help.

 The settings for the archive tags can be made in the process object view also. Under the option 'Archive tags', change the 'Archiving cycle' to 10 seconds. (→ Archive tags → Archiving cycle → 10 seconds)

SIMATIC Manager - IPCS7 SCE MP (Proces	s Object View) C\Program Files\Sjemens\STEP7\S7Pro\PCS7_SCE\PCS7_MP1
Re File Edit Insert PLC View Option	s Window Help
Image: Strate	✓ General       Blocks       Parameters       Signals       ✓ Messages       Picture objects       ✓ Archive tags       Herarchy folder       Equipment properties       Shared declarations         Filter by column:       Diplay:       Filter general:       ✓ ✓ ✓       ✓ ✓ ✓         ✓ No filter > ✓       ✓       Block comment       Messages       1 second       ✓ ✓ ✓         ✓ Million Alt 72L001       Montor_Alt 72L001       Million Archiving       Archiving / Becond       1 second       1 second
riess i z to get rielp.	

11. We accept these changes by only compiling the OS this time. To this end, highlight the 'OS' in the component view of the *SIMATIC Manager*. Then, select for the PLC 'Compile and Download Objects'.

 $(\rightarrow OS \rightarrow PLC \rightarrow Compile and Download Objects)$ 

SIMATIC Manage	er - [PCS7_SCE_MP (Co	mponent view) C:\P	Program Files\Siemens\STEP7\S7Proj\PC	S7_S_1\PCS7_MP]		
🔁 File Edit Inse	ert PLC View Opt	tions Window Help	p			_ 8 ×
🗅 🗃 🚼 🛲	X 🖻 🛍 🛉		1111   No Filter >	• 7 8 📾	°a ⊟ 🔟	₩?
PCS7_SCE_M     PCS7_SCE     PCS7_SCE     PCS7_SCE     AS1     P    C7     B    PC     B    C7     B    PC     B    C7     B    C7	IP <b>BN</b> Coni E_Pri PU 414-3 DP 2 443-1	figuration 👔 WinC	CAppl. ¥∰tIE General			
ē-1	Open Object	Ctrl+Alt+O				
	Cut	Ctrl+X				
🗄 🕎 PCS7	Сору	Ctrl+C				
	Paste	Ctrl+V				
	Delete	Del				
	PLC	•	Download	Ctrl+L		
	Access Protection	•	Configure	Ctrl+K		
			Compile and Download Objects			
	Print	•	Compare	13		
	SIMATIC BATCH	• 1				
	Rename	F2				
	<b>Object Properties</b>	Alt+Return				
Compiles/downloads	s the objects to be selec	cted under the highlig	hted objects.			

12. Next, select -as shown here- the objects to be compiled and start the process as you learned in the previous chapters. ( $\rightarrow$  Start)

Compile and Download Objects				- • ×
Selection table:				
Objects	Status	Operating Mode	Compile	Download
			<b>V</b>	
Configuration	undefined		✓	
E- WinCC Appl.			$\checkmark$	
Connections	undefined		Image: Second	
OS(1)		Deactivated	✓	
Settings for Compilation/Download       Update         Edt       Test         Status       Operating Mode         T       Status during Open         Compile only       Do not load if compilation error is detected	_View L	og gle Object AlL.	t Objects Select All	Deselect All
Start Close				Help

13. After the successful compilation, open the OS. ( $\rightarrow$  OS(1)  $\rightarrow$  Open Object)

SIMATIC Manager - [PCS7_9	SCE_MP (Component view) C	:\Program Files\S	iemens\STEP7\S7Pi	roj\PCS7_S_1\PCS7_I	MP]	
File Edit Insert PLC	View Options Window H	telp		7. 99		_ 6 ×
			No Filter >			<u>*?</u>
	-슈A1_multipurpose_plant -슈 T4_rinsing	1	r T1_educt_tanks	-∱ T2_reaction	-∱ T3_product_tar	nks
	Open Object	Ctrl+Alt+O	1			
⊕-� PCS7_SCE_Lib	Cut Copy Paste	Ctrl+X Ctrl+C Ctrl+V				
	Delete	Del				
	Insert New Object PLC	k k				
	Access Protection	•				
	Compile	Ctrl+B				
Opens selected object.	Display compilation log Display load log Generate server data					

14. Then, in the WinCC Explorer, first open 'Alarm Logging' to configure the alarm system.(→ Alarm Logging)



 Select the AS messages. In the center window of Alarm Logging, you will find the individual messages and can edit their properties in the Properties area in the right margin. (→ AS Messages → PV – Warning full)

(c) Alarm Logging - [OS(1).mcp]		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	(scarjoffile)	*
File Edit View Messages Tools Help				
副父亲前周三之经部(学长)新92				
Restage blocks     Server	System User text Proc blocks block b	ess value locks		
Source	L] Area	Event		
Al, multipurpose, plant/T2, reaction/AIT2008/Valve, AIT2008 Al, multipurpose, plant/T2, reaction/AIT21002/Control,AIT21002/ Al, multipurpose, plant/T2, reaction/AIT21002/Control,AIT21002/ Al, multipurpose, plant/T3, Sproduct, tanks/AIT33002/Valve, AIT Al, multipurpose, plant/T3, Sproduct, tanks/AIT33002/Valve, AIT Al, multipurpose, plant/T4, inising/AIT45001/Purp,AIT45001 Al, multipurpose, plant/T4, inising/AIT45001/Valve, AIT45002 Al, multipurpose, plant/T4, inising/AIT45002/Valve, AIT45003 Al, multipurpose, plant/T4, inising/AIT45002/Valve, AIT45003 Al, multipurpose, plant/T4, inising/AIT45003/Valve, AIT45003 Al, multipurpose, plant/T4, inising/AIT45003/Valve, AIT45003 Al, multipurpose, plant/T2, reaction/AIT21002/Monker, AIT45003 Al, multipurpose, plant/T2, reaction/AIT21002/Monker, AIT45003 Al, multipurpose, plant/T2, reaction/AIT21002/Monker, AIT45003 Al, multipurpose, plant/T2, reaction/AIT21002/Monker, AIT45003 Al, multipurpose, plant/T4, inising/AIT45003/Valve, AIT45003/Valve, AIT45003 Al, multipurpose, plant/T4, inising/AIT45003/Valve, AIT45003/Valve, AIT4503 Al, multipurpose, plant/T4, inising/AIT45003/Valve, AIT45003/Valve, AIT45003/Valve, AIT45003/Valve, AIT4503/Valve, AIT4503/Valve, AIT4503/Valve, AIT4503/Valve, AIT4503/Valve, AIT4503/Valve, AIT4503/Valve, AIT4503/Valve, AIT4503/V	Al_multipurpose_plant Al_multipurpose_plant Al_multipurpose_plant X001 Al_multipurpose_plant Al_multipurpose_plant Al_multipurpose_plant Al_multipurpose_plant Al_multipurpose_plant Al_multipurpose_plant Al_multipurpose_plant Al_multipurpose_plant Al_multipurpose_plant	Valve inlet reactor 8002 from reactor 8002 Estemal e heating control reactor 8002 PV - High warning limit Valve inlet product tank 8001 Estemal error has occu Valve inlet product tank 8002 Estemal error has occu Pump outlet rinning tank 8001. Motor protection tigy Valve outlet rinning tank 8001. Estemal error has occu Valve outlet rinning tank 8001. Estemal error has occu Valve inlet rinning tank 8001. Estemal error has occu Monitoring level A121020 PV - Visionmon full Monitoring level A121020 PV - Visionmon full DP master @154@F. Failure	troi has occurred t violated gered urred urred copy cell contents CTRL+C Paste cell contents CTRL+V	
575Program(1)/@(2)/AS1_1 575Program(1)/@(2)/AS1_1 575Program(1)/@(2)/AS1_1 575Program(1)/@(2)/AS1_1 575Program(1)/@(2)/UP2ALU_1 57 Program(1)/@(2)/UP2ALU_1 57 Program(1)/@(2)/UP2ALU_1		Time-of-day interrupt OB@3%d@ elapsed (time j Interface error CPU loss of redundancy in rack @8%d@ Priorities of cyclical OBs not conforming to PCS7 Failure connection ID: 16#@3%X@ Failure connection ID: 16#@3%X@	Copy Line Append Copied Line Delete Line Append New Line Properties	

