# ControlsNews

## Automation with Saia®PCD

saia-burgess

Control Systems and Components

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Automation Server

Saia®PCD Automation Server

Saia®PCD Web-HMI even more attractive

Wide Area Automation with Saia®PCD

## Clear route into the whole automation world

**Jürgen Lauber**
Director Saia-Burgess Controls

# Borderline cases

### Dear Reader

The automation world still looks a lot like Europe in the middle ages, with many states and regional princes, each with their own border restrictions. Each producer erects borders around his territory (system). These borders generate additional costs and waste time.

Gallant attempts have been made to use specific regulations for the market segment (e.g. BACnet) as a way of offsetting the root problem of border crossings. Unfortunately, these have until now led to complicated, unwieldy solutions (e.g. BACnet, LONWorks). People make up for time lost at the border by buying and maintaining a coach.

I should also mention the few regional princes who are relatively sophisticated, they try hard to help their citizens (customers) but to little avail. They replace old walls with new fences. Where previously they defended an income source with a proprietary bus, now the bus has been replaced with a supposedly open proprietary network. Well, it is one approach to improve the transparency of their system.

We at Saia-Burgess are fortunate. Nowhere in the world are we a dominant regional power. We do not have to maintain and defend borders. We only stand to gain from the unrestricted freedom of movement of our customers/citizens. We have a vital self-interest in the removal of borders and the emergence of a genuine, common, and open automation market.

That is why we are tearing down barriers between different systems with web technology, and levelling ditches with IT technology.

The sum of Web + IT technology for automation engineering is the AutomationServer. It can be used to eliminate every toll road in the automation world.

With the $Saia^{®}PCD$ system environment, we have been bridging these old structures and borders from the very beginning. Now, with the AutomationServer, borders will be completely eliminated for the user. Find out more in the article on page 2.

I hope that you will enjoy reading and thinking about the subjects covered in this issue of Controls News. ∎
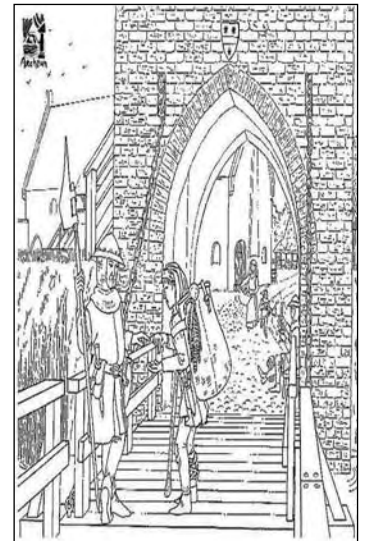


"The automation world still looks a lot like Europe in the middle ages."

The cover
No borders with $Saia^{®}PCD$

PLC
+ (Web + IT)
= Saia®PCD

# AutomationServer
## Decisive added value for the user
## from an advanced automation device

The crisis at the beginning of the new millennium made everything clear. Coping with the future called for more than just holding onto the old; the tried and tested. However, at the same time the bursting of the .com bubble had also made it plain that the "new" was not always necessarily better. To generate sustainable benefits and progress, the "new" must be gradually and continuously combined with the "old", the tried and tested. Since 2001, this is what we have continued to do.

### To date 100 000 web servers in the field

Function

**PLC + Web = Saia®PCD**

Saia®PCD2

Saia®PCD4

Saia®PCD1

**PLC + (Web + IT) = Saia®PCD**

Saia®PCD3

Saia®PCD2

SNMP

Structured C

Flash modules

File system, CSV

FTP server

SMTP (E-Mail)

USB interface

Web-HMI: HTML/ Java-based web visualization

Web server HTML / SSI / CGI

AutomationServer

2000  '01  '02  '03  '04  '05  '06  '07  2008
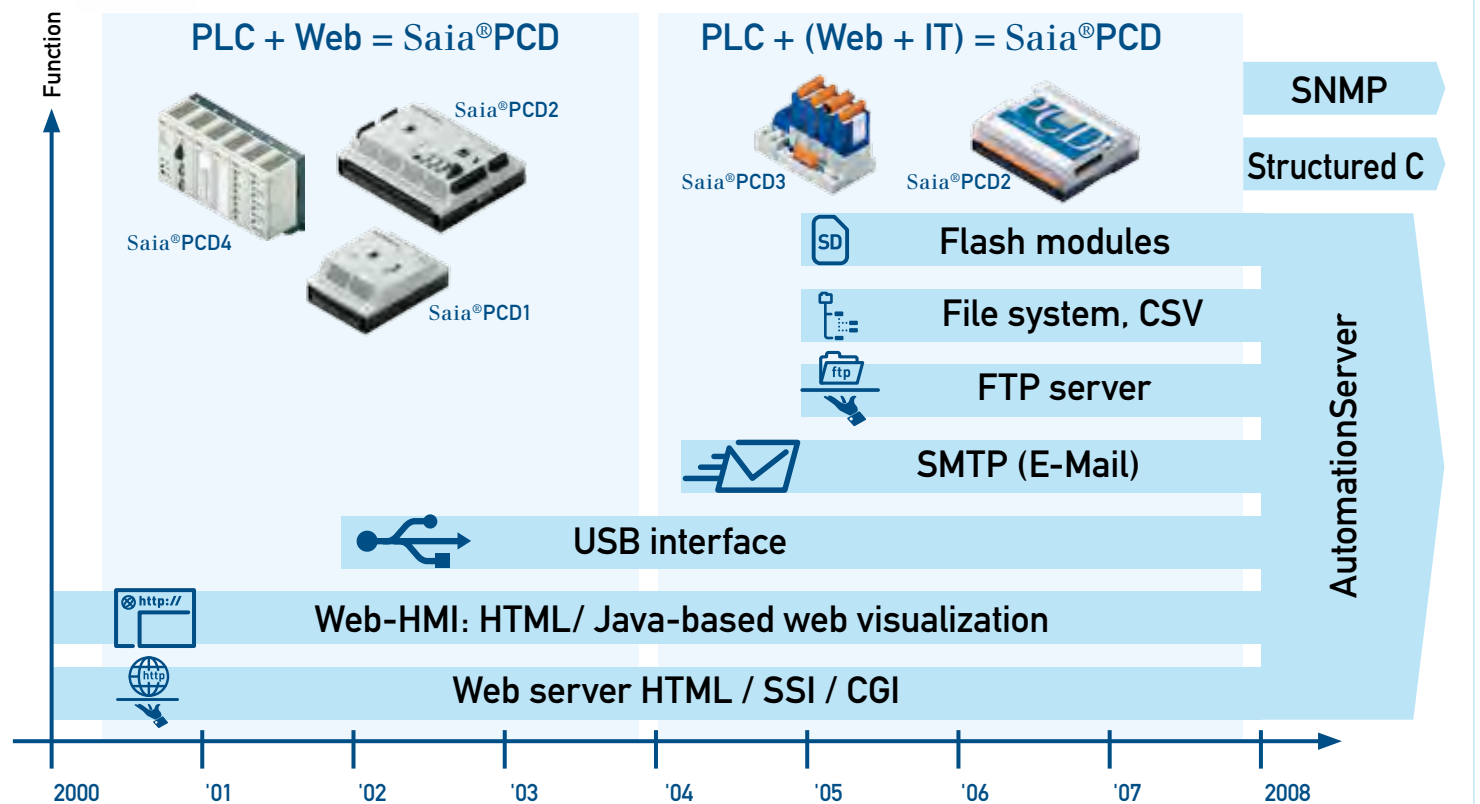
Web- and IT innovation history Saia®PCD

### Culture of innovation and technology

In the first 20 years of the company, Saia-Burgess built up a good reputation for its PLCs and established a corporate culture marked by open and closed loop industrial control technology.

We began continuously combining this "old" with the new. The "new" was technologies from the web and IT worlds, from the consumer electronics field (e.g. SD-Flash, Haptic) and telecommunications (e.g. GPRS).

In themselves, the individual technologies are nothing new and their use is very widespread. However, it is something new to have all these technologies united in a freely programmable automation device with industrial design and a cor-

respondingly long life cycle.

As a company, we have further developed our "old" PLC culture into a new PLC-based culture of innovations and technology.

We have continuously made our products more attractive through new technologies and innovation.

The positive, concrete consequences of this for our customers are explained in the following:

For greater clarity, we have chosen the viewpoint of the operators or owners of systems in commercial premises. For them, a major paradigm shift is becoming apparent. If they exploit this paradigm shift for themselves, they will have fewer problems

2

and worries in future. They increase their flexibility while simultaneously reducing their dependence on a single, dominant producer. In future, they can even meet higher demands on automation with fewer qualified staff. – Almost the prospect of paradise! Why should this be so?

### Struggling with the existing paradigm in automation technology

Until now, the operators of installations have been confronted with the fact that every one of the established manufacturers of automation equipment is exclusively self-centred. Technically, they do everything possible to separate themselves from the competition and thereby keep their customers to themselves.

They develop their own concept of the ideal closed or open-loop control device, one which rests on a proprietary, wholly-owned resource and process model.
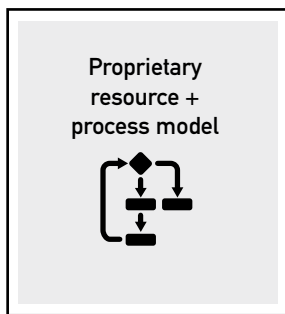
Operators actually have nothing to do with this proprietary logic controller part. After all, they do not want to write programs and develop automation solutions; they just want to use them. However, in order to use them, operators still have to be able to service an automation device installed at their location. They have to be able, throughout the lifetime of their installation, to exchange operating data and receive event messages. This is not easy and, periodically, it generates costs and even problems.

Operationally, this is how it looks:

They have to arrange for their technicians to be trained in the structure of the proprietary system of whichever equipment manufacturer, install their proprietary software tools on all service PCs/notebooks, and also keep them always up to date. That ought to cover the service side.

However, it still does not establish any integration with the operational automation environment.

If they want to access an individual device from another manufacturer's automation device or management system/ ERP system, etc., this usu-

ally proves both costly and complex. These costs and complexity are even defined as normative in the standard DIN EN ISO 16484 for automation systems. There one will find, alongside the actual automation stations, explicit mention of additional device classes, such as "communications controllers" and "data interface units". Interface cards and driver software are also usually needed.

**Integration of a conventional automation device in the automation and management levels**

Example of Siemens®:
Simatic® S7 controller /CPU
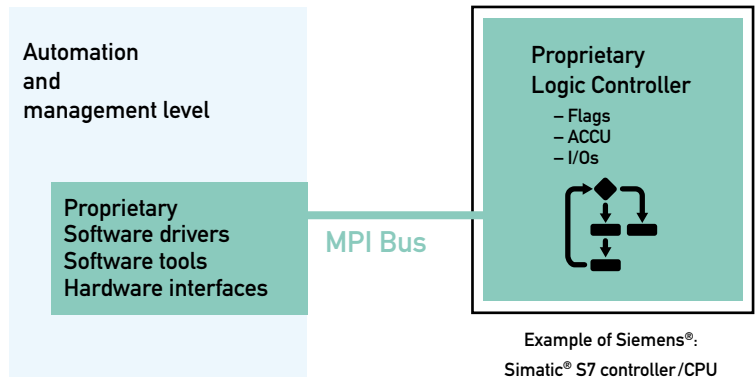
Representing the systems of other major manufacturers, such as Honeywell, Johnson Controls, Allen Bradley, etc. here the existing situation is demonstrated with the concrete example of the Simatic® S7 automation device from Siemens®.

If operators combine devices from different manufacturers in their installation, they construct a heterogeneous «own system» for themselves. They alone bear responsibility for the correct interaction of all the individual devices. They must carry the risks and costs of the communications interfaces for the entire useful life (lasting decades!) of installations. When making additions or modernizing, operators realize that their «own system» is not actually well enough documented to be built upon. The entire system is then either completely replaced, or it will kill any flexibility.

This is all because, while every manufacturer of automation equipment does indeed supply logic controllers, they do not deliver any usable automation stations for a networked, heterogeneous world.

Large automation suppliers all talk about more openness, but with their proprietary standards they force the exact opposite.

Now web/ IT technology has entered automation and made all the frustration unnecessary. These technologies have eliminated the borders and hurdles.

### AutomationServer – the missing link

We have seen that, while the logic control core function of an automation device may be good enough for operation in isolation, this fully autonomous op-

*PLC
+ AutomationServer
= Saia® PCD*
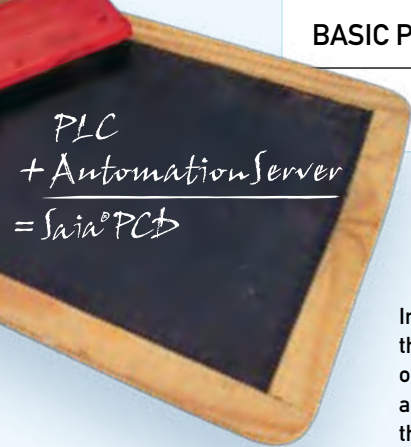
## AutomationServer: strategy or chance?

In 2001, we headed off on our journey towards the future with high aspirations. By focusing on innovation and technology, we were able to assemble a collection of interesting pieces of the puzzle, which we then took and combined to form an attractive picture.

You can be sure that this success will motivate us to continually expand the culture of innovation and technology in our company. We have great plans and ambitions for the development of our business, which cannot be realized if we copy the old solutions of the incumbents in automation. We know that we must be significantly better than others if we are to make our customers more successful.

Device manufacturers have adapted to this change in automation in a way that is ideal for them. They kept the old core of their devices and opened up additional income sources for themselves from the sale of communications accessories in the form of software and hardware. The operator's desire for openness is met through higher costs and added complexity. The manufacturer still does not have to take responsibility for interoperability across the operational lifetime of the overall system.

What should a manufacturer of automation equipment actually deliver for his money in terms of automation technology? How should automation devices actually be procured today?

To identify the answer, let us look at the extreme opposite of the current situation. Users no longer have to adapt to producers and instead have all their ideal wishes realized. This also means we adapt automation technology to the customer's demands. It is that simple.

Users and clients would find it ideal to replace everything proprietary and vendor-specific – unless is has an actual benefit in the core function of open or closed-loop control – with something that is universally known, appreciated and accepted; something that they already have in the home and that their staff know. However, this is only possible if the following basic preconditions are met:
– No more proprietary protocols
– No more proprietary data formats
– No more proprietary drivers and plug-in cards
– No more proprietary software tools

Starting with software, they have to be able to rely on something that is available everywhere and therefore costs little or nothing extra. Everyone should be familiar with it already, which will result in short induction times and high levels of user acceptance. The solution is any choice of browser or FTP and e-mail client.

For management systems, whether large ERP systems like SAP or small ones based on EXCEL, it must be possible to exchange information simply and securely with any choice of automation device. This is achieved with CGI bin instructions (supported by all operating systems) and the CSV data format (also universally understood).

### Automation and management level

- Web browser
- FTP client
- E-Mail client
⇨ 10 different ones for Linux, Mac, Windows®…
⇨ No licence or open source + proprietary

- ERP system / Management system

  SAP, Oracle, Lotus Notes, Excel…
⇨ Through CGI bin calls and CSV data format

The ideal situation for applications software from the user's point of view

In order for all these ideal wishes to be realized, a functional counterpart is required at both the field and automation levels to serve the operator's (client's) applications. This counterpart is the AutomationServer.
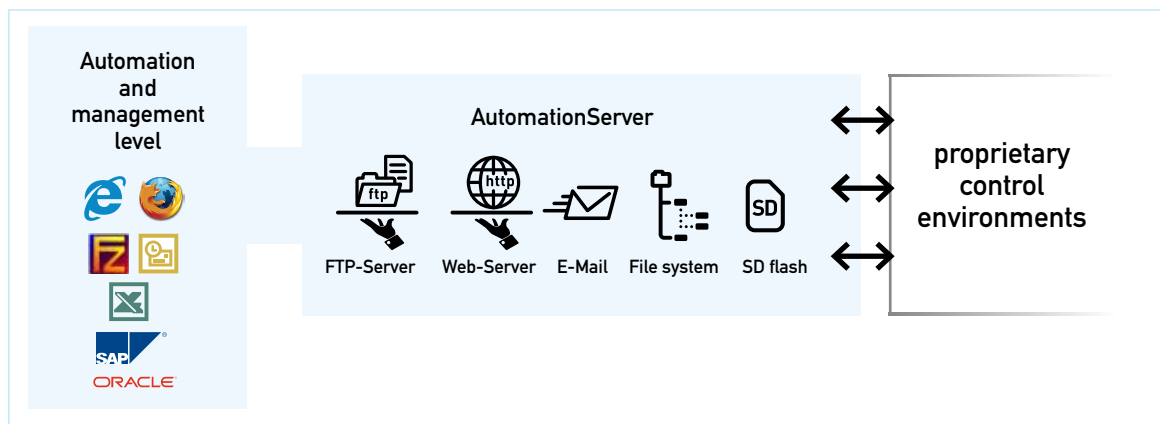
The AutomationServer as an open, universal bridge between users and proprietary open and closed-loop control environments

Automation and management level

AutomationServer

FTP-Server   Web-Server   E-Mail   File system   SD flash

proprietary control environments

The AutomationServer contains the server functions (Web server, FTP server, SMTP server/ e-mail, etc.) and its own file system with a large data memory.

In order to be effective at the field/automation level, an AutomationServer still needs integration of the actual logic controller. This is the most important, crucial function. As the sum of all its parts, the AutomationServer forms the transition from an open, standardized automation environment (based on widely used web/IT technology) to the internal, proprietary resources and process model of each device producer.

Instead of unloading the responsibility for integrating the data and communications of an automation device onto the operators and owners of an installation/property, manufacturers themselves must now take on this work and responsibility by integrating an AutomationServer. Producers therefore supply a product with genuine added value, no longer just technical hurdles and operating risks, as before.

### Comparison

Since 2001 we have worked to make these ideal concepts into a reality for the operators and owners of installations. Step by step, we have integrated the function of the AutomationServer into our new Saia®PCD systems. Now, with the latest version of Saia®PCD3 firmware, we have truly attained the ideal concepts sought by users and clients.

We have managed to put ourselves ahead of the competition and have given our final customers an almost irresistible argument in favour of innovation for their existing paradigms, including their supplier structure.

We have proved that all these customer benefits can be achieved without having to install a PC or expensive, large controllers. With the new Saia®PCD1 we will even have the Automation-Server in a class of devices whose price is half that of a PCD2 or PCD3. But this is still not the end of the possibilities open to us.

Every competitor is free to follow our path, as they see fit. All they must do is integrate all these web and IT technologies in an industrial way, while being prepared to dismantle their existing technical boundaries and hurdles. Saia-Burgess has not developed its own secret, proprietary technology, but has just used existing standards and integrated them in an industrial way. The picture opposite shows that, in the form of the Automation-Server, we have created genuine added value for the final customer.
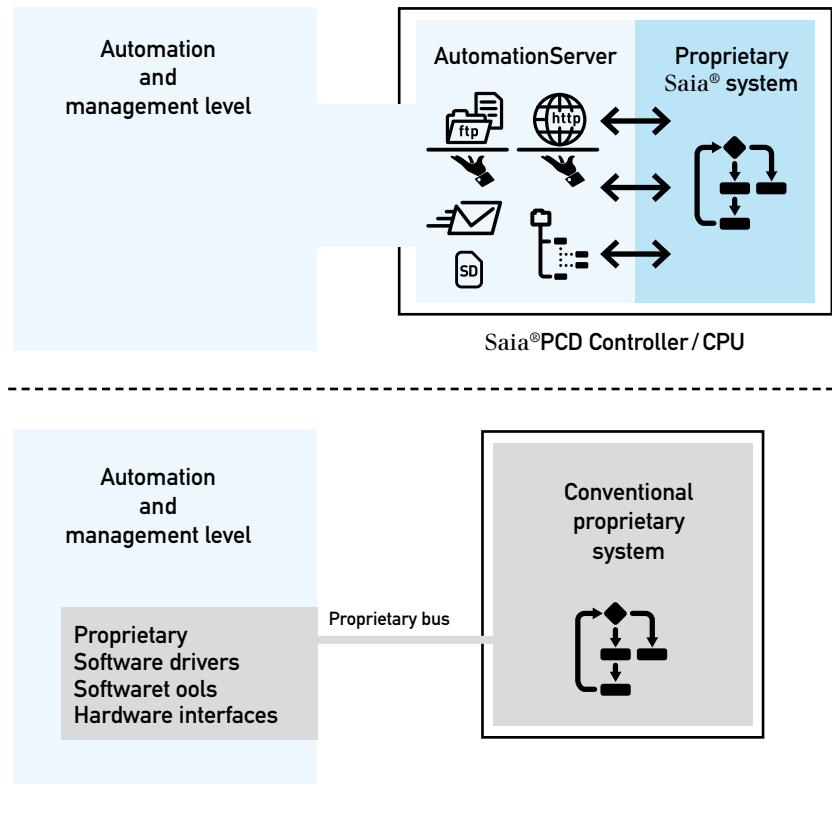
This added value allows installations and premises, whether their equipment is homogeneous or heterogeneous, to be automated even more extensively and in a cost-neutral way. Indeed, if proprietary user tools are abandoned, this can actually be achieved with less qualified staff than before.

