## SIMATIC powerrate for PCS 7

SIMATIC PCS 7 powerrate Configuration Instructions

## FAQ • November 2010



# Service & Support

## SIEMENS

## Introduction

SIMATIC PCS 7 powerrate provides for transparency in energy consumption from supply to consumer. SIMATIC PCS 7 powerrate continuously captures, archives and processes energy data. A precise view of the usage profile permits you to configure efficient power supply and detect energy-saving potential, which will help you effectively lower the costs for energy. Monitoring of the power limit agreed will put you in a position to exploit your limit to the full without unnecessarily having to pay high prices or even penalties for the power supply.

#### Advantages

- Efficient process design and optimization of energy efficiency by identifying power-intensive processes and devices and comparing usage profiles and costs.
- Reduced operating costs through enhanced transparency of energy flow.
- Greater awareness of energy costs through specific assignment of costs, causes and batches.
- Keeping to contractually agreed power limits and thus avoidance of higher power supply costs and penalties.
- Secure application ensured by tested system components.

## Contents

Introduct	ion	2
Contents		3
1 1.1 1.2 1.2.1 1.2.2	Preparation and Installation Hardware Requirements Software Requirements PCS 7 Installation SIMATIC PCS 7 powerrate	6 6 6
2 2.1 2.1.1 2.1.2 2.1.3	Information about the SIMATIC powerrate Library Overview Overview of the S7-400 Blocks User Data Types Changing the Block Numbers	8 8 9
3	Getting Started	10
4	Welcome	10
5 5.1	Creating a Project in the SIMATIC Manager Creating a PCS 7 Project	
6 6.1 6.2 6.3 6.3.1 6.3.2	Copying the Templates from the SIMATIC powerrate Library Overview Copying Charts General Settings Time Settings Internal Tag	19 19 21 21
7	Downloading the Configuration into the AS and the PC Station	22
8	Compiling the OS	26
9	Icons for the Process Pictures	29
10 10.1 10.2 10.3 10.4 10.5 10.5.1 10.5.2 10.5.3	Configuring the Measuring Points with PRE_SUM Description of the PRE_SUM Block Configuring the Faceplates for PRE_SUM Relationship between Block Icon and Function Block PRE_SUM Using Faceplates Description of Faceplates and Block Icons Standard. Trends Configuring the Tag Logging	30 33 36 36 38 38 38 39
11 11.1 11.2	Configuring the General Switch with PRE_SWTCH Relationship between Block Icon and Function Block PRE_SWTCH Using Faceplates	47
12 12.1 12.2	Configuring PAC3200 / PAC4200 with PRE_PAC Relationship between Block Icon and Function Block PRE_PAC Using Faceplates	52
13 13.1 13.2 13.3	Batch-related Acquisition of Energy Data with PRE_SUMC Description Configuring the PRE_SUMC Block Simulating a Batch	57 58
14 14.1 14.2	Configuring the Load Management with PRE_LMGM General Information about Configuration Configuring the Total Energy Consumption / Total Power Supply	69

14.3	Configuring the Consumers	
14.4	Sample Commissioning of the Load Management	75
14.4.1	PRE_LMGM Block Parameters	
14.4.2	Creating Raw Data Tags	77
14.4.3	Creating Archive Tags	77
14.4.4	Copying the Global Script Actions	77
14.4.5	Changing the Global Script Actions	77
14.4.6	Importing the Archives	77
14.4.7	Importing the Runtime Data	78
14.5	Configuring the LMGM Block	79
14.6	Using Faceplates	
14.7	Commissioning the Load Management Using the Faceplate	90
14.7.1	Overview	
14.7.2	Changing the Values in the "Parameters" View	90
14.7.3	Changing the Values in the "Tariffs" View	
14.7.4	Changing the Values in the "Edit List of Priorities" View	
14.7.5	Changing the Values in the "Priority List" View	
14.7.6	Testing the Load Management	
14.7.7	Reading Back Parameter from the CPU	96
15	Configuring SIMATIC powerrate Reports	97
15.1	Calling SIMATIC powerrate Reports	97
15.2	Configuring the Reports	98
15.2.1	Adding Reports → Exporting Archived Measured Values	
15.2.2	Adding Reports → Cost Center Report	103
15.2.3	Adding Reports → Duration Curve Report	106
15.2.4	Adding Reports → Batch Value Export	
15.2.5	Adding Reports $\rightarrow$ Batch Report (sorted according to time)	110
15.2.6	Adding Reports →Counter Values	112
15.2.7	Adding Reports → Virtual Measuring Points	
15.2.8	Adding Reports → Automatic Execution	116

SIMATIC powerrate für PCS 7 Version: 01, Entry ID: 46463467

## **1** Preparation and Installation

## 1.1 Hardware Requirements

The hardware requirements for PCS 7 apply for the installation. More information about compatibility is provided with each version of PCS 7.

## 1.2 Software Requirements

#### 1.2.1 PCS 7 Installation

To be able to work with SIMATIC PCS 7 powerrate V3.0 SP1 you must install one of the versions of PCS 7 given below.

- SIMATIC PCS 7 V6.1 SP3
- SIMATIC PCS 7 V7.0 SP3
- SIMATIC PCS 7 V7.1
- SIMATIC PCS 7 V7.1 SP1

**Note** The User Archives option is used for archiving/logging the load management configuration and SIMATIC Batch-related energy data. A license is required for this.

As from version V3.0 SP1 a license for SIMATIC WinCC/User Archives is included in the SIMATIC PCS 7 powerrate Engineering and Upgrade package.

## 1.2.2 SIMATIC PCS 7 powerrate

Start the "setup.exe" program to start installation. Any further information you might need will be provided in the course of the installation. Please also read the information in the readme file. You can select three components for installation.

- SIMATIC PCS 7 powerrate (AS)
   → AS library for SIMATIC powerrate PCS 7 V3.0 SP1
- SIMATIC PCS 7 powerrate (OS)
   → PCS 7 Faceplates and C Subroutines
- SIMATIC PCS 7 powerrate (Reports)
   → powerrate Reports and Online Help

Automation License Manager Automation License Manager V2.1 Simatic PCS 7 powerrate SIMATIC PCS 7 powerrate (AS) V3.0 SP1 SIMATIC PCS 7 powerrate (OS) V3.0 SP1 SIMATIC PCS 7 powerrate (Reports) V3.0 SP1	Select a product to obtain information about it.
	Required: 0 M Available on C: 7.29 G

**Note** To be able to use the powerrate reports you must have Microsoft Excel 2003 or 2007 installed.

## 2 Information about the SIMATIC powerrate Library

## 2.1 Overview

The library is copied into the directory in which the STEP 7 Basis software is also installed (for example, <Drive>:\SIEMENS\Step7\s7libs\powerrate).

## 2.1.1 Overview of the S7-400 Blocks

Name	Function	Number
PRE_SYNC	Time synchronization	FB1060
PRE_SUM	PCS 7 block for acquiring and processing energy	FB1061
PRE_FIFO_DATA	FIFO buffer	FB1062
PRE_AR_DATA	Data interface for sending the archive data	FB1063
PRE_AR_SND	Archiving of measured values in the WinCC tag logging archive	FB1064
PRE_LMGM	Load management for up to 100 loads	FB1065
PRE_LMGM_75	Load management for up to 75 loads	FB1066
PRE_LMGM_50	Load management for up to 50 loads	FB1067
PRE_LMGM_25	Load management for up to 25 loads	FB1068
PRE_LMGM_10	Load management for up to 10 loads	FB1069
PRE_AS_SEND	Send block for AS-to-AS communication	FB1070
PRE_AS_RECV	Receive block for AS-to-AS communication	FB1071
PRE_SND_H	Send block for AS-4xxH to AS-400 communication	FB1072
PRE_RCV_H	Receive block for AS-4xxH to AS-400 communication	FB1073
PRE_BS	Calls the BSEND system function block (used internally)	FB1074
PRE_BR	Calls the BRCV system function block (used internally)	FB1075
PRE_SUMC	Block for batch-related energy acquisition	FB1077
PRE_UA_S	Archive manager for writing archive data to the user archive	FB1078
PRE_UA_R	Archive manager for reading archive data from the user archive	FB1079
PRE_SWTCH	PCS 7 block for general switch	FB1750
PRE_PAC	PCS 7 block for basic functionality of the PAC3200 / PAC4200	FB1751
PRE_CALC	Calculation block	FC1061
PRE_FIFO_IO	Organizes the FIFObuffer	FC1062

## 2.1.2 User Data Types

Name	Function	Number
UDT_PRE_FIFO	Data type for check data for organizing the FIFO buffer	UDT1060
UDT_PRE_ITEM	Data type for measured value	UDT1061
UDT_PRE_TLG	Data type for message frame item for sending to the WinCC tag logging archive	UDT1062
UDT_PRE_SND_REQ	Data type for write data request	UDT1063
UDT_PRE_SND	Data type for archive manager checkback signal for writing	UDT1064
UDT_PRE_RCV_REQ	Data type for read data request	UDT1065
UDT_PRE_RCV	Data type for archive manager acknowledgment signal for reading	UDT1066
UDT_PRE_ANY	Data type for Any pointer	UDT1067

Note You cannot change the numbers of the UDT blocks.

You can change the numbers of the blocks that are not used internally, in the SIMATIC Manager.

## 2.1.3 Changing the Block Numbers

Proceed as follows to change the numbers of the internally used blocks PRE\_BR, PRE\_BS and PRE\_CALC.

- Copy the library into a PCS 7 project.
- Select the block container and call "Re-wire" in the pop-up menu.
- In the dialog that opens you enter the values for "Old operand" and "New operand" and then run "Re-wire".
   An error message is displayed indicating that you cannot re-wire a block. You can ignore this message.
- Check the changed block number in the "Calls" tab of the block's object properties.
- Update the block numbers in the symbol table.

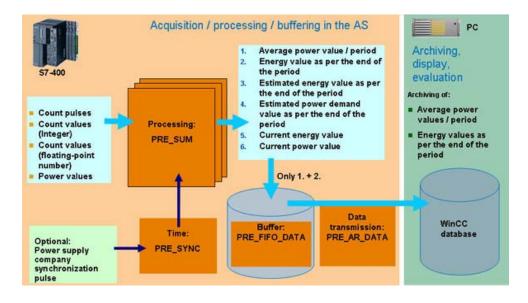
## 3 Getting Started

This Getting Started provides a fast and precise introduction to SIMATIC PCS 7 powerrate. It does not contain a complete list of all the possible functions, but it does contain all the information required to use the main functions. The sample project provided was created with PCS 7 V 7.1 SP1 and SIMATIC powerrate V 3.0 SP1. Please take this into account when using the sample project.

## 4 Welcome

#### **SIMATIC PCS 7** powerrate Configuration Instructions

Getting Started uses a sample project to demonstrate how easy it is to work with SIMATIC PCS 7 powerrate WinCC. You will need about 4 hours to work your way through all the topics of this documentation and to acquire the basic knowledge for configuring SIMATIC PCS 7 powerrate. A large part of the documentation is based on figures illustrating the various configuration steps.



The figure above gives you a good overview of the functions of the SIMATIC PCS 7 powerrate function blocks.

The **PRE\_SUM** block is used to acquire and process the energy values, and it is the interface of the OS. Various signal types are supported. They are selected using the input parameter "INP\_SEL".

- INP\_SEL=  $0 \rightarrow$  counting pulse
- INP\_SEL= 1  $\rightarrow$  integer counter value
- INP\_SEL=  $2 \rightarrow$  analog counter value
- INP\_SEL= 3 → energy value\* calculated with calculation function

The current value, trend and average value / period can be calculated for each **PRE\_SUM** block for performance and energy values.

**Note** \* See calculation algorithms included in the PRE\_CALC block.

The **PRE\_SYNC** block acts as a clock for synchronizing the PRE\_SUM power acquisition block and other SIMATIC powerrate blocks. The SYNC\_OUT clock is triggered by an external synchronization signal (EXT\_SYNC) or the internal CPU clock.

The **PRE\_FIFO\_DATA** block serves as a buffer for the measured values to be archived that the **PRE\_SUM** block supplies and which are sent to the OS by the **PRE\_AR\_SND** block.

The **PRE\_AR\_DATA** function block contains the data interface for the archive data to be sent and calls the **PRE\_AR\_SND** block that sends the archive data to OS.

#### The Getting Started consists of the sections below.

- Creating a Project in the SIMATIC Manager
- Copying the Templates from the SIMATIC powerrate Library
- General Settings
- Configuration of the AS and PC stations
- Compiling the OS
- Icons for the Process Pictures
- Relationship between Block Icon and S7 block PRE\_SUM

## 5 Creating a Project in the SIMATIC Manager

#### Introduction

This chapter provides information about PCS 7 and a description of how to create a project in the SIMATIC Manager. The project is the basis for configuring a user interface in the PCS 7 OS. In the project you can create and process all the objects you need for operating and monitoring the processes.

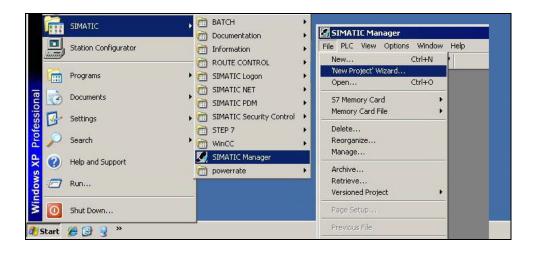
## 5.1 Creating a PCS 7 Project

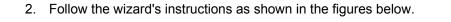
#### Requirements

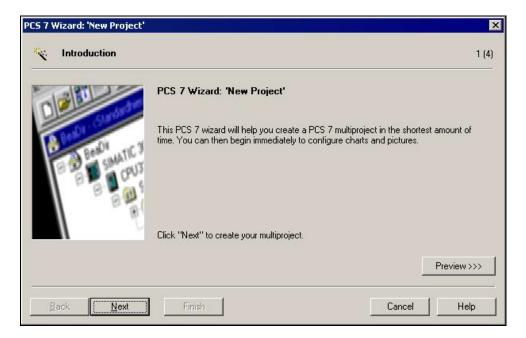
• PCS 7 is installed

#### Procedure

 Open the SIMATIC Manager and select "File > "New Project" Wizard...".







3. Select your bundle type.

2PU:	AS414-3	- <u>F</u> ind	Bundles: V1.4
<u>}</u> undle:	MLFB	Description	
	6ES7654-3Q*48-0×0 E-STAND:23	AS414-3 V5; AC20A; UR1; CP 443-1 EX11	
	6ES7654-6Q*48-0XX0 E-STAND:3	AS414-3 V5; DC20A; UR1; CP 443-1 EX11	
	6ES7654-6Q*48-0×X0 E-STAND:2	AS414-3 V5; DC20A; UR1; CP 443-1 EX11	
	6ES7654-1Q*58-0×X0 E-STAND:23		
		AS414-3 V5; DC10A; UR2; CP 443-1 EX11	
	6ES7654-3Q*47-0XX0	AS414-3 V4; AC20A; UR1; CP 443-1 EX11	
	6ES7654-6Q*47-0XX0 6ES7654-1Q*57-0XX0	AS414-3 V4; DC20A; UR1; CP 443-1 EX11 AS414-3 V4; AC10A; UR2; CP 443-1 EX11	
	6ES7654-4Q*57-0XX0	AS414-3 V4; AC10A; UR2; CP 443-1 EX11 AS414-3 V4; DC10A; UR2; CP 443-1 EX11	÷
			10
Jumber of	communication modules:	CP 443-5 V6.4	

4. Define the settings for the OS objects and the plant hierarchy.

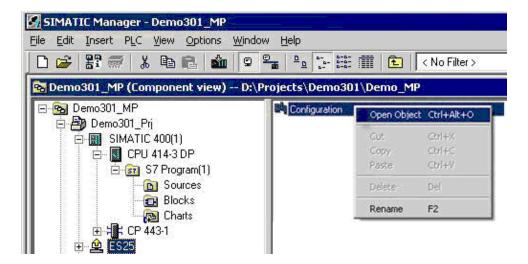
Plant hierarchy :		AS objects :
Number of levels:		77-10
Mumber or levels.	3	CFC chart
		☐ <u>SFC chart</u>
OS objects :	-	
	PCS7 OS	<ul> <li>Single station system</li> </ul>
	SIMATIC BATCH	C <u>M</u> ultiple station system
	E Route Control	C Multiple station system redundant
	🗖 OpenPCS 7	
		Preview >>>

5. Enter the name of the directory and the storage location.

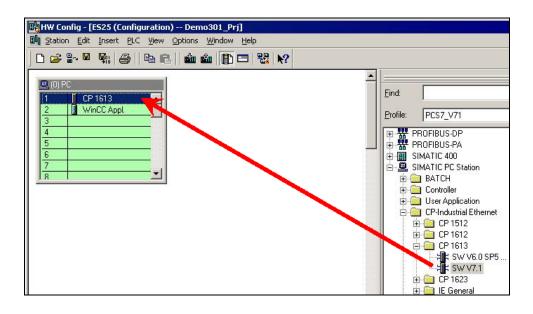
irectory name:	The following objects	will be created:	
Demo301	Multiproject:	Demo301_MP	
	Project:	Demo301_Prj	
	Master data library:	Demo301_LIB	
torage location (path): D:\Projects			Browse

6. Click the "Finish" button to close the wizard.

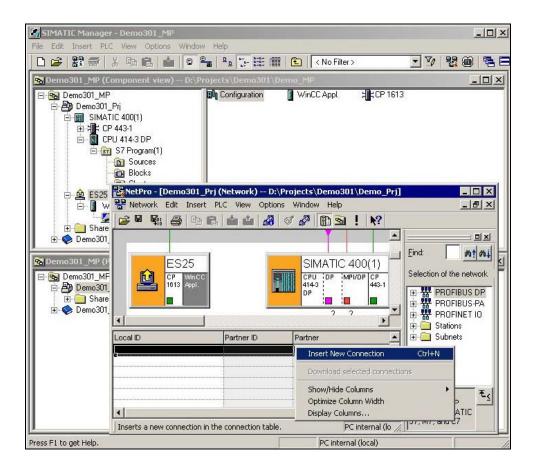
**Note** Create a new network (Ethernet (1), for example) for the interface of the CP443-1 and define a MAC address (an IP address is not necessary). 7. Change the default name of the PC station to that of your PG/PC (ES25, for example) and open the configuration.



8. Add a CP1613, for example. If you do not have a CP1613, use an IE General instead.



**Note** Configure a MAC address for the CP1613 (08-06-01-00-25, for example) and assign the card and the Ethernet(1) network. For the IE General card you must enter the MAC address of the card you wish to use.



9. Start the "NetPro" and select "Insert New Connection".

10. Create a new S7 connection. Check the connection settings and path. Quit the dialog with "OK".

	onnection	_
	Partner the current project Demo301_Prj SIMATIC 400(1) CPU 414-3DP (Unspecified) All broadcast stations All multicast stations the multiproject: Demo301_MP unknown project	
Project:	Demo301_Prj	€ <u>≺</u>
Project: <u>S</u> tation:	Demo301_Prj SIMATIC 400(1)	₹s
-		₹ <u>₹</u>
<u>S</u> tation:	SIMATIC 400(1) CPU 414-3 DP	₹ <u>₹</u>
<u>S</u> tation: <u>M</u> odule:	SIMATIC 400(1) CPU 414-3 DP	₹ <u>₹</u>

	tion End Point		ection identification	
	figured dynamic connection	Loca		
☐ One-way ✓ Establish an active connection		S7 connection_1 VFD Name:		
Lat. All the second			CC Appl.	
	ath Lo <u>c</u> al ES25/		Partner	
Connection Pa End Point:	Lo <u>c</u> al ES25/ WinCC Appl.		SIMATIC 400(1)/ CPU 414-3 DP	
End Point: Int <u>e</u> rface:	Lo <u>c</u> al ES25/ WinCC Appl. CP 1613	<b></b>	SIMATIC 400(1)/ CPU 414-3 DP CP 443-1(R0/S5)	
End Point: Int <u>e</u> rface: Subnet:	Logal ES257 WinCC Appl. CP 1613 [Ethernet(1) [Industrial Ethernet	<b>•</b>	SIMATIC 400(1)/ CPU 414-3 DP CP 443-1(R0/S5)	
	Lo <u>c</u> al ES25/ WinCC Appl. CP 1613	•]	SIMATIC 400(1)/ CPU 414-3 DP CP 443-1(R0/S5)	

- NetPro [Demo301\_Prj (Network) -- D:\Projects\Demo301\Demo\_Prj] \_ 🗆 × Protect PLC View Options Window Help \_ 8 × 😅 🖷 🙀 🎒 🖻 🖻 🌰 🌰 🖓 🖉 🔊 😫 📜 ? \* 1 **ES25** SIMATIC 400(1) Û CPU 414-3 CP 1613 DP MPI/DP CP 443-1 DP : 🗖 2 2 4 Partner ID Partner Local ID Туре Active connection partner S.A S7 connection\_1 SIMATIC 400(1) / CPU 414-3 ... S7 connection Yes 1 E 4 Ready PC internal (local)
- 11. Save and compile the configuration.