16. In the parameters we can select, for example, if we want to archive the corresponding message. (will be archived  $\rightarrow$  OK)

Parameters	Text Tag/Action		
Number: Class: Type: Group: Hide mask: Priority: This mes: is sing Contro will be is creat is creat trigger Conta	679477343         Waming         Waming High         A1_multipurpose_plant         0x0         0         sage         gle acknowledgment only         ols the central signaling device         e archived         ated on a negative edge         rs an action         ins expanded associated values	Connections Message tag: Message bit: Acknowledge tag: Acknowledge bit: Status tag: Status tag: Format DLL	S7\$Program(1)#Raw R 0 S7\$Program(1)#Raw R 0 R 0 NRMS7PMC.NLL R DLL-Parameters
Select the	e message parameters and connect the	message	

17. In the shortcut menu of the messages, under the item 'Archive Configuration', you can now select the 'Properties' of the 'Message archive' (→ Messages → Archive Configuration → Properties)

Alarm Logging - (OS(1).mcp)	1	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	
Message archive	estage chivy Reset Link archive Disconnect from	archive	
Source     A1_multipurpose_plant/T2_reaction/A1T2X008/Valve_A1T2X008     A1_multipurpose_plant/T2_reaction/A1T2T002/Control_A1T2T002	Ar Reload after power	r failure r R002 from reactor R001 External error has occ eactor R002 External message 2	surred *
A1_multipurpose_plant/T2_reaction/A1T2T002/Control_A1T2T002 A1_multipurpose_plant/T3_Sproduct_tanks/A1T3X001/Valve_A1T3X001 A1_multipurpose_plant/T3_Sproduct_tanks/A1T3X002/Valve_A1T3X002 A1_multipurpose_plant/T4_minineA1TX5001 (cmm_a)_ATT5000	A1_multipurpose_plant A1_multipurpose_plant A1_multipurpose_plant	heating control reactor R002 PV - High warning limit violated Valve inlet product tank 8001 External error has occurred Valve inlet product tank 8002 External error has occurred Durop exited ionize task 8001 Meter exceptions integrated	
A1_multipurpose_plant/T4_inising/A1T4X001/Valve_A1T4X001 A1_multipurpose_plant/T4_inising/A1T4X002/Valve_A1T4X002 A1_multipurpose_plant/T4_inising/A1T4X003/Valve_A1T4X003	A1_multipurpose_plant A1_multipurpose_plant A1_multipurpose_plant	Valve outlet rinsing tank B001 External error has occurred Valve outlet rinsing tank B001 External error has occurred Valve outlet rinsing tank B001 External error has occurred	
A1_multipurpose_plant/T4_rinsing/A1T4X004/Valve_ALT4X004 A1_multipurpose_plant/T2_reaction/A1T2L001/Monitor_A1T2L001 A1_multipurpose_plant/T2_reaction/A1T2L002/Monitor_A1T2L002 CTDPurpose_plant/T2_reaction/A1T2L002/Monitor_A1T2L002	A1_multipurpose_plant A1_multipurpose_plant A1_multipurpose_plant	Valve inlet rinsing tank 8001 External error has occurred Monitoring level A1721001 PV - Warning full Monitoring level A1721002 PV - High warning limit violated DD external error and a second sec	
57 Program(1)/@(1)/0/_matter_syst_1 57 Program(1)/@(1)/CPU_414-3_DP_1 575Program(1)/@(2)/AS1_1 575Program(1)/@(2)/AS1_1		DP master @1%d@1Failure DP master @1%d@1Failure Time-of-day interrupt OB@3%d@ elapsed (time jump) Interface error	
575Program(1)/@(2)/AS1_1 575Program(1)/@(2)/AS1_1 57 Program(1)/@(2)/UR2ALU_1		CPU loss of redundancy in rack @8%d@ Priorities of cyclical OBs not conforming to PCS 7 Failure connection ID: 16#@3%X@	
. 57 Program(1)/@(2)/UR2ALU_1 57 Program(1)/@(2)/UR2ALU_1		Failure connection ID: 16#@3%X@ Failure connection ID: 16#@3%X@	
Ready	English (United Sta	ites)	Number of Messages: 1023

- 18. Under Archive Configuration, we can now parameterize the size of the entire archive and the distribution into the segments.
  - $(\rightarrow$  Archive Configuration  $\rightarrow$  Archive size  $\rightarrow$  Time of the segment change)

Arc	chive size						
T	ìme period lax. size of	of all segments all segments		1000 <del>(</del>	Week(s) - Megabyte(s) -		UP
T N	ìme period lax. size o	covered by a singl f a single segment	e segment	1 ÷	Day(s) - Megabyte(s) -		
Tin	ne of the s	egment change	- Vear	2012	Day of the	21	
W	/eekday	Wednesday	<ul><li>Teal</li><li>→ Hour</li></ul>	0	month Minute	0 -	

19. Under 'Backup Configuration' it is possible to activate storing the archive data in a destination path to ensure gapless process documentation. By default, backup is started after the first time related segment change. After the settings were applied with