Bring on the future. Any shortage in the next generation of engineers and technicians can be compensated for intelligently through innovation.



System comparison:
open, innovative automation device vs. conventional technology

Automation and management level

AutomationServer — Proprietary Saia® system

Saia®PCD Controller / CPU

Automation and management level

Conventional proprietary system

Proprietary Software drivers Softwaret ools Hardware interfaces

Proprietary bus

### Summary

What we (and therefore you) can offer your customers with the AutomationServer concept is not an improved or modified version of the same old approach, but a radically different one. This approach is based on the fact that the proliferation of many incompatible, proprietary technical standards is being very largely replaced by universal standards, and that these have effectively become common property world-wide. In future, only the tools for developing automation software will remain proprietary. However, this is the domain of system developers and system integrators. Thanks to the AutomationServer, operators and users no longer have to bother with these proprietary software packages. After all, they do not want to develop automation, just use it efficiently. In future, they will be able to concentrate more on their core business and produce more added value through automation. ∎

Value comparison:
With Saia®PCD, we supply the solution to a serious problem, while others continue to sell at a high price the causes of problems and routine costs.

# Ready for take-off!
# New generation Saia®PCD2 is now complete

Since early summer 2008, the basic Saia®PCD2.M5 has been in its launch phase with great success. The PCD2.M5 was the first product of the new Saia®PCD2 generation to be ready for sale.

Saia®PCD2.M5
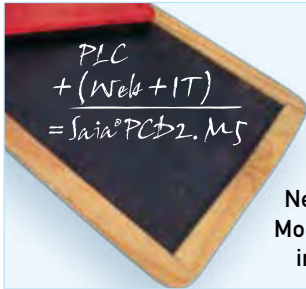
Saia®PCD2.M5540 – CPU and 8x module carrier in one

With the completion of the new Saia®PCD2 series, we aim to help the Saia®PCD2 catch up with the Saia®PCD3 series in growth and volume.

Completion means that all the important options from the existing first-generation Saia®PCD2 are now available. Previously, anyone who wanted to use web and IT features, such as SD flash memory extensions, had to turn to the Saia®PCD3. The PCD2.M series has now drawn level with the Saia®PCD3 series on web and IT features while, with the integral Nano-Browser panel, it has even pulled slightly ahead in technology.

Below we will briefly present once again the essential features of the new Saia®PCD2 generation and then set out the new options and functions that are available from autumn 2008.

With all its new ingredients and varieties, the position that the pizza-style Saia®PCD2 occupies on the menu of the automaters of this world will again be a broader one. It demonstrates the systematic advantages and strengths of flat-style construction at its best.

Brief desciption of the new Saia®PCD2

$$\frac{PLC + (Web + IT)}{= Saia^\circ PCD2.M5}$$

**New Saia®PCD2.M series:**
Modular automation devices in flat-type construction

### Saia®PCD2 Screensaver

Download the Saia®PCD2 Screensaver free-of-charge under www.sbc-support.ch/pcd2-m5/. This informative 3D animation shows the main features in an attractive form. The Saia®PCD2 screen saver is available in 12 languages.
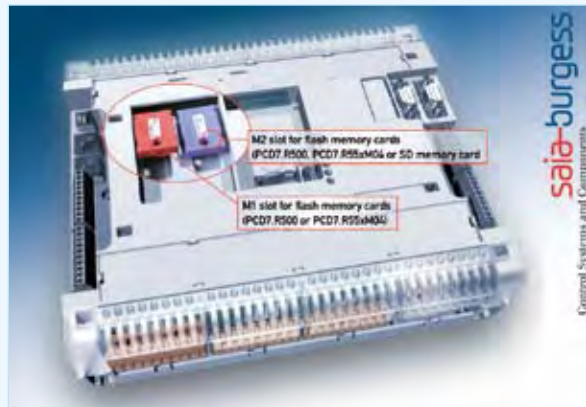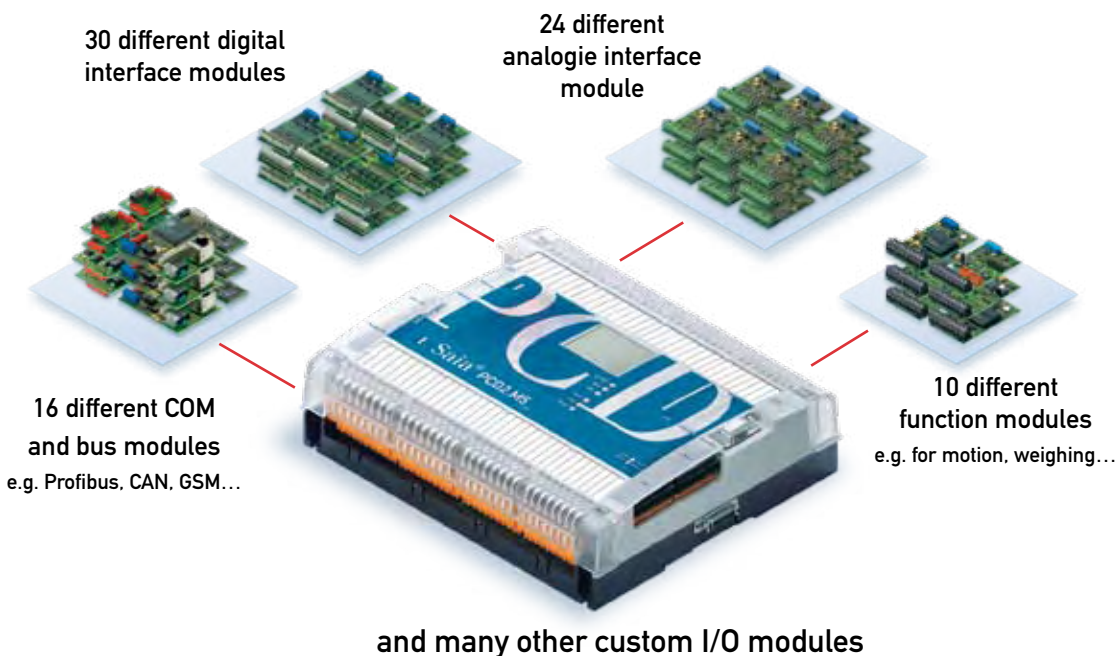
Innovative web and IT technologies on a freely programmable automation device matching the PLC quality standard IEC 61131-2: the appeal of the new has been combined with the proven quality of the old by Saia-Burgess and is now available in devices with a flat-style construction. What previously was only possible with a PC/IPC or high-end controller is now offered by the new mid-range in the form of the Saia®PCD2.M5.

The basic device is a CPU and I/O module carrier in one. For communication, the following interfaces are present as standard: USB, Ethernet with switch, RS232/RS 485 – 115 KBaud, RS 485/Profibus 1.5 MBaud. For fast signals, 6 inputs and 2 outputs have been integrated in the CPU. The basic device can be equipped from a choice of 50 different I/O modules up to 256 I/Os. Through expansion units, the number of I/Os can even be increased to 1023.

Without changing the frame size, expansion is possible from 4 to 15 communications interfaces, including CAN, Profibus DP 12 MBaud and MP Bus. No other automation device in its class can do this!

Internal program/data memory for applications can be expanded from 1 MByte to 4 GBytes. This data can be accessed via FTP or http, SMTP or directly in Excel-compatible CSV format.

The small, optional, built-in browser control unit with its 1.9 inch graphics display uses web technology. This permits on-site operation of the Saia®PCD2 from all PCs and Web-Panels connected in the network, at no added expense.

**30 different digital interface modules**

**24 different analogie interface module**

**16 different COM and bus modules**
e.g. Profibus, CAN, GSM…

**10 different function modules**
e.g. for motion, weighing…

**and many other custom I/O modules**

### Expansion units for Saia®PCD2

With these new expansion units, Saia®PCD2 systems are no longer limited to a maximum of 16 I/O slots. Now you can add numerous expansion units and build these systems up to 1023 I/Os, just as you can with Saia®PCD3. A new cable (PCD2.K106) is available that couples expansion units to the CPU and allows for space-saving mounting, as before. Further improvements with the new Saia®PCD2. C2000 are: the use of a different terminal technology, more labelling possibilities, and better protection of electronics from accidental contact.

Regarding engineering in particular, it should be a great relief to know that, in the new C2000, every device supplies its own power. You no longer have to worry about the electrical demands of applications in infrastructure (peace of mind!). Whatever current the I/O modules require is provided by the C2000 itself: a simple, reliable approach.

Saia®PCD2.C2000 expansion units coupled together

### New communications options available for the Saia®PCD2.M5 series

| I/O modules with serial interfaces for PCD2.M5xxx (on slot 0…3) | |
| --- | --- |
| PCD2.F2100 | Serial interface module with 1 x RS 422 / RS 485 and 1 slot to receive PCD7.F1xx |
| PCD2.F2210 | Serial interface module with 1 x RS 232 and 1 slot to receive PCD7.F1xx |
| PCD2.F2810 | Serial interface module with 1 x Belimo MP-Bus and 1 slot to receive PCD7.F1xx |

| Communications modules for PCD2.M5xxx slot C | |
| --- | --- |
| PCD7.F7500 | Profibus-DP master interface, 12 MBaud |
| PCD7.F7400 | CAN communications module |

### New IT modules available

| Flash memory modules | |
| --- | --- |
| PCD2.R6000 | For PCD2.M5xxx (on I/O slot 0…3) (SD card not included) |
| PCD7.R-SD1024 | Saia®SD SD flash memory card, 1 GByte |

One single project to display and operate, local and remote.

### New IT modules available

#### Optional. integral Nano-Browser control panel: Saia®PCD7.D3100E

The concept of "seamless control", with just one HMI project, from the small operator unit to all devices with a browser (Explorer, Mozilla, etc.) has now been extended with the Saia®PCD7.D3100E to include the on-site display of an automation device. It is an exciting and completely new way of making the on-site control of an automation device available throughout the network, whether on a PC or PDA.

Of course, the HMI project is edited with the Saia®Web-Editor, which you already know from applications with the Micro-Browser and Microsoft® Explorer. ∎

#### Saia®PCD Nano-Browser

- Full graphic display
- 4 grey scales
- Display resolution 128 x 88 pixel
- LED backlight
- Display view size 35.8 x 24.8 mm
- Overall dimensions 47 x 67 mm
- Navigation switch (Joystick)
- Nano-Browser with a sub-set of Micro-Browser functionality

# Saia®PCD3 Wide Area Controller (WAC)

**The Wide Area Controller is the latest addition to the PCD3 family. With it, we have created a type of product which, in a uniform and consistent manner, covers the increased requirements of network automation at the field level, in buildings, across regions, and beyond national borders.**

Saia®PCD3.WAC

### Compact but capable of modular expansion

Saia®PCD3 Wide Area Controllers are freely programmable, industrial devices for control and automation with web, IT and telecommunications functions. It is not only compact in size, but also in its all-in-one functionality. Packed into the smallest space are integral telecommunications interfaces (GSM/GPRS or PSTN/ISDN) with an added Ethernet 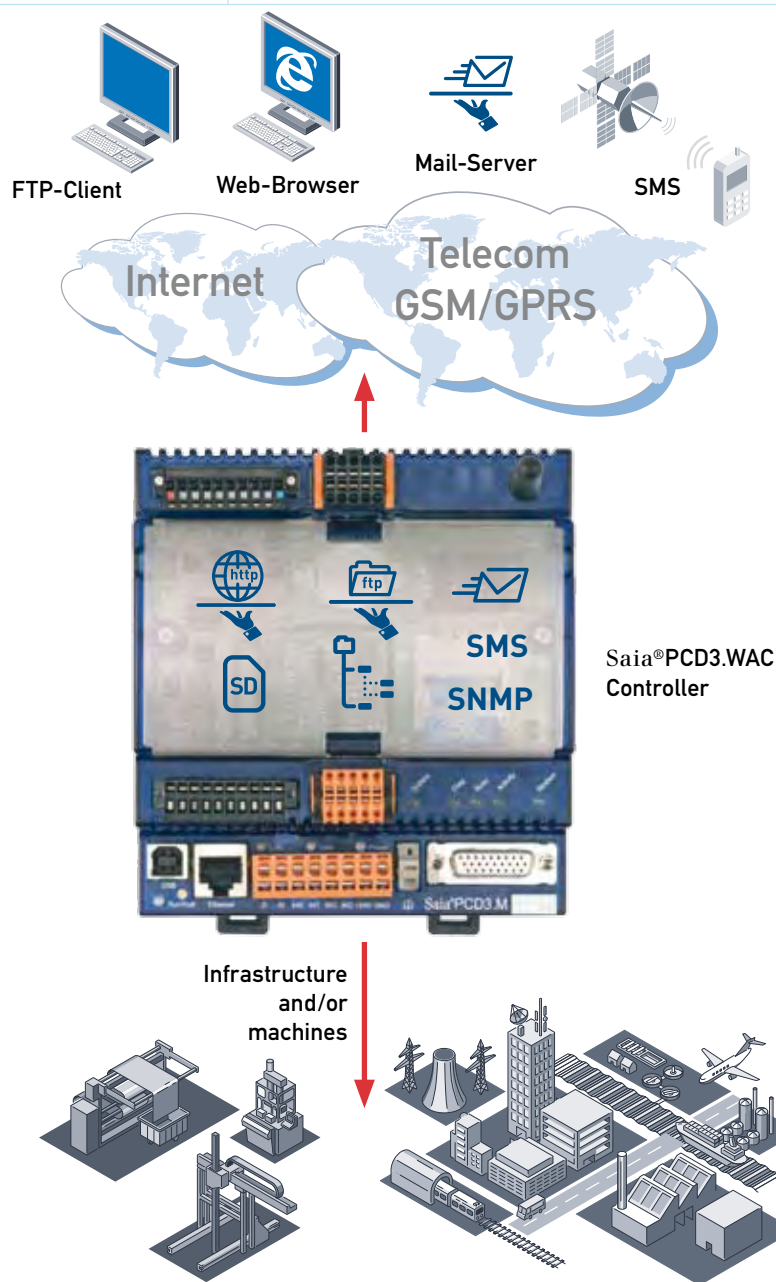port, plus a powerful processor and ample on-board memory. A slot for SD flash cards (up to 1 GByte) is also included. In addition, the basic unit has a USB and RS485 interface. An extra interface (RS232, RS422 or RS485) can be added as an option. As with a classical RTU station (remote terminal unit) the Wide Area Controller also has some I/Os already integrated directly in the basic unit. These are: 10 digital inputs, 4 config-

The impressive function and design of the new Saia®PCD Wide Area Controller

PLC
+ (Web + IT)
+ Telecom
= Saia® PCD

urable analogue inputs and 2 relay outputs. And if this is not enough, the basic unit can be extended with a standard PCD3.C1xx or .C2xx expansion housing. These modular expansion

FTP-Client    Web-Browser    Mail-Server    SMS

Internet

Telecom GSM/GPRS

http    ftp    SMS

SD    SNMP

Saia®**PCD3.WAC** Controller

Infrastructure and/or machines

housings can be equipped with any PCD3 I/O modules.

The compact size of this device means that space will be found for it even in the smallest control cabinet. It is therefore ideal for the upgrading of existing installations.

### PLC+IT+Web+Telecom = Saia®PCD3.WAC

The device is not only compact and highly integrated with regard to hardware, it also includes many powerful software functions and communications protocols. It therefore has an integral AutomationServer with a powerful web server, FTP server and file system. The file system in its flash memory can store data as Excel-compatible CSV files. Standard tools (web browser, FTP client, CGI interface…) are used for local or remote access (e.g. via Internet) to the AutomationServer through the Ethernet connection and/or through integriertal telecommunications interfaces. Log data or alarms can be sent via e-mail (inc. data attachments) or SMS messages.

Integration into existing IT infrastructures is easily accomplished with the standard IP protocols: DHCP (dynamic host configuration protocol), DNS (domain name service), PPP (point-to-point protocol), SMTP (simple mail transfer protocol), SNTP (simple network time protocol), and SMNP (simple network management protocol).

The numerous field bus protocols available (Modbus TCP/RTU/ASCII, MPI, EIB, M-Bus, …) support the connection of many field devices and third-party products.
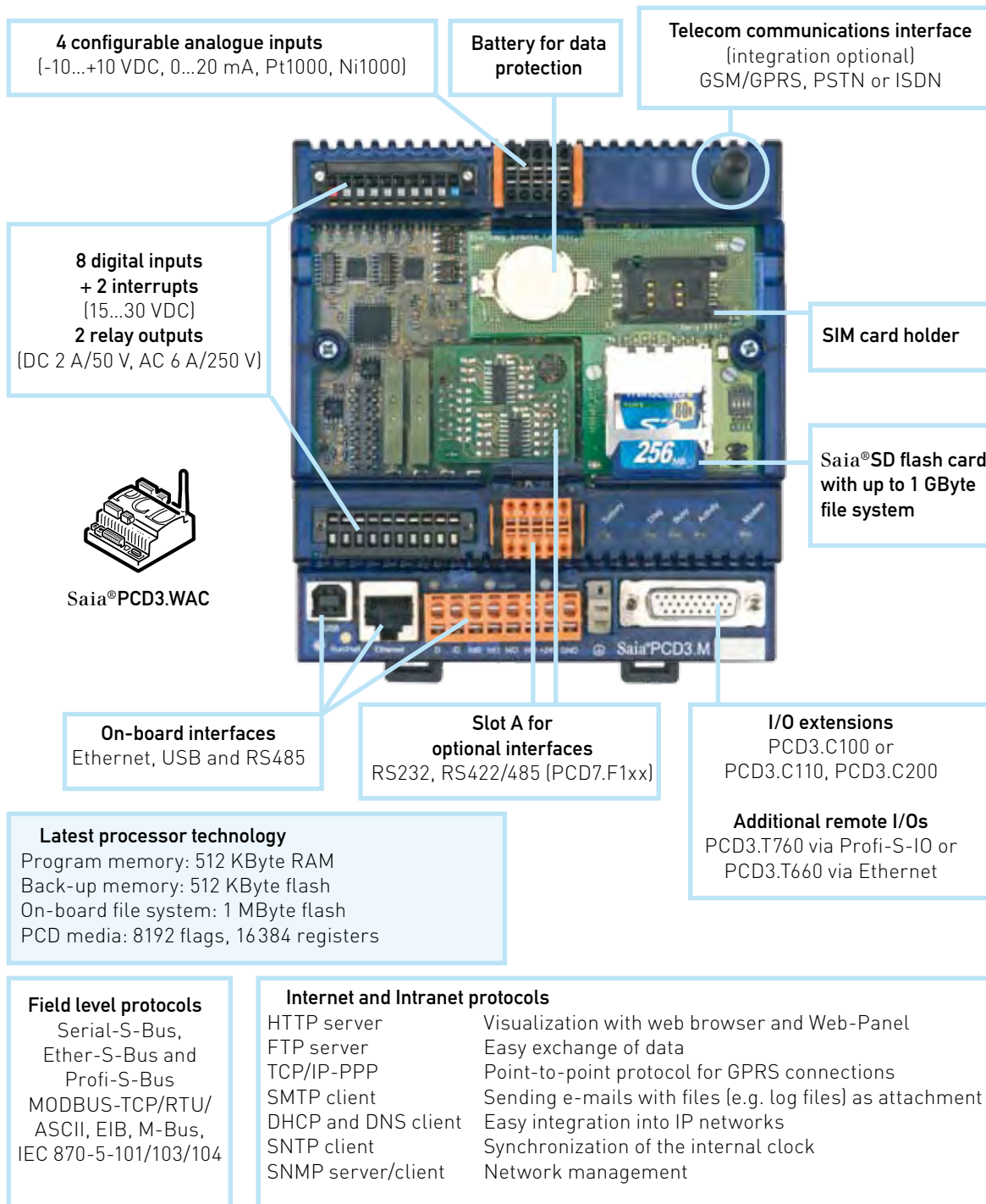
### Freely programmable for diverse tasks

The Saia®PCD3 Wide Area Controller is, like all other PCD systems, freely programmable with the PG5 programming tool. Its potential uses therefore extend much further than those of a classical RTU station, which is normally only suitable for alarm monitoring with remote alarms and data logging.