Note You will need the Partner ID again later in the project.

#### Result

You have created a project called "Demo301\_MP".

# 6 Copying the Templates from the SIMATIC powerrate Library

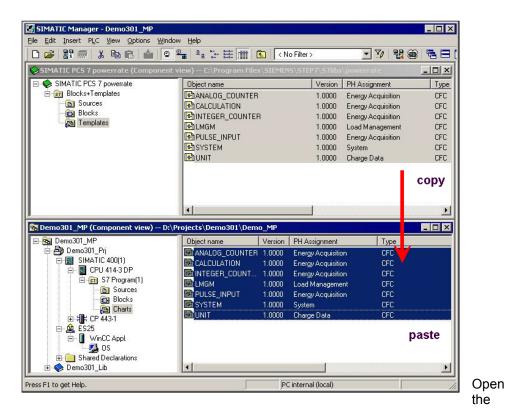
## 6.1 Overview

The library contains prepared CFC templates that you can use. In the sections below we describe the relevant CFC charts and procedures for creating programs.

Eile Edit Insert PLC View				
D 😅   🎛 🛲   👗 🖻 🛍		📔 < No Fil	ter > 🗾 🏹	
🖃 🍫 SIMATIC PCS 7 powerrate	Object name	Version	PH Assignment	Туре
🖻 🛐 Blocks+Templates	ANALOG_COUNTER	1.0000	Energy Acquisition	CFC
B Sources	CALCULATION	1.0000	Energy Acquisition	CFC
Blocks	MINTEGER_COUNTER	1.0000	Energy Acquisition	CFC
Templates	LMGM	1.0000	Load Management	CFC
	PULSE_INPUT	1.0000	Energy Acquisition	CFC
	SYSTEM	1.0000	System	CFC
	TINU	1.0000	Charge Data	CFC
	۲			
ress F1 to get Help.		PC inte	ernal (local)	

## 6.2 Copying Charts

Copy all the charts from the SIMATIC powerrate library into your project.



Plant View and delete all the unnecessary hierarchy folders created by the wizard.

Since we are using blocks whose numbers have been assigned by default by the CFC, you have to change the Compilation/Download settings in the CFC before compiling the program. You make these changes in the CFC in the menu "Options> Customize> Compile/Download...".

Settings f	or Compilatio	n/Download		×
CPU:	CPU 414-	3 DP		
Warning	Limits			
Local dat	:a (%): 90	Co <u>m</u> mu	nications jobs (i	%): 90 🕂
Lo <u>a</u> d mer	mory (%): 90		emory (%):	90 📑
□ <u>s</u>	blocks per runtim uppress warning served for Other ers from: 1		 I [	50 ★ T <u>e</u> st
<u>F</u> C numb	ers from:	to 1100	1	<u>C</u> ompress
Statistics				
	Maximum	Available	In use	Highest number
DB	4095	4035	14	74
FC	2048	1407	64	704
□ <u>G</u> ene		wnloaded program	n for compariso	m Help

## 6.3 General Settings

## 6.3.1 Time Settings

The time of the CPU must be synchronized with the time of the PCS 7 server for correct archiving, application and acquisition of times. The CPU time must be set to UTC time.

Make sure that the time synchronization is set for the CPU, the CP CP443-1 and the CP1613 (not possible for IE General). You must also make the settings in the OS.

## 6.3.2 Internal Tag

Open the OS and in the Tag Management create an internal tag of the "Text tag 8bit character set" type named "pre\_inf".

# Downloading the Configuration into the AS and the PC Station

The configuration for the CPU and the PC station is ready. Now you must download both stations.

Note

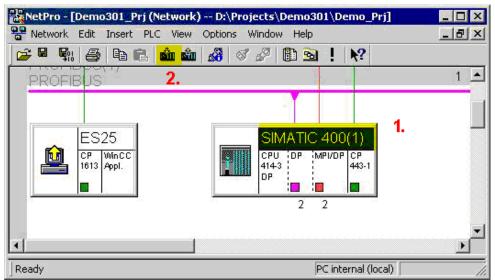
7

Make sure that the PG/PC interface is set to PC internal (local).

- \_ 🗆 × 🛃 SIMATIC Manager - [Demo301\_MP (Component view) -- D:\Projects\Demo301\Demo\_MP] 🔂 File Edit Insert PLC View Options Window Help - 8 × - 🏹 🔡 🃾 🗅 🧀 🚼 🐖 👗 🖻 💼 🏜 🔍 🐾 🏝 🦕 🏥 🏥 主 < No Filter > E 💁 Demo301\_MP Object name Symbolic name Туре Size 🖻 🎒 Demo301\_Prj 🛄 Configuration PC station configuration E SIMATIC 400(1) WinCC Appl. .... WinCC Applikation 🗄 📓 CPU 414-3 DP CP ------🗄 🛐 S7 Program(1) Sources 💼 Blocks 🔊 Charts CP 443-1 Ė 2 Open Object Ctrl+Alt+O Ė Cut Ctrl+X 🗄 🛅 S Сору Ctrl+C E S Demc Delete Del Ctrl+L PLC Download Configure... Ctrl+K Access Protection Compile and Download Objects... Print • Compare... SIMATIC Route Control Þ SIMATIC BATCH Rename F2 Alt+Return Object Properties.
- 1. Configure the PC station.

- NetPro [Demo301\_Prj (Network) -- D:\Projects\Demo301\Demo\_Prj] \_ 🗆 🗙 Pretwork Edit Insert PLC View Options Window Help \_ 8 × 😅 🖣 🚑 Pa 🖪 🏜 🏜 🔏 🚿 🖗 🖻 🧕 ! **?** 2. 1 🔺 PROFIBUS 1. SIMATIC 400(1) 25 CPU OP MPI/DP CP WinCC CP 414-3 DP 1613 Appl. 443-1 2 2 4 F Ready PC internal (local)
- 2. Open "NetPro", mark the PC station(1) and download it(2).

3. Then mark the S7-400 station(1) and download it(2).



		10.000	jects\Demo301\Demo_MP]	
Bile Edit Insert PL		lindow Help Set P ≞ 5-5 5-5 1111	E < No Filter >	• 70
Demo301_MP     Demo301_Prj     Demo30Prj     Demo30Prj     Demo30Prj     Demo30Prj     Demo30Prj     Demo		Dbject name ANALOG_COUNTER CALCULATION CALCULATION INTEGER_COUNT LMGM PULSE_INPUT SYSTEM Ctrl+X Ctrl+X Ctrl+C Ctrl+V Del	Version PH Assignment 1.0000 Energy Acquisition 1.0000 Energy Acquisition	Type CFC CFC CFC CFC CFC CFC CFC
⊡ 😵 Demo301_Lit	Insert New Object PLC Access Protection Check Consistency Compile Charts Plant Hierarchy	Ctrl+B		

4. Compile your program.

5. After successful compilation, download your program into the CPU.

SIMATIC Manager - [ B File Edit Insert PLC		n <mark>ponent view) D:\Pro</mark> Vindow Help	ojects\Dei	mo301\Demo_MP]
🗅 😂 🚼 🐖 👗	B 🔒 🏄 💿		1	No Filter >
		Object name ANALOG_COUNTER CALCULATION INTEGER_COUNT LMGM PULSE_INPUT SYSTEM Ctrl+X Ctrl+C Ctrl+V Del	1.0000	PH Assignment Energy Acquisition Energy Acquisition Load Management Energy Acquisition System Charge Data
⊡ 🍫 Demo301_Lib	Insert New Object		Download	Ctrl+L
	Access Protection		Copy RAM t	
	Check Consistency		CPU Messag	jes

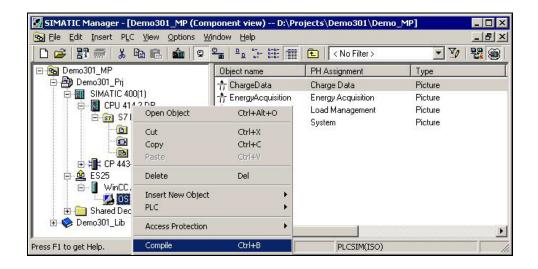
- 🛃 SIMATIC Manager Demo301\_MP - 🗆 × File Edit Insert PLC View Options Window Help 🗅 🤪 🔡 🐖 👗 🛍 💼 😰 😜 🏤 🏗 🏢 🔁 🛛 < No Filter > - V 🔡 📾 🖻 🗖 💁 Demo301\_MP (Plant View) -- D:\Projects\Demo301\Demo\_MP \_ 🗆 × 🖃 🔂 Demo301\_MP OS Assignment Object name AS Assignment Picture name for C 🖻 🎒 Demo301\_Pri UNIT SIMATIC 400(1)\CPU 41 Shared Declarations
   Charge Data 🗄 🛅 Energy Acquisition 🗄 🛅 Load Management 🗄 🔞 System 🗄 📀 Demo301\_Lib Insert New Object Hierarchy folder Access Protection CFC 4 SEC Print - 🗆 × 😼 Demo301\_MP (Co Additional document Plant Hierarchy 🖃 💁 Demo301\_MP Picture 🖻 🎒 Demo301\_Pri Process Tags Report Models 40001
- 6. Open the Plant view and insert a picture into each hierarchy folder.

7. The settings for deriving the block icons from the plant hierarchy are set automatically when a picture is inserted into the hierarchy.

Properties - WinCC-Picture: ChargeData	×
General Block icons	
Derive the block icons from the plant hierarchy.	
OK Apply Cancel	
OK Apply Cancel	

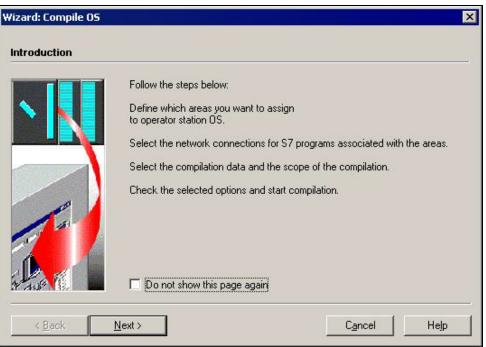
## 8 Compiling the OS

Mark the OS and select "Compile" in the pop-up menu. The wizard for compiling the OS will start and guide you through the process.



### OS Compilation Wizard Step 1

Press the "Next >" button.



### **OS Compilation Wizard Step 2**

Press the "Next >" button.

Hierarchy	Area	OS Assignment	Comment
🔟 Charge Data	Charge Data	ES25\WinCC Appl.\OS	
📓 Energy Acq	Energy Acq	ES25\WinCC Appl.\OS	
🙆 Load Mana	Load Mana	ES25\WinCC Appl.\OS	
🙆 System	System	ES25\WinCC Appl.\OS	

#### **OS Compilation Wizard Step 3**

- Click "Connection..." to select the network connection.
- Select the configured S7 connection (Named Connection) and then click the "OK" button.
- Press the "Next >" button.

perator stations and areas:	<u>S</u> 7 programs and r	network conne	ctions:					
🖃 🗹 🥐 OS	S7 program 🗠	C. Subnet	Subnet t	γpe Win CC ι	nit	Address		
🗹 📷 Charge Data 🗹 📷 Energy Acquisition	S7 Program(1	) 2 S7 conr	nection_1 Sym. cor	in. Named (	Connections			
	Select Network Conn	nection						
System	S7 program: S7 Progra	am(1)			8.			
	Subnet 🖉	Subnet type	WinCC unit	Address	Station no.	Segment no.	Rack no.	Slot no.
	Ethernet(1)	Ind. Eth.	Industrial Ethernet	08.00.06.01.00.16			0	3
	S7 connection_1	Sym. conn.	Named Connection	s <b>2.</b>				
				1				
	4					•		
				4	Conne	ection		
				1.		OCCOT IN THE		

#### **OS Compilation Wizard Step 4**

Press the "Next >" button.

Wizard: Compile OS		X
Select the data you —Data	want to compile and the scope of the compilation. Further options	
Tags and messa	Minimum acquisition cycle of the archive tags:	
SFC Visualization	1	
Picture Tree		
Scope	Create <u>s</u> erver data	
<ul> <li>Entire OS</li> <li>Changes</li> </ul>	₩îth memory reset	
< <u>B</u> ack	Next > Einish	Cancel Help

#### **OS Compilation Wizard Step 5**

Close the wizard by clicking the "Compile" button.

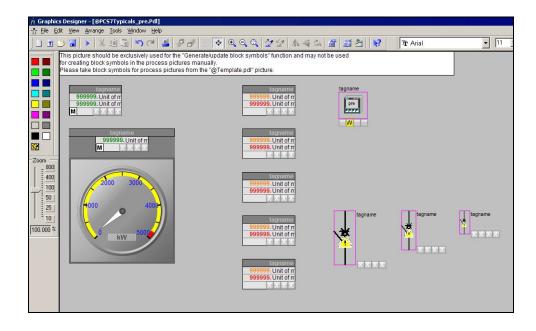
Picture tree Further options: Create / up	nd messages date block icons		
Create / up Archive tag	date block icons		
	s (Minimum acquisition cj	ycle: 1 second)	
Area OS assignments Charge Dat Energy Acc			

#### Result

All the relevant OS data is transferred automatically to the PCS 7 OS.

## 9 Icons for the Process Pictures

The icons that are placed automatically with "Compile OS" are located in the picture "@PCS7Typicals\_pre.pdl".



## 10 Configuring the Measuring Points with PRE\_SUM

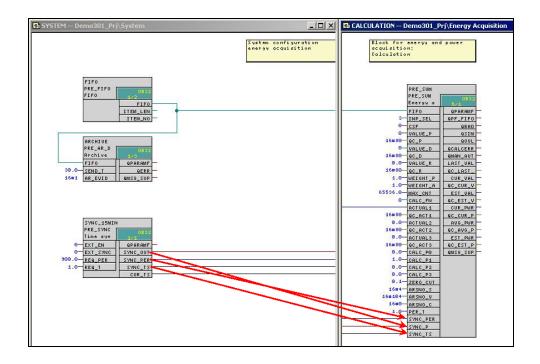
## 10.1 Description of the PRE\_SUM Block

The PRE\_SUM block is for acquiring and processing the power data and is the interface to the OS.

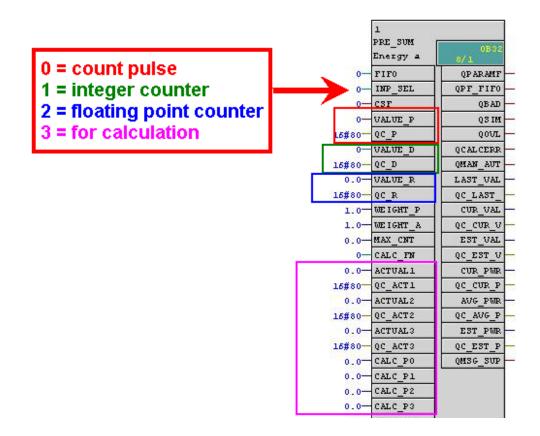
The inputs (depending on INP\_SEL) are for interconnecting count pulses or counter values (integer or analog).

The synchronization period is configured at the REQ\_PER input of the PRE\_SYNC block. The SYNC\_PER output of the PRE\_SYNC block is interconnected with the SYNC\_PER input of the PRE\_SUM block.

The mean power value and energy usage value over a specific period of time (usually 15 minutes) are output at the outputs.

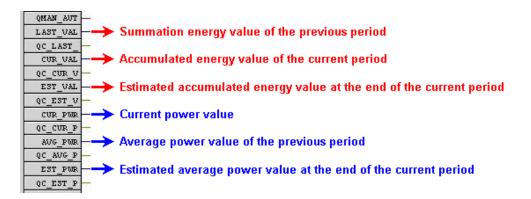


#### **PRE\_SUM – Important Inputs**

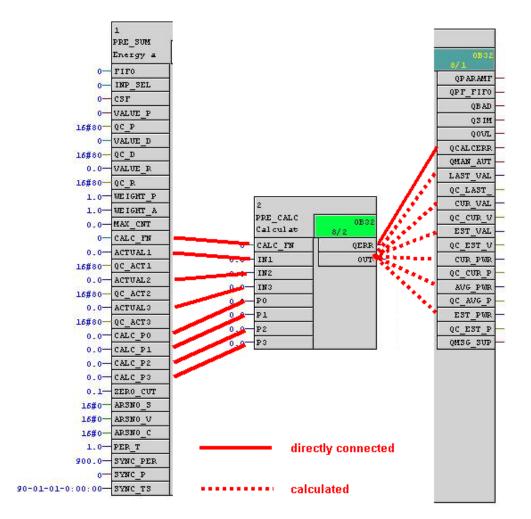


**Note** The energy value is measured with the values 0, 1 and 2 at the "INP\_SEL" input. A power value is measured with the value 3 at the "INP\_SEL" input.

#### PRE\_SUM – Important Outputs



#### PRE Blocks PRE\_SUM with Calculation Function



The PRE\_CALC block is called internally by the PRE\_SUM block. The connections between PRE\_SUM and PRE\_CALC are shown below.

#### **Calculation Algorithms**

The PRE\_CALC function includes calculation algorithms that can be used for forming measured values for the PRE\_SUM block.

The function is available as a source in the library and the user can extend it with additional calculations.

**WARNING** It is not permitted to change the interface of the function.

Table 10	-1

•

Function CALC_FN	Algorithm
0	OUT = P0 + P1 * IN1 + P2 * IN2 + P3 * IN3
1	Calculation of the quantity of heat for liquids OUT = P0*IN1*P1*IN2
	P0 = specific heat capacity c P1 = density $\rho$ IN1 = flow rate V IN2 = temperature difference $\Delta T$

## **10.2** Configuring the Faceplates for PRE\_SUM

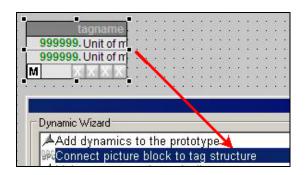
The icons are placed automatically in the relevant picture of the hierarchy. Proceed as follows if you want place another instance manually in a different picture.

1. Copy the icon from the "@Template\_pre.pdl" picture.

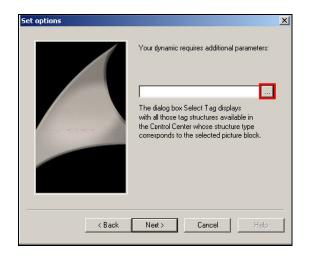
🛉 @Template_pre.PDL	
	eating block symbols in the process ols into the picture "@Template.pdl".
1. tagname	n NewPdl1
999999. Unit of m	tagname
999999. Unit of m	999999. Unit of m 2.
M X X X X	999999. Unit of m
	M

2. Connect the block icon with the structure using the "Dynamic Wizard". Make sure that the icon is marked. Start the "Connect faceplate to measuring point"

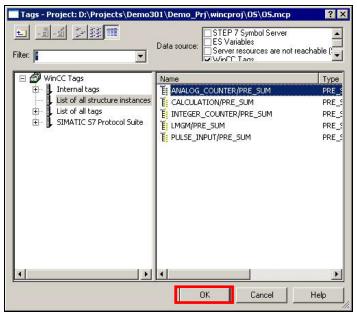
wizard.

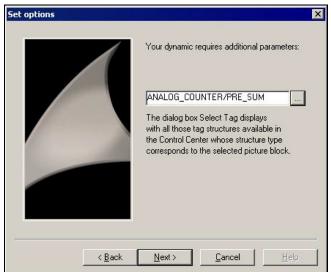


3. Follow the wizard and assign the structure to the block icon. For this you click the "Search" button to select the WinCC structure.