'OK' exit Alarm Logging X after the save	
	•

 $(\rightarrow \text{Backup Configuration} \rightarrow \text{OK} \rightarrow \square \rightarrow \boxtimes)$ 

mLogging		
rchive Configuration Backup Configuration		
Signature activated	Backup to both paths	
Destination path	Browse	
Alternative destination path		5
	browse	

20. Now, in the WinCC Explorer open 'Tag Logging' for configuring the process value archives. (→ Tag Logging)

WinCCExplorer - C:\Program Files\Siemens\STEP7\S7Proj\PCS7_SCE\PCS7_Prj\wind	cproj	\OS(1)\OS(1).mcp	_ <b>D</b> _ X
File Edit View Tools Help			
□ > ■ > X = □ 1 > 33 □ 2			
⊡ OS(1)	*	Name	Туре
Computer		No objecto eviet	
🗄 🚻 Tag Management		No objects exist	
🖶 🗄 Structure tag			
Alarm Logging			
Tag Logging			
Report Desig			
Text Library			
Text Distributor	E		
User Administrator			
Cross-Reference			
Redundancy			
User Archive			
Time synchronization			
Distance Management			
Lifebest Menitering			
OS Project Editor			
Component List Editor			
A SEC			
Web Navigator	-		
OS(1)\Tag Logging\		0 object(s)	Licensed mode

21. Process values can be archived according to different time patterns. This is important in order not to generate data volumes that are too large in the case of large archives. The shortest time is 500ms. ( $\rightarrow$  Timers  $\rightarrow$  500ms)

] Tag Logging - [OS(1).mcp]	1 Same		
File Edit View Help			
<mark>                       </mark>	i 🖀 😽		
OS(1).mcp	Timer name	Time base	Ti ^
Timers	Ø 500 ms	500 ms	1
Archives 6	1 second	1 second	1
Archive Configuration	1 minute	1 minute	1
	1 hour	1 hour	1 =
	1 day	1 day	1
	1 2 seconds	1 second	2
	5 seconds	1 second	5
	10 seconds	1 second	10
	20 seconds	1 second	2(
	2 minutes	1 minute	2
	🗇 5 minutes	1 minute	5 _
	* III		
There are no properties for	the selected configuration area.		
•			,
Ready		16 Time object(s).	

22. A 'Process Value Archive' called 'SystemArchive' is set up automatically for the PCS 7 project. Additional archives can be set up in the subitems 'Process Value Archives' and 'Compressed Archives'. We are doing this now for a 'Compressed Archives'. The differences between these two types of archive are described in the property dialogs in the pages below. (→ Archives → Archive Wizard)



#### 23. Then, assign a name to the 'Compressed\_Archive'.

#### $(\rightarrow \text{Next} \rightarrow \text{Archive Name} \rightarrow \text{Compressed}_\text{Archive} \rightarrow \text{Finish})$



- 24. Now, look at the properties of such a 'Compressed Archive'.
  - $(\rightarrow \text{Compressed Archive} \rightarrow \text{Properties})$

] Tag Logging - [OS(1).mcp]	ala la ala		
<b>■ X = 1</b> > ∰ <b>■ 2  X</b>			
OS(1).mcp Timers Archives Archive Configuration	Archive name SystemArchive	Archive mode Process Value Archive Compressed Archive Selection Tag Delete	Last change 2013-01-22 11:58:34 2013-01-22 12:13:03
Tag name		Properties	Source archive S
Ready		2 Archive(s).	•

- 25. In the section 'General Information' you can specify if this archive is already enabled when WinCC is started (not locked) and archiving of the data is to start, or if this is to take place at a later time by means of a C script. You can also link an action under 'General archive properties' with the start/enable of the archive.
  - $(\rightarrow$  General Information  $\rightarrow$  Enabled)

General Information	Compressi	on			
Archive Server Comme	ename: name: ents:	ompressed_Archive	Ŧ		
Archiving		Archive type			
Enabled		Process Value Archive			
C Locked		Compressed Archive			
Action when arch	hive <mark>start</mark> ed/	enabled	Select		
The general infor	mati <mark>on</mark> tab o	f the archive properties changes	basic parameters		

- 26. In the section 'Compression', the compression time period and the processing method are selected.
  - $(\rightarrow$  Processing method: Calculate  $\rightarrow$  Compression time period: 1 day  $\rightarrow$  OK)

27. Tags are assigned to the compressed archives from the tags that were set up in the process value archives. ( $\rightarrow$  Compressed Archive  $\rightarrow$  Selection Tag  $\rightarrow$  SystemArchive  $\rightarrow$  A1\_multipurpose\_plant  $\rightarrow \bigcirc \rightarrow OK$ )

File Edit View Help				
🖬   🐰   📕   🗉 🌫 😂 🕅   🖀 🖹	2			
OS(1).mcp	Archive name	Archive mode	Last change	
Timers	SystemArchive	Process Value Archive	e 2013-01-22 11:58:34	
Archive Configuration	Compressed_Archiv	Selection Tag	2013-01-22 12:13:03	
		Delete 63		
Tag name	1	Properties	Source archive	
" Tay name	Select Co	mpressed Tags		8 X
	Repres	entation of the archive tag	Compressed Archive	e
	E- OS	(1).mcp Archives	Compressed_A	Archive chive
		SystemArchive	ـــــــــــــــــــــــــــــــــــــ	ultipurpose_plant/T2_
		A1_multipulpose_plant		
			>>	
			<<	
( 🗌				
eady				
			4 888	

Unrestricted for Educational and R&D Facilities. © Siemens AG 2015. All Rights Reserved. P02-03\_Archiving and Trend Reporting\_V8.0\_S0915\_EN.docx

28. For the properties of the compressed tag archiving we want to display above all the parameters for editing or calculating the compression.

 $(\rightarrow \text{Compressed Archive} \rightarrow \text{Tag name} \rightarrow \text{Properties} \rightarrow \text{Parameters} \rightarrow \text{Processing:}$ Mean value  $\rightarrow \text{Unit: ml} \rightarrow \text{OK}$ )



29. Now look at the properties of the process value archive.  $(\rightarrow \text{Process value archives} \rightarrow \text{SystemArchive} \rightarrow \text{Properties})$ 

│ 🖬 │ 💥 │ 📕 │ –ੈ⊐ 🐉 💷 │ 🆀 🍋 ┌── 🔒 OS(1).mcp	Archive name	Archive mode	Last change
💮 Timers	SystemArchive	New Tag	11:58:34
🏭 Archives		New Process Controlled Ta	12:13:03
🔂 Archive Configuration		Delete	ag
Tag name	Proc	Properties	A1T2L001/Monitor_A1
A1_multipurpose_plant/T2_reaction/	/A1T2L001/Monitor_A1T2(A1_mul	tipurpose_plant/T2_reaction/4	