Because the PCD3 Wide Area Controller is freely programmable, has ample memory, and can be expanded with I/O extension modules, it is also suitable for sophisticated control tasks (e.g. machine control) and at the same time has the necessary integral telecommunications and Ethernet interfaces for wide area automation.

Ready-made software libraries (Fupla FBoxes and S-Web templates) for alarm management, logging of history data, transmission of e-mail, SMS, etc. are also available and simplify configuration of the Saia®PCD3 Wide Area Controller.

Technical Data

**4 configurable analogue inputs**
(-10...+10 VDC, 0...20 mA, Pt1000, Ni1000)

**Battery for data protection**

**Telecom communications interface** (integration optional) GSM/GPRS, PSTN or ISDN

**Example of application**

**8 digital inputs**
**+ 2 interrupts**
(15...30 VDC)
**2 relay outputs**
(DC 2 A/50 V, AC 6 A/250 V)

**SIM card holder**

Saia®**PCD3.WAC**

Saia®**SD flash card with up to 1 GByte file system**

**On-board interfaces**
Ethernet, USB and RS485

**Slot A for optional interfaces**
RS232, RS422/485 (PCD7.F1xx)

**I/O extensions**
PCD3.C100 or
PCD3.C110, PCD3.C200

**Additional remote I/Os**
PCD3.T760 via Profi-S-IO or
PCD3.T660 via Ethernet

**Latest processor technology**
Program memory: 512 KByte RAM
Back-up memory: 512 KByte flash
On-board file system: 1 MByte flash
PCD media: 8192 flags, 16384 registers

**Field level protocols**
Serial-S-Bus,
Ether-S-Bus and
Profi-S-Bus
MODBUS-TCP/RTU/
ASCII, EIB, M-Bus,
IEC 870-5-101/103/104

**Internet and Intranet protocols**
| | |
|---|---|
| HTTP server | Visualization with web browser and Web-Panel |
| FTP server | Easy exchange of data |
| TCP/IP-PPP | Point-to-point protocol for GPRS connections |
| SMTP client | Sending e-mails with files (e.g. log files) as attachment |
| DHCP and DNS client | Easy integration into IP networks |
| SNTP client | Synchronization of the internal clock |
| SNMP server/client | Network management |

**Application examples and areas of use**

Examples of fields of application for the PCD3 Wide Area Controllers include: the automation of networked machines/devices, district heating systems, drinking water supply, rain basins, water treatment, solar and wind energy stations, and real estate data management.

Because it supports numerous communications protocols and interfaces, the Wide Area Controller is an ideal communications gateway for foreign systems.

In addition, its large SD flash memory enables it to store data over a long period, independently of a management station, and also makes it suitable as a data concentrator.

The Wide Area Controller is also permanently available via its telecommunications interface and Ethernet port. Redundant communications paths increase the reliability and availability of the system. ■

# New members of the successful micro-browser Web-Panel family: 5.7" and 10.4" MB-Panels with VGA/TFT LCD displays

Eighteen months after the introduction of micro-browser panels, 250 customers are successfully using over 5000 devices. This success justifies our confidence and motivates us to constant expansion and improvement of our product range.



The new 10.4"
Saia®PCD Web-Panel MB



Accessories Saia®SD flash and SD card holder

### New, powerful CPU platform ready for future demands

The new 5.7" and 10.4" VGA/TFT panels are based on a new CPU platform with the proven Coldfire processor, ample memory and a new, powerful graphics controller. This controls the new VGA/TFT displays while also having enough reserves to be able, in future, to run even larger displays at a still higher resolution. The ample reserves of memory and power available with the Coldfire processor also make this CPU platform a suitable basis for the implementation of future added functions, such as a programmable logic controller or the implementation of broadcast communications protocols like MPI, Modbus, etc. This means that, in future, the micro-browser panels will also be usable with foreign devices, thereby making them web and IT compatible.

### SD flash card holder as accessory

Micro-browser panels already have a generous 4MBytes of on-board flash memory. If this memory is not enough, MB-Panels can be retrofitted with the SD flash card holder: PCD7.RD4-SD. This card holder takes SD flash cards up to 512MB, which are available from SBC. With SD flash cards, almost unlimited memory is available for:
– **Storing Unicode fonts.**
  In this way, almost any number of fonts required can be stored in the MB-Panel, including those for languages that demand much memory, like Chinese, and they can be switched to during runtime.
– **Storage of web pages**
  In this way, comprehensive web projects can be realized even for PCD controllers with relatively little flash memory. Moreover, for slow serial communications connections, page loading times are also shortened.
In addition, the SD flash can be used as backup storage for the entire MB application and configuration. When a panel is exchanged, the SD flash card is simply plugged into the new panel, making it functional immediately, without the use of specific tools.

In 2006, we launched the first 5.7" QVGA/STN micro-browser Web-Panel. One year later, we expanded the offering with the 3.5" QVGA/TFT panel. Now we are completing the next stage of innovation and expanding our range with new 5.7" and 10.4" VGA/TFT panels. However, we have not only extended and improved the display size, resolution and quality, but also functionality. As a result, we have expanded the range of possible uses while offering our customers even better scaling capabilities.

### Brilliant TFT displays with VGA resolution and touch control

The new micro-browser panels are equipped with high quality TFT LCD displays. Colour images are displayed with up to 65536 colours. Even the small 5.7" displays have VGA resolution with 480 x 640 pixels, just like the large 10.4" displays. They allow web pages to be edited once and then displayed and operated without modification throughout, from small 5.7" and 10.4" displays to PC screens. With the higher resolution, even complex system images with high information content can be output to small, low-cost displays. Thanks to the fully transparent touch membrane and TFT-LCD technology, the resultant images are pin-sharp.

### Drywall installation set

Our micro-browsers are not just for mounting in the control cabinet: they also look very good in the office or living-room, or mounted on a wall.
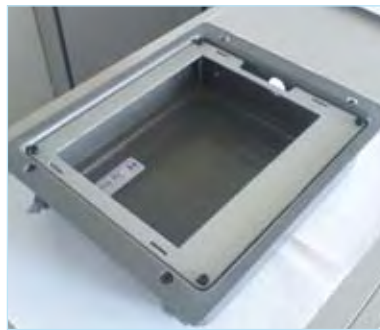
Mounting sets for both flush and on-wall installation are now available as an accessory for the 5.7" panel (in preparation for the 10.4"). As a result, this innovative technology is not just reserved to the control cabinet for the machine operator, but will also make a contribution to more comfort in the office or at home too.

### Setup extended and improved with a new, modern look

The Setup menu has been redesigned and now presents a modern, user-friendly look. It is now possible, by means of a particular touch sequence, to call the Setup at any time even during normal operation (without turning the panel off/on) and make any necessary adjustments. In addition to the various possible settings, online help can now also be called. It is also now possible to carry out firmware updates from a central location via an Ethernet network.

### A comprehensive panel family for scalable solutions

The comprehensive micro-browser panel family offers users scalable solutions for almost any requirements regarding display size, quality, resolution, operation (touch and/or keys), memory, function, mounting, costs, etc.

Micro-browser panels are suitable for a wide spectrum of applications: in infrastructure automation just as much as in machine control/operation. And all this is also available in custom-built versions. ■

New Setup menu

Mounting set for
Saia®PCD Web-Panels MB

## Overview of Saia®PCD micro-browser Web-Panels

| | 3,5" | 5,7" | | | 5,7" | | 10,4" |
|---|---|---|---|---|---|---|---|
| | PCD7.D435 | PCD7.D457 | | | PCD7.D457 | | PCD7.D410 |
| | TLCF | BTCF | STCF | VTCF | SMCF | VMCF | VTCF |
| Display colours | 256 colours | 16 grey shades | 256 | 65536 | 256 | 65536 | 65536 |
| Size | 3,5" TFT | 5,7" STN | 5,7" STN | 5,7" TFT | 5,7" STN | 5,7" STN | 10,4" TFT |
| Resolution/pixels | QVGA 320 x 240 | QVGA 320 x 240 | | VGA 640 x 480 | QVGA 320 x 240 | VGA 640 x 480 | VGA 640 x 480 |
| Resistive touch-screen | – | yes | yes | yes | yes | yes | yes |
| F keys, alphanumeric keyboard | 12 F keys + keyboard | – | – | – | 2 x 6 F keys | | – |
| Backlighting | LED | LED | CCFL | LED | CCFL | LED | CCFL |
| On-board memory for local web server | 4 MB flash | 4 MB flash | 4 MB flash | 4 MB flash | 4 MB flash | 4 MB flash | 4 MB flash |
| FTP server | yes | yes | yes | yes | yes | yes | yes |
| SD card interface (up to 1 GB) | option | option | option | option | option | option | option |
| Ethernet 10/100 MBit/s | HTTP direct/Ether-S-Bus | HTTP direct/Ether-S-Bus | | | HTTP direct/Ether-S-Bus | | |
| RS 232/RS 485 serial | Serial S-Bus | Serial S-Bus | | | Serial S-Bus | | Serial S-Bus |
| USB 1.1 slave device | Programming interface | | | | | | |
| Keyboard/barcode | 1x PS/2 | – | – | – | 1x PS/2 | 1x PS/2 | 1x PS/2 |
| Mounting kits: flush and on wall | yes | yes | yes | yes | yes | yes | yes |
| Protection type (front) | IP 65 | IP 65 | IP 65 | IP 65 | IP 65 | IP 65 | IP 65 |

# New Saia®PCD Windows® Web-Panel with Geode LX800 processor

**A new CPU generation expands our offering in Windows®-based Web-Panels. For Windows®CE panels, this means more power, memory and higher display resolutions. In the Windows®eXP sector, the excellent price/performance ratio and fanless design of these new panels makes them extremely attractive.**
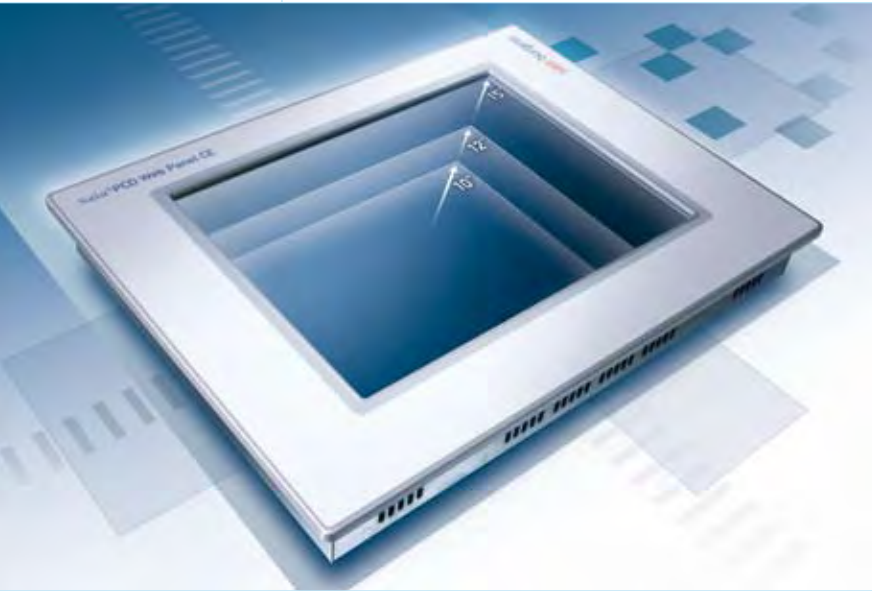


offer a screen resolution of 800 x 600 pixels; resolution for the 15" displays is 1024 x 768 pixels. Alongside the usual interfaces, such as serial port, PS/2 and 2x USB, this new CPU has the advantage of two completely independent Ethernet interfaces. This avoids the need for any switch/hub and allows for neat separation between the automation network and the factory LAN.
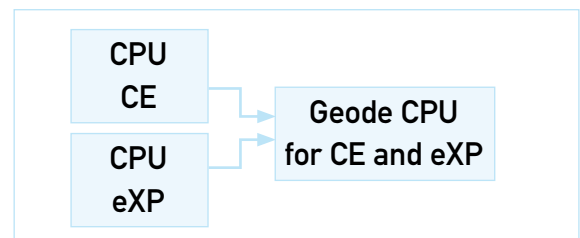


The new, universal CPU platform for Windows® panels: even better, even more economical



The new Web-Panels are also available
in the form of practical sets for wall mounting.
The set includes a plastic box, Web-Panel and removable front frame.

In spring 2005, Saia-Burgess brought Windows®-based web panels to the market for the first time. The motivation for this step arose from the need to use web technology not just for telemaintenance in connection with PCs, but also for local process control and machine operation. This laid the foundations for a strong commitment to the HMI field and, in particular, web-compatible control panels. In just three years, thousands of web panels have already found their way into applications – ample proof that the web control concept is correct.

Saia-Burgess Controls is now adding another type of CPU to its existing Windows®CE and Wndows®eXP series. Equipped with a Geode LX800 processor, the new panels occupy a position between XSCALE-based CE platforms and the eXP panels that are fitted with CELERON-M processors. In concrete terms, this means that, compared with previous CE panels, they have more processor power, greater memory, and displays of up to 15" in size. Regarding eXP panels, although the new CPU cannot quite match existing CELERON-M machines on processor power, it does however compete on price (significantly lower) and scores points for its fanless – i.e. silent – design.

The new LX800 Web-Panels can be supplied with both the Windows®CE operating system and Windows®XP embedded. They are available in display sizes 10", 12" and 15". The 10" and 12" displays

### What are the benefits of Windows®CE 6.0?
CE variants are now supplied with Windows®CE version 6.0. The speed with which this version sets to work is a significant improvement on its predecessor. Before, Windows®CE had two weak points: only 32 different processes (i.e. applications) were executable at any one time and each application was limited to max 32MBytes of memory. As a result, even when the CPU platform offered much more than 32MBytes of memory, a single application still could not use it. These restrictions have now been dropped with Windows®CE 6.0: the new version supports up to 32 000 parallel processes and a single application can claim up to 2GBytes of working memory.

### Upgrade without changing control cabinet or wiring
Saia®PCD Web-Panels with Windows® operating systems are modular in design, comprising a display unit and a CPU box. Only the CPU box is new; the display units are the same as those used with earlier panels (Windows®CE: 10"; Windows®eXP: 10", 12", 15"). It is not therefore necessary to change the front panel cut-out on existing applications. Upgrading or converting to the new panels therefore presents no problems. ■

## Saia®PCD Web-Panels CE

| | PCD7.D5100TL010 | PCD7.D5120TL010 | PCD7.D5150TL010 |
|---|---|---|---|
| **Display (inch)** | 10.4" | 12.1" | 15" |
| Technology/colours | TFT/16.7 million | TFT/16.7 million | TFT/16.7 million |
| Resolution/Pixels | SVGA 800 x 600 | SVGA 800 x 600 | SVGA 1024 x 768 |
| **CPU** | | | |
| Processor | AMD Geode LX 800 (533 MHz) | AMD Geode LX 800 (533 MHz) | AMD Geode LX 800 (533 MHz) |
| RAM | 256 MB | 256 MB | 256 MB |
| Compact Flash Card slot | 1 x external with 128 MB CFC | 1 x external with 128 MB CFC | 1 x external with 128 MB CFC |
| **Schnittstellen** | | | |
| Ethernet | 2 x 10/100 Base, RJ45 | 2 x 10/100 Base, RJ45 | 2 x 10/100 Base, RJ45 |
| USB | 2 x USB 2.0 | 2 x USB 2.0 | 2 x USB 2.0 |
| Serial | 1 x RS232 | 1 x RS232 | 1 x RS232 |
| Keyboard/Mouse | Mini DIN PS/2 | Mini DIN PS/2 | Mini DIN PS/2 |
| **Operating system/Browser/Server** | | | |
| Operating system | Windows CE 6.0 | Windows CE 6.0 | Windows CE 6.0 |
| Browser | Internet Explorer Micro-Browser Applet-Viewer | Internet Explorer Micro-Browser Applet-Viewer | Internet Explorer Micro-Browser Applet-Viewer |
| Saia®.NET Web-Connect | pre-installed | pre-installed | pre-installed |
| Server | Web-Server FTP-Server File-Server (enabling) VNC (telemaintenance) | Web-Server FTP-Server File-Server (enabling) VNC (telemaintenance) | Web-Server FTP-Server File-Server (enabling) VNC (telemaintenance) |

## Saia®PCD Web-Panels eXP

| | PCD7.D6100TL010 | PCD7.D6120TL010 | PCD7.D6150TL010 |
|---|---|---|---|
| **Display (inch)** | 10.4" | 12.1" | 15" |
| Technology/colours | TFT/16.7 million | TFT/16.7 million | TFT/16.7 million |
| Resolution/Pixels | SVGA 800 x 600 | SVGA 800 x 600 | SVGA 1024 x 768 |
| **CPU** | | | |
| Processor | AMD Geode LX 800 (533 MHz) | AMD Geode LX 800 (533 MHz) | AMD Geode LX 800 (533 MHz) |
| RAM | 512 MB | 512 MB | 512 MB |
| Compact Flash Card slot | 1 x internal with 1 GB CFC 1 x external | 1 x internal with 1 GB CFC 1 x external | 1 x internal with 1 GB CFC 1 x external |
| **Interfaces** | | | |
| Ethernet | 2 x 10/100 Base, RJ45 | 2 x 10/100 Base, RJ45 | 2 x 10/100 Base, RJ45 |
| USB | 2 x USB 2.0 | 2 x USB 2.0 | 2 x USB 2.0 |
| Serial | 1 x RS232 | 1 x RS232 | 1 x RS232 |
| Keyboard/Mouse | Mini DIN PS/2 | Mini DIN PS/2 | Mini DIN PS/2 |
| **Operating system/Browser/Server** | | | |
| Operating system | Windows XP embedded | Windows XP embedded | Windows XP embedded |
| Browser | Internet Explorer | Internet Explorer | Internet Explorer |
| Virtual Java Engine | Sun Microsystems | Sun Microsystems | Sun Microsystems |
| Saia®.NET Web-Connect | pre-installed | pre-installed | pre-installed |
| Server | Web-Server FTP-Server File-Server (enabling) VNC (telemaintenance) | Web-Server FTP-Server File-Server (enabling) VNC (telemaintenance) | Web-Server FTP-Server File-Server (enabling) VNC (telemaintenance) |

# SD-Flash starter kit and typical applications

One year ago, Saia® started introducing industrial and IT-compatible data management for the Saia®PCD series. Memory capacities range from a few megabytes directly on the controller up to 4 gigabytes for bulk storage with SD flash cards.