4. Select the structure type "ANALOG\_COUNTER/PRE\_SUM", for example, and confirm with "OK".

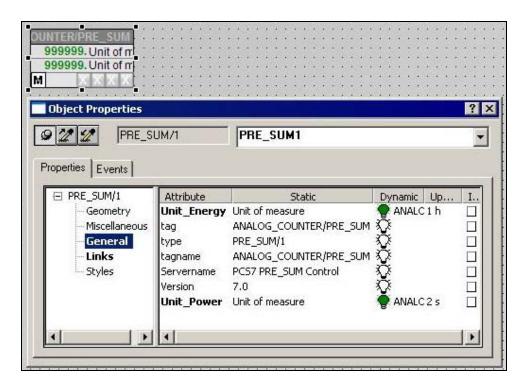




5. The structure is selected. Close the wizard by clicking "Next>".

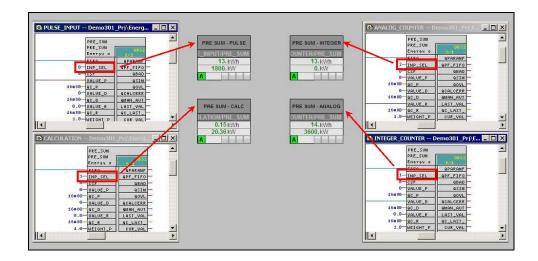
#### Result

The icon is connected with the structure.



# 10.3 Relationship between Block Icon and Function Block PRE\_SUM

The PRE\_SUM block is for acquiring and processing the power data and is the interface to the OS. Different types of signal are supported. You select them with the INP\_SEL switch. Each operable block has a block icon in the PCS 7 OS. More details are available in the programming and operating manual "Power management for PCS 7 - SIMATIC PCS 7 powerrate".



## 10.4 Using Faceplates

#### Open a faceplate

You can open a faceplate by clicking on the associated block icon in PCS 7 OS Runtime.

	C	ALCULATI	ON/PRE_SU	IM T	TOWARE SI
	<u>ê</u> 🖗 🔺	Standar	'd 🔽 🏹		0.2 kWh 20, kW
Mode	[	Auto	•		
Periode	[	60	s		
Energy	Previous	0.33	kWh		
	Instant.	0.2	kWh		
	Forecast	0.33	KWh		
Power	Prev. Avg	19.97	kW		
	Instant.	20.	KW		
	Forecast	19.7	kW		

#### Views

You can choose one of the six views from the drop-down menu. Alternatively you can have them displayed simultaneously in the loop display view (the data is available in the trend displays as soon as you have configured Tag Logging - described later on in the document).

差 Energy Acqu	Jisition			×
	C	ALCULATI	ON/PRE_	SUM
	🎽 🌌 🔺	Standar	d 🔽	Ŋ
Mode Periode	]	standaro alarm trend	Ł	
Energy	Previous Instant. Forecast	table edit mainten	ance KWN	
Power	Prev. Avg Instant. Forecast	20.03 20. 19.67	ĸw	

🖊 Energy Acquis	ition						×
	W A PRE_SUM		-		CAL	CULATION/PRE_SI	UN
Mode	Auto		H 44 P> H & 4	) 🚑 🛃 🖭		🚭 🚑 🔝 💌	
Periode	60 s	Date Time Class Status B	Date/Time	Energy (KWh)	Date/Time		*
Energy	Previous 0.33 kWh		08/19/10 2:05 PM 08/19/10 2:06 PM	0.33	08/19/10 2:05 PM 08/19/10 2:06 PM		
	Instant 0.31 kWh		08/19/10 2:07 PM	0.33	08/19/10 2:07 PM		
			08/19/10 2:08 PM	0.33	08/19/10 2:08 PM		
	Forecast 0.33 kWh		08/19/10 2:09 PM	0.33	08/19/10 2:09 PM		
Power	Prev. Avg 20, kW		08/19/10 2:10 PM	0.33	08/19/10 2:10 PM		
			08/19/10 2:11 PM	0.33	08/19/10 2:11 PM		
	Instant. 20. KW		08/19/10 2:12 PM	0.33	08/19/10 2:12 PM		
	Forecast 19.67 kW	List: 6 Window: 0 Ack: 0	08/19/10 2:13 PM	0.33	08/19/10 2:13 PM	20.00	¥
Man value k	Wh Prior stored values kWh	? 🗏 🎘 P 11 😡	H 44 PP H   0   G	> 🖕	H 44 PP H 0	۵ <mark>۵</mark>	
	0 1717990 0	21.0 1	Date/Time	Energy (ki%h)	Date/Time	Power [kW]	
1/1/1990	<ul> <li>12:00:00 AM 10</li> </ul>	16.8 -	08/19/10 2:05 PM	0.33	08/19/10 2:05 PM		
12:00:00 AM			08/19/10 2:06 PM	0.33	08/19/10 2:06 PM	20.00	
112:00:00 AM 5		12.6	08/19/10 2:07 PM	0.33	08/19/10 2:07 PM		
	17171990 💌 🔍 0	0.4	08/19/10 2:08 PM	0.33	08/19/10 2:08 PM		
	12:00:00 AM 🗮	4.2	08/19/10 2:09 PM	0.33	08/19/10 2:09 PM		
			08/19/10 2:10 PM	0.33	08/19/10 2:10 PM		
			08/19/10 2:11 PM	0.33	08/19/10 2:11 PM		
Set	1 / 1 / 1990 🗾 0	08/19/10 8:12:00:000 AM 2:12:00:000 PM	08/19/10 2:12 PM	0.33	08/19/10 2:12 PM		
	12:00:00 AM	Trend in the foreground CALCUL	08/19/10 2:13 PM	0.33	08/19/10 2:13 PM	20.00	

## **10.5** Description of Faceplates and Block Icons

## 10.5.1 Standard

Energy Acq	uisition			
	C	CALCULATI	ON/PF	RΕ.
	🗎 😻 👗	Standa	rd	¥
Mode		Auto	•	1
Periode		60	s	8
Energy	Previous	0.33	kWh	2
	Instant.	0.2	kWh	3
	Forecast	0.33	kWh	4
Power	Prev. Avg	19.97	kW	5
	Instant.	20.	KW	6
	Forecast	19.7	kW	7

(1) QMAN\_AUT / AUT\_ON\_OP (2) LAST\_VAL / unit  $\rightarrow$ LAST\_VAL#unit (3) CUR\_VAL / unit  $\rightarrow$ CUR\_VAL#unit (4) EST\_VAL / unit  $\rightarrow$ EST\_VAL#unit (5) AVG\_PWR / unit  $\rightarrow$ AVG\_PWR#unit (6) CUR\_PWR / unit  $\rightarrow$ CUR\_PWR#unit (7) EST\_PWR / unit  $\rightarrow$ EST\_PWR#unit (8) SYNC\_PER

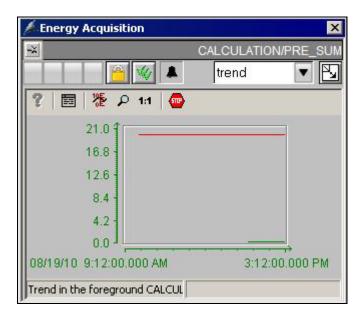
## Explanation of the values

ltem		Signal type 0, 1 – 2 (automatic)	Signal type 1 – 2 (manual)	Signal type 3	
Energy: (work)	Previous	Last archived energy value from the previous synchronization period	Last archived energy value from the last time period entered	Last archived energy value from the previous synchronization period	
	Instant.	Energy value accumulated within the current synchronization period	Energy consumption of the time period entered	Energy value accumulated within the current synchronization period	
	Forecast	Extrapolated accumulated energy value to end of synchronization period	See energy: Instant.	Extrapolated accumulated energy value to end of synchronization period	
Power:	Prev. Avg	Last archived average power value	Average power value for the last time period entered	Last archived average power value	
	Instant.	Current power value	See Power: Instant.	Current power value	
	Forecast	Extrapolated average power value to end of synchronization period	See Power: Instant.	Extrapolated average power value to end of synchronization period	

## 10.5.2 Trends

If archiving of the accumulated energy values is activated, the archive tags S (summed energy value) and V (average power value) are displayed in the trend view.

If the archiving of the accumulated energy values is not activated, the trend view shows the online variables CUR\_VAL (current energy) and CUR\_PWR (current power).



If you wish to archive values for 15 minutes, for example, you must create archive tags. Since SIMATIC powerrate works with process-controlled archive tags, a number of additional configuration steps are required.

- Define a raw data variable for transferring values for 15 minutes, for example.
- Copy files (Global Script actions).
- Change the Global Script actions.
- Create process-controlled archive tags in the Tag Logging editor.

NoteSteps 1 to 3: Necessary only once per PCS 7 project.Step 4: Repeat this step for each energy measuring point.

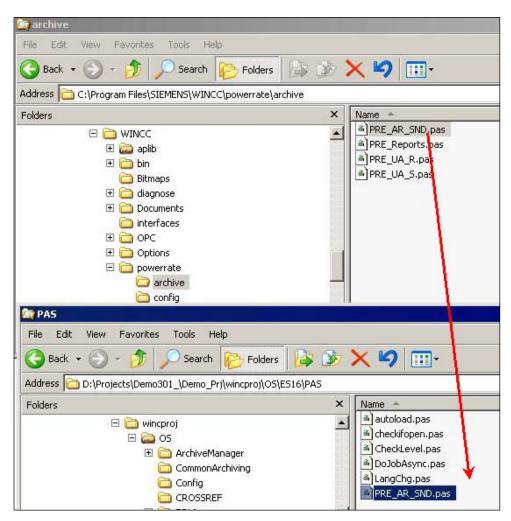
## 10.5.3 Configuring the Tag Logging

- Create one raw data tag per PRE\_AR\_DATA block for archiving in the OS Tag Management.
  - Structure of the tag name: OS tag name of the block PRE\_AR\_DATA + Suffix "/DATA".
  - Type:
  - Archive Data Link.

WinCCExplorer - D:\Projects\Demo301_	\Demo_Prj\wincproj\05\05.mcp [ Active ]		
Eile Edit View Tools Help			
🗋 🍃   📕 🔺 🕺 🏥 🗒 🗄 🏷	• 我 🏛 者 💡		
🖂 🔓 OS	Name	Туре	Parameters Last Ch
Computer	S7\$Program(1)#RawEvent	Raw Data Type	RAW FVFNT 8/4/201
Tag Management	■ \$7\$Program(1)#RawArchiv	Tag properties	
Thernal tags	ANALOC COUNTED DDS. SUM.MAX_CNT	General Limits/Reporting	
BINATIC S7 PROTOCOL SUITE	ANALC New Group 1.ARSNO_S	1	
	ANALC New Tag	Properties of Tags	
	Find 2. 1.ARSNO_C	Name: 🚽 SYSTEM/A	RCHIVE/DATA 3.
🕀 📙 Industrial Ethernet (II)	ANALC 1.SYNC_PER	DataType: Raw Data 1	Гуре ▼
H MPI	ANALC COPY 1.SET	Length:	-
🕀 👖 Named Connections	ANAL Paste 1.AUT_ON_OP		
57\$Program(1)	ANALC Delete 1.V_MAN	Address:	Select
😥 👖 PROFIBUS	ANALC 1.V MAN_DATE	Add ess properties	×
😟 👖 PROFIBUS (II)	ANALC Properties 1.V_MAN_TIME		
Slot PLC	ANALOG_COUNTER/PRE_SUM.V_MAN_L1	Address	
E II Soft PLC	ANALOG_COUNTER/PRE_SUM.V_MAN_L1_DA		
	ANALOG_COUNTER/PRE_SUM.V_MAN_L1_T		
<b>^</b>		CPU	
	_\Demo_Prj\wincproj\05\05.mcp [ Active ]	Data DB	DB No. 0
Eile Edit View Tools Help		Address Byte	
] 🕒 🗁   🔳 🔺 🗐 🛄   🖧 🕄	> 錢		
🖃 [ 🔓 OS	Name	DBB 0	Length 0
Computer	SYSTEM/ARCHIVE	Raw Data Length 0	
🗄 🎹 Tag Management	Addressing		
E E Structure tag	Cut	Raw Data Type	
@Maintenance	1 Copy	C Send/Receive Block	BSEND/BRCV
E @Enum Operating State	Paste	- C Event	
	Delete	Archive Data Link 4.	
	Delete		
	Properties	NO, Check the box if the variable is a ra	w data variable.
PRE_LMGM		NO,	
PRE_UA_R		ET OK Ca	ncel Help
PRE_UA_S			

## **Copying files**

 Copy the C action PRE\_AR\_SND.pas from the \WinCC\powerrate\Archive folder into the project directory\computer name\PAS of the project (server project if you have a multiple-station system).



## Creating C action for archiving

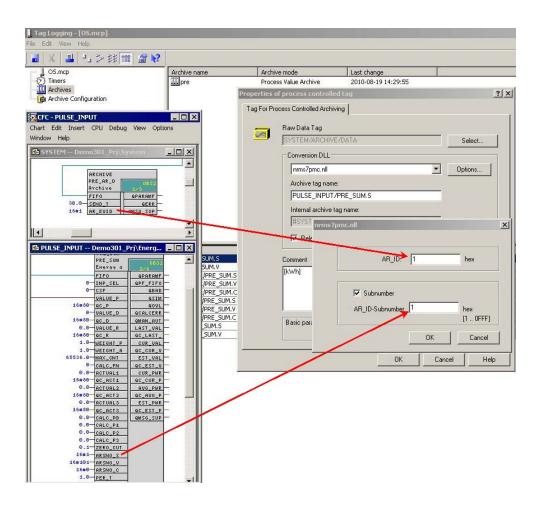
- Match tag trigger to raw data tag for archiving.
- Match tag link in the C script to tag name of the PRE\_AR\_DATA block. The name is case sensitive also in the trigger!

😤 Global Script C - (OS.mcp) File Edit View Window Tools	Help	
X 🖬 🗠 🖷 🖻 🖬 🕹	単 道   つ (ベ   昌 😵   参 🌔 💆 👑 🗀 🛝	1 D
\\LS16\WinCC_Project_OS\OS.mc     Project functions     Standard functions     Internal functions     Actions     Actions     Actions : ES16     Actions : ES16     Checklevel.pas     Checklevel.pas	Image: State of the state	
- 9 DoJobAsync,pas 9 LangChg,pas - 9 PRE_AR_SND,pas - 9 Global actions	// Trigger tag and Tag <u>eame baye to be adjusted</u> char Tagname[256] = <mark>"SYSTEM/ARCHIVE";</mark> PRE_AR_SND (Tagname);	Properties
	return (TRUE); }	Add

## Configuring the process value archive

- Create a process value archive named "pre".
- Create two or three archive tags for the PRE\_SUM block.
- Assign the raw data tags of the associated block for archiving PRE\_AR\_DATA. The names of the archive tags have the following structure:
  - Accumulated energy value (LAST\_VAL): tagname.S
  - Average power value (CUR\_PWR):
  - Absolute counter value (VALUE\_D / VALUE\_R) optional tagname.C
- **Note** The tag name corresponds to the tag name of the PRE\_SUM block. You can copy this into the structure type by selecting the PRE\_SUM block in the WinCC Explorer. The name of the archive tag must be unique throughout the project.
  - Parameterize the AR\_ID with the AR\_EVID parameter of the associated archiving block PRE\_AR\_DATA.
  - Parameterize the subnumbers with the parameters ARSNO\_S (for the energy value), ARSNO\_V (for the average power value) and ARSNO\_C (for absolute counter value if available) of the associated energy acquisition block PRE\_SUM.

tagname.V



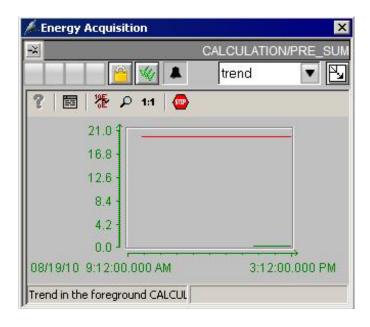
## Values used in the sample program

Table	10-2
Iable	10-2

Archive tag name	AR_ID	AR_ID subnumber	Comment
PULSE_INPUT/PRE_SUM.S	1	1	[kWh]
PULSE_INPUT/PRE_SUM.V	1	101	[kW]
INTEGER_COUNTER/PRE_SUM.S	1	2	[kWh]
INTEGER_COUNTER/PRE_SUM.V	1	201	[kW]
INTEGER_COUNTER/PRE_SUM.C	1	202	[kWh]
ANALOG_COUNTER/PRE_SUM.S	1	3	[kWh]
ANALOG_COUNTER/PRE_SUM.V	1	103	[kW]
ANALOG_COUNTER/PRE_SUM.C	1	203	[kWh]
CALCULATION/PRE_SUM.S	1	4	[kWh]
CALCULATION/PRE_SUM.V	1	104	[kW]

## Result

Now the values are displayed in PCS 7 OS Runtime.

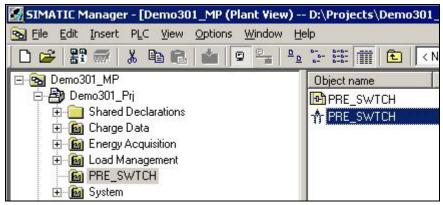


## 11 Configuring the General Switch with PRE\_SWTCH

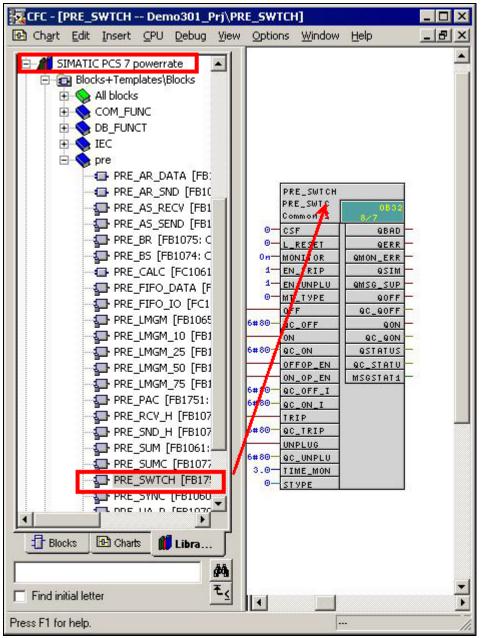
🛃 SIMATIC Manager - [Demo301_MP (Plant View)	D:\Projects\Demo30	l_\Demo_MP]	
B File Edit Insert PLC View Options Window He		N. 5%	<b>√</b> / ‱ / ¶
		-	
Demo301_MP     Demo301_Pri     Shared Declarations     Gin Charge Data     Gin Energy Acquisition     Gin Load Management	Object name Shared Declarations Charge Data Energy Acquisition Load Management System	AS Assignment SIMATIC 400(1)\CPU 41 SIMATIC 400(1)\CPU 41 SIMATIC 400(1)\CPU 41 SIMATIC 400(1)\CPU 41	. ES16\WinCC Appl . ES16\WinCC Appl
ie i i i i i i i i i i i i i i i i i i	Global labeling field		
	Open Object	Ctrl+Alt+O	
	Cut Copy Paste	Ctrl+X Ctrl+C Ctrl+V	
	Delete	Del	
	Insert New Object	Þ	Preconfigured Station.
	PLC	•	Hierarchy folder
	Access Protection	<u>/</u> _	Shared Declarations
	PCS 7 license inform	ation	Batch process cell
	Shared Declarations	/•	RC database object
Inserts Hierarchy folder at the cursor position.	Plant Hierarchy	/ »—	
SIMATIC Manager - [Demo301_MP (Plant View) Ba File Edit Insert PLC View Options Window He	elp		
🗅 🌽 🔡 🛲   👗 🖻 🛍 🕍 🗳 🐾 🗠	🔁 🖽 🔳 💽	No Filter	
Demo301_MP      Demo301_Pri      Shared Declarations      Generations      Geneforma	Object name Shared Declarations Charge Data Energy Acquisition Charge Data Energy Acquisition System System Global labeling fiel PRE_SWTCH	AS Artig SIMATIC MMATIC SIMATIC SIMATIC 	

1. Create a new PRE\_SWTCH folder in the Plant View.

2. Insert a new CFC and a new picture.



3. Open the CFC and insert a PRE\_SWTCH block from the SIMATIC PCS 7 powerrate library into the chart.



4. Compile and load the program. Then compile the OS.

#### Result

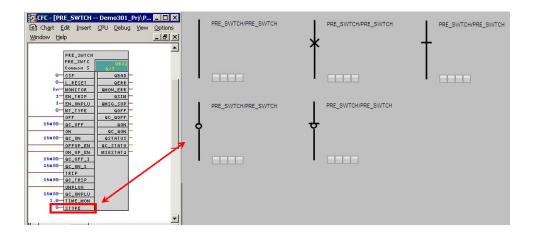
The new area is created in the OS and the block icon for the PRE\_SWTCH has been inserted automatically into the picture. A simulation for the switch is already available in the sample project.

## 11.1 Relationship between Block Icon and Function Block PRE\_SWTCH

The PRE\_SWTCH function block is for displaying and operating a switch via digital inputs and outputs.