- 30. In the section 'General', again specify whether this archive is to be enabled when the OS is started, or whether an action is to be linked with the enable/start of the archive.
  - $(\rightarrow$  General Information  $\rightarrow$  Enabled)

General Information Mem Archive name Server name:	Memor	y location			
	name:	System	Archive		
	name:	PCS70	SCLIENT3 -		
Comme	nts:				
Archiving			Archive type		
Enabled		Process Value Archive			
C Locked		Compressed Archive			
	8 5/6	10. 11			
Action when arcl	nive start	ed/enabl	Select		
The general infor	mation ta	ib of the a	archive properties changes basic parameters		

- 31. In the section 'Memory location', select where the archive is to be stored. If the main memory was selected, memory consumption has to be limited.
  - $(\rightarrow \text{Memory location} \rightarrow \text{On the hard disk} \rightarrow \text{OK})$

General Information Memory loc	ation
Memory location	
◉ On the hard disk	In the main memory
	Number of records: 1000
	Size in kBytes/Tags: 31
In this option tab, you select the	e properties of a buffered archive compressed in
main memory (RAM) or on the h	ard disk (HD).
In this option tab, you select the	e properties of a buffered archive compressed in
main memory (RAM) or on the h	ard disk (HD).
In this option tab, you select the	e properties of a buffered archive compressed in
main memory (RAM) or on the h	ard disk (HD).
In this option tab, you select the	e properties of a buffered archive compressed in
main memory (RAM) or on the h	ard disk (HD).
In this option tab, you select the	e properties of a buffered archive compressed in
main memory (RAM) or on the h	ard disk (HD).

32. Now, look at the 'Properties' of the process tag that you set up previously in the CFC.

 $(\rightarrow$  SystemArchive  $\rightarrow$  Tag name  $\rightarrow$  Properties)

] Tag Logging - [OS(1).mcp]	Contraction of		
File Edit View Help			
<b>] ■   X    =</b>   <sup>2</sup> 3 ≫ 종 🛲   .	ar 💦		
] OS(1).mcp	Archive name	Archive mode	Last change
Archives	SystemArchive Verdichtungsarchiv	Process Value Archive Compressed Archive	2012-11-30 09:22:27 2012-11-30 09:50:09
Tag name		Process tag	Tag type
A1_multipurpose_plant/T2_rea	ction/A1T2L001/Monitor_A1T/ Delete Properties	2 A1_multipurpose_plant/T2_react	ion/A1T2L001/Monitor_A1`Analog
Ready		1 Tag(s)	

- 33. In the section 'General', basic settings have to be made for the 'Archive Tag', such as Supplying tags through WinCC and not through 'Manual input', or the possible assignment to a central archive server (CAS) via 'Long term relevant'
  - $(\rightarrow$  Supplying tags: System  $\rightarrow$  Archiving: Enabled)

Archive Tag	Archiving Parameters Display Compression	
1 100 - 100	Name of the archive tag Tag Type	
Set.	reaction/A1T2L001/Monitor_A1T2L001.PV#Value Analog	
	Name of the process tag	
	A1_multipurpose_plant/T2_reaction/A1T2L001/Mc Select	
Comments		
	Supplying tags	
	System	
	Archiving	
	<ul> <li>Enabled</li> <li>Disabled</li> <li>Relevant long term</li> </ul>	
	Also put archived value in tag	
	Select	
	The general tab of the tag properties changes basic parameters.	

34. The archive tag is recorded according to a fixed data collection cycle. The following can be set: whether archiving follows an archiving cycle (acquisition cycle) also cyclically or whether it is to be acyclical (event controlled/if there is a change). In the field 'Hysteresis' we specify if only the process value is archived that is located absolute (abs.) or relative (in %) above or below the specified threshold.

$(\rightarrow \text{Archiving})$	$\rightarrow$ Archiving type:	cyclic $\rightarrow$ Acquisition:	1 second $\rightarrow$	Archiving: 1	x 10
seconds)					

		A1 multinumose plant/T2 reactio	n/A1T2I 001/Monitor A1T2I 001	1 PV#Value
		Analog		
Archiving type		cyclic	Events	
Acquisition:		1 second	▼ Tag	
Archiving		Name of the second s	C script:	1.000
Factor		Cycle	Actions	
1	x	10 seconds 🛛 👻	Start:	
Hysteresis:		Absolute      in % 0	Tag	
Archive a	fter:	regment change	C script:	
Display			Stop:	
Factor		Cycle	Tag	
1	x	10 seconds 🛛 👻	C script:	(((444()))

- 35. For the other parameters, functions can be specified that are to be calculated also during archiving. The unit of the respective value can be defined here also.
  - $(\rightarrow \text{Parameters} \rightarrow \text{Processing: Current value} \rightarrow \text{Unit: mI} \rightarrow \text{OK})$

chive Tag Archiving	Parameters	isplay Compression	on	
A1	_multipurpose_pla	ant/1	Analog	
Processing			Number of values	
<ul> <li>Current value</li> <li>Mean valu</li> </ul>	Sum (	) Max. value Min. value	Leader 0	
		Select	Trailer 0	
Unit			Save on error	
Oirect	ml		<ul> <li>Last value</li> </ul>	
O Structure elem.		Select	Subst. value	
Settings for cyclic an	alog measuremen	t points		

36. Now, we turn to the 'Archive configuration'. At Tag Logging, there are two 'Archive types': 'TagLogging Fast' and 'TagLogging Slow'. The differences become evident in the parameters. Here, first TagLogging Fast.

J Tag Logging - [OS(1).mcp]	1 and a street of			
File Edit View Help				
] <mark>]</mark>   X   <b>]</b>   → ≫ ﷺ   <b>=</b>	A 💦			
OS(1).mcp	Archive mode			
Timers	E TagLogging Fast			
Archives	🕞 TagLogging Slow	Reset Link archive Disconnect from archive		
		Properties		
There are no properties for th	e selected configuration ar	ea.		
•		•		
Ready		2 Type(s).		