### Web-IT starter kit

To make it as easy as possible for users to access the new Web-IT functions, Saia-Burgess has launched its Web-IT starter kits. These kits contain all the essential elements to identify advantages and benefits. Examples help users understand the necessary program steps and integrate them accordingly into their own applications.

**PCD3.R600 SD card modules**
I/O module to read and write Saia®SD cards for PCD3.M controllers, can be used in slots 0–3.

**USB SD card reader**
To allow the reading and writing of SD cards on a PC.

**Saia® flash-card PCD7.R551M04**
This industrial flash-card is suitable for backing up programs and storing data. A demo project can be uploaded without further preparation directly onto a PCD3.M5 with 1 MB of memory.

**PCD7.R-SD256 SD card**
This SD card is pre-formatted for secure operation and can be used as industrial bulk storage. Tools and demo projects can be found directly on the SD card.

### Projects

#### Web-IT: easy and always available

Even in sensitive projects, such as the filter systems for laboratory equipment in hospitals, Web-IT functions can successfully be used. For example, in this Tel Aviv hospital, a web server is used for visualization, an FTP server for transmitting recorded data, while e-mail and SMS are used for sending alarms and messages.

#### Data logging: official verifiability

In many countries it is a statutory requirement for anyone using groundwater for commercial or in-dustrial purposes to keep a utilization log. For example, when groundwater is needed as a coolant, a Saia®PCD3 will control the pumps, simultaneously registering the relevant data and storing it in a .CSV file. This data is periodically transmitted via FTP to a PC, where an EXCEL application will automatically draw up an official utilization log.

### Data storage for 24 h service tasks

A PCD3 controller runs and monitors a number of washing machines in a self-service launderette. All functions (coin recognition, washing programs, washing times, service intervals, etc.) are represented in an S-Web project. The relevant data is stored in .CSV files. This means that any pending service work or repairs can be efficiently planned and executed.

### On-site data storage and archiving

When fully equipped, up to 4 GB of memory is available to the user. This capacity can be used for larger web projects or data logging. It can also be used for storing documents, data sheets, manuals and regulations, or for backing up entire PG5 projects, including firmware and tools. This makes it easier to work on-site.

### Convenient editing of recipes in EXCEL

In the production of plastics pellets, the different mixes and colour combinations are stored in tabular form for each job. With each production order, the PCD controller will automatically read the appropriate composition and execute it. The operator can conveniently enter new orders in EXCEL from his office desk. Data is transmitted to the controller via FTP. ∎
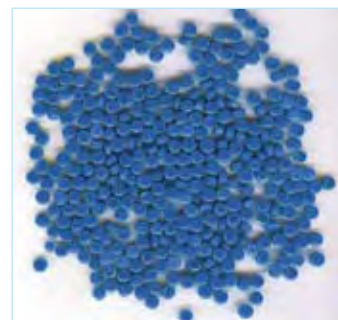
# Saia®S-Web-Editor Version 5.14
# Another chapter in the success story
# of this tool

**This good tool just got better. The new version 5.14 includes numerous useful additions and improvements. Today over 700 users are utilizing the Web-Editor and exploiting the benefits of our innovative S-Web concept.**

What is new in version 5.14?
– History data logging in flash memory
– New, intuitive dialogues for macro configuration
– Auto-scaling for higher screen resolutions
– "Nano" Web-Editor for the PCD2 eDisplay
– "Move" function for all "Painter" objects
– "Polygon rotate" function
– "Tacho" macro
– Extension of macros for "Login" and "URL and TEQ jump"

### History data logging (HDLog) and web trending now supported by PCD flash file system

Previously, the HDLog FBoxes wrote history data to PCD RAM data blocks for display by the web browser as trend curves. RAM memory in PCD controllers is limited and it is not possible to record data for as long as might be wished. With the new version of the HDLog FBoxes and this new Web-Editor, history data can now also be stored in CSV files on flash memory modules for display in the web browser. Thanks to the large capacity of flash memory modules (up to 4 x 1GByte SD flash cards per PCD controller) process data can now be stored in controllers for a much longer period and called up for analysis from any location via the web browser. The adjacent diagram shows how it works in principle.

HDLog data is stored in the flash file system as Excel-compatible CSV data. Therefore, a standard FTP client can be used to upload data to a higher ranking system for further processing, e.g. with Excel. At the same time, a PC browser or Micro-Browser can as usual display log data in trend curves, according to the configuration defined in the Web-Editor.

### New macro dialogues allow easy, intuitive configuration

Version 5.14 provides programmers with new, intuitive dialogues for use in configuring macros. Functions and settings can now be selected from predefined lists. These dialogues also include a short description of the macro, so there is no more need to consult online help. Together, they increase the ease of use and prevent configuration errors. With the introduction of these new dialogues, it has also been possible to reduce the number of macros while retaining the same functionality. All in all,
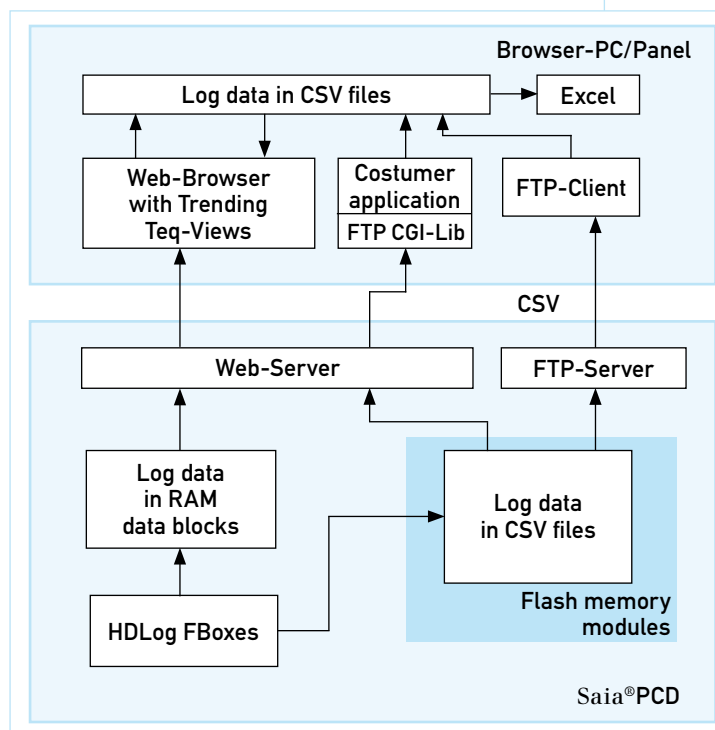
use of the tool is made even easier and more efficient, with a positive effect on engineering costs.
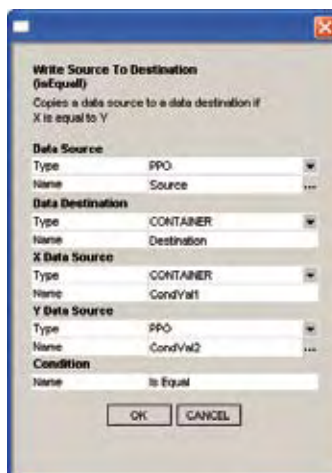
**Automatic scaling at higher screen resolutions
-> Web pages, once edited, can be displayed anywhere**

When web pages are edited, they are always adjusted to a particular screen resolution. If such web pages are displayed on a browser device with a higher resolution, only part of the screen area will be used and, depending on the resolution, the page display will be very small. With the new "Autoscale" function, web pages edited for a ¼ VGA display can now displayed in the correct size on a PC with XGA resolution by a web browser (IMaster.jar Applet and Micro-Browser). The important thing is that these web pages (TEQ files) are only edited once. This saves valuable engineering time and, with that, costs. It is just a matter of calling an individual HTML file for each resolution.

**"Nano" Web-Editor for PCD2 eDisplay**

Alongside the "Basic" and "Advanced" editions of the Web-Editor, a "Nano" edition is now also available. It allows the easy editing of web pages for the new PCD2 eDisplay. Project settings (resolution, macro library, graphics format, etc.) are preset for the eDisplay and cannot be modified. In future, the "Nano" edition will be included as part of the basic PG5 package. Web pages for the eDisplay can also be edited with the "Basic" and "Advanced" editions.

**When pictures learn to walk –
dynamic movement of objects in browser**

An X/Y offset can be used to position Painter objects at will on the screen in the browser. For example, it can be used to move a GIF graphic during runtime to represent the progress of a process. The position of the graphic can also be defined by the PLC application/process, or by the machine.
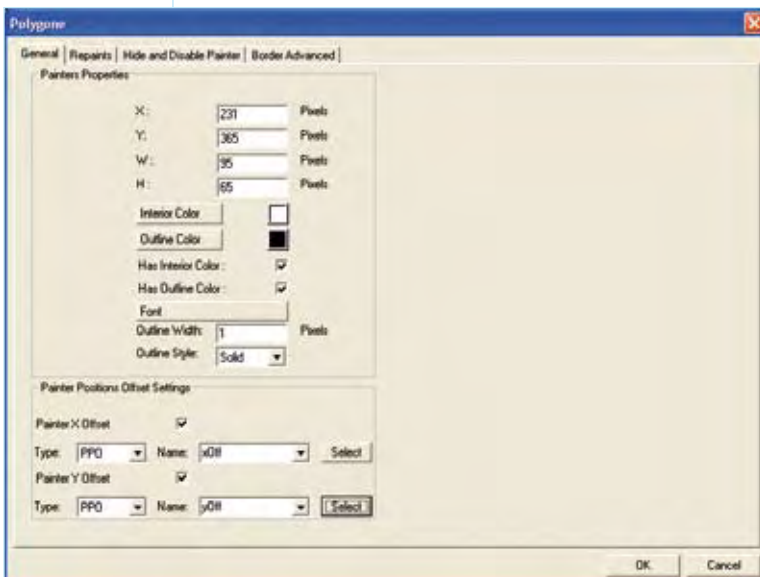
In this way, all Painter objects (graphics and text) can be moved dynamically in the browser window.

**Rotation of polygonal objects**

Polygonal objects can not only be moved, they can also be made to rotate on their own axis. The angle of rotation can be specified dynamically by a process point (PPO) or container. It is therefore possible to display dynamically during runtime the current angle position of part of an installation or machine.

**"Tacho" macro**

The new "Tacho" macro can be used to create analogue dial-type instruments. The angle of the pointer on the dial is defined via a process point (PPO) or container. The display range and scaling can be adjusted at will.
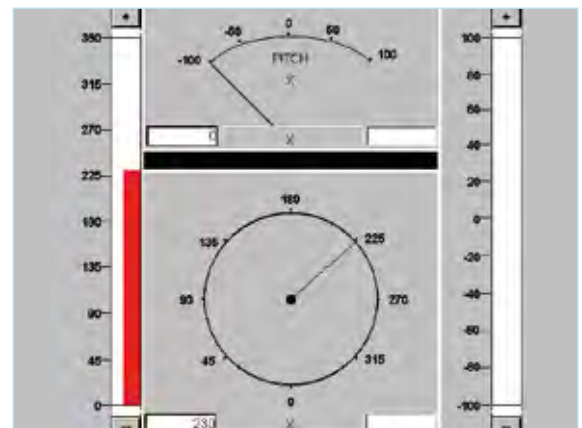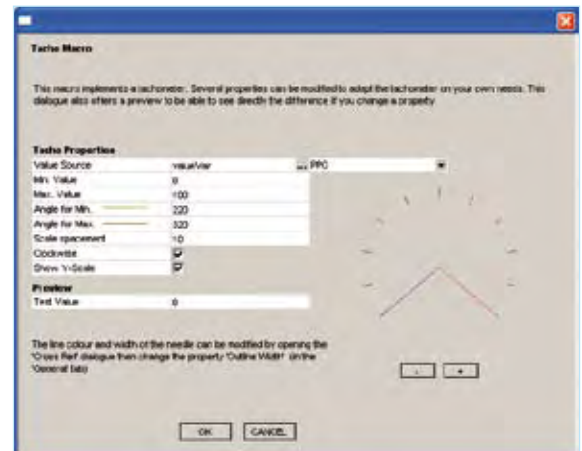
### Improved access protection with new Login macros

Access to web pages can be protected with a password request. It is now possible to request not just a password, but also a user name. Moreover, after a successful login, it is now possible to jump automatically to individual, user-dependent TEQ pages. This enables several users to share one PCD Web-Server, having access to their own pages, but not to the web pages of other users.

### Extended URL and TEQ view navigation

The user presses buttons to navigate manually inside a web project (TEQ jump) or between several web projects (URL jump). However, it may sometimes necessary for the process to execute/force an automatic change of page or server, without any intervention by the operator. These capabilities support greater comfort and security in user prompting. Invalid entries or incorrect manipulations by the operator can be avoided. For example, when an alarm occurs, the alarm list should be displayed automatically. Or when an operator leaves the machine, after a certain period without panel activity, the login page should be displayed again.

For this purpose, the existing "Jump" macros have been extended with new functions. It is now also possible to execute URL jumps automatically. The jump address (TEQ view or URL) can now be stored in a string, container, HTML tag or PPO. In this way, destination addresses can be adapted dynmically during runtime.
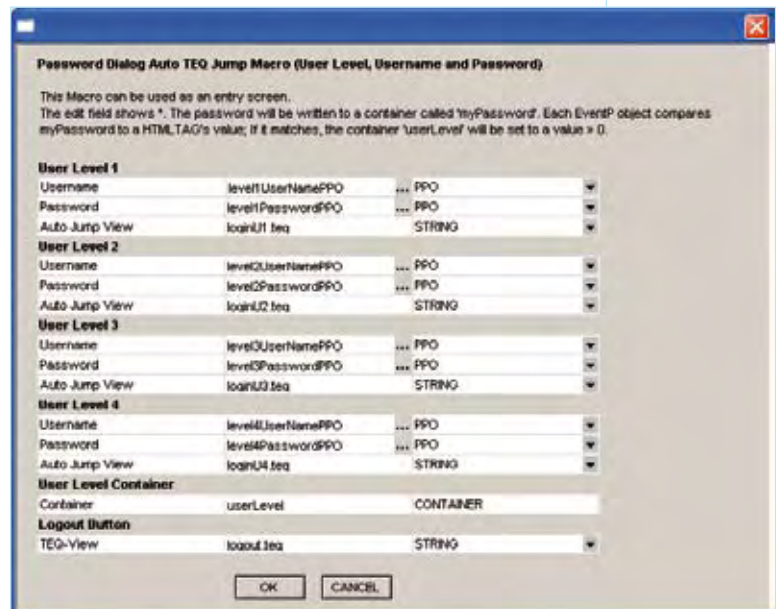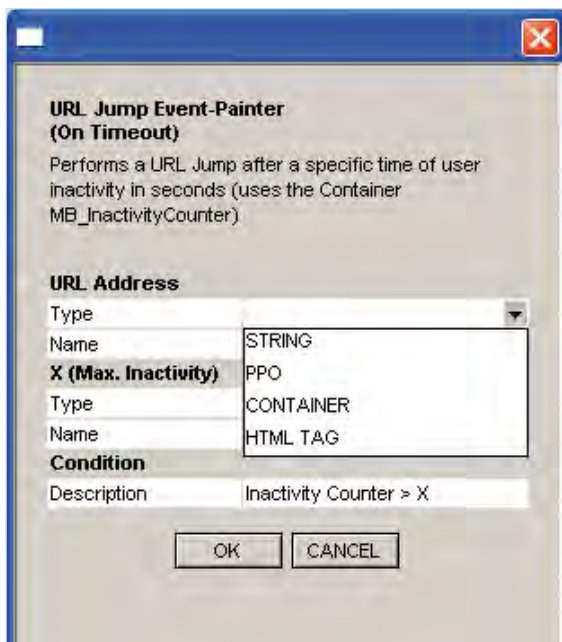


### New PCD Web-Server

In 2000, we delivered the first PCD controllers with an integral Web-Server. This Web-Server has proved itself in the field 100 000 times and has been continuously extended with new functions. But, as with a building, it is not possible to add extensions indefinitely without renovating or reinforcing the foundations. For this reason, we have completely rewritten our PCD Web-Server and replaced it with a new, more powerful, future-oriented version (while others are still dealing with the first version...). All previously acquired experience and findings have, of course, contributed to this development.

The new Web-Server is absolutely compatible with the old, i.e. you do not have to rewrite existing applications. In addition, however, the new Web-Server offers many advantages. It is HTTP 1.1-compliant and now also supports HTTP caching. This considerably reduces the time required for loading web pages or files. The IMaster.jar applet is now only loaded the first time a connection is established, or if a newer version is located in the controller. A new design, optimized for our PCD systems, has resulted in an overall increase in performance. This enables, for example, much shorter reaction times for simultaneous requests from several web browsers. In addition, diagnostic capabilities have also been extended and improved. The new PCD Web-Server provides you with a solid basis and sufficient reserves of power to realize future plans. With it, you will be able to continue to stand out against the competition. ■

Saia®PG5 Controls Suite
One engineering software tool
for all

# Saia®PCD system-building kit for automating infrastructure projects – "no risk, no limit"!

Over the past 10 years, why have we been able, from such small beginnings, to increase our market share to 10 percent in competitive, mature markets? One possible explanation is the power of innovation. But innovation alone is not enough. Something more is needed. That something is a product range with specific characteristics and values: the foundation for success.

Saia®PCD system-building kit
The building kit for automation
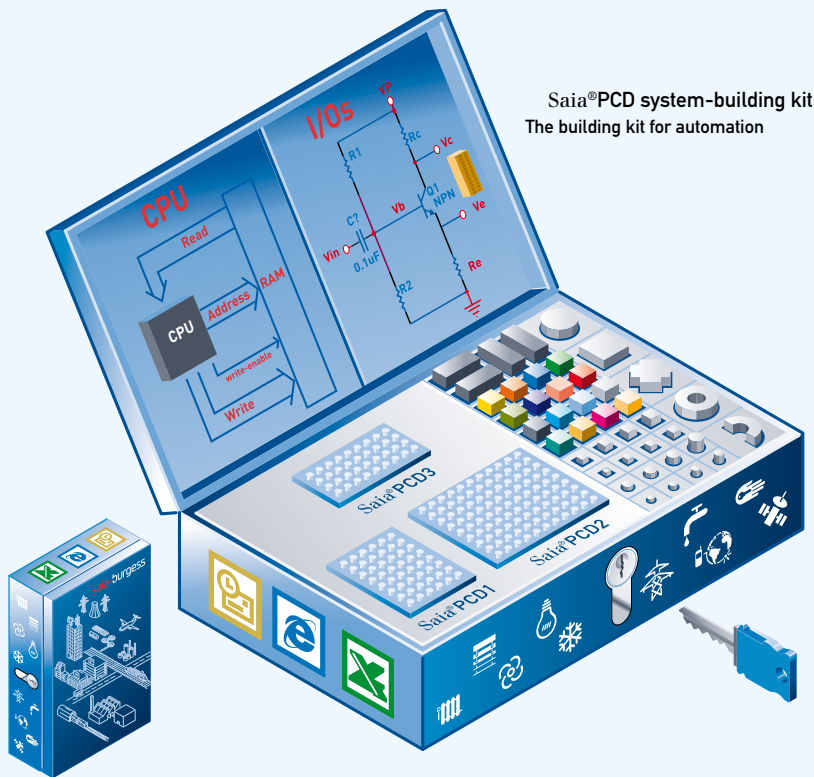
Saia®PCD system-building kit
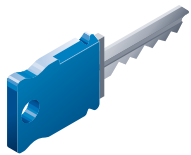
Saia®PCD Flash-Key
The key
to the automation system

### What distinguishes these values?

The Saia®PCD range is a consistent system-building kit for control and automation technology.

More than the fragmentary offerings of its competitors, the Saia®PCD range meets the basic needs of the operators and proprietors of infrastructure projects. These people need "no risk, no limit" solutions.

Saia®PCD1    Saia®PCD2    Saia®PCD3

The product illustration of our Saia®PCD building kit

### "No risk, no limit".
### What does that mean?

It means, as far as possible, no risks with regard to both economic operation and the value of any investment made; no limits to the integration of very diverse types of automation technology, whether already installed or to be purchased in the future.