The input parameters ON, OFF, TRIP and UNPLUG are used to form the switch status. The input parameters TRIP and UNPLUG are not evaluated if EN\_TRIP or EN\_UNPLUG = FALSE respectively.

You can change the appearance of the switch at the STYPE\_INT input. The views below are possible for the switch depending on the value at the STYPE\_INT input.



The following switch statuses are formed depending on the inputs and are displayed in the faceplate and icon.

Status	Output QSTATUS	Input ON	Input OFF	Input TRIP	Input UNPLUG
On	Bit 0	TRUE	FALSE	FALSE	FALSE
Off	Bit 1	FALSE	TRUE	FALSE	FALSE
Tripped	Bit 2	Х	Х	TRUE	FALSE
Unplugged	Bit 3	Х	Х	Х	TRUE

Table 11-1

 $X \rightarrow$  Irrelevant in this status and not evaluated.

## 11.2 Using Faceplates

## Open a faceplate

You can open a faceplate by clicking on the associated block icon in PCS 7 OS Runtime.

PRE_SWTCH/PRE_SWTCH		
ON     OFF     Switch STYPE VIEW (		OP_ON OP_OFF
Common Switch	×	
PRE_SWTCH/PR	RE_SWTCH	
STATUS COMMAND	On	
ON Not Tripped Not Unplugged		

#### Views

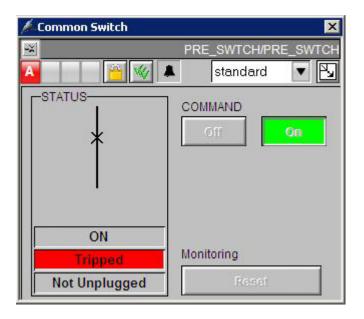
You can choose one of the two views from the drop-down menu or in the loop display view.

🖊 Common Switch	×
*	PRE_SWTCH/PRE_SWTCH
🗎 🖉 🏄	🛦 🛛 standard 🔽 🌄
-STATUS *	COM alarm
ON	
Not Tripped	Monitoring
Not Unplugged	Resei

A 🖄 💆 💆	PRE_SWTCH		PR	E_SWTCH/F	RE_SWTCH
STATUS			l 💵   H 🖨   🖪		
	Off On	Date	Time	Class	Status E
l Mi		19/08/10	17:53:05.997	Alarm	CU

## **Description of Faceplates and Block Icons**

## Standard

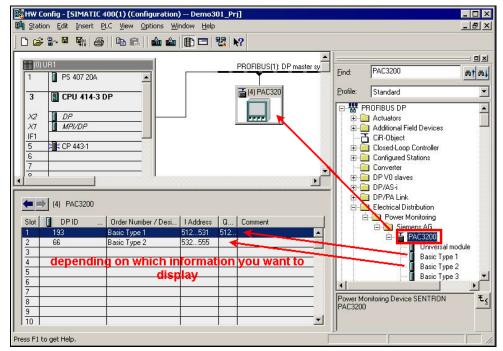


## The parameters below are displayed:

## Table 11-2

Element	Parameter	Description
Status	QSTATUS	Switch status
Command	MAN_ON	0 = off, 1 = on
Monitoring – Reset Reset		Reset of the monitoring error

## 12 Configuring PAC3200 / PAC4200 with PRE\_PAC

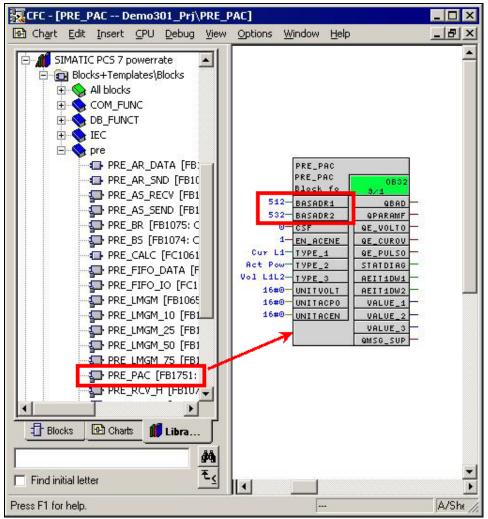


1. Insert a new PAC3200 module in the HW Config.

2. Create a new PRE\_PAC folder in the Plant View and insert a new CFC and a new picture.

SIMATIC Manager - Demo301       File     Edit       Insert     PLC       View     Optic       Image: State S	ons <u>W</u> indow <u>H</u> elp	- # # • <	No Filter >
🔂 Demo301_MP (Plant View)	D:\Projects\Demo30)	l_\Demo_MP	
⊡-® Demo301_MP		Object name	AS Assignmen
Demo301_Prj     Shared Declarations     Charge Data     Charge Data     Demo301_E Energy Acquisition     Demo301_MP (Component view)     Demo301_MP (Component view)		PRE_PAC ↑ PRE_PAC	SIMATIC 400( 
🖃 💼 S7 Program 🔺	Object name	PH Assignment	Туре
B Source	- ChargeData	Charge Data	Picture
Blocks	- TEnergyAcquisition	Energy Acquisition	Picture
B Charts	🕂 LoadManagement	Load Management	Picture
⊡ + <b>∦</b> ; CP 443-1	The PRE_PAC	PRE_PAC	Picture
ES16	The PRE_SWICH	PRE_SWTCH	Picture
	ריך System	System	Picture
Press F1 to get Help.		F	C internal (loc //

3. Open the CFC and insert a PRE\_PAC block from the SIMATIC PCS 7 powerrate library into the chart.



4. Compile and load the program. Then compile the OS.

#### Result

The new area is created in the OS and the block icon for the PRE\_PAC has been inserted automatically into the picture.

## 12.1 Relationship between Block Icon and Function Block PRE\_PAC

The PRE\_PAC function block is for displaying selected measured values and reporting status information of the multifunctional measuring devices PAC3200 and PAC4200.

## Measured value display

You can select data of basic types 1 and 2 for the measured value display. However, when you parameterize the PAC in the HW Config you must make sure that the basic types for the data to be displayed are configured accordingly.

The parameters BASADR1 and BASADR2 must each be supplied with the logical basic addresses of basic types 1 and 2 if used.

You specify the type of measured value with the TYPE\_x parameter.

Measured value type TYPE_x	Basic type	Meaning	Unit
1	1	Current a	А
2	1	Current b	А
3	1	Current c	А
4	1	Total active power	W
5	2	Voltage PH-PH a- b	V
6	2	Voltage PH-PH b- c	V
7	2	Voltage PH-PH c- a	V
8	2	Total power factor	-

Table 12-1

The status information is output in the STATDIAG parameter.

More details are available in the programming and operating manual "Power management for PCS 7 - SIMATIC PCS 7 powerrate".

## 12.2 Using Faceplates

## Open a faceplate

You can open a faceplate by clicking on the associated block icon in PCS 7 OS Runtime.

PAC			Block for basic functionality of PAE3200 / PAE420
			PRE_PAC/PRE_
pre			Standard 🔽
			Current L1 0 A
PAC Value 1	0.264	A	Collective active power 147.73 W
PAC Value 2	147.729	W	Voltage PH-PH L1-L2 0.0 V
PAC Value 3	0.000	kv	Active energy import tariff 1 0.97 kWh

## Views

You can choose one of the three views from the drop-down menu or alternatively you can have them displayed in the loop display view.

A.BI	ock for basic functionality of	PAC3200 / PAC42	00 ×
4		PRE_PAC/PRE	_PAC
	📔 🖌 🖌	Standard 🔽	
	2	standard parameters alarm	
	Current L1		
	Collective active power	87.18 W	
	Voltage PH-PH L1-L2	0.0 V	
	Active energy import tariff 1	1.16 KWh	

Block for basic functionality of PAC320	10 / PAC4200					x
📔 🦉 🔺 🛛 🛛 🖉	RE_PAC				PRE_P	AC/PRE_PAC
		1 3 I	<b>₽</b>   14 6	3	2	
	0 A 7.18 W	Date	Time		Class	Status E
Active energy import tariff 1	0.0 V 1.16 kWh	List: 8	Window: 0	Ack:	7 800	<b>▶</b> ]
Active power 2 / 2 [W] Active energy 7 / 2 [KWh] Voltage 3 / 1 [V]						

## **Description of Faceplates and Block Icons**

## Standard

*	NAME AND IN	PRE_P	AC/PRE_PA	
	<u> </u>	Standard	1 🔽 🛛	(1) VALUE_1
				(2) UNITVOLT / UNITACPOV
Current L	1	1	0 A 2	(3) VALUE_2
Collective	active power	3 147.7	3 w <b>2</b>	(4) VALUE_3 (5) AEIT1DW1 / AE1T1DW2
Voltage P	H-PH L1-L2	<b>4</b> 0.	o v <b>2</b>	(6) UNITACENER
Active ene	rgy import tariff	1 5 0.9	7 KWh 6	

## The parameters below are displayed:

#### Table 12-2

Item	Parameter	Description
Values 1 3	VALUE_x TYPE_x	Depending on the TYPE_x measured value, the relevant value is displayed with a description.
	UNITVOLT / UNITACPOW	The format and unit of the measured value can be set in the Parameters view.
Active energy import tariff 1	AEIT1DW1 / AE1T1DW2	The active energy is displayed if the parameter EN_ACENER = TRUE.
	UNITACENER	The format and unit of the measured value can be set in the Parameters view.

**Note** The values for current are rounded to 2 figures. For example, if the current current value is 1.45A, 1A is displayed in the faceplate.

#### Parameter

Here you can parameterize the format (number of places before and after the decimal point) and unit for the different measured value types.

Block for basic functionality of PAC3200 ,	/ PAC4200 🗙
PRE_P	AC/PRE_PAC
📔 🕢 👗 🛛 paramet	ers 🔻 🛐
Active power	
2/2[W] 💌	1
Active energy	
7/2[kWh] 💌	2
-Voltage-	
3/1[√] ▼	3

	Item	Parameter	Description
(1)	Active power	UNITACPOW	0 ≙ 2 / 2 [W]
			1 ≙ 3 / 1 [kW]
			2 ≙ 4 / 0 [kW]
			3 ≙ 4 / 0 [MW]
(2)	Active energy	UNITACENER	The selection box for the active energy is displayed if the parameter EN_ACENER = TRUE.
			0 ≙ 7 / 2 [kWh]
			1 ≙ 9 / 0 [kWh]
			2 ≙ 9 / 0 [MWh]
			3 ≙ 9 / 0 [GWh]
(3)	Voltage	UNITVOLT	0 ≙ 3 / 1 [V]
			1 ≙ 2 / 2 [kV]
			2 ≙ 3 / 1 [kV]

Table 1	2-3
---------	-----

# 13 Batch-related Acquisition of Energy Data with PRE\_SUMC

## 13.1 Description

The PRE\_SUMC block adds together the energy usage for 5 types of energy from 10 consumers in each case (VALx\_y) with the same unit and assigns the total energy usage (CUR\_VALx, LASTVALx) to a batch.

The acquisition of the energy usage is started and stopped with an input signal. The energy usage acquired in this time period is archived in PCS7 OS user archives (PRE\_SUMC\_x) with start/end times and information about the batch. The PRE\_UA\_S archive manager block for writing is used for archiving.

The input signal for energy data acquisition is independent of the synchronization pulse. The PRE\_SUM block provides the energy values of the separate consumers.

## Structure of the user archives

The user archive has the data structure below.

Field name	Data type	Block parameter	Meaning
BA_NA	STRING[32]	BA_NA	Batch name
STARTTIME	DATE_AND_TIME	-	Start time
ENDTIME	DATE_AND_TIME	-	End time
UNIT	STRING[24]	UNIT	System
BA_ID	INT	BA_ID	Batch ID
REC_NA	STRING[32]	REC_NA	Recipe name
VALUEx	REAL	CUR_VALx	Total work value x (x = 1 5)
VAL_UNITx	STRING[8]	VALUNITx	Unit x (x = 1 5)
TYPEx	STRING[32]	TYPEx	Energy type x (x = 1 5)

The PRE\_SUMC block collects the usage data at the inputs except for the start and end points. These data points are derived from the input signal ACTIVE.

The user archives are named PRE\_SUMC\_x (where x is the archive ID). You can enter a meaningful name for the alias name. For example, this name can include the designation of the PCELL that you can use as filter criterion for export.

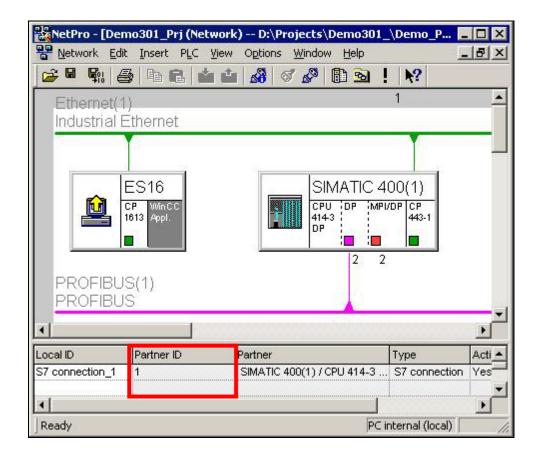
#### Archiving

A positive edge from ACTIVE issues a Start job to the archive manager or stores it in the internal buffer if a job is still active. This is necessary to ensure that no data is lost when one job quickly follows the other. Only one job can be buffered.

## 13.2 Configuring the PRE\_SUMC Block

## NetPro

Open the NetPro editor. The partner ID of the configured S7 connection used here is needed later for configuring the PRE\_UA\_S block.



**Note** The PRE\_SUMC block determines and stores the starting time. The default end time is 01.01.1990. The end time is updated when measurement is finished.

## PRE\_SUMC block parameters

PRE_SUMC Charge r	083 6/1
ID	OPARAM
CUR_TS	QER
ACTIVE	QMON_ER
ARCH_ID	90V
UNIT	GREG_AC
BA_ID	START_0
BA_NA	ARCH_0
REC_NA	QARCH_I
MAX_VAL	CUR_VAL
VALUNIT1	LASTVAL
TYPE1	CUR_VAL
VALUNIT2	LASTVAL
TYPE2	CUR_VAL
VALUNIT3	LASTVAL
ТУРЕЗ	CUR_VAL
VAL1_1	LASTVAL
VAL1_2	CUR_VAL
VAL1_3	LASTVAL
VAL1_4	QREQ_3
COUNT	
SND_ST	

## Meaning of important inputs

- Input ID: Block ID; unique number for this block.
- Input CUR\_TS: Output CUR\_TS of the PRE\_SYNC block.
- Input ACTIVE: Active batch. Trigger to send data to the user archive.
- Input ARCH\_ID: Number of the user archive. For example, PRE\_SUMC\_1 (PRE\_SUMC\_+"ARCH\_ID").
- Input MAX\_VAL: Maximum number of energy values (values: 1 to 5).
- Input VALUNITx: value unit of energy type x (x = 1 ... 5)
- Input **TYPEx**: energy type x (x = 1 ... 5)
- Input VALx\_y: current working value of energy type x (x = 1 ... 5) of consumer y (y = 1 ... 10)
- Input **SND\_ST**: output QSND\_ST of the PRE\_UA\_S block.

## PRE\_UA\_S block parameters

SEND	
PRE_UA_S Archive	.0832 1/4
#1-ID_1	QPARAME
#0-ID_2	QARCHERR
#1- R_ID	QERR
RE0001_S	OMON_ERR
RE0002_S	QSND_ST
0- RE0003_5	QID
0 RE0004_S	QJOB_ID
0- RE0005_5	QARCH_TY
0- RE0006_S	GARCH_ID
0 RE0007_S	QREC_NO

## Meaning of important inputs

- Input ID\_1: Partner ID of the S7 connection.
- Input ID\_2: Only needed for redundant connections.
- Input R\_ID: Connection to the user archive. This ID is used for the raw data tag of the type BSEND/BRCV, which was created for sending the data to the user archive.
- Input **REQ001\_ST**: Output QREQ\_ST of the PRE\_SUMC block that will be connected with the input of the REQ001\_ST block of the PRE\_UA\_S.

#### Create a raw data tag of the BSEND/BRCV type

Create a raw data tag for each archive manager block PRE\_UA\_S / PRE\_UA\_R in the OS Tag Management for the configured connection. The tag name has the structure below.

- PRE\_UA\_S / PRE\_UA\_R + Suffix "/DATA".
- Type: BSEND / BRCV.
- R\_ID of the associated archive manager block PRE\_UA\_S / PRE\_UA\_R.

05	- 55 🛗 🔐 ? Name	Type	Parameters	Last Change	
Computer	S7\$Program(1)#RaveEvent	Date Pat a Tore	BAW FUENT	RIA10010 4-02-36 DM	
Tag Management	S7\$Program(1)#RamArchiv	Tag properties		×	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	analog_counter/PRE_SLM.MAX_CNT	General Linds/Reporte	al .		
B- SIMATIC 57 PROTOCOL SUITE	MALOG_COUNTER/PRE_SUM.ARSNO_S	Party and the owner water and the second	at	1	
Industrial Ethernet	ANALOG_COUNTER/PRE_SUM.ARSNO_V	Properties of Tags	729	100	
	ANALOG_COUNTER/PRE_SUM.SYNC.PER	Name:	SYSTEM/SEND/DATA		
	ANALOG_COUNTER/PRE_SUM.RESET	DataType:	Raw Data Type	<b>x</b>	
MPI     Moned Connections	ANALOG COUNTER, PRE_SUM.SET	Length	0		
Fill S75Program(1)	ANALOG_COUNTER, PRE_SUM. AUT_ON_OP	Address		Select	
	ANALOG_COUNTER/PRE_SUM.V_MAN	A deat formation			
B- PROFIDUS	ANALOG_COUNTER/PRE_SUM.V_MAN_DATE	Address propert	ies .	×	
WinffFynlore	- D:\Projects\Demo301_\Demo_Prj\wincproj\ 🖃 🗖	× Addeus			
C Starter File File Man				1	
an a sort PLC	「(通道出会部開留?	- Description-			
B I TCP/IP		- CRU			
El superente real	antenance	TP Data	7		
V andress sealed	num_Operating State	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	I I I I I I I I I I I I I I I I I I I	B No: 1	
The second secon		Adden	Splar 💌		
THE LOT FORMUN	Conv	Di	ap 0 L	muth 0	
Trabar Pasitian	Paste		1000 Page 1		
-1 Global Script -B PRE		🔽 Raw Data	R_ID 1		
The rest benefy	AR DATA	- Raw Data Typ	we construction of the second s		
- E Text Distributor E PRE	A	C Sent/Rec		ISEND/BRCV	

SIMATIC 57 PROTOCOL SUIT	0	Type	Parameters	Last Change	
Deductive Enhance     Deductive Enhance     Deductive Enhance     Deductive Enhance     Deductive Enhance     Deductive Enhance     Deductive     Deduc	Dipogenel (JiPlandevine Dipogenel (JiPlandevin) NACOC_COUNTER/IPRE_SUM AND/OT NACOC_COUNTER/IPRE_SUM AND/O_T NACOC_COUNTER/IPRE_SUM AND/O_T NACOC_COUNTER/IPRE_SUM AND/O_T NACOC_COUNTER/IPRE_SUM ANT NACOC_COUNTER/IPRE_SUM ANT NACOC_COUNTER/IPRE_SUM ANT NACOC_COUNTER/IPRE_SUM ANT NACOC_COUNTER/IPRE_SUM ANT NACOC_COUNTER/IPRE_SUM ANT NACOC_COUNTER/IPRE_SUM ANT NANI	Tag properties General Last/Reporting Properties of Tags Name: 573	TEMPRECENE/DATA	Anter Carego Anter	

## Copy the global script actions

Copy the PRE\_UA\_S.pas and PRE\_UA\_R.pas files from the SIMATIC powerrate installation directory into your OS project folder.