 $(\rightarrow \text{Archive mode} \rightarrow \text{TagLogging Fast} \rightarrow \text{Properties})$ 

- 37. Under Archive Configuration, the size of the entire archive and the division into segments can be parameterized. For the archive type TagLogging Slow, this option looks like this.
  - $(\rightarrow$  Archive Configuration  $\rightarrow$  Archive size  $\rightarrow$  Time of the segment change)

rchive Configuration	Backup Configuration	Archive	e contents			
Archive size						R
Time period of	f all segments		1 ≑	Week(s)	•	U
Max. size of a	Il segments	1	1000 🚔	Megabyte(s)	•	
Time period c	overed by a single segm	ent	1	Day(s)	•	
Max. size of a	a single segment		100 ≑	Megabyte(s)	•	
Time of the seg	gment change	Year	2012	Day of the	21 *	
Weekday	Wednesdav 💌	Hour	0	month Minute	0	
	Concernation of the Concern 7 of the					

38. Under 'Backup Configuration', it is possible to activate archive data storage in a 'Destination path' to ensure gapless process documentation. The backup is started by default after the first time related segment change. (→ Backup Configuration)

TagLogging Fast	X
Archive Configuration Backup Configuration	Archive contents
Signature activated  Activate Backup  Destination path	Backup to both paths Browse
Alternative destination path	Browse
	OK Abbrechen Übemehmen Hilfe

39. In the tab 'Archive contents' the difference regarding TagLogging Slow becomes evident. Here, the archiving criteria for TagLogging Fast are specified. The other tags with longer cycle time are located in TagLogging Slow. For the archive type TagLogging Slow this option does not exist. After accepting the settings with 'OK'

close Tag Logging with	after the save	
------------------------	----------------	--

	1	1	100
$(\rightarrow \text{Archive contents} \rightarrow \text{OK} \rightarrow$		$\rightarrow$	2

Archive Configura	tion Backup Configuration Archive contents
	Measuring values with event-driven acquisition
	Cyclic meas. values with cycle <= 1 x 1 minute
	Compressed values with cycle <= 1 x 1 minute -
	Proccontrolled meas. values
	Note All Tag Logging tags that do not fulfill the above-mentioned conditions will be archived in Tag Logging Slow.



**Note:** An additional individual variant of archives are the user archives. User archives are database tables where users can set up their own data fields. User archives are used to store data and offer standardized access to this data according to SQL database description. However, this variant is not shown here, since generating it is very individual and complicated. ( $\rightarrow$  User Archive  $\rightarrow$  Open  $\rightarrow$  ...)

WinCCExplorer - C:\Program Files\Siemens\STEP7\S7Proj\PCS7_S_1\PCS7_Prj\wincproj	\OS(1)\OS(1).mcp	
File Edit View Tools Help		
□ ▷ ■ ▶ 🗴 追 淵 ▷ ▷ 診 翻 🗃 💡		
□ [b OS(1)	Name	Туре
	No objects evict	
⊞	NO ODJECTS EXIST	
🖶 🗄 Structure tag		
···· 👌 Graphics Designer		
Alarm Logging		
Tag Logging		
Report Designer		
Text Library		
Liser Administrator		
Cross-Reference		
Redundancy		
Time synchr Open		
Horn Properties		
Picture Tree Manager		
* OS Project Editor		
一品 SFC		
OS(1)\User Archive\	0 object(s)	Licensed mode

40. To display the archive data, OS Runtime has to be started first, of course. (→ Activate OS runtime)



41. To display the plant, select the down arrow to the right of "A1\_multipurpose\_plant" and then "T2\_Reaction". (→ ↓ → T2\_Reaction)

A1_multipurpose_plant	Ð
	£
	↓ ↓ ↓
A1_multipurpose_plant T1_educt_tanks T2_reaction T3_product_tank T2_reaction T4_rinsing	A1T1B003 OK NT/SEC_rinsing
T2_reaction	
A1T2R001	A1T2R001 evel 0 ml

42. The simplest method to display archive data in curve form is by clicking on Assemble groups/Call.

 $(\rightarrow \text{Assemble Groups/Call} \boxtimes)$ 

24	30.11.12	11:02:41,650	0	A1_multipurpose_plant/T2_reaction/A1PV -	Untere Alarmgrenze	verletzt	10 K
	A1_multipurpose	e_gelant.		0			
<u></u>					1.		
1			1000				





43. In the dialog below, assign a name to the 'New Trend Group' and select 'Archive' as content. That means: the displayed values come from an archive. As an alternative, all other online variables can be displayed directly. (→ New → Name:Trend\_Group01 → Contents: Archive → Create)

Trends Online			<b>—</b> ×	
Trend Groups	New Trend Group	Changed last	Display New Delete	×
	Name: Trend_Gro Contents Archive Online	oup01 Template Pictures -∱r @TRG_Default.Pdl -∱r @TRG_Standard.Pdl		Create

44. In the tab 'Trends' select at data connection – Tag name the folder icon and in the next dialog the tag A1\_multipurpose\_plant/.... ( $\rightarrow$  Tag name  $\rightarrow$  SystemArchive  $\rightarrow$  A1\_multipurpose\_plant/...  $\rightarrow$  OK)