It means: an installation that can be extended or whose use can be changed simply and reliably across its entire life cycle; and no cost traps involving forced investment in "modernization" (perhaps because the control and automation electronics have aged and become obsolete much faster than the overall installation).

### What essential, core characteristics mark our system-building kit for infrastructure automation?

– It has industrial quality throughout (IEC 61131-2) with life cycles exceeding 15 years (no risk).

– It includes three different, basic platforms, or three types of housing, that can be equipped with over 100 different interface modules for actuators, sensors, and communications. All conceivable applications can be covered with a single building kit. Upgrades, exchanges and extensions are possible with ease, at any time (no limits).

– Just one, common software tool for the development of solutions. Rather like a shopping bag (see picture), it is required during the procurement phase (programming). Subsequently, the only software tools needed are already familiar and present, for example a web browser, FTP clients or – for updates – our plug-in flash memory modules, a simple key to the automation system

"No risk, no limit". These are basic requirements for decision makers, and the Saia®PCD system-building kit meets them because it can also be easily combined with other, existing system-building kits. No other manufacturer can seriously make the same claim! We are the only ones to supply the necessary coupler modules, from our own company, with deliveries. ∎

# The new Saia®PCD1

**The 2nd generation of the smallest basic platform in the Saia®PCD system building kit. In 2005/2006, with the Saia®PCD3 series, we introduced a completely new platform. In 2007/2008, with the new Saia®PCD2, we completely updated a successful platform that had come of age.**
**We are now doing the same with the Saia®PCD1, the smallest of our platforms. Its updating will extend throughout 2009/2010, taking place in two stages with two different Saia®PCD1 versions.**

First we will bring Saia® web and IT technology to the smallest, most economical platform we have provided for the Saia®PCD automation building kit.

Then we want to produce a construction of Saia®PCD1 that is more flexible and more powerful. Then it will really be "half" of the Saia®PCD2.

Both versions of the new Saia®PCD1 will have the same external dimensions (height, width) as the first generation Saia®PCD1 and are compatible with all existing I/O modules.

With the implementation of this plan, today's PCD1 customer will in future be able to choose whether he wants to get the new technology even more cheaply than before, or whether he wants to have more power and functions at the same price.

### What are the main innovations and improvements in the Saia®PCD1 V 2.0 – type M2?

Development of the first version of the new Saia®PCD1 generation V2.0 is already up to speed. The aim is to produce this smallest and most economical Saia®PCD with full web and IT functionalities. We have given this version the internal project name M2.

The fundamental change in the M2 will be that the CPU will no longer be mounted on the first level above the I/O level. The CPU is fixed at the base level. The CPU already has 16 integral I/Os as standard.

In addition to the 16 integral I/Os on the CPU board, two Saia®PCD2 I/O modules can be plugged into the base level. The possibility exists, of course, of plugging optional cards for extending functionality into the base level.

Although the housing will not include an integral nanobrowser control unit, it will still be possible to connect one locally directly to the new Saia®PCD1. No additional power supply will be necessary to do this, nor will it take up any serial user interface.

As with the existing Saia®PCD1 generation, it will still be possible to remove the housing cover easily without the use of tools. Regarding mounting depth, the M2 version of the new Saia®PCD1 will be even flatter than existing Saia®PCD1 devices.



The new Saia®PCD1.M2
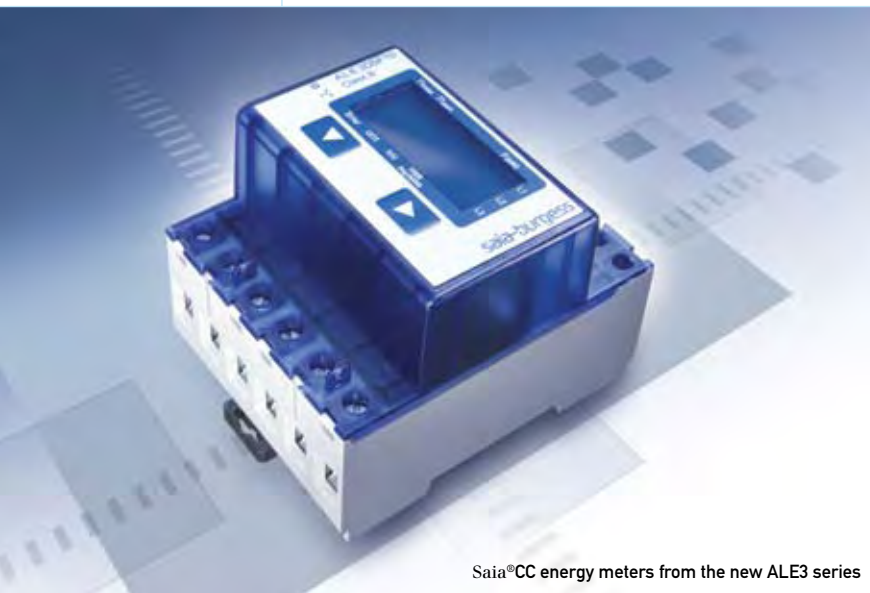even flatter than existing Saia®PCD1 devices

The first Saia®PCD1 CPU of the new generation will, alongside the integral I/Os, offer practically all the web and IT functions that are already familiar from the Saia®PCD3 CPUs and the new Saia®PCD2 CPU. In this way, functional continuity and consistency throughout the entire Saia®PCD system building kit is maintained. ∎
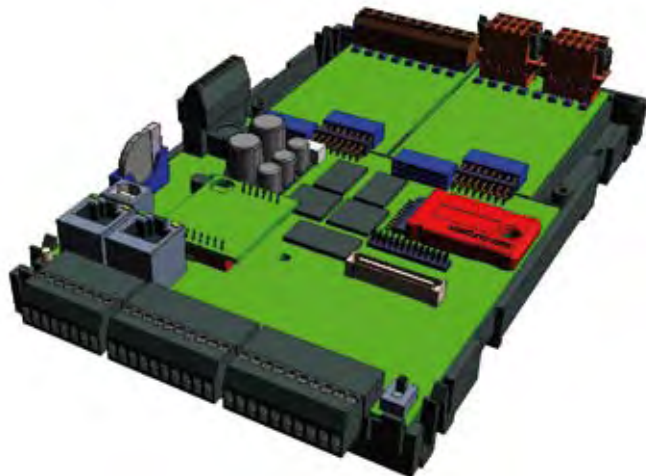


Clarification of the basic concept of the new
Saia®PCD1, M2 version

# From classic to modern with Saia®CC: multifunctional energy meters with integral bus capabilities

Saia®CC energy meters are now being expanded to include LCD displays. This new series is colour-matched to the Saia®PCD3 series and gives Saia®CC components a new, clearly recognizable face. To offer solutions for the widest variety of applications, added functions have been incorporated. This means that not only can total consumption be captured, but also partial consumption. This offers the possibility of interim billing or of useful data for monitoring the installation. Alongside the display of such errors as phase loss, it is possible to query values for voltage or current and thus obtain a direct insight into installation status. This applies equally to production equipment in industry, machine centres, and to infrastructure in building complexes or power distribution in residential construction.



Saia®CC energy meters from the new ALE3 series

**The new energy meters with integral LCD display**



Saia®CC energy meters are introduced in precision class 1 (IEC 62053), specifically as MID-compliant meters according to EN50470 class B. The LCD display is back-lit for optimum reading in a dark setting. For meters with added functions, this backlighting is turned off after approx. 20 seconds and the LCD can be read without the backlight. The dual tariff meter even has capacitive support for the LCD display, allowing the status of the meter to be read with backlighting when power is disconnected.

Creating the compact, 4-wire, ALE3 series of energy meters has laid the foundation for other products with LCD displays. This series will therefore shortly be expanded to include converter meters (ALW3), which are used to capture consumption values the high current field. Programming of the converter ratio is enabled by opening a hardware jumper. This wire jumper can be secured with the optional cover seal. This makes the converter configuration MID-compliant.

By keeping to the basic structure of the real power meter, a successful design that meets reliability and precision requirements is retained, ensuring a cost-optimized solution with a short time-to-market of less than one year.

The same approach has been applied to development of the compact series of 17.5mm wide 32A meters (ALD1), which is also almost market-ready. As with the 4-wire energy meters, the single-phase, 32A meter again offers not only the basic device with a simple kWh display, but also a device with expanded functions, such as the instantaneous display of power, voltage and current.
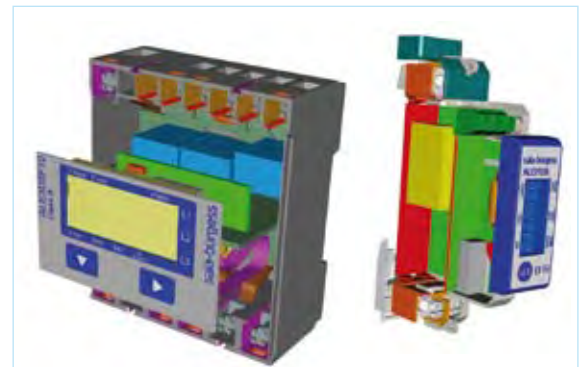
### Prospects for Saia®CC energy meters

With growing awareness of energy resource limits, energy control and optimization has gained in importance to demand more than just the remote polling of meter status. To satisfy these new requirements, within the new generation of Saia®CC energy meters an internal interface has been defined that, via an add-on module, allows appropriate bus protocols to be supported. At present, connections to M-Bus and Saia®S-Bus on an RS485 basis are provided. This approach allows Saia-Burgess Controls to react with innovation to changes in the market. ■



Via the integral auxiliary board, any choice of bus protocol can be attached and used for communication.

### European measuring instrument directive, MID, 2004/22/EG

The measuring instruments directive (MID) lays down specific requirements for measuring instruments with the aim of achieving recognized conformity across Europe and thereby replacing initial calibration for the groups of measuring instruments defined. For real power electric meters, the category concerned is MI-003.

Saia-Burgess Controls Ltd meets the requirements of conformity through module B (type examination) and module D (basis of quality assurance in production).

MID-compliance is identified by the CE mark (a square enclosing the letter M and the last two digits of the year of manufacture) and the 4-digit number of the notified body in charge.

The "notified body" is the agency in charge of conferring MID conformity. For $Saia^®$CC energy meters, the relevant body is METAS, the Swiss Federal Office for Metrology.

# $Saia^®$CC expands its range with 24 VDC power supplies, output capacity between 60 and 240 W

Saia®PCD products are generally supplied with 24VDC. To offer a single-vendor solution, the Saia®CC range has been expanded to include power supplies. These have also been colour matched to the design of the Saia®PCD3 range and, when combined with Saia®PCD products, offer solutions for many fields of application.

These power supplies are built as switch-mode power supplies (SMPS). This technology provides the supplies with a very high level of efficiency and correspondingly low power losses, a compact size, high voltage stability and integral protection against short-circuits and overloading.

**The product range is divided among 4 device groups:**
– Power supplies for 24 VAC supply voltage, as frequently used in HEAVAC applications.
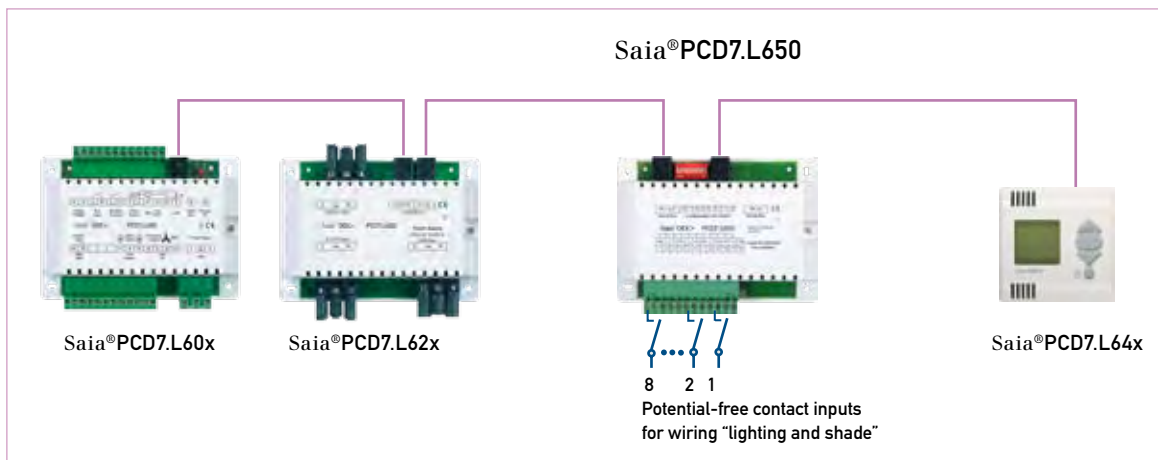– Power supplies for the single-phase supply of 115 to 230 VAC, suitable for applications in infra-structure projects including machine building.
– Power supplies for the two-phase supply of 400 to 480 VAC, suitable for applications in 3-phase networks, such as frequently occur in machine building.
– Single-phase power supply with integral battery charger module for 24 VDC lead batteries, suitable for applications in which high controller availability is ensured independently of the mains via a battery supply. ■

| Product | Input voltage | Output data | Type | Features |
|---|---|---|---|---|
| | Single-phase 24VAC / 40VDC | 24VDC, 3A<br>24VDC, 5A<br>24VDC, 7A | Q.PS-AD1-2403<br>Q.PS-AD1-2405<br>Q.PS-AD1-2407 | Short-circuit and overload protection |
| | Single-phase 115–230VAC | 24VDC, 2.5A<br>24VDC, 5A<br>24VDC, 10A | Q.PS-AD2-2402<br>Q.PS-AD2-2405<br>Q.PS-AD2-2410 | Short-circuit and overload and over-voltage protection. Output voltage adjustable from 22–26VDC |
| | Two-phase 400–480VAC | 24VDC, 5A | Q.PS-AD3-2405 | Short-circuit and overload and over-voltage protection. Output voltage adjustable from 22–26VDC |
| | Single-phase 115–230VAC / 24VDC Lead battery | 24VDC, 5A | Q.PS-ADB-2405 | Short-circuit and overload and over-voltage protection. Charging current adjustable from 1–5A, battery diagnosis, diverse charging modes. |

# Attractive addition to portfolio for integral room automation solution

The PCD7.L6xx product series has made a very good start. Even in its launch year, it exceeded the target for controllers sold. With the new PCD7.L603 and PCD7.L650 modules, flexibility is further increased.
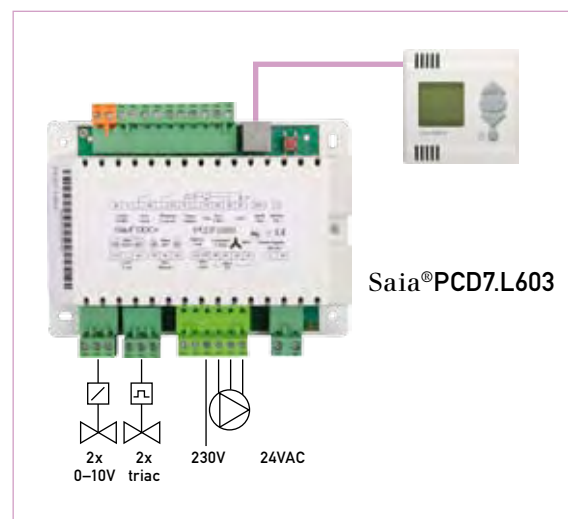
Saia®PCD7.L650



Saia®PCD7.L60x    Saia®PCD7.L62x    Saia®PCD7.L64x

8    2    1
Potential-free contact inputs
for wiring "lighting and shade"

### Separate input module for the field of light and shade applications (L650)

The new extension module for light and shade – Saia®PCD7.L650 – allows the control of lighting and blinds via up to 8 potential-free contacts. Standard electrical components can therefore easily be combined with the room controller.

### Expanded spectrum of use for 24V valves (L603)

The Saia®PCD7.L603 room controller with 24V supply voltage has been expanded to a 3-stage fan controller through potential-free relays. This also allows the terminals to be reconfigured. They can now be plugged in separately for the valves and relays, further simplifying installation. ■



Saia®PCD7.L603

2x          2x       230V      24VAC
0–10V     triac

## New room controller in compact form with much functionality

From April 2009, the Saia®PCD7.L7 portfolio will be further extended by the addition of four new, very attractively priced room controllers. Compactly built for surface mounting, they are suitable for radiators, cooling ceilings and VAV systems. These PCD7.L790…PCD7.L793 controllers are available in 4 different hardware versions and all have a serial RS485 interface with Saia®S-Bus. They are software-compatible with PCD7.L60x devices and can therefore be combined with anything from the existing range. All control elements and electronics are located in the upper part of the housing and all terminals in the separate, lower part of the housing. This means that, during installation, the electronics and all visible parts are protected. The upper part is only attached to the fully mounted and wired up lower part when commissioning takes place. ■



New room controller
Saia®PCD7.L7x

# The largest Saia®PCD7.Lxx integrator
# – 5 projects in the first 12 months

One year after the launch of the new room controller line, our product management analysed the largest customers and applications to identify starting points for further expansion of and improvements to the portfolio. In the process, we were surprised to note that the largest user in the first 12 months was a system integrator with the smallest possible company size. That company is Emge from Alzenau in Germany, a long-standing Saia®PCD system integrator. Emge is quite deliberately and on principle "just" a one-man business. It is an extremely innovative and economically highly successful enterprise. In one year it carried out five projects with the new Saia®PCD7 room controllers. These were mainly small to medium-sized hotel or office projects.

For these projects, 19 new Saia®PCD Web-Panels were also used alongside the new room controller technology from Saia-Burgess. Based on Saia®PCD3, not only were the web capabilities of the Saia®PCD range used, but also its new IT features. We organized a small celebration at the offices of our German affiliate in honour of such a great achievement by such a small business. Mr Emge was awarded a prize and was able to describe to us his experiences with us and our technology. Unfortunately, he did not want to make a speech in front of the entire staff, as he did not have enough time to prepare one. In view of the size of his organization and its project volume, this is surely a very valid reason.

Our "largest" L6 customer: Mr Emge (2nd from right) at a celebration in the premises of Saia-Burgess' German affiliate.

P.S.: Mr Emge does not go in for short-sighted "purchasing optimization". He does not himself integrate any "cheap" products from third-party suppliers into the Saia®DDC+ automation system. This approach pays him in the form of good profitability and productivity. It enables him, over a 12 month period, successfully to deal with projects involving almost 200 KEuro of Saia®PCD hardware. ■

Example: small hotel automated with new Saia®PCD web and room controller technology
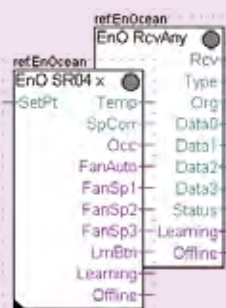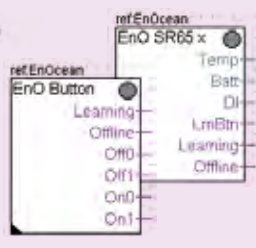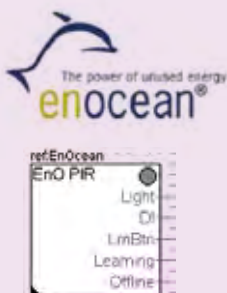
## EnOcean in motion

A new FBox library for EnOcean now also supports receivers and transceivers from Omnio and Thermokon. In addition, bidirectional communication has been implemented for sensor technology and switched actuators. By receiving and transmitting instructions for switching or adjusting, EnOcean becomes a genuine alternative to hard-wired bus systems for lighting control and room automation systems. ■

# Modernization of existing systems: fast, reliable, but still economical – Saia®PCD offers the technical basis

Since mid 2008, Saia-Burgess Controls has offered a conversion set with Saia®PCD technology for Staefa Integral TS1500 (NRUF or NRUH) systems, which have been on notice for some time.
This conversion kit makes it possible to modernize existing equipment without laborious and cost-intensive reconstruction of the control cabinet.