2 archive			
File Edit View Favorites Tools Help			
🕒 Back 🔹 🕥 👻 🏂 🔎 Search 📂 Folders	» 🕪 🗙 🍤 📺 ·		
Address 🛅 C:\Program Files\SIEMENS\WINCC\powerrate\archive			👻 📑 Go
Folders	× Name -		ype D.
E 🚞 WINCC	PRE_AR_SND.pas		걸 것 않다. 성상의 고양을 것 같아요 명식품
🕀 🚞 aplib			물건물 밖 걸렸다. 분명에 들었던 상태한 것 이 것입니다.
			그는 아이들은 것은 것은 것은 것은 것은 것이 없는 것이 없다.
	PRC_OA_5.pas	2 ND G	iobal Script Docum 12
🔁 🧰 archive			IS Ze Type D XB Global Script Docum 11 KB Global Script Docum 21 KB Global Script Docum 11 KB Global Script Docum 11 C Go Size Type Da Go Size Type Da Go Size Type Da Go Size Type Da Go Size Type C Da Size Type C Da C Da
Back       Search       Folders       Source         Address       C:\Program Files\SIEMENS\WINCC(powerrate\archive         Folders       Image: Source       Image: Source         Image: Source       Image: Source       Image: Source         Image:		) I	
Pas			
Plack       Image: Search image:			
	> > <b>&gt; </b>		
	promotion of the second of the second		
			and show that the second se
			그 않는 것이 같은 것이 같은 것이 같은 것이 같이 많이
	PRE_UA_R.pas	2 KB	
	PRE_UA_S.pas	2 KB	Global Script Docum 8/3
PDE			
🛅 PRT			
📔 📄 Redundancy			
	- 1		1
E TEYTRIR	and a second sec		

## Change the global script actions

You must change the tag names and tag triggers in both scripts.

In your example PRE\_UA\_S.pas: tag name  $\rightarrow$  "SYSTEM/SEND" and tag trigger  $\rightarrow$  "SYSTEM/SEND.REQ" and "SYSTEM/SEND/DATA". After making the changes, compile and save the script.

For the script PRE\_UA\_R.pas: tag name  $\rightarrow$  "SYSTEM/RECEIVE" and tag trigger  $\rightarrow$  "SYSTEM/RECEIVE.REQ". After making the changes, compile and save the script.

肖 - (OS.mcp) - [PRE_UA_S.pas]	Help						
L 🗿 🗐 D 😕 📕   X 🗉		50	8	?	<b>₿</b> 🖧	0	
-\\ES16\WinCC_Project_OS\OS.mc <mark>#</mark> i	nclud	e "apdefa	ap.h"				
Project functions	81 - A	22 M					
	gscA	Action( vo	ia)				
Internal functions							
		Convrig	ht (C) 3	2008	Siemen	• AG	
autoload.pas		Copying		2000	oremen	o nu	
checkifopen.pas		Abteilun	a:	11	A SE SH	16	
CheckLevel.pas		Bearbei		Br	raun Mich	haela	
DoJobAsync.pas		Datum:		12	2.08.08		
LangChg.pas		Version:		V	1.0		
OW PDE AD END PAR //							
PRE_UA_S.pas //		Changin	g this	scrip	ot can ca	use a	bnormal
Global actions				27 27 2 - 2	1963	100000	
		Trigger	for set	nd di	ata from.	AS	
	iar Ta	ertag an agname[2 fakeData ; Info	256] = S_A erties	"SY	STEM/S agname	END"	
Press F1 for Help.							

🔭 - (OS.mcp) - [PRE_UA_R.pas]	alp
] 🗅 🗿 🖻 🗩 🖬 🕺 🛍 🗍	
VVES16\WinCC_Project_DS\DS.mc #inclu Project functions Standard functions Internal functions Actions □    Actions: ES16	ide "apdefap.h" cAction(void) Copyright (C) 2008 Siemens AG All Ri
Image: State	Abteilung: IIA SE SH6 Bearbeiter: Braun Michaela Datum: 12.08.08 Version: V1.0
Global actions // //──	Changing this script can cause abnormal beha Trigger for receive data in AS gger tag and Tagnamo have to be edjusted! Tagname[256] = "SYSTEM/RECEIVE";
	MakeData_R_AS (Tagname);
Press F1 for Help.	R-2 Tog SYSTEM/RECEIVE.REQ

## Import the archives

All the user archive files required are located in the WinCC installation directory (for example, **WinCC Installation\_path\powerrate\config)**.

## Configuration

- Open the user archive editor in the WinCC Explorer.
- Select "Project → Import..." from the menus.
- In the file selection dialog you use the "Browse..." button to select the "UserArchiveConfigurationEnglish.uap".
- After making your selection, click the "Load" button. The result is that all the archive configuration files are displayed.
- Select the "PRE\_SUMC\_1" item and click the "Import" button.
- After importing, you save the changes and quit the user archive configuration.

## Result

User Archive Editor - [05.md	• <b>p</b> ]		_ 0	×
Project Edit View Runtime Dat	a <u>H</u> elp			
] 🗓 📕   🗙 🗱 🚰   🎟		🗄 🕒 😽		
🖵 🕂 Archives	Name	Alias	Туре	
PRE_SUMC_1	PRE_SUMC_1	Charge 1	Unlimited	
Views				
Finished			NUM	11.

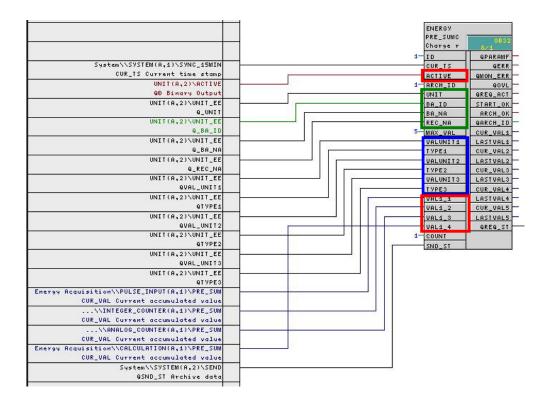
## Configure process picture

- Open the picture that you created for the "Batch Data" area.
- Insert a WinCC OCX control "WinCC UserArchiveControl" from the object catalog "Control" tab.
- Double-click the control to open the configuration dialog.
- Go to the "General" tab and select the previously configured archive "PRE\_SUMC\_1".

## Result

ID	BA_NA	STARTTIME E	STARTTIME ENDTIME UNIT BA_ID REC_NA VALUE1						TYPE1	VAL
-		WinCC UserArc	hiveControl Pro	operties			? >	3		_
		Toolbar	Statu	s Bar	Online configu	ration	Export			_
		General	Columns	Parameter	Effects	Selection	Font			-
		Window Window T	ïtle:		User Archive - Name:					
		1 - Norma	al	-	PRE_SUMC_	1				
)		Text:	Text:							
r		WinCC U	WinCC UserArchiveControl			1				
eadv		- Movab	hle					Archiv	e: Charge 1	

## 13.3 Simulating a Batch



- ACTIVE → Start/Stop measuring
- UNIT → Name of the plant
- BA\_ID, BA\_NA and REC\_NA → The inputs can be used to identify individual measurements. These values are stored in addition in the user archive.
- VALUNITx → Value unit (kWh or m<sup>3</sup>, for example).
- TYPEx  $\rightarrow$  Energy type (electric, for example).
- VALx\_y  $\rightarrow$  Current working value of energy type y (x = 1 ... 5, y = 1 ... 10)

The VALx\_y inputs must be interconnected with the outputs of the PRE\_SUM block. In your example the outputs of the four PRE\_SUM blocks are interconnected.

The picture in the test project has been extended for test purposes. You can use the I/O fields to change the input values interconnected with the "**PRE\_SUMC**" block.

ID	BA NA	STARTTIME	ENDTIME	UNIT	BA_ID	REC_NA	VALUE1 VA	L_UNIT1	TYPE1	VALUE2	VAL_
						iu i					
											_
					-						
N											
						1					
0											_
1											
2						111				1	
3											
4											
5	_	-			_						-
7											
1	-	di.									)
eady								Archive	: Charge 1	🗐 1:00:36 P	M
Batch i	nformation		Unit	and type			PF	RE_SUM blo	ocks		
E Batch activ	e		Unit type 1	kWh	P	RE SUM - PULSE	PRE SUM - INTE	EGER PR	E SUM - ANALOG	PRE SUM	- CALC
Name of Unit	Unit	1	Energy type 1	Electrici	ity	NPUT/PRE_SUN 0. kWh	OUNTER/PRE		NTER/PRE_SUM 0. kWh	JLATION/PE	RE_SUI
Batch ID	1		Unit type 2	m³		0. kW	0. KW		0. KW	0. A	kW
Batch Name	BN1	E	Energy type 2	Water		Pulse	0		0.00	0.0	0
	RN1		Unit type 3	m³							
Recipev Name											

When the ACTIVE input is set to 1, a new data record is created in the WinCC user archive. The start time is updated to the current time. The default end time is 01.01.1990. The end time is updated when measurement is stopped.

ID 1	BA_NA BN1	STARTTIME 8/23/2010 3:00:56 PM	ENDTIME 1/1/1990 1:00:00 AM	UNIT UNIT1	BA_ID	REC_NA V RN1 0	ALUE1 VAL_UNIT1 KWh	TYPE1 Electricity	V. 0
								all of al	
								1	_
								-	
									_
0									
1						-			
3					1			1	T
4 5									
5									-
7									
leady							Archive: Charge 1	1:01:06 PI	
leady							Prenive. charge i		<b>n</b> /
Batch ir	formation		Unit and type			PRE_	SUM blocks		
F Batch active	9	Unit type	1 kWh	PRI	SUM - PULSE	PRE SUM - INTEGE	PRE SUM - ANALOG	PRE SUM - C	ALC
Name of Unit	Unit	Energy typ	De 1 Electricity	E_IN	O. kWh	OUNTER/PRE_SU	M OUNTER/PRE_SUM 0. kWh	JLATION/PRE	
Batch ID	1	Unit type	2 m³	A	0. KW	0.kW	0. KW	0. KV	
Batch Name	BN1	Energy typ	be 2 Water		Pulse	0	20.00	0.00	
Recipev Name	RN1	Unit type	3 m³					L	

ID	BA_NA	STARTTIME	ENDTIME	UNIT	BA ID	REC NA	VALUE1	VAL UNIT1	TYPE1	V
1	BN1	8/23/2010 3:00:56 PM	1/1/1990 1:00:00 AM	UNIT1	1		0	kWh	Electricity	0
_										-
				1						
_		-	-						-	-
)										
1										-
3										
4										
5										-
7										
		- A-								0
eady							Archive:	Charge 1	🗐 1:01:23 PM	M /
Bate	h information		Unit and type		_	PRE	SUM bloc	ks	_	-
		Unit type		PRE	SUM - PULSE	PRE SUM - INTER		SUM - ANALOG	PRE SUM - C	ALC
Name of Un		Energy ty	pe 1 Electricity	E_INP	UT/PRE_SUM 0. kWh	OUNTER/PRE S		TER/PRE_SUM	JLATION/PRE_	
UM-100 %C	1	Unit type	2 m³		0. KW	0. kW		0. KW	0. kV	
Batch ID	200	Energy ty	pe 2 Water		Pulse	A 10		20.00	A 0.00	
Batch ID Batch Name	e BN1						3 8		1000	
and the second second		Unit type	9.3 m³							

## The counter value for INTEGER has been increased to 10 kWh.

The ACTIVE input has been reset. This means that measuring has been stopped and the end time and VALUE1 fields have been updated.

ID	BA NA	STARTTIME	ENDTIME	UNIT	BA_ID	REC NA VA	LUE1 VAL UNIT1	TYPE1	1
1	BN1		8/23/2010 3:01:51 PM		1	RN1 10		Electricity	(
_		-						_	-
									Ť
									+
-									7
									1
									4
						-			-
									4
		10				1			
ady							Archive: Charge 1	1:02:01 PM	
									ī
									1
Batch information Unit and type			Unit and type		PRE_SUM blocks				
E Batch active		Unit type	1 kWh	PR	E SUM - PULSE	PRE SUM - INTEGE	R PRE SUM - ANALOG	PRE SUM - CA	41
Name of Unit	Unit	Energy ty	e 1 Electricity		PUT/PRE_SUM	OUNTER/PRE_SU	M OUNTERIPRE_SUM	ILATION/PRE	
Batch ID	1	Unit type	2 m³		0. kW	0. KW	0. KW	0. KW	
Batch Name	BN1	Energy ty	e 2 Water		Pulse	10	20.00	0.00	Î
Recipev Name	RN1	Unit type	3 m³						Î
		Energy ty	e 3 Gas						

## 14 Configuring the Load Management with PRE\_LMGM

Load management in the context of energy management systems is understood to be the monitoring of the power limit per time interval agreed with the utility company. The time interval depends on the medium; for electricity it is typically 15 minutes, with gas 1 hour.

The general load management functions below are implemented in SIMATIC powerrate.

- Calculation of the difference in power based on the current consumption and the trend taken from the PRE\_SUM block.
- Monitoring of the supply limit.
- A pending limit overshoot triggers a warning / alarm.
- Archiving of additional data when limits are overshot.
- Generation of a release/block signal for each consumer based on the priority list taking into account min./max. switch-off times and min. switch on times of the consumer.

For this, blocks with different quantity frameworks are made available depending on the required number of consumers. The blocks below are available.

- PRE\_LMGM\_10 up to 10 consumers
- PRE\_LMGM\_25 up to 25 consumers
- PRE\_LMGM\_50 up to 50 consumers
- PRE\_LMGM\_75 up to 75 consumers
- PRE\_LMGM up to 100 consumers

## 14.1 General Information about Configuration

WinCC user archives are used for storing the load management configuration. You must configure the load management in the faceplate. When you edit and save the parameters in the individual steps, the data is both downloaded to the controller and written to the WinCC user archives.

If you want to make sure that the current status of the priority list is being used in the controller, you can use the "Download from PLC" function in the faceplate view "Edit List of Priorities".

It is recommended to read back the program in the CFC before making a total download of the controller to ensure that the last configuration is active when you restart the CPU. If reading back is not possible or an old configuration is to be activated, you can download the complete configuration immediately into the controller from the faceplate view "Configuration".

You can see which is the latest configuration from the Config ID (if known) or from the "Start of configuration" time stamp and "End of configuration" (empty).

## 14.2 Configuring the Total Energy Consumption / Total Power Supply

You use the PRE\_SUM block to acquire the information below. The block parameters must be interconnected according to PRE\_LMGM.

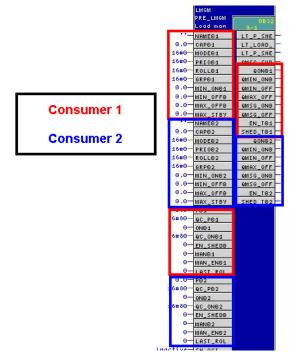
- Total energy consumption (CUR\_VAL) / total power supply (CUR\_PWR)
- Trend calculation up to the end of the period (EST\_VAL / EST\_PWR).
- Average energy consumption/power supply values up to the end of the period.

## 14.3 **Configuring the Consumers**

The block used in the template can manage up to 100 consumers. (You can also replace this with the PRE\_LMGM\_10 block which can manage up to 10 consumers.)

You must specify at the MAX\_LOAD input the highest number at whose input a consumer is interconnected. You can make settings for each consumer.

Below we describe the associated parameters, where x stands for the number of consumers and x = 01 - 100.



**Note** The interconnections are described in section 14.4.1 "PRE\_LMGM Block Parameterss".

#### MODES

The current consumer power is at input Px. This input is evaluated only if the input MODEx (see below) has the value 1.

The rated capacity is specified at input CAPx. The rated capacity is always taken as the basis for calculating when connecting. In MODEx = 2 or 3 it is assumed that the consumer runs at the rated capacity when switched on.

The input ONx is interconnected with the switching state of the consumer (only MODEx = 2).

Modex	Consumer type
1	The current consumer power is interconnected at the Px input.
2	The switching state of the consumer is interconnected at the ONx input.
3	Only the rated capacity of the consumer is known.

Depending on the consumer type, a consumer is considered to be switched off under the conditions listed below.

Consumer type	Conditions for "OFF"
MODEx = 1	Px < CAPx*MAX_STBYs/100.0
	Current consumer power is less than the consumer's maximum standby power.
MODEx = 2	ONx = FALSE
	Feedback: "OFF"
MODEx = 3	QONx = FALSE
	Consumer not released by Load Management.

#### Times

A minimum switch-on time, a minimum switch-off time and a maximum switch-off time can be parameterized for each consumer at the inputs MIN\_ONx, MIN\_OFFx and MAX\_OFFx respectively.

- Minimum switch-on time, i.e. after release how long must the consumer remain released until it can be blocked again.
- Minimum switch-off time, i.e. after switch-off how long must the consumer remain switched off until it can be released again.
- Maximum switch-off time, i.e. after switch-off how long may the consumer remain switched off until it must be switched on again (MAX\_OFFx = 0 means that there is no maximum switch-off time).

## Release

Each consumer has an EN\_SHEDx input which specifies whether the consumer is in the Load Management (1 = consumer is in the Load Management).

Each consumer has a MAN\_ENx input which specifies whether or not manual mode can be released for the consumer (MAN\_ENx =1).

The MANx input specifies whether manual mode is switched on.

## Priority

There is one PRIOx input for each consumer at which the priority of the consumer is parameterized as a number (1...255). 1 is the highest priority, 0 means that the consumer is not part of the load management or that there is no consumer available.

#### **Rolling consumers**

There is one input named ROLLx for each consumer at which is defined whether the consumer is a rolling consumer in the priority group (ROLLx > 0) or not (ROLLx = 0).

Consumers switched as rolling consumers all have the same priority. The ROLLx parameter defines the order in which the consumers concerned are switched off.

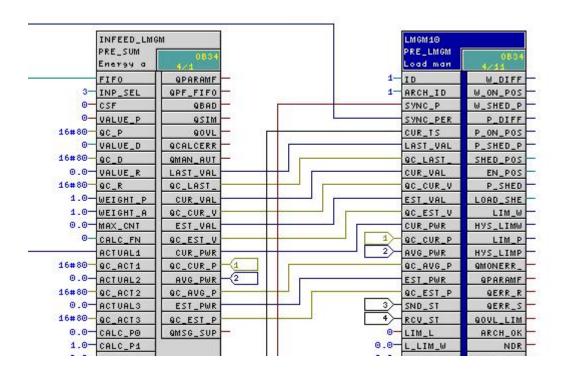
#### Tariffs

The block has three tariffs (on-peak tariff, off-peak tariff, and Sunday or holiday tariff). Either a work limit or a power limit can be defined for each tariff. You define the limit values either using the faceplate or switchable inputs.

0 <u>BEG_HT</u> 0 <u>BEG_LT</u> •• BEG_HT_S	
DEC_ET	
BEC HT	
DEO_HT_1	5
BEG_LT_S	5
0.0-LIM_W_H	
0.0-LIM_P_H	81
0.0 LIM_W_L	
0.0-LIM_P_L	
0.0-LIM_W_SH	1
0.0-LIM_P_SH	1
Energy-SEL_PW	
inactive SH_ACT	
R_CFG	
0 R_PARA	3
0 R_TARIFF	8.
0 R_PRIO	
0 S_CFG	3
0 S_PRIO	
O-SH_NUM	

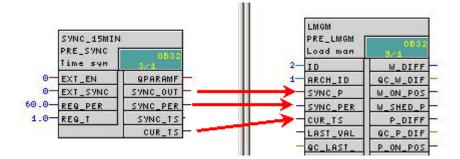
#### Parameters input data

The figure below shows the input parameters that are to be interconnected.



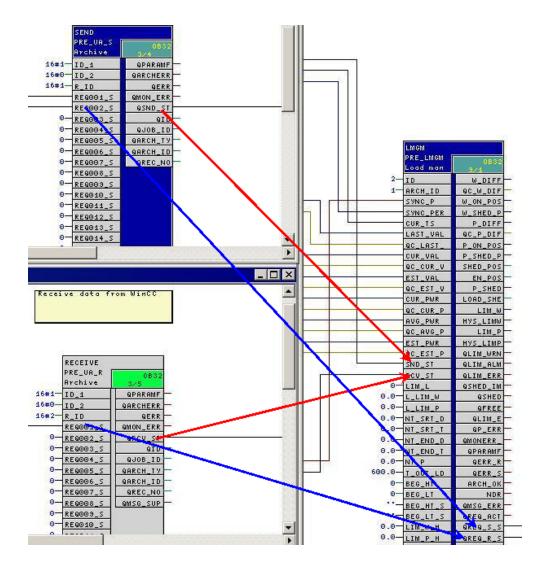
#### Interconnection with the PRE\_SYNC block

The three marked inputs of the LMGM block must be interconnected with the outputs of the PRE\_SYNC block.



#### Interconnection with the PRE\_UA\_S and PRE\_UA\_R blocks

The PRE\_UA\_S and PRE\_UA\_R blocks are used to write data from the controller to the WinCC user archive and read data from them.