Toolbar       Status Bar       Online configuration       Export         Trends       General       Font       Trend window       Time axes       Value axes         Trends:       Object name:       Trend 1       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Use axis:       Trend window:       Trend window:       Trend window:       Trend window:         Value axis:       Value axis:       Value axis:       Value axis:       Value axis:         Value axis:       Value axis:       Value axis:       Value axis:       Value axis:         Label:       Label:       Label:       Label:       Label:       Label:         If a name:       If a name: <th>Toolbar       Status Bar       Online configuration       Export         Trends       General       Font       Trend window       Time axes       Value axes         Trends:       Object name:       Trend 1       Trend window:       Trend window:         Trend 1       Trend window       Trend window:       Trend window:       Trend window:         Trend window:       Trend window       Trend window:       Trend window:       Trend window:         Trend window       Trend window       Trend window:       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Time axis:       Time axis:       Time axis:       Time axis:       Tue taxis:       Value axis:         Value axis:       Value axis:       Value axis:       Value axis:       Value axis:       Value axis:         Data connection       Data source:       Tag name:       Image: Selection of Archives/Tags       Image: Selection of Archives/Tags       Image: Selection of Archives/Tags       Image: Selec</th> <th></th>	Toolbar       Status Bar       Online configuration       Export         Trends       General       Font       Trend window       Time axes       Value axes         Trends:       Object name:       Trend 1       Trend window:       Trend window:         Trend 1       Trend window       Trend window:       Trend window:       Trend window:         Trend window:       Trend window       Trend window:       Trend window:       Trend window:         Trend window       Trend window       Trend window:       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Trend window:       Trend window:       Trend window:       Trend window:       Trend window:         Time axis:       Time axis:       Time axis:       Time axis:       Tue taxis:       Value axis:         Value axis:       Value axis:       Value axis:       Value axis:       Value axis:       Value axis:         Data connection       Data source:       Tag name:       Image: Selection of Archives/Tags       Image: Selection of Archives/Tags       Image: Selection of Archives/Tags       Image: Selec	
Trends General Font Trend window Time axes Value axes Trends:          Object name:         Image: Trend 1         Trend vindow:         Value axis:	Trends General Font Trend window Time axes Value axes   Trends:   Image: Constraint of the action of the act	
Trend 1   Trend 1 Trend window: Value axis: Value ax	Trends: Object name:   Trend 1 Trend 1   Trend window: Trend window 1   Trend window 1 Time axis:   Time axis: Time axis 1   Value axis: Value axis 1   Value axis 1 Label:   Data connection   Data source: Tag name:   1 - Archive tags Image:	
Image: Solection of Archives/Tags         Effects	Image: Trend 1   Trend 1 Trend window: Trend window 1 Time axis: Time axis: Time axis 1 Value axis: Value axis: Value axis 1 Value axis 1 Label: Data connection Data connection Data source: Tag name: 1 - Archive tags Effects Effects Tre Selection of Archives/Tags In the archy: [systemArchive] Tre Selection of Archives/Tags In the archy: [systemArchive] Tre Selection of Archives/Tags Interactor: Interactor: Selection of Archives/Tags Interactor: Interacto	
Trend window:   Trend window 1   Time axis:   Time axis:   Time axis:   Value axis:   Value axis:   Label:   Label:   Label:   It acconnection   Data connection   Data source:   Tag name:   1 - Archive tags   Effects	Trend window:   Trend window 1   Time axis:   Time axis 1   Value axis 1   Value axis 1   Up Down     Data connection   Data source:   1 - Archive tags     Effects   Effects   Tre     Selection of Archives/Tags     1 - Marchive for a source     Tre     Selection of Archives/Tags     1 - Marchive for a source     Tre     Selection of Archives/Tags     1 - Meandry:     SystemArchiveA	
Image: Solution of Archives/Tags       Image: Solution	Image: Trend window 1   Time axis:   Time axis 1   Value axis:   Value axis:   Value axis 1   Label:     Data connection   Data source:   1 - Archive tags   Effects   Tre   Effects   Image: Selection of Archives/Tags   1   Image: Selection of Archives/Tags	
Time axis:         Time axis:         Value axis:         Value axis:         Value axis:         Label:         Data connection         Data source:         1 - Archive tags         Tre         Selection of Archives/Tags         Image:         Image:         Image:         Image:         Image:         Data connection         Data source:         Tag name:         I-Archive tags         Image:         SystemArchive         Al_mothpurpose_plant/12_reschon/Al 12L001_Montogr.Al 12L001_Plantal         Analog:       Cyclic 2013-L	Time axis:   Time axis:   Value axis:   Value axis:   Value axis:   Value axis:   Label:     Data connection   Data source:   1 - Archive tags     Tag name:      Effects   Tre        Effects     Image:        Effects     Image:        Effects     Image:        Image:        Image:     Image:	
Ime axis 1       Value axis:       Value axis:       Value axis:       Label:       Data connection       Data source:       1 - Archive tags       Effects       Effects       Ime       Selection of Archivex/Tags       Ime       Ime       Selection of Archivex/Tags       Ime	Time axis 1   Value axis:   Value axis 1   Label:     Label:     Data connection   Data source:   Tag name:     1 - Archive tags   Effects   Tre     Selection of Archives/Tags     Line     Tre        Tre     Selection of Archives/Tags     Line     Tre     Selection of Archives/Tags     Line     We Remove     Up Down     Tre     Selection of Archives/Tags     Line     We Remove     Tre     Selection of Archives/Tags     Tre     Selection of Archives/Tags     Tre     Selection of Archives/Tags     Tre     Selection of Archives/Tags     Tre	
Value axis:         Value axis 1         Label:         Data connection         Data source:         Tag name:         1 - Archive tags         Effects         Effects         In Hierarchy:         SystemArchive         Pot         Pot         Pot         SystemArchive         Imultipurpose plant/12_reaction/AIT21001/Monitor_AIT21001 PVEValue         Analog         Cyclic         201	Value axis: Value axis 1 Label: New Remove Up Down Data connection Data source: Tag name: 1 - Archive tags Effects Effects Tre Selection of Archives/Tags 1 Hearchy: SystemArchive/ Hearchy: SystemArchive/ Hearchy: SystemArchive/ Hearchy: SystemArchive/ Hearchy: SystemArchive/ Hearchy: SystemArchive/	
Value axis 1       Label:       Data connection       Data source:       Tag name:       1 - Archive tags       Effects	Value axis 1 Label: Label: Label: Data connection Data source: Tag name: 1 - Archive tags  Effects  Tre Selection of Archives/Tags  Line Herarchy: SystemArchiveA  Comp Technol Archive	
Label:     New Remove Up Down   Data connection Data source:      I - Archive tags     Effects  Effects Effects  Effects  Effects  Effects  Effects Effects  Effects Effects  Effects	New Remove   Up Down   Data connection Data source: Tag name:   1 - Archive tags   Effects   Effects   Effects   Image: Selection of Archives/Tags   Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selection of Archives/Tags Image: Selecti	
New Remove       Up Down         Data connection         Data source:       Tag name:         1 - Archive tags       Image: I	New Remove Up   Data connection   Data source:   Tag name:     1 - Archive tags    Effects   Tre     Effects   Effects   Effects   Tre     Effects   Effects   Effects   Effects Effects  Effects  Effects  Effects  Effects  Effects  Effects  Effects  Effects  Effects  Effects  Effects  Effects  Effe	
New       Remove       Up       Down         Data connection       Data source:       Tag name:         1 - Archive tags       Image: Imag	New       Remove       Up       Down         Data connection       Data source:       Tag name:         1 - Archive tags       Image: Imag	
Effects  Tre Selection of Archives/Tags  I Hierarchy: SystemArchive  PCS70SCLIENT3  PCCompressed_Archive  Analog Cyclic 2013-1  Analog Cyclic 2013-1  ( IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Effects Tre Selection of Archives/Tags  1 Hierarchy: SystemArchive\ Hierarchy: SystemArchive\ Hierarchy: SystemArchive\	
Tre     Selection of Archives/Tags       1     1 - EE III       Line     1 - EE IIII       Herarchy:     SystemArchive       0     P CSTOSCLIENT3       +     Tag name       Comm     Tag type       Analog     Cyclic       2     Oct       0     SystemArchive       +     A1_multipurpose_plant/T2_reaction/A1T2L001/Monitor_A1T2L001.PV#Value       Analog     Cyclic       2013-1	Tree     Selection of Archives/Tags       1     Image: Im	
Image: The Hitting Hitting         Line         Histarchy:       SystemArchive         Image: The S		2
Line Hierarchy: [SystemArchive]  PCS7OSCLIENT3  Compressed_Archive  SystemArchive  Analog Cyclic 2013-1  Al_multipurpose_plant/T2_reaction/ALT2L001/Monitor_ALT2L001.PV#Value  Analog Cyclic 2013-1  ( Interpret int		
O       Tag name       Comm       Tag type       Acquis       Last ch         Oot       SystemArchive       *		
Dot     Image: SystemArchive     Image:	Tag name Comm Tag type Acquis I	ast ch Ac
	Dot SystemArchive Analog Cyclic	7 * 013-1 1 s
	2.	
	Dot	
l l l e m		