To deal with this problem, a Staefa Integral TS 1500 adapter board was developed that can be inserted quickly, without rebuilding the control cabinet, when a replacement is required. Since the adapter board can be equipped with a PCD2.M150 or PCD2.

M5540, there are almost no limits to the range of uses. Even locking onto BACnet®/IP presents no problem with a PCD2.M5540.

Any existing I/O wiring and the power supply are retained in full. Any existing field level (actuators or sensors, including special Staefa sensors) can still be used.
At a stroke, the existing control system can be replaced with new, advanced Saia® technology.

After just three months, Saia-Burgess Controls has been able to book orders for more than 1000 conversion kits.

Offering customers this kind of conversion system with proven Saia® technology represents the best possible solution to previously unresolved problems faced by the operators and owners of existing installations when suppliers discontinue systems without providing equivalent replacements.

**We also help customers with old Siemens® or Johnson Controls systems installed, who now wish to modernize**

For some time, a software driver has been available from Saia-Burgess Controls for the Johnson Controls N2 bus. It provides an easy way of putting new Saia®PCD2.M5 or Saia®PCD3.M5 control devices on top of an existing installation. The entire system is therefore brought up to the level of the third millennium with regard to its network, IT, web and telecommunications technology, opening it up on every side.





Control cabinet before and after conversion: the existing Staefa controller is on the left, the Saia-Burgess Controls conversion set with PCD2.M5540 is on the right
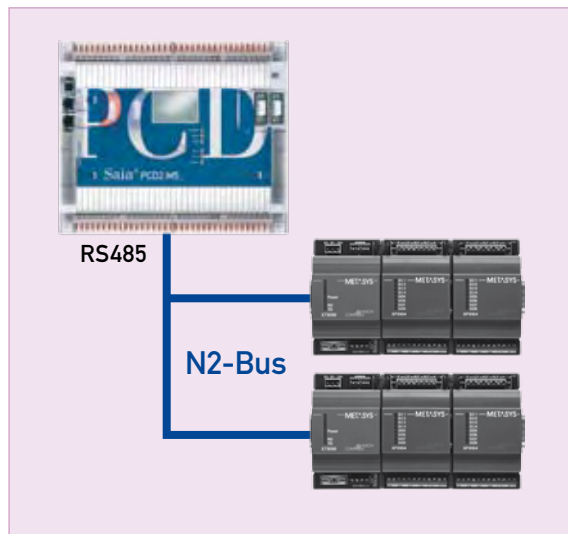
Saia®PCD2.M5 controller as master to JCI slave devices



Existing P-Bus data point modules are coupled to a Saia®PCD controller via a gateway from the Persy Company
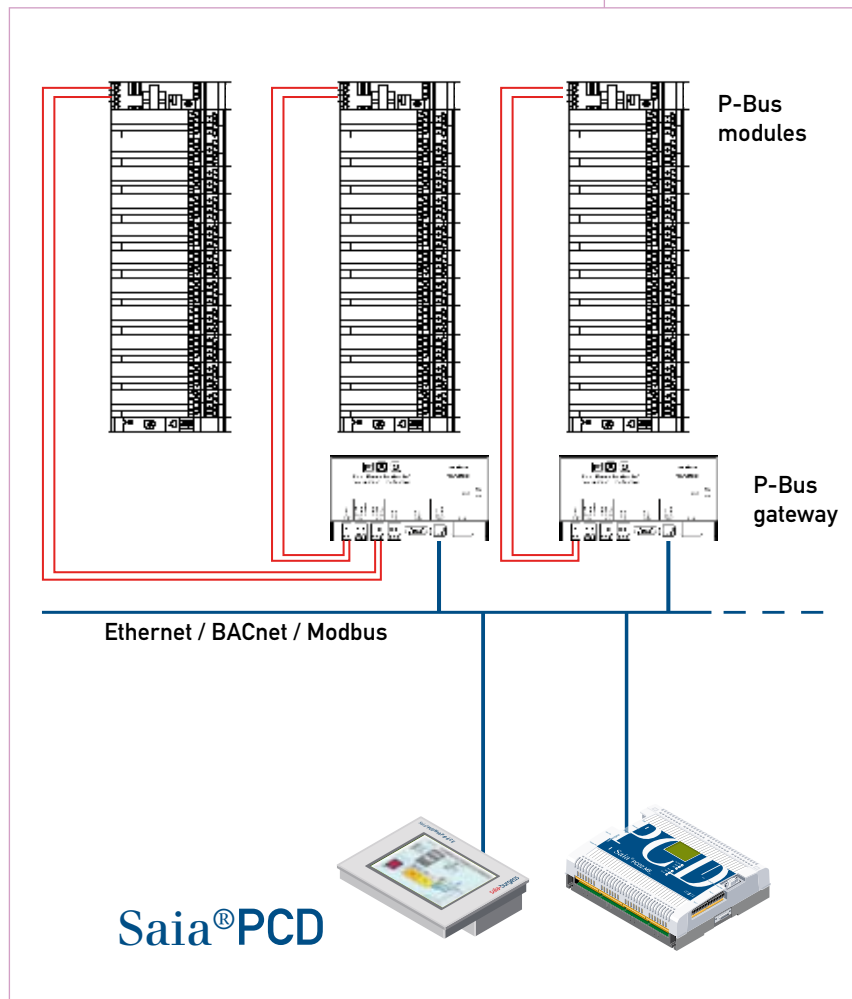
For owners of equipment with Siemens®DDC systems (PRU and PRV series) there is a middle way between complete replacement and simply upgrading with an additional, advanced Saia®CPU. The system integrator just changes the Siemens®CPU for a Saia®PCD CPU and leaves the existing Siemens®I/O modules in place. A standard commercial gateway from the Persy Company allows coupling to the proprietary Siemens®system bus (P-Bus). We make upgrading easy because these Siemens®I/O modules are already represented as FBoxes in Saia®PG5 Fupla. This means that, within the Saia®PG5 software environment, project planning and engineering can take place just as quickly with old Siemens® P-Bus data points as with Saia® standard data points.

### Summary

Over the next few years we plan strong expansion of our customer base. Our aim therefore is to win end-user customers from our competitors, who have been rather too reluctant to innovate or be flexible in automation.

Many major suppliers seem to think that once they have produced a complete project for a customer, that customer will be their permanent client. The three modernization options described here will offer such customers a route to autonomy and at the same time a very economical, future-proof solution to their current challenges.

In future we will certainly be opening up more of these attractive routes, with the intention that they should lead, via modernization and renovation projects, straight to Saia®PCD. ∎



Saia®PCD
**Peace of mind**

# Happy holidays on Lake Garda (Italy) – IT and web technology with Saia®PCD in water management

Garda Uno S.p.A was established in 1974 as a company responsible for environmental protection and cross-regional water management for Lake Garda. Its founders were 25 local authorities and 5 public utilities. The area managed covers 254 square kilometres. Automating such an area certainly meets the definition of "Wide Area Automation". The 1500 km of fresh water pipelines are supplied by 25 wells, 45 springs and 6 lake extraction points. These supply 20 million cubic meters of drinking water to 250 000 consumers. Regarding sewage treatment, a network of pipes totalling 850 km and 15 treatment plants are in operation.

Traditionally, Garda Uno used Siemens® for its automation technology. Increasing demands for comfort, site-independent visualization, central data recording and complete documentation for years ahead could still be achieved with their current technology, at a corresponding cost. However, free networkability with any choice of third-party device, and easy service without lengthy training or costly software tools could not be achieved with Siemens®. For these reasons Garda Uno took another look at the market.

After lengthy, thorough testing and a trial phase, Saia®PCD was used for the first new projects last year. The decisive factor was the seamless integration of web and IT technologies on an industrial, freely programmable controller platform.

The first major project was to modernize 11 pumping stations and optimize their energy costs.

To do this, a Saia®PCD3.M with two memory modules was put into each station. One module serves to store the entire application software, in-

Web control masks for pumping station on a Saia®PCD Web-Panel CE

cluding all events. The industrial SD flash module Saia®PCD3.R600 is used to store the entire automation project (documentation, circuit diagrams, source code, web pages for help menus, etc.) and all the pump station operating data. All data files of the Saia®PCD3 memory modules can also be called up via FTP access and opened directly from standard programs like Excel. Wide Area Automation is achieved by networking each station via Ethernet and a serial modem.
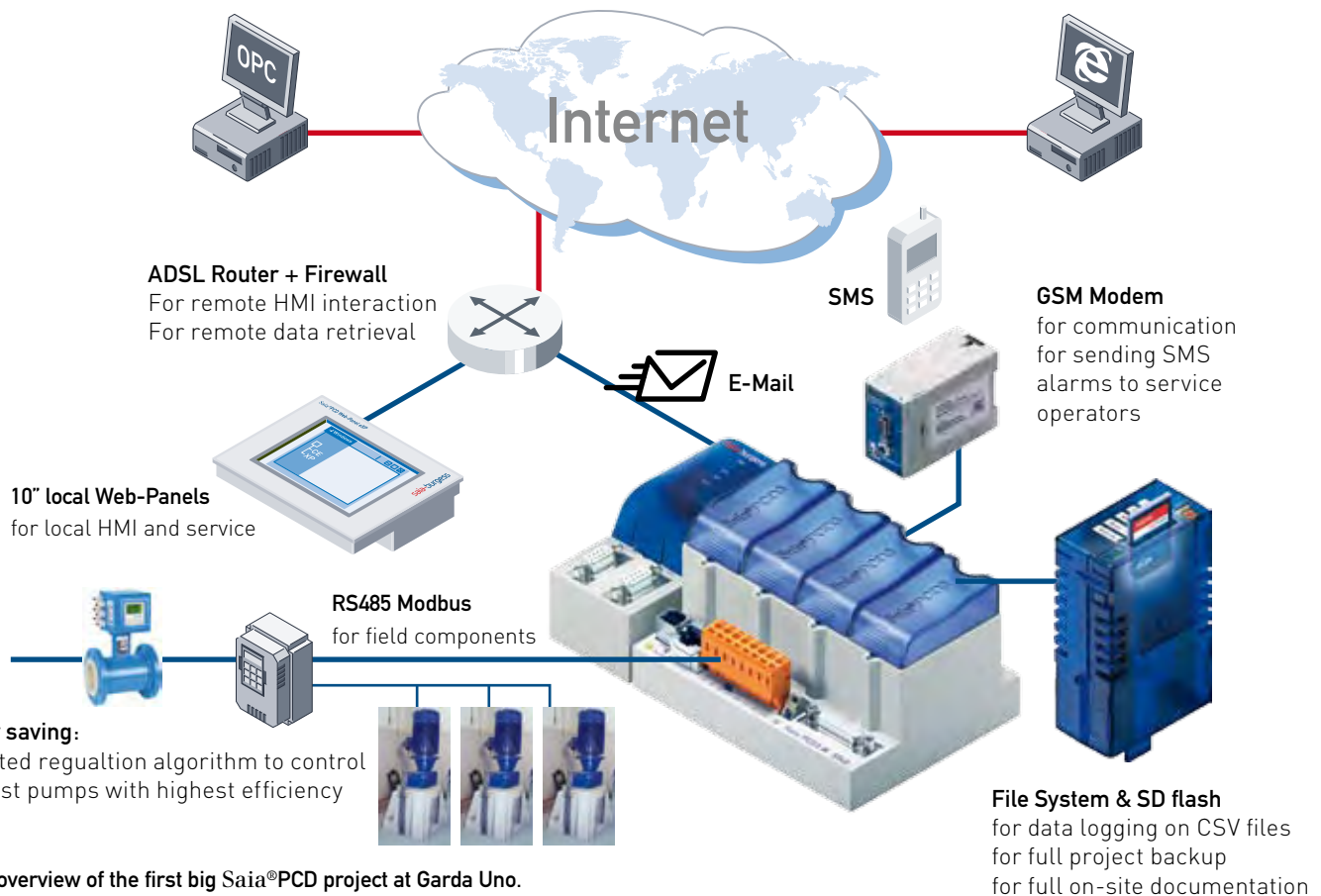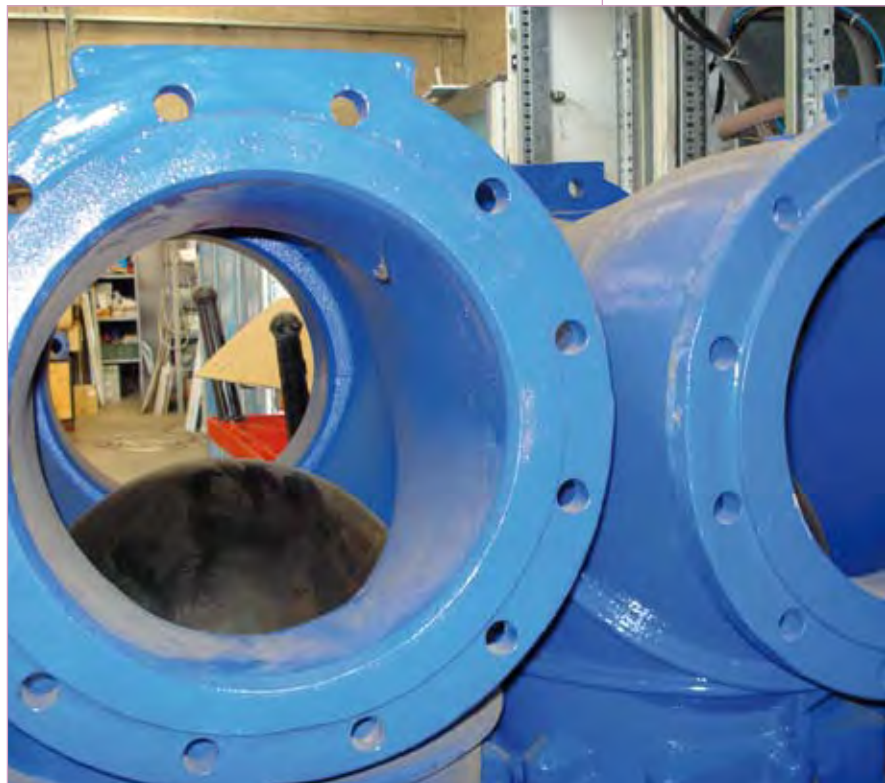
On-site operation is accessed via 10.4" Saia®PCD Web-Panels. Any device with a browser in the Garda Uno Wide Area Network can be used without

Pumping station control cabinet with Saia®PCD3 controllers

additional software for remote control and remote management (= Saia®Web-HMI).

The first major project for Garda Uno with advanced, innovative Saia®PCD technology is now in permanent operation. The customer is very satisfied with the decision to leave the path previously travelled. The next major project is already in progress. ■



Technicians from Garda Uno with trial system Saia®PCD3.M5540



**ADSL Router + Firewall**
For remote HMI interaction
For remote data retrieval

**10" local Web-Panels**
for local HMI and service

**RS485 Modbus**
for field components

**Energy saving:**
dedicated regualtion algorithm to control upthrust pumps with highest efficiency

**SMS**

**E-Mail**

**GSM Modem**
for communication
for sending SMS
alarms to service
operators

**File System & SD flash**
for data logging on CSV files
for full project backup
for full on-site documentation

**System overview of the first big Saia®PCD project at Garda Uno.**
**Totally 11 controller and 11 web panels in this application.**

# Newly certified Saia®PCD products

## The entire Saia®PCD family has BACnet® certification

In time for the Light & Building Exhibition in April 2008, the Saia®BACnet® stack successfully completed testing on a PCD3.M5540 and was certified by the world's only accredited BACnet® test laboratory, WSPLab. Subsequently, data capture via trend-log objects has been expanded still further. Moreover, all Saia®PCD systems with an Ethernet interface (PCD3.M3120, M3330, M5340, M5540, M6340 M6540 and PCD2.M5540) have also been tested and certified and have been available since October. ■

Saia®PCD2.M5            Saia®PCD3.M3            Saia®PCD3.M5

## Saia®PCD interface modules, now with MP-Bus certification

The Belimo MP-Bus has been well established in building automation for many years and the number of applications is constantly rising. To ensure smooth functioning of the MP-Bus, Belimo also offers an MP-Bus certification test for MP master devices. This test is performed in accordance with the strict quality standards of the accredited test laboratory, WSPLab. Tests have been successfully concluded for the new PCD3.F281 communications module with PCD7.F180 for 2 MP-Bus branches. ■

**MP⚡BUS®**
MP-BUS® COMPATIBLE

**Certificate**

MP⚡PUS

Saia-Burgess Controls Ltd.
CH-3280 Murten

Belimo approved MP-Partner

BELIMO Automation AG

Markus Keel
Head of Product Management
Room Solutions &
System Integration Europe

BELIMO Automation AG

Andreas Marty
Product Manager
Room Solutions &
System Integration Europe

Hinwil/Switzerland
3. November 2008

BELIMO

# Smart owner
# unlocks potential savings of CHF millions per year

**Key provided by life cycle, design, and quality of control and automation electronics**

UBS owns 350 properties in Switzerland and spends approx. CHF 120 million per year renovating or modernizing them. This figure includes about $\frac{1}{3}$ for HEAVAC engineering and the associated measurement, control and automation technology.

Over the past 10 years, UBS outsourced responsibility for management of these properties to external facility management companies. A more dynamic technical environment, added to the higher demands of users, made this arrangement increasingly unsuitable. In 2007, with ever-rising costs for maintaining and renovating building technology, UBS decided to take back responsibility for managing their properties into their own hands.

The new person in charge, was recruited from a respected planning and engineering company in the building technology field. The first step was to analyse the cost situation and identify the largest potential savings. One of these lay in the control and automation electronics of HEAVAC engineering systems. In his analysis, he found that over the 15-20 year life cycle of HEAVAC installations, it was unfortunately necessary to renew control and automation electronics up to three times. Each time this involves an investment project costing much time and money. Such fundamental changes to existing installations are always associated with imponderables and need correspondingly professional staff. Even if one overlooks the cost burden, the shortage of skilled employees due to demographic change is a great added motivation for avoiding such critical
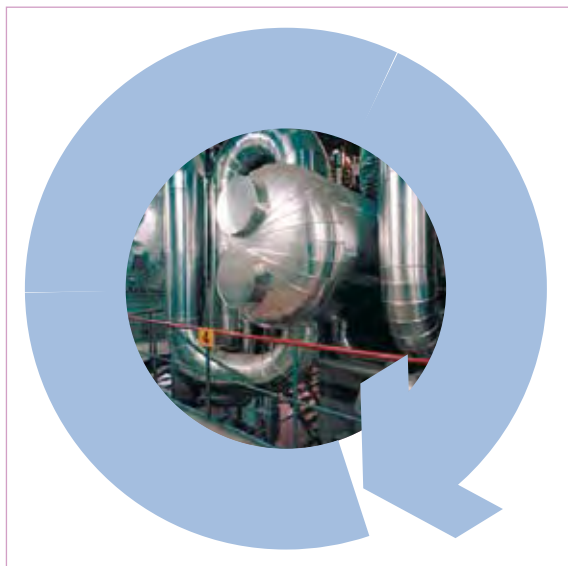


**Generally, the life cycle of HEAVAC systems is 15 to 20 years**

interim investments.

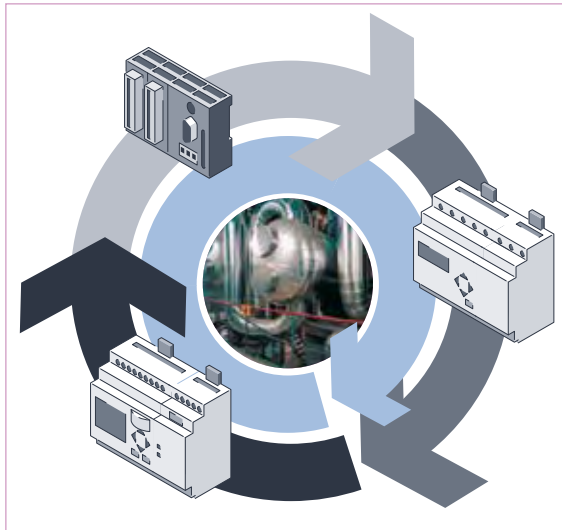### What are the causes
### of the owner's precarious situation?