# 14.4 Sample Commissioning of the Load Management

## 14.4.1 PRE\_LMGM Block Parameters

20						LMGM	
						PRE_LMGM Load man	01 3/1
	PRE_SUM			11	2-	ID	W_01
	PRE_SUM	0000				ARCH_ID	8C_W_D
	Energy a	0B32 3/2			2002	SYNC_P	W_ON_F
	FIFO	QPARAME		-		SYNC_PER	W_SHE
0-	INP_SEL	QPF_FIF0			1>	CUR_TS	P_D1
	CSF	QBAD	 	-		LAST_VAL	QC_P_I
	VALUE_P	MIZO		_		QC_LAST_	P_ON_F
16#80-		GOVL			1	CUR_VAL	P_SHE
0-	VALUE_D	QCALCERR	 			QC_CUR_V	SHED_P
16#80-		QMAN_AUT	1			EST_VAL	EN_F
0.0-	VALUE_R	LAST_VAL	-			QC_EST_V	P_SI
16#80-	QC_R	QC_LAST_		-		CUR_PWR	LOAD_S
1.0-	WEIGHT_P	CUR_VAL		-		QC_CUR_P	LIN
1.0-	WEIGHT_A	QC_CUR_V				AVG_PWR	HYS_L1
0.0-	MAX_CNT	EST_VAL				QC_AVG_P	LIN
0-	CALC_FN	QC_EST_V	 	-	-	EST_PWR	HVS_L1
0.0-	ACTUAL1	CUR_PWR			-	QC_EST_P	QLIM_U
16#80-	QC_ACT1	QC_CUR_P			2>-	SND_ST	QLIM_P
0.0-	ACTUAL2	AVG_PWR			3	RCV_ST	QLIM_B
16#80-	QC_ACT2	QC_AVG_P			0-	LIM_L	QSHED.
0.0-	ACTUAL3	EST_PWR			0.0-	L_LIM_W	851
16#80-	QC_ACT3	QC_EST_P			0.0-	L_LIM_P	QFF
0.0-	CALC_P0	QMSG_SUP			0.0-	NT_SRT_D	ALIB
0.0-	CALC_P1				0.0-	NT_SRT_T	QP_E
	CALC_P2					NT_END_D	QMONER
	CALC_P3				0.0-	NT_END_T	QPARE
0.1-	ZERO_CUT				0.0-	NT_P	QERF
	ARSNO_S				600.0-	T_OUT_LD	QERF
	ARSNO_V				0-	BEG_HT	ARCH_
16#0-	ARSNO_C					BEG_LT	, P
1.0-	PER_T					BEG_HT_S	QMSG_E
	SYNC_PER					BEG_LT_S	OREQ_P
+	SYNC_P					LIM_W_H	QREQ_
	SYNC_TS				0.0-	LIM_P_H	GREG_P

#### Meaning of important inputs

- MAX\_LOAD: maximum number of consumers.
- ID: all blocks that use PRE\_UA\_S or PRE\_UA\_R to exchange data with the WinCC user archives need a unique ID.
- **ARCH\_ID**: number of the user archive, for example PRE\_\_LMGM\_CONFIG\_1 (PRE\_\_LMGM\_CONFIG\_+"**ARCH\_ID**").
- SYNC\_P, SYNC\_PER, CUR\_TS: these must be interconnected with the outputs of the PRE\_SYNC block.
- **SND\_ST, RCV\_ST**: these must be connected with the outputs of the PRE\_UA\_S and PRE\_UA\_R blocks.

In the sample project the inputs of the PRE\_SUM block are interconnected with blocks that are used for simulation.

	LMGM	
	PRE_LMGM	0832
	Load man	9/4
	NAME01	LT_P_SHE
0.0-	CAP01	QMSG_SUP
16#1-	MODE01	Q0N01
16#0-	PRI001	QMIN_ONO
16#0-	ROLL01	QMIN_OFF
16#0-	GRP01	QMAX_OFF
0.0-	MIN_ON01	QMSG_ON0
0.0-	MIN_OFF0	QMSG_OFF
0.0-	MAX_OFF0	EN_T01
0.0-	MAX_STBY	SHED_T01
	NAME02	90N02
0.0-	CAP02	QMIN_ONO
16#1-	MODE02	QMIN_OFF
16#0-	PRI002	QMAX_OFF
16#0-	ROLL02	QMSG_ON0
16#0-	GRP02	QMSG_OFF
0.0-	MIN_ON02	EN_T02
0.0-	MIN_OFF0	SHED_T02
0.0-	MAX_OFF0	80N03
0.0-	MAX_STBY	QMIN_ON0
· · · _	NAME03	
0.0-	CAPOS	QMIN_OFF
16#1-	aler of energy set	QMSG_ONO
16#0-	MODE03 PRI003	2
16#0-	1	QMSG_OFF
16#0-	ROLLOS	EN_TO3
0.0-	GRP03	SHED_T03
0.0-	MIN_ON03	
	MIN_OFF0	8
0.0-	MAX_OFF0	
0.0-	MAX_STBY	
	P01	8
6#80-	QC_P01	
0-	0N01	Q
6#80-	QC_ON01	8
0-	EN_SHED0	
0-	MAN01	
0-	MAN_EN01	2
0-	LAST_ROL	
and a	P02	S
6#80-	QC_P02	2
0-	0N02	
6#80-	QC_ON02	8
0-	EN_SHED0	2
0-	MAN02	
0-	MAN_EN02	
0-	LAST_ROL	
	P03	1
6#80-	QC_P03	

We want to control 3 consumers in out example. All of them are running in MODE 1. Therefore we must connect the inputs P01, P02 and P03 and outputs QON01 QON02 and QON03 with the simulation data block (see sample project).

\_\_\_\_

The values of the inputsCAP01, CAP02 and CAP03 are defined using the faceplate.

The MAX\_LOAD parameter must be set to "3".

Now you have finished the program. Compile the program and download the changes into the CPU. Then compile the OS.

## 14.4.2 Creating Raw Data Tags

You must create raw data tags for sending/receiving data to/from the PCS 7 OS. This has already been described in the previous chapter.

If you have not already done so, execute this step now.

## 14.4.3 Creating Archive Tags

If you want to archive the PRE\_SUM values, you must do this in the Tag Logging as described above in the document.

## 14.4.4 Copying the Global Script Actions

The PRE\_UA\_S.pas and PRE\_UA\_R.pas scripts are needed for sending/receiving data to/from the CPU. This has already been described in the previous chapter. If you have not already done so, execute this step now.

#### 14.4.5 Changing the Global Script Actions

You must change the tag names and tag triggers in both scripts. If you have not already done so, execute this step now.

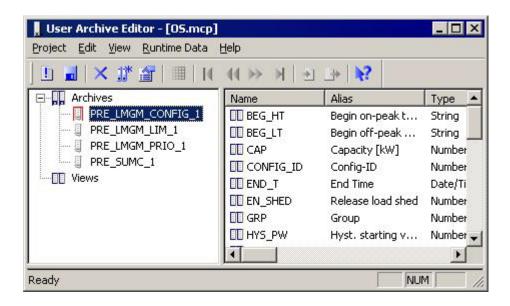
#### 14.4.6 Importing the Archives

All the user archive files required are located in the WinCC installation directory (for example, **WinCC Installation\_path\powerrate\config)**.

#### Configuration

- Open the user archive editor in the WinCC Explorer.
- Select "Project > Import..." from the menus.
- In the file selection dialog you use the "Browse..." button to select the "UserArchiveConfigurationEnglish.uap".
- After making your selection, click the "Load" button. The result is that all the archive configuration files are displayed.
- Select the "PRE\_LMGM\_\*" item and click the "Import" button.
- After importing, you save the changes and quit the user archive configuration.

#### Result



## 14.4.7 Importing the Runtime Data

You must import the Runtime data for the "PRE\_LMGM\_PRIO\_1" archive.

#### Configuration

- Open the user archive editor in the WinCC Explorer.
- Select "Runtime Data > Import" from the menus.
- In the file selection dialog you use the "Browse..." button to select the import file.
- Select the "PRE\_LMGM\_PRIO\_English.csv" file from the powerrate installation directory.
- In the archive selection field you select the "PRE\_LMGM\_PRIO\_1" archive and click the "Import" key.
- After importing, you save the changes and quit the user archive configuration.

### Result

	1* 2		(4 ≫ ≥		2				
Archives			Name	Alia:	5	Туре	Le	ength	
PRE_	.MGM_LI .MGM_PF		CAP GRP MAX_OF MAX_ST MIN_OF	Grou F Max BY Max F Min. I Min.	disconnec standby [% disconnect connect ti	<ul> <li>Number (float)</li> <li>Number (float)</li> <li>Number (float)</li> <li>Number (float)</li> <li>Number (integer)</li> </ul>		32	
					uisition type sumer load	1000		2	
ID		NAME			1.42	1000		2 MIN_ON	
ID 1	1	NAME Load 1		Con	sumer load	. String	32	MIN_ON	
ID 1 2	1			Con MODUS	sumer load PRIO	String	32 GRP	MIN_ON	
1D 1 2 3		Load 1	CAP	Con MODUS 0	sumer load PRIO	String	GRP 0	MIN_ON	-
1D 1 2 3 4	3	Load 1 Load 2	CAP 0	Con MODUS 0	sumer load PRIO 0	String	32 GRP 0 0	 	0

**Note** A file (PRx\_LMGM\_PRIO\_Deutsch.csv / PRx\_LMGM\_PRIO\_English.csv) which contains the default settings for the PRE\_LMGM\_PRIO\_1 archive is provided. If necessary, you can edit this file in Microsoft Excel and then import it.

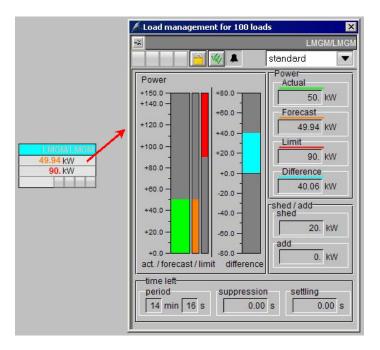
# 14.5 Configuring the LMGM Block

The icon for the LMGM block is placed automatically in the relevant picture when the OS is compiled.

## 14.6 Using Faceplates

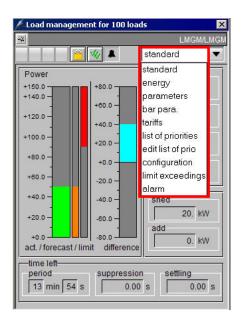
#### Open a faceplate

You can open a faceplate by clicking on the associated block icon in PCS 7 OS Runtime.



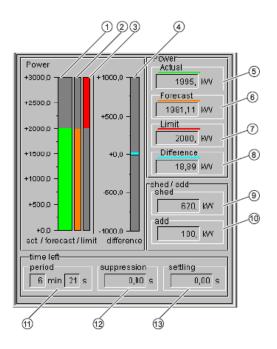
#### Views

You can choose one of the views from the drop-down menu.



#### Description of the faceplates and block icons

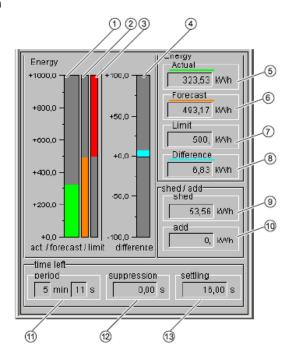
#### Standard



## Explanation of the values

	Item	Parameter	Description
(1)	Power – act.	CUR_PWR	The current supply power, shown as a bar graph
(2)	Power – Trend	EST_PWR	The calculated trend at the end of the period, shown as a bar graph
(3)	Limit	HYS_LIMP	The currently valid limit, shown as a bar graph
(4)	Difference	P_DIFF	The difference between the trend and the current limit, shown as a bar graph
(5)	Power – Actual	CUR_PWR	The current supply power, shown as a value
(6)	Power – Trend	EST_PWR	The calculated trend at the end of the period
(7)	Limit	HYS_LIMP	The currently valid limit
(8)	Difference	P_DIFF	The difference between the trend and the current limit, shown as a value
	shed / add		
(9)	trip	P_SHED	The disconnect power still available according to the priority list
(10)	add	P_ON	The connect power still available according to the priority list
	Remaining times	;	
(11)	Period	SYNC_PER	Synchronization period
(12)	Suppression	QSUPP_T	Suppression time: Time that must elapse from the start of the period before load management becomes active
(13)	Settling	QSETTLE_T	Settling time: Specifies the time which must elapse following release/hold before a new signal is set

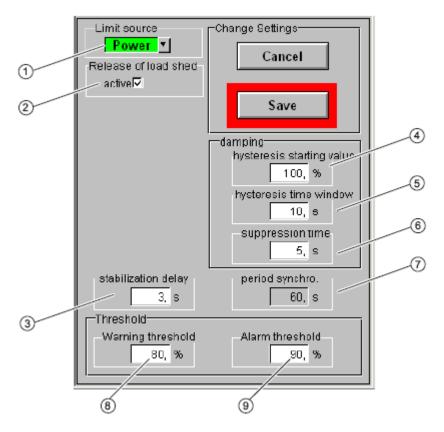
## Operation



The parameters below are displayed:

	ltem	Parameter	Description
(1)	Energy – act.	CUR_VAL	The current supply energy, shown as a bar graph
(2)	Energy – Trend	EST_VAL	The calculated trend at the end of the period, shown as a bar graph
(3)	Limit	HYS_LIMW	The currently valid limit, shown as a bar graph
(4)	Difference	W_DIFF	The difference between the trend and the current limit, shown as a bar graph
(5)	Energy – Actual	CUR_VAL	The current supply energy, shown as a value
(6)	Energy – Trend	EST_PWR	The calculated trend at the end of the period
(7)	Limit	HYS_LIMW	The currently valid limit
(8)	Difference	W_DIFF	The difference between the trend and the current limit, shown as a value
	shed / add	•	
(9)	trip	W_SHED	The disconnect energy still available according to the priority list
(10)	add	W_ON	The connect energy still available according to the priority list
	Remaining times		
(11)	Period	SYNC_PER	Synchronization period
(12)	Suppression	QSUPP_T	Suppression time: Time that must elapse from the start of the period before load management becomes active
(13)	Settling	QSETTLE_T	Settling time: Specifies the time which must elapse following release/hold before a new signal is set

### Parameters

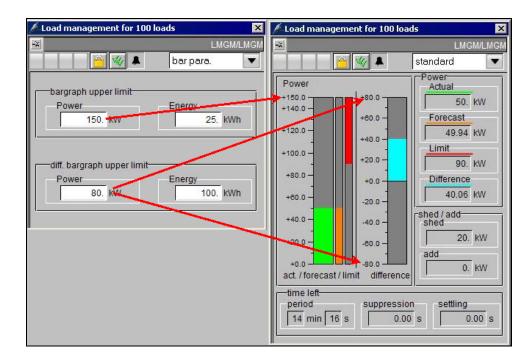


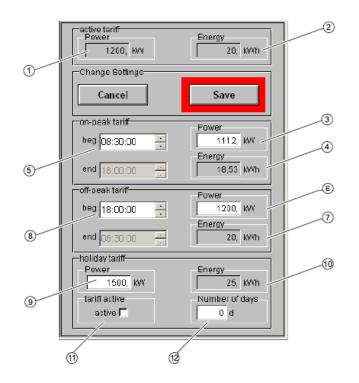
#### The parameters below are displayed:

	ltem	Parameter	Description
(1)	Limit source	SEL_PW	Specifies whether the limit will be defined as energy (work) or power.
(2)	Release of load shed	EN_SHED	If this box is checked, loads are released/held in accordance with the priority list.
			If the box is not checked, only a trend calculation and limit monitoring are performed, i.e. corresponding messages are output if a limit is about to be exceeded.
(3)	Stabilization delay	SETTLE_T	Specifies the time which must elapse following release/hold before a new signal can be set
(4)	Hysteresis – starting value	HYS_PW	% value based on the current limit for the hysteresis starting value at the start of the period
(5)	Hysteresis – time window	HYS_T	Time until hysteresis has reached 0, i.e. until the specified limit is used as a basis.
(6)	Suppression time	SUPP_T	Time which must elapse from the start of the period before load management becomes active
(7)	Period synchro.	SYNC_PER	Time for the specified limit (for electricity, usually 15 min); this value is configured at the PRE_SUM block.
	Threshold		Specifies when a a warning or alarm will be output. The values are given as percentages of the specified limit.
(8)	Warning limit	LIM_WRN	% value of the limit after which a warning message indicating a limit is about to be exceeded is issued
(9)	Alarm threshold	LIM_ALM	% value of the limit after which an alarm message indicating a limit is about to be exceeded is issued

#### **Bar parameters**

With this view you specify the limit values for the bar display in the standard view.





#### Tariffs

### The parameters below are displayed:

	Item	Parameter	Description
	Current tariff		
(1)	Power	LIM_P	Shows the currently valid tariff as power.
(2)	Energy	LIM_W	Shows the currently valid tariff as energy.
	On-peak tariff	•	
(3)	Power	LIM_P_H	Power limit for on-peak tariff
(4)	Energy	LIM_W_H	Energy limit for on-peak tariff
(5)	Start time on-peak tariff	BEG_HT / BEG_HT_S	Start time for on-peak tariff
	Off-peak tariff		
(6)	Power	LIM_P_L	Power limit for off-peak tariff
(7)	Energy	LIM_W_L	Energy limit for off-peak tariff
(8)	Start time off-peak tariff	BEG_LT / BEG_LT_S	Start time for off-peak tariff
	Holiday tariff		
(9)	Power	LIM_P_SH	Power limit for holiday tariff
(10)	Energy	LIM_W_SH	Energy limit for holiday tariff
(11)	Tariff active	SH_ACT	From 00:00 of the next day, the holiday tariff applies for "Number of days" (until 24:00)
(12)	Number of days	SH_NUM	Number of days for holiday tariff

### **Priority list**

This view shows the current status of the individual consumers in the Load Management and provides the option of taking individual consumers out of the Load Management controller and releasing them manually.

Load management for 100 loads									LMGM/LI
📔 候 👗 🛛 list of	priorities 🔻								
Consumer load name	Available	Load manage- ment	In manual	Manual add	Current power	Con- nected	Capacity	Priority	Rolling sequence
Load 1	active	activeI⊽	active	active	10.00	active	10.	1	0
Load 2	active	active	active	active	10.00	active	20.	2	1
Load 3	active	active	active	active	30.00	active	30.	2	2
1	2	3	4	5	6	7	8	9	10

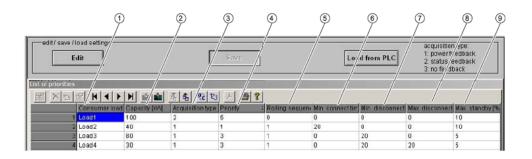
The values below are displayed:

	ltem	Parameter	Description
(1)	Load name	NAMEx	Shows the name of the load.
(2)	Released	QONx	Indicates whether the load is currently released via load management or not.
(3)	In the load management	EN_SHEDx	Defines whether the load is included in load management control or not.
(4)	in manual	MANx	Defines whether the load can be released manually or not.
(5)	manual add	MAN_ENx	This manually releases the load so that it is no longer under load management control.
(6)	Current output	Px	Shows the load's calculated power, provided it exists.
(7)	Switched on	ONx	Shows the status of the load, provided the load has status feedback.
(8)	Rated output	CAPx	Contains the load's configured rated power.
(9)	Priority	PRIOx	Shows the load's priority, which is used for holding.
(10)	Rolling sequence	ROLLX	Specifies the sequence in which loads of the same priority are disconnected in a rolling process. If loads have the same priority and rolling sequence, they are switched together as a group.

x = 01 to 10, 25, 50, 75 or 100

## Edit list of priorities

The PRE\_LMGM\_PRIO\_x user archive is displayed here. The view permits you to edit load parameters and download the current configuration from the CPU. You can also import and export the priority list in this view.



#### The values below are displayed:

	Item	Parameter	Description
(1)	Loads	NAMEx	Name of the load
(2)	Rated output	CAPx	Load's rated power
(3)	Mode	MODEx	Load status feedback:
			0: No load present
			1: Power feedback
			2: Status feedback
			3: No feedback
(4)	Priority	PRIOx	Shows the load priority used for holding
(5)	Rolling sequence	ROLLx	Specifies the sequence in which loads of the same priority are disconnected in a rolling process. If loads have the same priority and rolling sequence, they are switched together as a group.
(6)	Min. connect time	MIN_ONx	Minimum time the load must be released before it can be held again
(7)	Min. disconnect time	MIN_OFFx	Minimum time the load must be held before it can be released again
(8)	Max. disconnect time	MAX_OFFx	Maximum time the load may be held
(9)	Max. standby	MAX_STBYx	Max. standby power of the load as a percentage of the rated power

x = 01 to 10, 25, 50, 75 or 100

#### Configuration

This list contains the current and last CFG\_MAX configurations of the Load Management (user archive PRE\_LMGM\_CONFIG\_x).