45. In the second tab 'Value axes' deselect 'Automatic' and set the value range to 0 ... 1000. ( $\rightarrow$  Value axes  $\rightarrow$  deselect 'Automatic' $\rightarrow$  Value range: 0 ... 1000)

Toolbar	Status Bar	Online configuration Export
Trends General	Font	Trend window   Time axes Value axes
Value axes:		Object name:
Value axis 1		Value axis 1
		Trend window:
		Trend window 1
		Label:
		Alignment:
		0 - Left 🗸 🗸
New Remove	Up Dow	n Scaling:
		0 - Linear 🗸
Value range		
from:	to:	_
0	1000	Automatic
<b>F</b> # .		1/2
Effects Decimal places:		Color
2	Automatic	
Exponential not	ation	Use trend color
User scaling		Área names
	Use 🔲 😭	Show 🕅 🔝

46. In the tab 'Time Axes' select the time range 1 x 1 minute. ( $\rightarrow$  Time Axes  $\rightarrow$  Time range: 1 x 1 minute)

Toolbar	Status Bar	Online Configuration Export
rends Gene	ral Font	Trend Window Time Axes Value Axe
me axes:		Object name:
Time axis 1		Time axis 1
		Trend window:
		Trend window 1
		Label:
		Alignment:
		0 - Bottom
New Remo	ve Up Dov	wn 🔽 Refresh
Time range		
Setting:		Start time:
0 - Time range		▼ 22.05.2015 🔍 🕈 13:01:10
		End time:
		22.05.2015 📃 🔻 13:02:10
Number of meas	urement points:	Time range:
120		1 X 1 minute 🔻
Effects		
Time format:		Color:
	•	-
Automatic		
Automatic Date format:		- Use trend color
Automatic Date format: Automatic	-	Use trend color
Automatic Date format: Automatic		Use trend color
Automatic Date format: Automatic Show date	•	Use trend color
Automatic Date format: Automatic	•	Use trend color

47. You now have a trend display for the archive tag that you can modify conveniently using the task bar in the window Trendgroup01 regarding range and segment. To display it, the corresponding SIMIT model as well as the simulation has to be started in PCS7.

	22/01/13 12:29:05.592 0	A1_multipurpose_p	lant/T2_reaction Monitoring level A1T2L002 PV - Lov	alarm limi <sup>*</sup> 🗐 1/22/2013 12:40:00 PM
-	1_multipurpose_plant	1 D		I I SIEMENS



48. Another variant for displaying trends from the archives is using the 'Report Designer' as printout. Here it is important that WinCC remains started in runtime. In the Report Designer, print requests with the layout they contain can be started. For this reason, first select a layout '@CCTIgRTCurves\_ENU.RPL' matching the archive data in order to adapt it.

File Edit View Tools Help				
□ ▷ ■ →   X 晅 폐 - 5 沙 診 🏢 🖆 📍				
Computer     Computer     Tag Management     Tag Management     Tag Management     Tag Management     Tag Languing     Report Designer     Language neutral     German (Germany)     English (United States)     Consider (Germany)     English (United States)	E	Name  CCAlgRtOnlineMessagesNewWithToleranc CCAlgRtOnlineMessagesNew_ENU.RPL CCAlgRtOnlineMessagesOld_ENU.RPL CCAlgRtSequenceArchiveJournal_ENU.RPL CCAlgRtSequenceArchiveJournal_ENU.RPL CCAlgRtSequenceArchive_ENU.RPL CCAlgRtSequenceArchive_ENU.RPL CCCAlgRtSequenceArchive_ENU.RPL CCCAlgRtSequenceArchive_ENU.RPL CCCCligRtShortTermArchive_ENU.RPL CCCCLIGRtShortTermArchive_ENU.RPL CCCCUrveControlContents_ENU.RPL CCCCurveControlContents_ENU.RPL CCCCurveControlContents_ENU.RPL CCCCurveControlContents_ENU.RPL CCCCUrveControlContents_ENU.RPL CCCCurveControlContents_ENU.RPL CCCCurveControlContents_ENU.RPL CCCCIDIneTableCtrl-CP_ENU.RPL	Type Layout Layout Layout Layout Layout Layout Layout Layout Layout Layout Layout Layout Layout	
French (France)     Italian (Italy)     Global Script     Text Library     Text Distributor     Wiser Administrator     Cross-Reference     Redundancy		OCCOnlineTrendCtrl-Curves-CP_ENU.RPL     OCCTigRtCurves_ENU.RPL     OCCTigRtCurves_ENU.RPL     OCCTigRtCarves_ENU.RPL     OCCTigRtTables_ENU.RPL     OCOntrol Center CS (compact)_ENU.rpl     OFunction Trend Control - Picture_ENU.RPL     OGlobal Script single Action (landscape)_EN     OGlobal Script single Project Funtion (landsc     OGlobal Script single Standard Function (lan     Oascract ENU.rpl     U	Layout Layout Layout Layout Layout Layout Layout Layout Layout	

 $(\rightarrow \text{Report Designer} \rightarrow \text{Layouts} \rightarrow \text{English} \rightarrow @\text{CCTIgRTCurves}\_\text{ENU.RPL})$ 

49. In the 'Report Designer Layout', the layout can now be edited as in the usual graphic tools. Here we show how the dynamic view of the tag trend has to be parameterized.
 (→ Tag Logging Runtime.Trend → Properties)



50. In the following dialog, select under 'Connect' the 'Tag Selection' for editing. Likewise, the time range, time base and the format can be specified here.  $(\rightarrow \text{Connect} \rightarrow \text{Tag Selection} \rightarrow \text{Edit})$ 

Object Properties		2 ×
-🛱 🦅 🖉 🛛 Dynamic m	etafile DynM	etafile1 🔹
Properties Connect		
Tag Loggir Name	Parameter	Edit
Trend Prine r	ange Nection Jase t	Delste

51. We still have to select a tag. Click on 'Add'. ( $\rightarrow$  Add)

urrent selection and sequence:	ОК
Variable	Cancel
	Add
	Move Up
	Move Down
	Delete
	Properties

52. From the 'SystemArchive': select 'A1\_multipurpose\_plant as tag.

```
(\rightarrow SystemArchive \rightarrow A1\_multipurpose\_plant \rightarrow OK \rightarrow OK)
```

Archive Selection			? ×
🖬   🗁 🏥 🏢			
Hierarchy: SystemArchive\			
PCS70SCLIENT3	Tag name * A1_multipurpose_plant/T2_reaction/A1T2L001/Monitor_A1T2L001.PV=Value	Comm     Tag type     Acquis       *     *     *     *       Analog     Cyclic	Last ch Acquis * 7 * 7 2013-1 1 seconc
	2.		
J	т. Т.	OK Cancel	Help
Tag Loggi	ng Runtime: Tag selection for reporting	8 <b>x</b>	
Current se	lection and sequence:		
Variable		Cancel	
SystemA	rchive\A1_multipurpose_plant/T2_reaction/A1T2L		
		Add	
		Move Up	
		Move Down	
		Delete	
		Properties	
This dia	og box allows you to select tags for reporting from existing Tag Logg	jing archives.	