– Faulty electronics: The operator of the installation has used cheap electronics that just do not have the life expectancy of the plant. When faults arise, there is no possibility of a 1:1 replacement. The life cycle of the control device has expired, or there is no longer any software tool provided for current Windows® computers.

– Change of use / new requirements: For cost reasons, fully compact, dedicated controller electronics have been used that can only do the tasks known at the time of their original installation.

– Expansion / networking: Even if the system is a programmable one, its computing power is often inadequate, or the installed system is compact and therefore not expandable with modules.

– Old technology: The installed control and automation technology was already at the end of its life cycle when originally supplied. The manufacturer therefore no longer supports further adaption or expansion of installed devices. Instead, the advice will be to change to newer, better technology, which unfortunately will not be fully compatible with the earlier generation.

For the future, UBS would like to avoid costly interim investments by paying close attention to the control and automation technology that system

Up to three investment cycles
to replace control and
automation technology
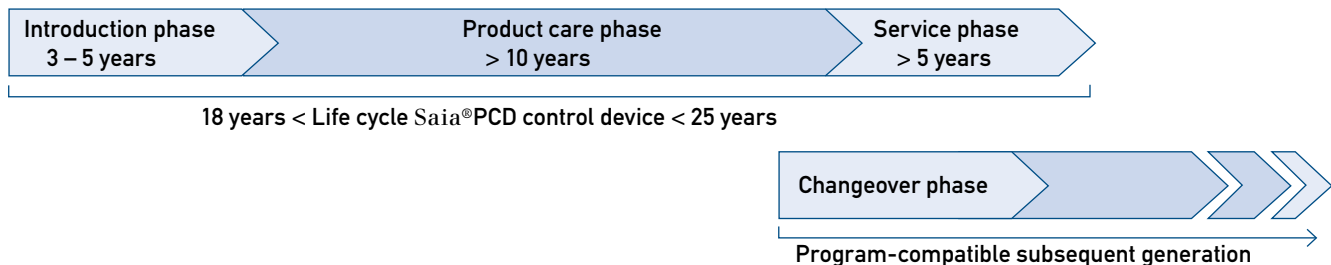over the life cycle
of UBS' HEAVAC installations

cal it is to implement changes of use or expansions with the modular Saia®PCD construction kit.

In future, UBS will ensure that its HEAVAC suppliers no longer use misguided optimization of control and automation to add a few francs to their margin, which over a year add up to several million in extra costs for UBS itself as the owner. ∎

builders and machine engineers install in their properties.

After several visits and intense discussions, UBS is confident that it will achieve this aim in the best possible way by relying on and PLC-based, DDC technology like Saia®PCD.

When UBS visited the Saia-Burgess factory, they could see we have many Saia®controllers still earning money at over 20 years old. They were able to speak to end-user customers and system integrators who have experienced how easy and economi-

The life cycle of Saia®PCD technology
encompasses the entire life cycle of a typical HEAVAC installation

## Life cycle considerations for Saia®PCD controllers

| Introduction phase 3 – 5 years | Product care phase > 10 years | Service phase > 5 years |
| --- | --- | --- |

18 years < Life cycle Saia®PCD control device < 25 years

Changeover phase

Program-compatible subsequent generation

Saia® programmable controllers have been around for over 30 years. They are designed for the high reliability typical of PLCs and have life cycles of between 15 and 25 years.

The first generation of devices only reached the end of its life cycle a few years ago. Many of these devices are still running in their applications.

In the meantime, some device types from the second generation have now also reached the end of their product care phase. They can still be expanded or adapted for other requirements with the current Saia®PG5 software tool and new hardware modules.

For at least 5 years after a phase-out has been announced, we will continue to provide a service phase with repairs and replacement services for all devices currently in use. If the component market permits, this phase may also be many years longer.

The third generation of devices is at the end of its introduction phase; i.e. after early, practical field trials, expansion of the relevant Saia®PCD product families is now well advanced with regard to functions and hardware options. Application programs for the third generation are compatible with the previous generation. It is possible, at no great expense, to port applications from the second generation to the third with the latest version of the Saia® software tool.

We have been successful with the above culture of generation management for a long time, and intend to remain so. Therefore, whenever a fourth generation comes along, we will continue to proceed in a consistent way, conserving value, as before. This protects your investment in installations, solution development and know-how. It allows you full freedom and flexibility for periods of 15 to 20 years.

# Smart government –
# thanks to Kyoto + energy prices

**The best offer, not the cheapest, should win. In the technical world, the long-standing, uncontested rule of thumb is that, over the full life cycle of a building, 80 percent of costs arise during its period of use and only 20 percent on the initial investment.**



Despite this, until recently it was a statutory requirement for projects put out to public competitive tender to be awarded to the lowest bidder. This legislation ensured pressure on prices for the first 20 percent of costs, but simultaneously generated much higher costs over the life cycle, whether due to subsequent reworking, service costs or energy consumption.

Thanks to high rises in energy costs, threats of power shortages and commitments made under Kyoto, governments now have to shift their position.

As an example of this shift, we have printed out a new regulation from the German government, dated 16th October 2007. It was sent to all Germany's building authorities at federal and regional level.

**The core statement
of this regulation is the following:**

**...., please rate all offers (public) according to their Life Cycle Costs. In spite of higher initial costs (investment) a system could be the most economical. To analyse the LCC you need to consider all products (systems) and their costs over the life cycle...**

This new regulation is a reversal of current practice. However, it has not only been signed by the Federal Minister of Commerce, but by representatives of all ministries.

Practical implementation of this regulation will greatly increase the relative importance of control and automation technology when contracts are awarded. There will now be more investment in control and automation technology to achieve resource-conserving operation; people will suddenly pay attention to the life cycles of installed automation technology; and everyone will have to be able to document and constantly ensure optimum operation of installations and machines.

If in future, when a project is awarded, the best supplier wins rather than the cheapest, the winner must be able to prove through the life cycle that the higher price paid was a good investment for the client.

With PLC-based DDC technology, large SD flash data memory (events & operating data) and our own range of energy metering technology, it is very much in our interest to see this new regulation implemented quickly and in full. We are now working hard on this together with other suppliers of building technology and the relevant industrial associations. ■



Hall of the Kyoto Conference
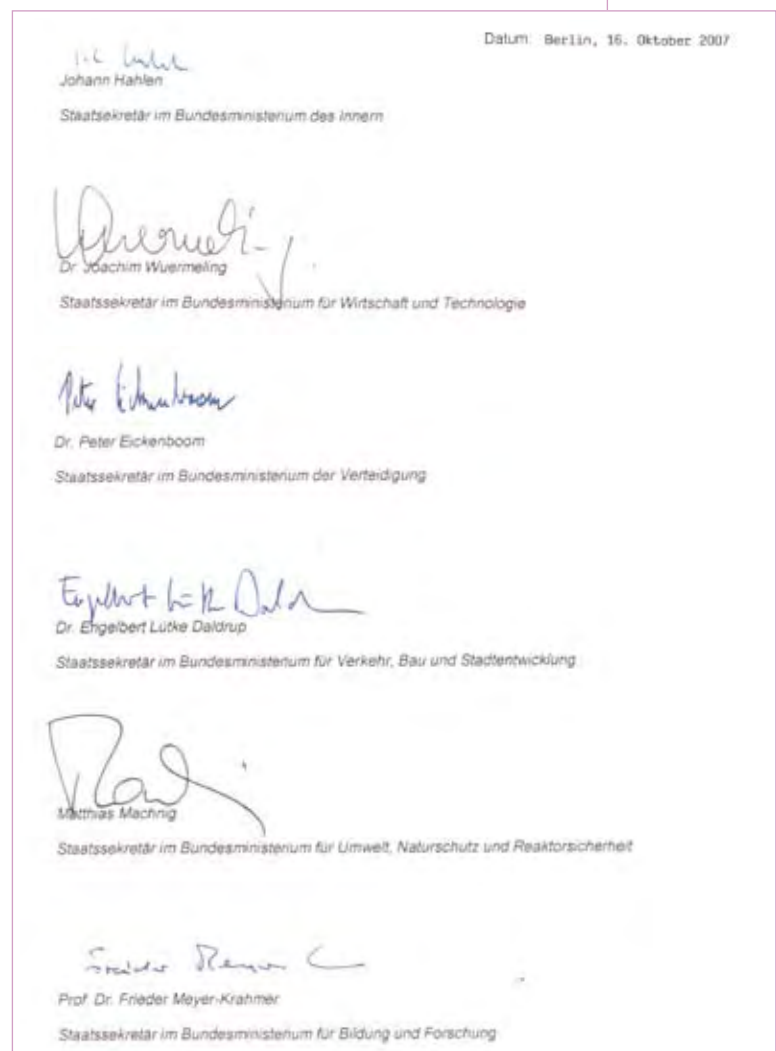


Co-signatories of the new regulation
Representatives from each German ministry

# Infrastructure automation – project engineering

## Principles:
## Implementing projects with Saia®PG5 software and Saia®PCD automation devices

For a full understanding of the following two contributions about the function and flexibility of Saia®DDC Suite, it is very helpful to appreciate the fundamental, system-dependent properties and structures of Saia®PG5 applications.

### Software engineering

The basis of every microprocessor systems is the program code, written in lines of text. Today, Saia®PG5 is programmed in the PLC language Instruction List (IL) and will in future also support the high level language C. Pieces of program text that belong together are combined in logic blocks or macros.

In over 95% of infrastructure automation projects, the system integrator does not write a single line of code. Nor is this necessary for standard applications, since Saia-Burgess supplies ready-made code. To ensure that no limits are imposed on the customer's full freedom, every Saia®PG5 application can, throughout the life cycle of whichever Saia®PCD automation devices are used, be extended at any time with individual functions programmed in text form.

### Automation objects
### as basic elements of automation engineering

When blocks of program text are encapsulated and put in the Saia®Fupla graphical programming environment (FuPla = function plan), the software programming level is exited. The code is no longer visible externally, but can still be changed at any time.

To make the use of encapsulated code possible in automation practice, vital added functions are needed for service and commissioning. In addition, a data and parameter interface is required, plus a documentation or help function. If these functions are present, we call the graphical program block a Saia®PG5 FBox (function box). All that is now lacking for a complete automation object is the visualization and operation function.

This completion was achieved last year for HEA-VAC FBoxes and Saia®DDC FBoxes by the integration of web browser control objects.

All Saia®PG5 users can also create their own FBoxes with Web-HMI control functions. This goes beyond mere software programming, it is software engineering.

```
abc hsjw if {was
u(wsw)s3 d e dw@
3llfs dwq = wdp
cd ww3d { jwncA}
com else{was
(wsw)s3E jtssj
3llfs dwq = wdp
```

The basis of
every program code is text
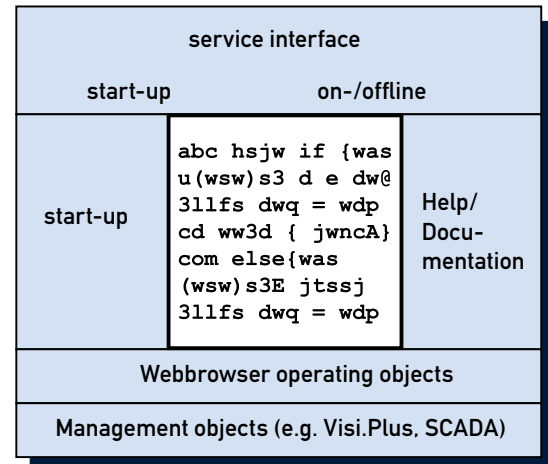


A Saia®PG5 automation object – PLC program code encapsulating everything necessary for purely graphical automation engineering.

Saia-Burgess offers a wide choice of ready-made automation objects, organized in turn in the form of libraries. Many large customers add their own libraries, programmed with the Saia®PG5 FBox-Builder, as a way of creating competitive advantages.
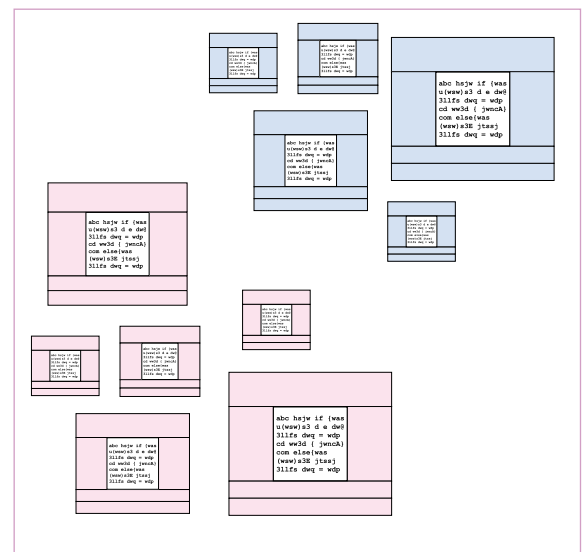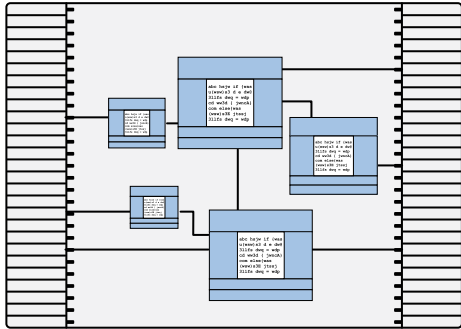


Example of two different libraries containing automation objects

Saia®**PG5 Fupla**
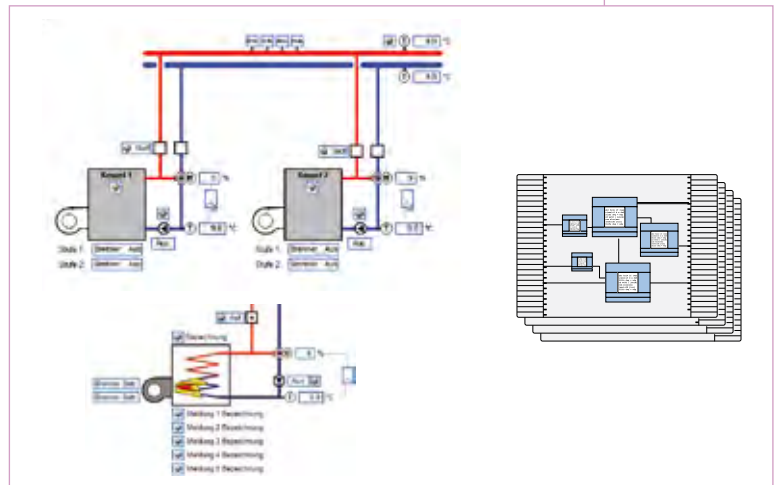**as a platform for automation engineering**
An automation task can be solved with ready-made automation objects by arranging them on a Fupla page and logically connecting them with lines: from one object to another, and to the I/Os, and to the memory resources of the Saia®PCD device.

One Saia®Fupla page is a functional representation of one part of an automation system. Numerous Fupla pages together represent the entire automation and control system of an installation.





Multiple Saia®Fupla pages and their display in the system visualization



One Fupla page with logically linked automation objects (FBoxes) represents the control and automation of one part of the installation.

It is also possible to use the Saia®PG5 FBox-Builder to pack an entire Fupla page into a new "custom or application-specific mega FBox". This allows a complete installation to be engineered with just one Fupla page.

**From software tool,**
**via engineering,**
**to automation hardware**
A complete installation (e.g. heating/ventilation system, data & communications infrastructure) can be implemented as a combination of Saia®Fupla pages. Every Saia®Fupla page in turn consists of automation (function) objects (=Saia®FBoxes). At the core of each of these Saia®FBoxes is program code that was written in the Saia®PG5 FBox editor. All the program code for an installation is converted by Saia®PG5 into a language that is independent of the hardware platform (intermediate code) and interpreted by Saia®PCD controllers.
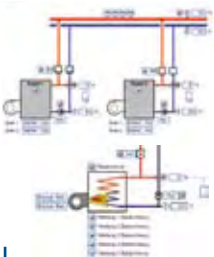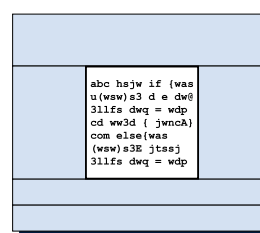
| Plant Engineering | Automation Engineering | Software Engineering | Software Development |
|---|---|---|---|
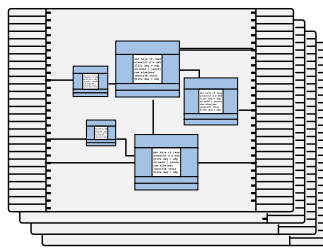


Saia®**PG5 Software Tool**



Saia®PCD4    1990 — 2008

Saia®PCD1    1994

Saia®PCD2

Saia®PCD1    2008

Saia®PCD3    2004 — 2008

**A software and automation engineering system that combines Saia®PG5 with Saia®PCD automation devices – What makes it so special?**

– Through the interpreter in every Saia®PCD, the program code of a project can be used on different device platforms and extended for decades. Once produced, it can be used often and for a long time.

– Through collections of Fupla pages and the relevant automation objects (basic Saia®PG5 FBoxes), projects that include operation and visualization can be created and commissioned very quickly, reliably, and with no programming knowledge (software training). However, unlike all other ready-made engineering tools, Saia®Fupla pages are not carved in stone as system configurations with a limited functionality. Fupla pages are system templates that can be freely adapted at any time. If complex projects require functions that have not already been implemented as standard, documented templates, any required function can be produced within the same software tool (Saia®PG5) via a simple PLC programming language. This function is then in turn packed into graphical FBoxes, thereby enabling its use once again in other projects, without any programming knowledge.

With the Saia®DDC-Suite, we have used the above mechanisms from our Saia®Automation system for the heating, air-conditioning, ventilation, sanitary and electrical engineering field (HEAVAC-SE). The following two contributions are intended as examples to explain what "Saia®DDC-Suite" is, and what kind of projects it can be used to implement.

---

### Projects implemented reliably and efficiently, without compromising on freedom and expandability !

Saia®PG5 DDC-Suite version 2.0:
the next leap forward in project engineering

A few years ago, to achieve faster growth in new markets, we began building up alongside our proven libraries of Saia®PG5 Fupla HEVAC function blocks, another library with automation blocks for the HEAVAC-SE field.

This library, the Saia®DDC-Suite V 1.0, essentially comprises a highly integrated FBox library that is complemented by a growing number of ready-made, tested, and ready-to-use Fupla pages, which are a complete, functional representation of typical system parts.

In contrast, the PG5 Fupla HEAVAC library consists of rather finely graduated, individual function boxes that project engineers themselves combine into Fupla pages for their individual installations.

With the DDC-Suite V 1.0, we managed within three years to double our market share in Holland to a two-digit percentage. In Germany, around 40 percent of our customers regularly use Saia®DDC-Suite to complement or even in place of Saia® HEAVAC function blocks.

With Version 2.0 of the Saia®PG5 DDC-Suite, we have substantially extended the functional scope and, alongside control and automation functions, also fully integrated web and operator functions. It is now also possible to generate engineering documentation quickly as the press of a button. For BACnet® projects, the BACnet® object list is edited automatically; something that saves much error-prone manual work.

We expect the Saia®DDC-Suite V 2.0 to be so attractive that we will achieve with it a penetration level of around 80 percent with our active customers in infrastructure automation.