When you open the faceplate view, the current configuration is always selected (CONFIG\_ID = CFG\_CUR). When you enter the CONFIG\_ID, you can select any configuration or also all configurations if you set an appropriate filter condition.

You can display, print, export and import the configurations and download them into the controller. Each configuration includes the time stamp of its validity as well as the values from the faceplate views "Parameters", "Tariffs" and "Edit list of priorities".

	configuration	<b>T</b>	_	_	_	_	_	_	
Configuration in PLC 4		nfiguration 4 KV	V Edi	it		Sava		Lot	ad from
te der Konfigurationen 🗄 🗙 🔄 😭 🖌 🕇 🕨		1 <b>6 2</b> 23	× 6 9						
		1	1 million and the second se						
Start Time	End Time							Energy holiday	
Start Time 1 6/30/2009 2:52 2		Begin off-peak t 07:00:00		Energy on-peak 7.5	Demand on-pei 90	Energy off-peak 8.333333	Demand off-pea 100	Energy holiday   8.333333	Deman 100

#### Limit violations

This list displays the archived limit violations (user archive PRE\_LMGM\_LIM\_x). You can export this list.

þ.								
R								Program1/DB_LM
S 🗎 🖋 🔺	limit exceeding	IS 🔻						
Limit exceedings								
		li 🔓 🔁 🖄	悲 🖨 የ					
Time	Energy limit (K/V	Power limit (kWI	Energy of loast	Power of loast p	Number of shec	Total load avails	Number of shec	Total load shed
1 5/31/2010 3:46:	0	0	1.013893	30.41679	0	0	0	0
2 5/31/2010 3:48:	0	0	1.666681	50.00042	0	0	0	0
3 5/31/2010 3:50:	0	0	1.666681	50.00042	0	0	0	0
4 5/31/2010 3:52:	0	0	1.666681	50.00042	0	0	0	0
5 5/31/2010 3:54:	0	0	1.666681	50.00042	0	0	0	0
6 5/31/2010 3:56:	0	0	1.666681	50.00042	0	0	0	0

#### Alarm

All the messages concerning the Load Management block are displayed here.

🖊 Load man	agement for 100 loa	ads		x
*				LMGM/LMGM
AW	1	alarm		
1 3	V 🛛 🖓 🔤			
Date	Time	Class	Status	Event
24/08/10	15:42:39.124	Alarm	С	No load available to shed
24/08/10	15:42:40.124	Warning	C	Warning approaching of limit 1.51 kWh/90.42 kW (limit 1
24/08/10	15:42:40.124	Alarm	С	Alarm approaching of limit 1.51 kWh/90.42 kW (limit 1.50
24/08/10	15:43:00.130	Alarm	CG	Exceeding of limit: 1.47 kWh/88.50 kW (limit 1.50 kWh/9

## 14.7 Commissioning the Load Management Using the Faceplate

## 14.7.1 Overview

To start with, it is necessary to define the parameters of the Load Management using the faceplate.

## Configuration

- Changing the Values in the "Parameters" View
- Define tariffs and power values.
- Parameterize consumer data.
- Enable consumers for Load Management.
- Test the Load Management.
- Read back parameters from the controller into the project.

## 14.7.2 Changing the Values in the "Parameters" View

## Configuration steps

- Select the "Parameters" view in the LMGM faceplate.
- Click the "Edit" button.
- Change the parameters for:
  - "Limit source" to power.
  - "Stabilization delay" to 3s.
  - "Hysteresis starting value" to 100%
  - "Warning threshold" to 80%.
  - "Alarm threshold" to 90%.
- Click "Save" to write the settings to the CPU and the user archive.

	LMGM/LM
N 19 19 19 19 19 19 19 19 19 19 19 19 19	parameters
Limit source Power Release of load shed active	Change Settings Edit
	damping hysteresis starting value 100. % hysteresis time window 0. s -suppression time 0. s
Stabilization delay 3. s Threshold Warning threshold 80. %	Alarm threshold

## Result

## 14.7.3 Changing the Values in the "Tariffs" View

## **Configuration steps**

- Select the "Tariffs" view in the LMGM faceplate.
- Click the "Edit" button.
- Define the times and power values for the 3 tariffs:
  - "On-peak tariff"
  - "Off-peak tariff"
  - "Holiday tariff"
- Save the settings.

#### Result

	LMGM/
🦰 💆 👗	tariffs
Power 90. kW	Energy 1.5 kWh
Change Settings	
Edit	Save
on-peak tariff	Power
beg. 7 :00:00 AM	90. KW
end 5 :00:00 AM	Energy 1.5 kWh
off-peak tariff	Power
beg. 5 :00:00 AM	100. kW
end 7:00:00 AM	Energy 1.67 kWh
noliday tariff	
Power 100. KW	Energy 1.67 kWh
tariff active	Number of days
active 🗖	0 d

## 14.7.4 Changing the Values in the "Edit List of Priorities" View

## **Configuration steps**

- Select the "Edit list of priorities" view in the LMGM faceplate.
- Click the "Edit" button.
- Change the values for the consumer data as shown in the figure:
  - "Capacity"
  - "Acquisition type"
  - "Priority"
  - "Rolling sequence no."

🔏 Load management for 100 load	ls							×
*								LMGM/LMGN
AW 🗎 👋 🔺	edit list of prio	V						
edit / save / load settings Cancel	N	<b>5 6 8</b> 123	Save		Loa	d from PLC	acquisition 1: power fe 2: status fe 3: no feed	edback edback
Consumer load		Acquisition type		Rolling sequen	Min. connect tim	Min. disconnect	Max. disconnect	Max. standby [%
1 Load 1	10	1	1	0	0	0	0	0
2 Load 2	20	1	2	1	0	0	0	0
3 Load 3	30	1	2	2	0	0	0	0

• Save the settings.

#### Result

🔏 Load management for 100 loads							×
×							LMGM/LMGN
🔼 📔 🔣 🔺 edit list of prio	•						
edit / save / load settings						acquisition	tvpe:
Edit		Save		Loa	d from PLC	1: power fe	
	ļ_	- LILLING		Loa	d liolit i Ec	2: status fe 3: no feedt	
						5.1101000	Jack
List of priorities							
	₹ <b>€ ?</b> C 123	/ 日 ?					
Consumer load Capacity [KW]	Acquisition type	Priority	Rolling sequen	Min. connect tim	Min. disconnect	Max. disconnect	Max. standby [%
1 Load 1 10	1	1	0	0	0	0	0
2 Load 2 20	1	2	1	0	0	0	0
3 Load 3 30	1	2	2	0	0	0	0

Note To start with only the default values are in the table. All the values are set to "0".

## 14.7.5 Changing the Values in the "Priority List" View

#### **Configuration steps**

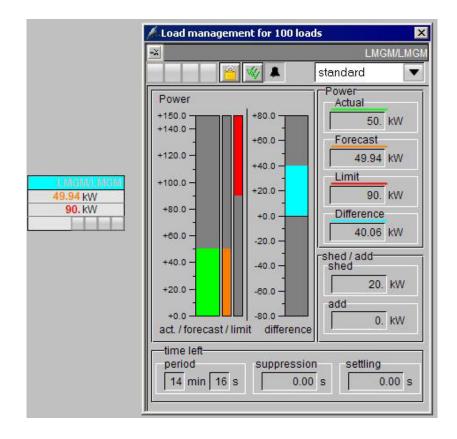
- Select the "Priority list" view in the LMGM faceplate.
- In the "Load Management" column you select the consumers that are integrated in the Load Management.

#### Result

i list of priorities 🔽									LMGM/L
Consumer load name	Available	Load manage- ment	in manual	Manual add	Current power	Con- nected	Capacity	Priority	Rolling
Load 1	active	activeI⊽	active	active	10.00	active	10.	1	0
Load 2	active	activeI⊽	active	active	10.00	active	20.	2	1
Load 3	active	active₽	active	active	30.00	active	30.	2	2

**Note** If a consumer is not activated in the Load Management, it is not switched off automatically as soon as the alarm limit is reached.

After changing the values in the various views of the LMGM faceplate, you can see the configured values in the "Standard" view of the faceplate.



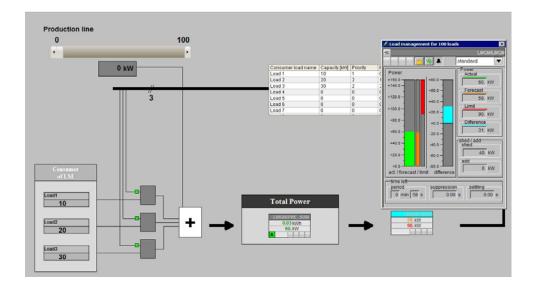
## 14.7.6 Testing the Load Management

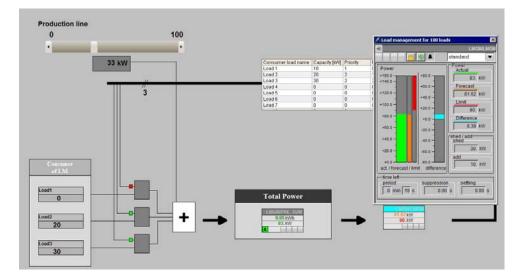
The power supply of the sample project is defined by the PRE\_SUM block in the "LMGM" CFC. This block gets its values from simulation blocks that are in the same CFC.

The power values for the 3 consumers (inputs P01, P02 and P03) are:

- Consumer 1 → 10kW
- Consumer  $2 \rightarrow 20$ kW
- Consumer  $3 \rightarrow 30$ kW

The Load\_Var block in the "LMGM" CFC is used for simulation purposes. It is linked with a bar display in the picture. If the value is increased, then the power supply increases. If the alarm limit is reached, a consumer is switched off automatically.

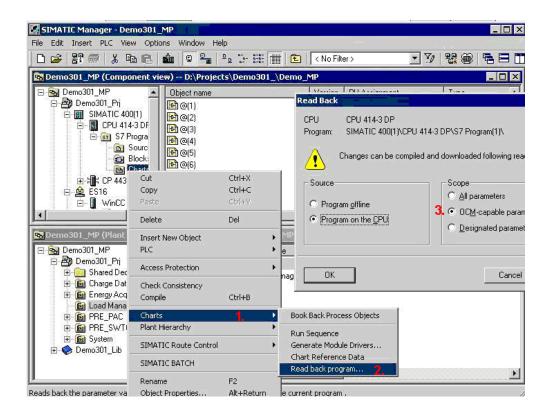




## 14.7.7 Reading Back Parameter from the CPU

#### **Configuration steps**

- Open the project in the SIMATIC Manager.
- Select "Read back program..." in the pop-up menu of the Charts folder.
- Select "OCM-capable parameters".



#### Result

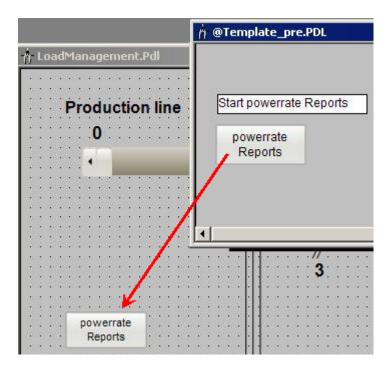
You have saved all the parameters of the Load Management in your STEP 7 project.

# **15 Configuring SIMATIC powerrate Reports**

# **15.1 Calling SIMATIC powerrate Reports**

There are two options for starting powerrate Reports.

- Use the Start menu "SIMATIC > powerrate > Reports".
- Configure a button in the PCS 7 OS Runtime. This button is in the template picture @Template\_pre.pdl.



# 15.2 Configuring the Reports

You can create manual or automatic reports in the Start window of SIMATIC powerrate Reports.

The figures below give you an overview of the menu options in the SIMATIC **powerrate Reports Editor**.

owerrate Reports		
ile Report Settings		$\sim$
hepoli hane TTT	Report type	Report cycle
	werrate Reports	
	File Report Settings	
	Add	
	Rep Copy Rep	ort
	Delete Del	
		-
	🚾 powerrate Reports	
	File Report Settings	
	WinCC Server	
	Report name Tariff sets Report	type
	powerrate Reports	5
w powerrate Reports	Please select the	WinCC server with a valid powerrate
File Report Settings	license	•
	Computer name	WinCC server
Exit	ES16	
-	Redundant Wir	nCC server
-		
		OK Cancel

# **Note** Under "Settings / PCS 7 Server" you can set the name of the PCS 7 server. If you are using redundancy, you also specify the name of the redundant server.

## 15.2.1 Adding Reports → Exporting Archived Measured Values

🔤 Add report Report Export of archived measured value Туре ost center report uration curve report Export of archived measured values -Batch value export Batch report (sorted acc. to time) Batch report (sorted acc. to name Trigge Manual Manual Automa Name Demo301\_MP File name Path C:\Program Files\Siemens\powerrate\r Demo301\_MP\_yymmdd\_hhmm.xls Next Cancel

Start the Report Wizard with the menu item "Report > Add".

Note You can only add a report if you have opened your WinCC project.

#### Select archive tags

When you select a report for energy evaluations (export of archived measured values, cost center report, duration curve report), the archive tags in the process value archive, which are available under the name "pre", are read out of the WinCC Tag Logging archive.

The archive tags that are offered for reading out are those that are suitable for the type of report selected. The archive tag types below are evaluated:

Archive tag extensions	Meaning
.C	Absolute counter value
.S	Energy value
.V	Average power value

Table 15-1

	Archive tag	Unit	Formula	
	ANALOG_COUNTER/PRE_SUM.C	[kWh]		
	ANALOG_COUNTER/PRE_SUM.S	[kWh]		
	ANALOG_COUNTER/PRE_SUM.V	[kW]		
	CALCULATION/PRE_SUM.S	[k₩h]		
_	CALCULATION/PRE_SUM.V	[k₩]	-	
	INTEGER_COUNTER/PRE_SUM.C	[kWh]		
	INTEGER_COUNTER/PRE_SUM.S	[kWh]		
	INTEGER_COUNTER/PRE_SUM.V	[kW]		
	LMGM/PRE_SUM.S	[kWh]		
	LMGM/PRE_SUM.V	[kW]		
	PULSE_INPUT/PRE_SUM.S	[kWh]		
	PULSE_INPUT/PRE_SUM.V	[kW]		
•			1	

# **Note** .S is only possible with energy values (INTEGER\_COUNTER or ANALOG\_COUNTER, for example).

#### **Time period**

The start and end times of the archive values are specified for manual reports as the report time period.

Last day

 $\rightarrow$  The report displays the time period of the last 24 hours.

Elapsed day

 $\rightarrow$  The report displays the time period of the previous day from 0:00 to 24:00.

Report cycle	1
Report period	Start
Time period	8 /25/2010 3:01:00 PM
Imme period     Last day     Elapsed day (00:00 - 24:00)     Last week     Elapsed week (Mo - Su)     Last month     Elapsed month (1st to end of month)	End 8 /26/2010
Aggregation	1
	<u>'</u>

#### Result

Select a time period and quit the wizard by clicking the "Finish" button.

#### **Generate reports**

- 1. Click the menu item "Generate report".
- 2. You have the option of changing the time period before the report is generated.
- 3. Click the "Generate report" button.

Powerrate Reports       File     Report       Settings       Image: Constraint of the settings       Image: Constraint of the settings	1.			
Report name Demo301 MP ExArchiveValue	Report type	and such such	Report cycle	
E Demosol_MP_Exarchivevalue	es Export or archived meas	ured values	Manually	l
🔛 Generate report				X
Time of report				
Report cycle		1		
The second	<b>•</b>	🔛 powerrate R	teports 4	
Manually		Read status o	f archive data	
Report period			والمركم والم	
Time period		Read status o	f virtual process	: tags
100				
Time period 2.	<b>•</b>			
		Report is bein	g updated	
		10		
			C	
10 m 10			Can	NY SURVEY STATES AND A STATES
Aggregation		-		
None	<b>•</b>			
Trono				
		3. 0	Generate report	Cancel
		· -		
-				

## Result

Once the report has been generated successfully, you can save the Excel files in the path configured.

File       Edit       View       Pavorites       Tools       Help	
Address       D:\Projects\Demo301_\Demo_Prj\wincproj\OS\GraCS\Reports         Name       Size       Type       Date Modifie         Demo301_MP_ExArchiveValues_100826_1519.xls       63 KB       Microsoft Excel Wor       8/26/2010 3         Image: Microsoft Excel - Demo301_MP_ExArchiveValues_100826_1519.xls       63 KB       Microsoft Excel Wor       8/26/2010 3         Image: File       Edit       Yiew       Insert       Figmat       Lools       Date       Mindow       Help         Image: All       Image:	
Name       Size       Type       Date Modifie         Demo301_MP_ExArchiveValues_100826_1519.xls       63 KB       Microsoft Excel Vor       8/26/2010         Image: Size in the image in t	
Image: State St	
Image: State St	:d
Bile       Edit       View       Insert       Format       Iools       Data       Window       Help         Image: Array of the stamp         Image: Array of the stamp<	:20 PM
Elle       Edit       View       Insert       Format       Iools       Data       Window       Help         Image: Array of the stamp         Image: Array of the stamp<	
A       B       C       D       E       F         A1       *       fx       Time stamp       Anal CE       •       10       •       B         A1       *       fx       Time stamp       Anal CE       •       10       •       B         A1       *       fx       Time stamp       AnaLOG CC       CALCULATIC INTEGER_CC LMGM/PRE       PULSE         2       [kWh]       [kWh]       [kWh]       [kWh]       [kWh]         3       -       -       -       -       -       -         4       8/25/2010 15:15       0       0       0       14.96661       -         5       8/25/2010 15:30       0       0       0       15.0999413	
A1         Fime stamp           A         B         C         D         E         F           1         Time stamp         ANALOG_CC CALCULATIC INTEGER_CC LMGM/PRE         PULSE           2         [kWh]         [kWh]         [kWh]         [kWh]           3	
A1         F Time stamp           A         B         C         D         E         F           1         Time stamp         ANALOG_CC CALCULATIC INTEGER_CC LMGM/PRE         PULSE           2         [kWh]         [kWh]         [kWh]         [kWh]           3	υ∣≣
A         B         C         D         E         F           1         Time stamp         ANALOG_CC         CALCULATIC INTEGER_CC         LMGM/PRE         PULSE           2         [kWh]         [kWh]         [kWh]         [kWh]         [kWh]         [kWh]           3	
1         Time stamp         ANALOG_CC CALCULATIC INTEGER_CC LMGM/PRE         PULSE           2         [kWh]         [kWh]         [kWh]         [kWh]         [kWh]           3	
2         [kWh]         [kW	
3         4         8/25/2010 15:15         0         0         0         14.96661           5         8/25/2010 15:30         0         0         0         15.0999413	
4         8/25/2010 15:15         0         0         0         14.96661           5         8/25/2010 15:30         0         0         0         15.0999413	
<b>5</b> 8/25/2010 15:30 0 0 0 15.0999413	-
	0
h 0/25/2000 15:45 00 00 14 9332771	0
	0
7         8/25/2010 16:00         0         0         0         15.1166077           8         8/25/2010 16:15         0         0         0         14.9832764	0
8         8/25/2010 16:15         0         0         0         14.9832764           9         8/25/2010 16:30         0         0         0         14.9332771	0
10 8/25/2010 16:30 0 0 0 14.9332771 10 8/25/2010 16:45 0 0 0 19.1498795	0

## 15.2.2 Adding Reports → Cost Center Report

Before you can add a cost center report you must create tariff sets and define the parameters as shown in the figure.

🔤 роч	werrate	Reports					_ 🗆 ×
File F	Report   9	Settings					
	🗅 😭	WinCC Server					
	rt name	Tariff sets		🔤 Manage tariff	sets		×
De	mo301_M	IP_ExArchiveValues	Export of arch				
				Add tariff set 2		Unit	
	Change	e tariff set 🔡 🔒					
	-Name -	e canin sec 🔥					
	Electri	cal		€ / kWh			
-	- Times /	costs				⊣ ⊣ ⊢Assign tariffs —	
			From	To	€/kWh		Mo
	🔽 Ta	riff 1 12:00:0	0 AM ÷	12:00:00 AM 🕂	0.1	Tariff 1	1
	J <b>v</b> ia			12:00:00 AM 🕂	0.1		
	100	Manage tariff se	:ts		×		
		) 🗗 🖻 🗙	-		1		
	1 Automatic	Tariff set		Jnit		Clos	se
		lectrical <mark>4</mark>		/kWh			

Now add a cost center report. Enter the parameters as shown in the figure below.