53. Close the Properties dialog and save the modified layout under the same or a different name. ( $\rightarrow$  Close  $\rightarrow$  Save



54. In the print request for online trends '@Report Tag Logging RT Curves New' the properties are now set.

 $(\rightarrow \text{Report Designer} \rightarrow \text{Print jobs} \rightarrow @\text{Report Tag Logging RT Curves New} \rightarrow \text{Properties})$ 

WinCCExplorer - C:\Program Files\Siemens\STEP7\S7Proj\PCS7_SCE\PCS7_Prj\w	incproj	\OS(1)\OS(1).mcp [ Active ]	
File Edit View Tools Help			
□ >   ■ >   X = □   1 > 3 [ □] a   ?			
🖃 🕞 OS(1)	*	Name	Туре ^
		@internal Global Script Standard-function	@gsc_sfc.rpl
🗄 📶 Tag Management		@internal Global Script Actions	@gsc_act.rpl
🖶 🗄 Eructure tag		Occumentation Tag Logging	@TIgCS.RPL
Graphics Designer		@Documentation Alarm Logging	@AlgCS.RPL
		Scherologing RT Revolving archive	@ALRtUmA.
		Sequence archive @Report Alarm Logging RT Sequence archive	@ALRtFoA.R
🖕 📕 Report Designer		@Report Alarm Logging RT Message sequence	@CCAlgRtSe
- Layouts	E	@Report Alarm Logging RT OnlineMessages	@CCAlgRtO
		@Report Alarm Logging RT OnlineMessages	@CCAlgRtO
		@Documentation Signal Collection	@SCollect.Rl
		@Documentation Lifebeat Monitoring	@LBMCS.RP
		@Documentation Picture Tree Manager	@PTMCS.RP
		@Report Alarm Logging RT OnlineMessages	@CCAlgRtO
Italian (Italy)		WREPORT Tag Logging RT Tables New	@CCTIgRETa
Print jobs			CCTIgREC
		OPenort Alarm Logging P	
Text Library		Operation Text Lik	D E
		ODocumentation User Ac	ob
🔤 🙀 User Administrator		ODocumentation Global	job
- Cross-Reference		Operation Global     Properties	
Redundancy			- L
User Archive	*		•
OS(1)\Report Designer\Print jobs\		59 object(s)	icensed mode

55. In the dialog 'General', a suitable 'Layout file: @CCTIgRTCurves.RPL' is displayed. If own layouts were created, they can be selected here also. (→ Layout file: @CCTIgRTCurves.RPL)

eneral	Selection	Printer	Setup				
A	Name:	Report	Tag Loggir	ng RT Cun	ves Ne	w	
P	Project:	C:\Progr	ram Files\	Siemens\S	TEP7	.S7Proj\F	CST
Layout	name:	@CCTIg	RtCurves.	RPL			
Layout	file:		CTIgRtCu	ves.RPL			•
		Line	layout for	line printer			
		Selec	ction for p	int job list			
	Dialog:	No dialo	g				•
	Last prir	ntout on:		-			
	Next pri	ntout on:					
	Start Pa	arameters	3				0
			YYYY-	MM - DD		HH : MM	
	Star	t Time:	2012	11-30		10:26	¥.
	Сус	le:	Daily				

56. Under Selection of the print job properties, the pages and the time range are specified.
 (→ Selection → Page Range → Time range)

Print Job P	roperties	June 1	? <b>x</b>
General	Selection Printer Setup		
Ð	Page Range		
	Pages from 1	📩 to 9999	
	Data time range	the print start time)	
	Number: 1	All	•
	Absolute     YYYY - MM - D	D НН · ММ	
	From 2015 05 22	▲ 13:05 ▲	
	To 2015-05-22	13:05	
	ОК	Abbrechen	Hilfe

57. In 'Printer Setup', several printers can be specified sorted according to priority. ( $\rightarrow$  Printer Setup  $\rightarrow$  OK)

ieneral	Selection Printer Setup					
	Print Output To					
P	V Printer					
	Printer Priorities					
	(Standard Printer)	-				
	2.) <pre></pre>					
	3.) <pre></pre>					
	Minimum space required on the ha	ard disk in MB				
	Generate warnings	150				
	Discard trigger for logging	100				
	File (*.emf)					
	Tray:					
	PRT_OUT\_YYYYMMDDhhmms	ssmmm\				
	PRT_OUT\_YYYYMMDDhhmms	ssmmm.pdf				
	Minimum space required on the ha	ard disk in MB				
	Minimum space required on the ha Generate warnings	ard disk in MB 150				

58. Now, we are ready to print. To save paper, the print job can be previewed.  $(\rightarrow @$ Report Tag Logging RT Curves New  $\rightarrow$  Preview print job)





## **Exercises**

In the exercises we apply what we learned in the Theory section and the Step by Step Instructions. The existing multi-project from the step by step instructions (PCS7\_SCE\_0203\_R1305\_en.zip) is used for this and expanded.

The objective of this exercise is this: to configure two trend groups that represent different archive values for the reactors. To this end, combine the temperature and controller relevant data in the first trend group and the level relevant data in the second trend group.

#### TASKS

- 1. Archive all values that are level, temperature and controller relevant. Edit the corresponding blocks in a way that these values are archived.
- 2. Now, define a trend group for reactor R001 that represents the values of the PID controller. Add all relevant archive tags. Do the same for reactor R002. Try different time and value axis settings.
- 3. Next, the level relevant data of the reactors is to be visualized together. Select them and display them.
- 4. Test different settings in the configuration dialog. Search for a function that can be used to select and deselect individual trends and trend groups.



The tasks below were not realized in the exercise project. However, they are typical for planning archive systems.

- 5. Which process values should be archived for an easy-to-follow and gapless representation? Develop a concept and implement it.
- 6. Calculate the memory needed for the tag "Tag Logging Fast". As the number of process values, utilize the results from the first task. For the analog process values, once assume 6 bytes for each process value and once 16 bytes for each process value. One segment is to store the process values for 2 weeks and all segments at least half a year.
- 7. Now calculate the memory requirement for Alarm Logging by assuming 4 messages per minute. One message requires 4000 bytes memory.
- 8. Based on the results, distribute the assumed 10 GB memory to Archive Tag Logging Fast, Alarm Logging and Tag Logging Slow. Then set the properties of the archives in your project.