Туре	1		
Cost center report			
- Trigger			
Manual			
Name	1		
Demo301_MP_CostCenter			
File name	Path		
Demo301_MP_CostCenter_yymmdd_hhmm.xls	D:\Projec	sts\Demo301_\Demo_	Prj\win
Tariff set	Unit —		
Electrical	kWh		
	]		

#### Add cost centers

Before you can add cost centers you must first create names for them. 3 cost centers are created in this example.

 Refresh		Tariff: Electrical Unit used in report: k				
Archive tag	Unit	Cost center	Formula			
ANALOG_COUNTER/PRE_S	[kWh]					
CALCULATION/PRE_SUM.S	[kWh]					
INTEGER_COUNTER/PRE	[kWh]					
LMGM/PRE_SUM.S	[kWh]					
PULSE_INPUT/PRE_SUM.S	[kWh]					
Costcer		ew cost center	a for the new cost center			
	iter2		e for the new cost center:	Ca		

#### Assign cost centers

Select a cost center from the pop-up menu and do this for all the archive tags.

	Refresh			Tariff: Electrical	Unit used in report: kWI
	Archive tag	Unit	Cost center	Formula	
	ANALOG_COUNTER/PRE_SUM.S	Assign	cost center 🔸	No cost center	1
ö	INTEGER_COUNTER/PRE_SUM.	S Virtual r	process tag 🕨	Costcenter1	
	LMGM/PRE_SUM.S	[KWN]	, occoss cog ·	Costcenter2	-
	PULSE_INPUT/PRE_SUM.S	[kWh]		Costcenter3	
	Select archive tags				
	Refresh			T	ariff: Electrical Unit us
	Refresh Archive tag		Unit	T Cost center	ariff: Electrical Unit us
		ER/PRE_SU		-	
	Archive tag			Cost center	
	Archive tag ANALOG_COUNT	RE_SUM.S	M.S [kWh] [kWh]	Cost center Costcenter1	
	Archive tag ANALOG_COUNT CALCULATION/P	RE_SUM.S FER/PRE_SU	M.S [kWh] [kWh]	Cost center Costcenter1 Costcenter3	

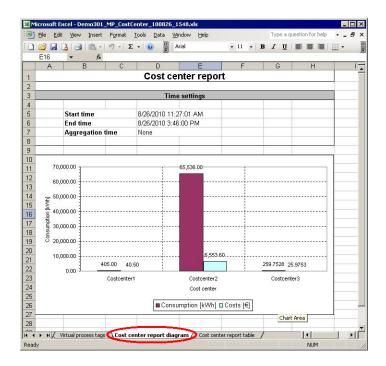
#### **Time period**

Select the report time period and close the wizard by clicking the "Finish" button.

1 🗅 😭 🖻 🗙 🗐	Report type		Report cycle	
Demo301_MP_CostCenter	Cost center report		Manually	
Demo301_MP_ExArchiveValues			Manually	
🔤 Generate report				
Time of report				
Report cycle				
Manually				
- Report period				
Time period		- Start		
Time period		8 /25/20	10 💌	3 :27:0
		End-		
		LIIG		

#### Result

After successful generation the reports are located in the path configured.



Ele		Format Iools Data Window Help		pe a question for	
			- 10 - B I	ū ≣ ≣	·⊞∣⊞ •
F1		20.07527821064	F	G H	1
101		Cost center repor		0 11	
1		Cost center repor	L		
2		Time settings			
4		Time settings	1 1		
4 5	Start time	8/26/2010 11:27:01 AM			
6	End time	8/26/2010 3:46:00 PM			
7	Aggregation time	None			
8	Aggregation ante	None			
9					
10	Cost center	Consumption [kWh]	Costs [€]		
11	Costcenter1	405.00	40.50		
12	Costcenter2	65,536.00	6,553.60		
13	Costcenter3	259.7528	25.9753		
14					
15	Total	66,200.7528	6,620.0753		
16					
17					
18					
19					
20					
21					
22					
23			-		
24					
25					
26				_	
27			-	_	
28	1/1/1				

# 15.2.3 Adding Reports → Duration Curve Report

Add a report of the "Duration Curve Report" type and configure the parameters as shown in the figure below.

Report		
Туре		
Duration curve report		
Trigger		
Manual		
Name		
Demo301_MP_CurveReport		
File name	_ Path	
Demo301_MP_CurveReport_yymmdd_hhmm.xls	D:\Projects\Demo301_\D	emo_Pri\win
	Next	Cancel
	Next	Lancel

#### Add archive tags and select time period

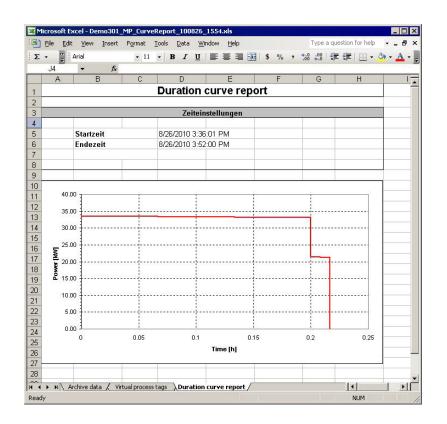
Select the archive tags and time period. Close the wizard by clicking the "Finish" button.

Add report		
Refresh		
Archive tag	Unit	Formula
ANALOG_COUNTER/PRE_S		
CALCULATION/PRE_SUM.V	[kW]	
INTEGER_COUNTER/PRE	[kW] [kW]	
	dd report	
	- Time of report	t
	- Report cyc	cle
	Manually	ly
	- Report period	
	Time period	vd
	Last day	
	1 supervision of the second	
4		
		Create report Back Finish Cancel

#### Result

After successful generation the reports are located in the path configured.

Eile <u>R</u> eport <u>S</u> ettings		
- C 🗗 🖻 🗙 📳		
Report name General	e report ype	Report cycle
Toemo301_MP_CostCenter	Cost center report	Manually
Demo301_MP_CurveReport	Duration curve report	Manually
MP ExArchiveValues	Export of archived measured values	Manually



## 15.2.4 Adding Reports → Batch Value Export

Add a report of the "Batch Value Export" type and configure the parameters as shown in the figure below.

- Туре	🔤 Add report	
Batch value export	Select user archives	
- Trigger	Refresh 2.	
Manual	Alias	Archive nar
Name	Charge 1	PRE_SUM
Demo301_MP_BatchValExp		
File name	Path	
Demo301_MP_BatchValExp_yymmdd_hhmm.xl	D:\Projects\Demo301_\Demo_Prj\win	

#### **Time period**

Select the report time period and close the wizard by clicking the "Finish" button.

Change report				×
Time of report Report cycle	<u>.</u>			
Report period	<b></b>			
	Create report	Back	Finish	Cancel

#### Result

After successful generation the reports are located in the path configured.

💌 h	Vicrosoft Excel - Demo301	1_MP_BatchValExp_1008	26_1601.xls							
:8)	Datei Bearbeiten Ansicht	: <u>E</u> infügen Forma <u>t</u> E <u>x</u> tras	: Date <u>n E</u> enster <u>?</u> Ad	lo <u>b</u> e PDF	A	do <u>b</u> e PDF			Frage hier eingeben	8 ×
: 🗅	💕 🖬 🔒 🎒 🖪 🖤	📖   X 🗈 🛍 - 🕩   🐇	) • (° -   🥵 Σ • Δ↓ 2	(†   🛍	43	100% 💌 🕜	🚽 : Aria	CE	• 10 • 🚍 🔤 🗄	• 💩 • 📲
: 🖢	🔁 🐏 🐏 🕢 🐟 🏹   5 🔗   🖉 🖓 👔   🖤 Bearbeitung zurückgenden Bearbeitung beenden 🍃									
5	😓 Snaglt 🔠 Fenster									
: 🔁	12									
	A4 -	🖈 BN1								
	A	В	С	D	Е	F	G	Н	l l	
1	Batch	Time stamp	Time stamp	Unit	ID	Recipe name	Value 1	Unit value 1	Type value 1	
2		from	to							=
3										
4	BN1	8/23/2010 1:00:56 PM	8/23/2010 1:01:51 PM	UNIT1	1	RN1	10,00	k₩h	Electricity	
5	BN1	8/26/2010 3:48:34 PM	8/26/2010 3:48:47 PM	UNIT1	1	RN1	6,111	kWh	Electricity	
	BN2	8/26/2010 3:49:17 PM	8/26/2010 3:49:37 PM	UNIT1	2	RN2	9,1758	kWh	Electricity	
7	BN3	8/26/2010 3:57:18 PM	8/26/2010 3:50:44 PM	UNIT1	2	RN3	22,407	kWh	Electricity	
8	► ► Archive data									>
Berei	t							Summe=32	3380,74 NF	

## 15.2.5 Adding Reports → Batch Report (sorted according to time)

Add a report of the "Batch Report (sorted according to time)" type and configure the parameters as shown in the figure below.

Add report	X	
Batch report (sorted acc. to time)	Generation Select user archives	
Trigger Manual	Refresh 2.	
Name	Alias Charge 1	Archive name PRE_SUMC_1
File name Demo301_MP_BatSortTime_yymmdd_hhmm.xls	Path D:\Projects\Demo301_\Demo_Prj\win	
	1. Next Cancel	

### **Time period**

Select a time period and quit the wizard by clicking the "Finish" button.

Add report				×
Time of report				
Report period		•		
[	Create report	Back	Finish	Cancel

## Result

After successful generation the reports are located in the path configured. Batch reports (sorted according to name) are configured in the same way as Batch reports (sorted according to time).

Eike		t Format <u>T</u> ools	Data Window	v <u>H</u> elp	Type a qu	estion for help	- 8
3 🖌	Σ 🔹 🚆 Arial	•	10 - <b>B</b> <i>I</i>	u∣≣ ≣ ₹	🖩 📴   \$ % , 號 🔐   🗊	: 🚝   🛄 🗸 🖄	- <u>A</u>
D	14 <b>-</b> fs	è				17.000	
F	A B	C	D	E	F	G	
		Batch re	port (sorte	ed acc. to	time)		
3			Time setti	ings			
4							
5	Start time		8/19/2010 4	:03:50 PM			
6	End time		8/26/2010 4	:03:49 PM			
7							
8							
9							
10	Time period		8/23/2010 1	:00 PM	8/23/2010 1:01 PM		
11	BN1	Electricity	10.00				
12		Water	0.00				
13		Gas	0.00	m³			
14							_
15							_
16	Time period		8/26/2010 3		8/26/2010 3:48 PM		_
17	BN1	Electricity	6.111				_
18		Water	0.00			_	-
19		Gas	0.00	m³			_
20						_	_
21							_
22	Time period	-	8/26/2010 3		8/26/2010 3:49 PM		_
23	BN2	Electricity	9.1758				_
24		Water	0.00			_	_
25		Gas	0.00	m			_
26 27							_
27 28	Thursday		8/26/2010 3		0/00/0040 0.50 DM	_	_
28 29	Time period BN3	Electricity	22.407		8/26/2010 3:50 PM	_	-
29 30	DNO	Water	22.407			-	
30		Gas	0.00				_
31	H Archive data			10			_

## 15.2.6 Adding Reports →Counter Values

Add a report of the "Export of archived measured values" type and configure the parameters as shown in the figure below.

- File nam		\Demo301_\Demo_F	Tr/win
	port st archive tags Refresh	Next	Cancel
	Archive tag	Unit [kw/b]	Formula
and the local division of the local division	Archive tag ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S	Unit [kWh] [kWh]	Formula
and the local division of the local division	ANALOG_COUNTER/PRE_SUM.C	[kWh]	Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S	[kWh] [kWh]	Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V	[kWh] [kWh] [kW]	Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V CALCULATION/PRE_SUM.S CALCULATION/PRE_SUM.V INTEGER_COUNTER/PRE_SUM.C	[kWh] [kWh] [kW] [kWh]	Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V CALCULATION/PRE_SUM.S CALCULATION/PRE_SUM.V INTEGER_COUNTER/PRE_SUM.C INTEGER_COUNTER/PRE_SUM.S	[kWh] [kWh] [kW] [kWh] [kW]	Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V CALCULATION/PRE_SUM.S CALCULATION/PRE_SUM.V INTEGER_COUNTER/PRE_SUM.C INTEGER_COUNTER/PRE_SUM.S INTEGER_COUNTER/PRE_SUM.V	[kWh] [kWh] [kW] [kWh] [kW] [kWh]	Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V CALCULATION/PRE_SUM.S CALCULATION/PRE_SUM.V INTEGER_COUNTER/PRE_SUM.C INTEGER_COUNTER/PRE_SUM.S INTEGER_COUNTER/PRE_SUM.V LMGM/PRE_SUM.S	[kWh]           [kWh]           [kW]           [kW]           [kW]           [kWh]           [kWh]           [kWh]           [kWh]           [kW]           [kWh]	Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V CALCULATION/PRE_SUM.S CALCULATION/PRE_SUM.V INTEGER_COUNTER/PRE_SUM.C INTEGER_COUNTER/PRE_SUM.S INTEGER_COUNTER/PRE_SUM.V LMGM/PRE_SUM.S LMGM/PRE_SUM.V	[kWh]           [kWh]           [kW]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]	Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V CALCULATION/PRE_SUM.S CALCULATION/PRE_SUM.V INTEGER_COUNTER/PRE_SUM.C INTEGER_COUNTER/PRE_SUM.S INTEGER_COUNTER/PRE_SUM.V LMGM/PRE_SUM.S LMGM/PRE_SUM.V PULSE_INPUT/PRE_SUM.S	[kWh]           [kWh]           [kW]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]	Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V CALCULATION/PRE_SUM.S CALCULATION/PRE_SUM.V INTEGER_COUNTER/PRE_SUM.C INTEGER_COUNTER/PRE_SUM.S INTEGER_COUNTER/PRE_SUM.V LMGM/PRE_SUM.S LMGM/PRE_SUM.V	[kWh]           [kWh]           [kW]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]           [kWh]	Formula Formula
	ANALOG_COUNTER/PRE_SUM.C ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V CALCULATION/PRE_SUM.V INTEGER_COUNTER/PRE_SUM.V INTEGER_COUNTER/PRE_SUM.C INTEGER_COUNTER/PRE_SUM.S INTEGER_COUNTER/PRE_SUM.V LMGM/PRE_SUM.S LMGM/PRE_SUM.V PULSE_INPUT/PRE_SUM.S PULSE_INPUT/PRE_SUM.V	[kWh]           [kWh]           [kW]           [kW]           [kWh]           [kWh]	Counter values *.C

### **Time period**

Select a time period and end the wizard by clicking the "Finish" button.

Add report				
Report cycle				
Report period	<b>_</b>			
Time period	<b>_</b> _			
		Daily	ading out counter val	:05:00 PM
		All values Daily Weekly Monthly		
				and the second
	Create report	Back	Finish	Cancel
	J			

**Note** Different views for the time period are displayed depending on the "Start time..." parameter.

#### Result

After successful generation the reports are located in the path configured.

	licros	oft Exc	el - De	mo301_	МР_Ехро	rtC¥alı	ies_10	0826_1	608.xls				_	×
1	Eile	Edit	⊻iew	Insert	Format	<u>T</u> ools	Data	Windo	w <u>H</u> elp	Type a	question I	or help		₽×
Σ	•	2 A	rial CE		<del>•</del> 10	-   1	B <i>I</i>	<u>u</u>   I	F III	-a- \$		- 👌 -	A -	;; ₹
	A1	-	-	fx.	Time sta	mp								
		Α				В				C				D
1	Time	stam	р	ANALO	G_COUN	ITER/P	RE_S	UM.C	INTEGER	COUNTE	ER/PRE_	SUM.C		
2				[kWh]					[kWh]					_
3														
4	8/24	/2010	17:15					20				10		
5	8/25	/2010	12:15					20				10		
6	8/25	/2010	12:30					20				10		
7	8/25	/2010	12:45					20				10		
8	8/25	/2010	13:00					20				10		
9	8/25	/2010	13:15					20				10		
10	8/25	/2010	13:30					20				10		
11	8/25	/2010	13:45					20				10		
12			14.00		14 - 115			20				, 10		_
14 4	) F FI	Arc	hive da	ita / Vir	tual proces	is tags	/					•		
Read	ły										N	UM		1

## 15.2.7 Adding Reports → Virtual Measuring Points

Virtual measuring points are possible for:

- Duration curve report
- Export of archived measured values
- Cost center report

#### Add a virtual measuring point

Select Virtual measuring point in the pop-up menu.

		Turn	1-
	Archive tag	Unit	Formula
	ANALOG_COUNTER/PRE_SUM.C	[kWh]	
	ANALOG_COUNTER/PRE_SUM.S ANALOG_COUNTER/PRE_SUM.V	[kWh] [kW]	Virtual process tag 🕨 Add
	CALCULATION/PRE_SUM.S	[kWh]	Change
	CALCULATION/PRE_SUM.V	[kW]	Delete
H	INTEGER_COUNTER/PRE_SUM.C	[kWh]	
	INTEGER_COUNTER/PRE_SUM.S	[kWh]	
ō	INTEGER COUNTER/PRE SUM.V	[kW]	
	LMGM/PRE_SUM.S	[kWh]	
	LMGM/PRE_SUM.V	[kW]	
	PULSE_INPUT/PRE_SUM.S	[kWh]	
	PULSE_INPUT/PRE_SUM.V	[kW]	
		1000000	
•			1

## Configure a virtual measuring point

Configure the virtual measuring point. If you use energy values (\*.S) in your formula, then you must also use .S for the name of your virtual measuring point.

e	Unit	
st.S	kWh	
ula		
	N/PRE_SUM.S	-
▼ 1.2	INT FILE SOM S	
		-
view		
ALCULATION/PRE_SUN	4.S*1.2)	
	11	1200 12
	Add	Ca

#### Result

The virtual measuring point is created.

	Archive tag	Unit	Formula
	ANALOG_COUNTER/PRE_S	[k₩h]	
	ANALOG_COUNTER/PRE_S		
	ANALOG_COUNTER/PRE_S		
	CALCULATION/PRE_SUM.S	[kWh]	
	CALCULATION/PRE_SUM.V	[k₩]	
	INTEGER_COUNTER/PRE	[k₩h]	
	INTEGER_COUNTER/PRE	[kWh]	
	INTEGER_COUNTER/PRE	[kW]	
$\mathbf{\nabla}$	LMGM/PRE_SUM.S	[kWh]	
	LMGM/PRE_SUM.V	[k₩]	
	PULSE_INPUT/PRE_SUM.S	[k₩h]	
	PULSE_INPUT/PRE_SUM.V	[kW]	
	Test.S	kWh	(CALCULATION/PRE_SUM.S*1.2)

**Note** When you assign a name for the virtual measuring point, you must make sure that you use the extensions ".C", ".S" or ".V" depending on the value so that the measuring point is used correctly in the different types of report.

## 15.2.8 Adding Reports → Automatic Execution

Double-click the report to change the settings. Set the "Trigger" parameter to "Automatic".

	-	
port name	Report type	Report cycle
Demo301_MP_BatchValExp	Batch value export	Manually
Demo301_MP_BatSortTime	Batch report (sorted acc. to time)	Manually
Demo301_MP_CostCenter	Cost center report	Manually
Demo301_MP_CurveReport	Duration curve report	Manually
Demo301_MP_ExArchiveValues		Manually
Demo301_MP_ExportCValues	Export of archived measured values	Manually
Report Type Export of archived meas	ured values	
Type Export of archived measure	ured values	
Туре	ured values	
Type Export of archived meas Trigger		

#### Define the time period

Select the time period according to your requirements. See the figure for the possible settings.

Change report		
Time of report Report cycle Daily		Time of day
Report period	Start	
Time period		7 :01:00 PM
	$ \land \land$	3:01:00 AM
Aggregation None	Daily Daily Week!	<b>•</b>
	Month Time p	period
	Last d. Elapse	ay ad day (00:00 - 24:00)
	Back	Next Cancel

#### Define valid period

You define the valid period according to your requirements. See the figure for the possible settings.

ange report				
Valid period				
_ Start				
8 /26/2010	3:01:00 PM	3		
End				
8 /26/2011	3:01:00 PM	-		
	Create report	Back	Finish	Cancel

#### Result

After configuration the report is marked green so that you can pick it out better from the others.

<u>File Report S</u> ettings		
Report name	Report type	Report cycle
Demo301_MP_BatchValExp	Batch value export	Manually
≝ Demo301_MP_BatSortTime	Batch report (sorted acc. to time)	Manually
≝ Demo301_MP_CostCenter	Cost center report	Manually
■ Demo301_MP_CurveReport	Duration curve report	Manually
<b># [</b> emo301_MP_ExArchiveValues	Export of archived measured values	Daily
≌) Demo301_MP_ExportCValues	Export of archived measured values	Manually