We have now commenced translation of Saia®DDC-Suite Version 2.0 into other languages and, in 2009, will launch it on international markets as Saia®Standard.
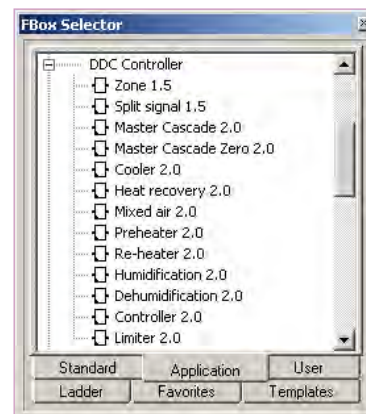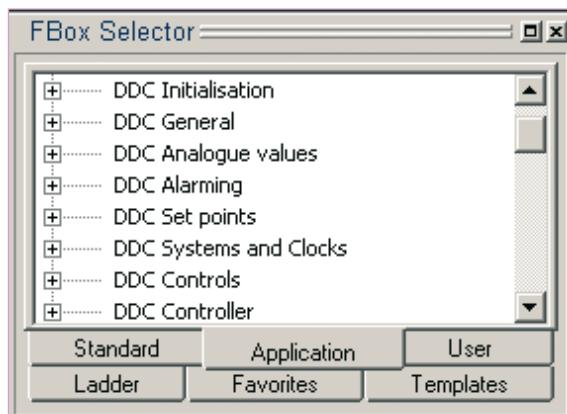
Insights into Saia®DDC-Suite V.2
Automation engineering:

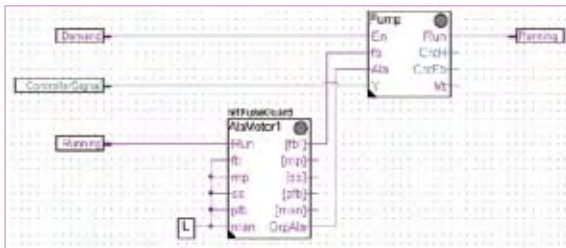The core of the Saia®DDC-Suite is a library of 8 FBox families.

Each family contains many individual FBoxes belonging to the subject family concerned.

Selection window for FBox libraries in Saia®PG5



FBoxes library "DDC controller"

A typical pump for a heating register with ready-made FBoxes from Saia®DDC-Suite looks as follows:



Part of a Saia®PG5 Fupla page with Saia®DDC-Suite templates

The same pump function can, of course, also be produced with the long-standing, proven Saia®HEAVAC library. However, more knowledge will be required and more time, since HEAVAC FBoxes are more finely graduated in function.
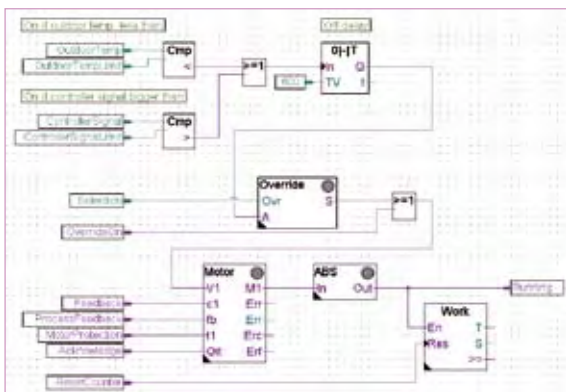


The same pump function for HEAVAC applications
implemented with Saia®HEAVAC library

If, alongside the actual control and automation of a system, it now becomes necessary to capture data, this is very simple with Saia®DDC-Suite.

By simply defining the memory size/alarm number in the object parameter window, data capture can be initiated for trending. The same easy also principle applies for alarm functionalities.
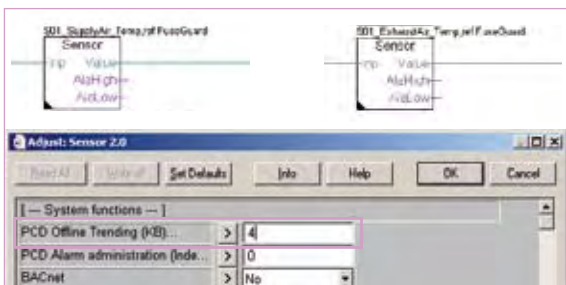


Initialization of trending function for an analogue value

Now, while the automation system is running, data is continuously stored in the Saia®PCD and available for assessment.

Saia®DDC-Suite also has an operation and visualization function ready for each FBox. This turns the FBox into a genuine automation object. Operation and visualization by means of a web browser has already been integrated and is fully functional.
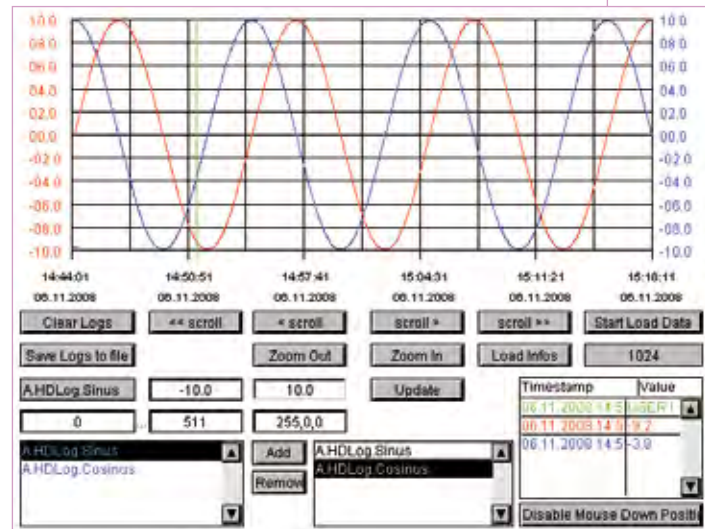


Example: operation and trending function
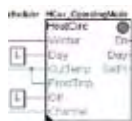of a Saia®DDC-Suite function box

Any SCADA system that might be present, or management/ERP software, will access exactly the same data as the web browser.

Via the FTP protocol, any authorized, interested system can access all data files generated. Saia®DDC-Suite automatically generates data log files for this purpose in the CSV format (comma separated value). This format is used world-wide and accepted everywhere.

This shows an alarm file, which lists all defined alarms and is automatically generated by Saia®DDC-Suite, as it appears when opened by the Saia®PCD file system with Microsoft® EXCEL.
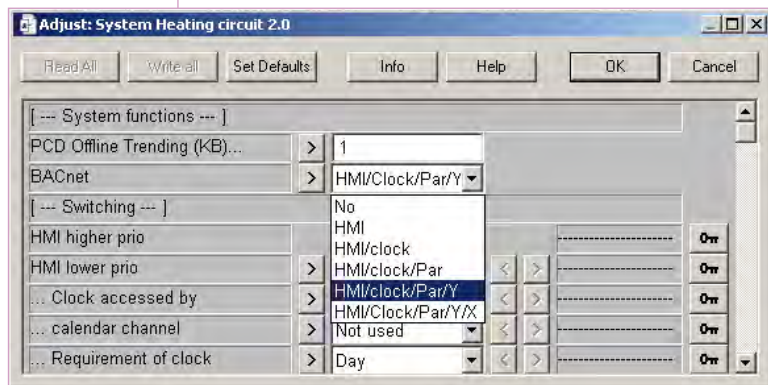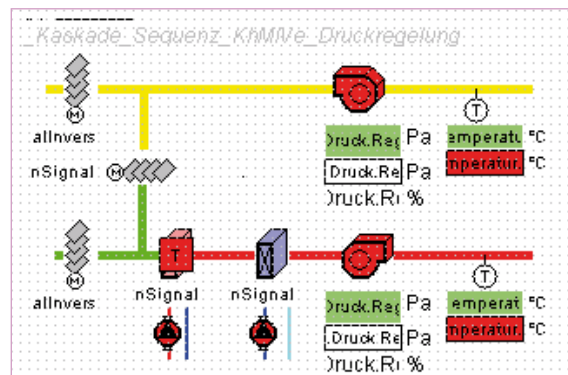
For on-site operators and service engineers, the system web view is, of course, also part of Saia®DCC-Suite. Saia®Web-Panels and/or all devices with a browser (Internet Explorer/Firefox) can be used as HMI devices.



Example: Generation of BACnet® configuration and object listing by checkbox in parameter window of a Saia®PG5 FBox



Web representation of an air-conditioning system

## Project example:
## Saia®PG5 and Saia®DDC-Suite in use with a complex industrial infrastructure project

Up to this point, the basic concepts and relevant features of Saia®PG5 and Saia®DDC-Suite software have been explained with text and pictures. The following article shows that this "theory" can be translated in practice into very attractive projects.

As an example, we have chosen the production infrastructure of the company ASML, one of the largest chip machine producers in the world with a turnover exceeding 3.5 billion Euros and almost 7000 employees.

Building automation at the headquarters in Holland was, in the past, achieved with a purely configurable system from the local market leader. Automation technology from different manufacturers and generations of devices were in operation within industrial equipment and installations. As a result, the factory was divided by its automation technology.

A single ASML machine costs around 20 million Euros. Before it can be used to produce structures measuring 32 nanometres, months of running-in are required in testing and calibration spaces.

The first phase of the project comprised the automation, within a new building, of 28 testing and calibration spaces designed as clean-rooms.

The contract to implement this automation was awarded to the company GTI. With 7500 employees, GTI is a large engineering company that forms part of the French SUEZ Group.

In the present project, both ASML and GTI used Saia®PCD technology for the first time. Since ASML had very complex and critical process require-



The ASML factory in Holland

An ASML machine



The customer's smiling Project Manager in front of a control cabinet with some Saia®PCD3.M5 controllers.

ments, their decision only came after a lengthy selection and testing procedure.

Saia®DDC-Suite was used to implement the heating, air-conditioning, ventilation and electrical facilities. It was very helpful to have an automatically integrated log function and easy access from the production management system to all data (current and historic) from machines running for tests and calibration over many months.

Operation of the entire automation technology is via web browser.

To integrate the actual machine controllers (Siemens® S7) and additional groups (e.g. carrier refrigerating machines), the customer programmed the necessary communications drivers and management routines in text form and then packed them into graphical Saia®Fupla FBoxes. In this form, they were then simply added to the standard Saia®DDC-Suite as a project-specific extension. No other software tool for infrastructure automation can do this.

Despite the complexity of the project and the integrator's lack of familiarity with Saia®PCD technology, the project went very well. Saia®DCC Suite was a substantial prerequisite for the success of the project.

ASML, GTI and Saia-Burgess
in the automation of infrastructure;

Each one is satisfied,
and therefore anticipates a good future together.

We are now looking forward to the second construction phase. This is already underway and comprises 28 more test and calibration rooms. Phases 3 and 4 are at the planning stage and awaiting approval. ∎

The ASML building with its 28 test rooms can really be viewed as a large money machine, in which Saia®PCD technology guarantees an optimized, reliable output.

Key technical device data
for the first construction phase,
commissioned in June 2008:

– 89    Saia®PCD3.M5540
– 9 000 I/O points
– 89    Flash 4 MB PCD7.R550M04
– 28    Saia®PCD Web-Panel MB PCD7.D457STCF

Saia® PCD



YOUR BUSINESS

# Web technology on ships:
# Saia®PCD in the engine room
# and on the bridge

The Brunvoll company in Molde (Norway) builds thrusters (ships' drives) in the power range from 100 kW to 2.6 MW and has used Saia®PCD controllers for over 20 years. Thousands of ships – including the most sophisticated and largest cruise liners and freighters – travel the seven seas with thrusters from Brunvoll. As the world-wide market leader, Brunvoll is not only committed to high quality, availability and safety, but also just as much to leadership in technology. Drives must outlive the ships themselves, and it must be possible to run them with optimum economy and control them reliably. Brunvoll supplies all the world's largest shipyards with complete drive units. These comprise: the motor, hydraulic system, ship's propeller, and technology for control and automation.

### Tried and tested by decades
### in the harshest environment: Saia®PCD

Thousands of Saia®PCD controllers have been tried and tested for years in the harshest of all environments: the ship's engine room. Here the air is salty and thick; heat and humidity prevail; everything vibrates. But despite all this, even the oldest Saia®PCD4 controllers are still in operation, without any special measures.

For three years, Brunvoll has relied on the latest Saia® technology with PCD3. Due to our leadership in web-based automation, new possibilities have opened up that increase the scope of our offering and bring Brunvoll further competitive advantages, more efficiency, and significant cost reductions.

### Contrasting demands for operator guidance

High above in the bridge of the ship, the helmsman is master of many megawatts of power. Using a joystick, he decides the speed and direction, there-

by influencing several drives running in parallel – as if it were child's play. There is no sign here of the rugged environment far below in the engine room. Between bridge and engine room are up to 15 decks, rather like a small high-rise building.

Apart from their main drives, large ships have several manoeuvring drives mounted laterally. Each drive has its own hydraulic system and its own Saia®PCD controller. Control elements and display instruments in the switch cabinet allow each drive to be controlled from the engine room too.

The contrast between demands on operator guidance on the bridge and those in the engine room could not be greater. Here prestige applies. Everything shines and lights up. A general overview is central, but the individual details of all drives are not ignored. These are looked after by another Saia®PCD3 as the central system for coordination of all drives. A redundant-type bus system, which satisfies strict safety standards, is where all operational data runs together, and where new correcting variables are calculated and passed on to the individual drives. Third-party systems, such as radar and GPS, are connected to this central controller across other interfaces.

### New approach to control and monitoring thanks to web technology

In the past, Brunvoll had to implement and maintain two control concepts: a workmanlike one for the engine room and a fine one for the bridge.

Two years ago, Brunvoll bought the first Saia®PCD micro-browser Web-Panels, which are intended to replace the existing, conventional panels on the bridge as well as the electromechanical display instruments in the engine room.

In future, Brunvoll will only implement and maintain a single control concept. All user interfaces will be stored as web projects in the individual controllers. It will therefore be possible to call them from anywhere. In the engine room, the MB-Panel replaces the existing "wired" visualization with its lit keys and displays. On the bridge, everything is scalable and can be used according to requirements, from MB-Panels to eXP-Panels, from 5.7" displays to 15" displays. A single project for the most diverse requirements saves engineering and production time.

A wide variety of components for control and monitoring is reduced to a few items: the Saia®PCD Web-Panel. For this we have developed on Brunvoll's behalf a customized, configurable rotation object, so that all dynamic processes associated with the drives can be represented efficiently: motor load, thruster position and degree of propeller adjustment.

### Next project in our sights: motorized handle tracking (joystick)

On the bridge of large ships, operator guidance for the drives is provided in multiple versions. When putting into port, control devices on the extreme left or right are used. When cruising at sea, those aligned centrally are used. In this way, the helmsman always has the optimum viewing angle on his surroundings, whether near or far.

Handles built into the different control stations must always stand in the current position, regardless of where the ship is being steered from, i.e. the handles must track manual operation. Prototypes have been built with handles from Brunvoll that have been equipped with Saia® stepper motors, which in turn are driven by a further Saia®PCD3. This concept is currently in its test phase.

### Successful partnership: Brunvoll – Saia

We like customers like Brunvoll: reliable, highly productive and innovative, and always striving for innovations that ultimately serve the customer – in this case, the ship owner.

Suppliers must also live up to these aspirations. For Saia-Burgess Controls, Brunvoll is in every regard a perfect example: the requirements for high quality in standard products, the will and the ability to respond to special demands and produce solutions by collaborating well with the customer, from prototype to production readiness.

With Saia®PCD, we are well positioned and full of confidence for the next 20 years. ∎

# Saia® Structured C: the best of all worlds



How GCC is integrated into PG5
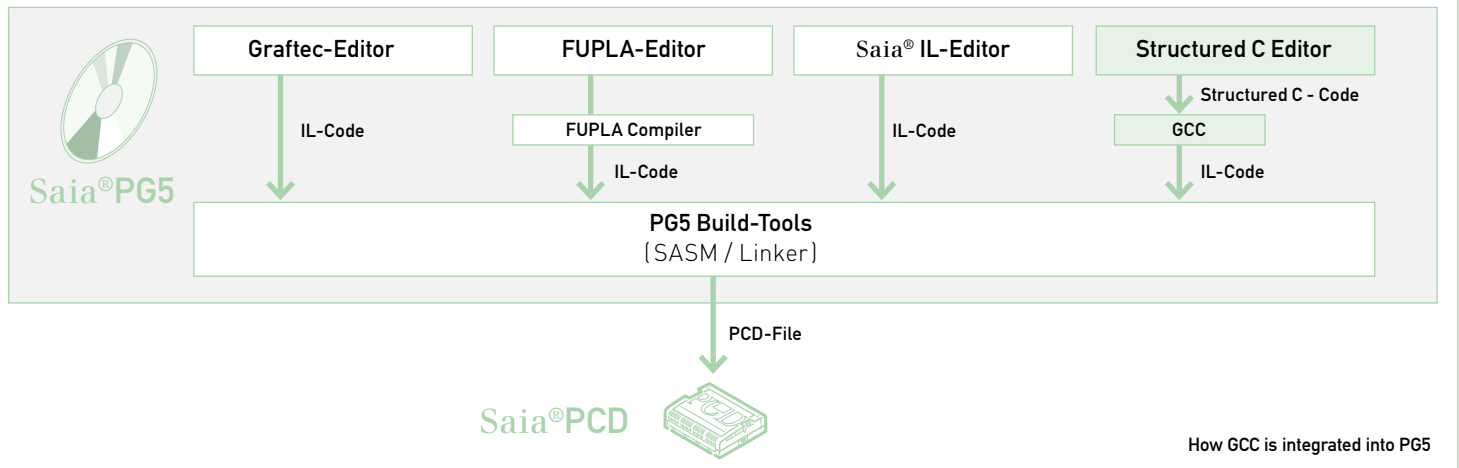
### A review of the PLC

The PLC (programmable logic controller) was born around forty years ago. Since it was conceived to replace inflexible, hard-wired relay logic, it is not surprising that PLC programming languages – including those of the Saia®PCD – should have their origins in an emulation of this relay logic. Over the years, the proportion of this logic in the overall controller program has been constantly reduced. Today, a Saia®PCD with its integral IT functions, plug-in SD cards, web access and telecommunications capabilities takes on tasks that not so long ago would only have been feasible with the help of an added PC. Even the job profile for a PLC programmer has changed. The programmer not only needs to know the process well, but also be proficient in these technologies, which are still quite young in the PLC world, and able to implement them. Young engineers know TCP/IP better than a PLC and are more familiar with C/C++ than with a PLC language.

Since the Saia®PCD, through adopting these technologies, has evolved from a logic controller into an automation controller, it is in our interest to bring in a new programming language that will let us use these innovations in the easiest, best possible way. We have decided in favour of C, a widely used programming language that every engineer knows. Since we have no desire to reinvent the wheel, we have chosen to use the open source GNU compiler GCC and adapt it to PCD and PG5. However, unlike other producers, we do not use the compiler to generate hardware-dependent processor code, but our PCD IL code. This means that we exploit the great advantage of an interpreter, which guarantees independence from the hardware and from the processor used. Only in this way is it possible to use a flash module to load the program into different controllers, with-

out having to recompile it. Losses in performance are cancelled out by (prior) compiling on the PCD. This procedure has become widespread in the PC world with Java and .NET.

### How does Structured C work?

During the PG5's compile procedure, a Structured C program (written using any choice of text editor) will be compiled by the GCC and IL code will be generated. This is looked after by the back-end, developed by Saia®. Then, like any IL, Graftec or Fupla program, PG5 tools will translate it and link it to other program parts, which may be written in any PG5 language. In the Structured C program, symbols defined in other PG5 parts can be accessed. Variables defined in Structured C are at the disposal of the rest of the program, but also of the Web Editor. A Structured C library (largely corresponding to ANSI-C) and specific Saia®PCD libraries (regulating access to system functions) give users every freedom to concentrate on their core competency: solving the automation task. Debugging at source-code level makes error detection easier.

### Best of all worlds

With Structured C, we have integrated the best of the PLC and PC worlds on the Saia®PCD. As ever, it is a platform conceived and developed for industrial use, with the promise of PLC manufacturer to produce, maintain and support any model for at least ten years, and to develop further the necessary software tools. Perhaps the next step is Structured C# ?  ■

# New OEM project for refrigeration machines
# with Saia®PCD technology

Last spring, Saia-Burgess Controls submitted a competitive tender for its products and technologies to one of the world's leading manufacturers of refrigeration machines.
Because of the customer's strict requirements on innovation, integration and differentiation, the usual PLC and DCS competitors were put under huge pressure. In the end, flexibility and open concepts made the difference and Saia® won the project.
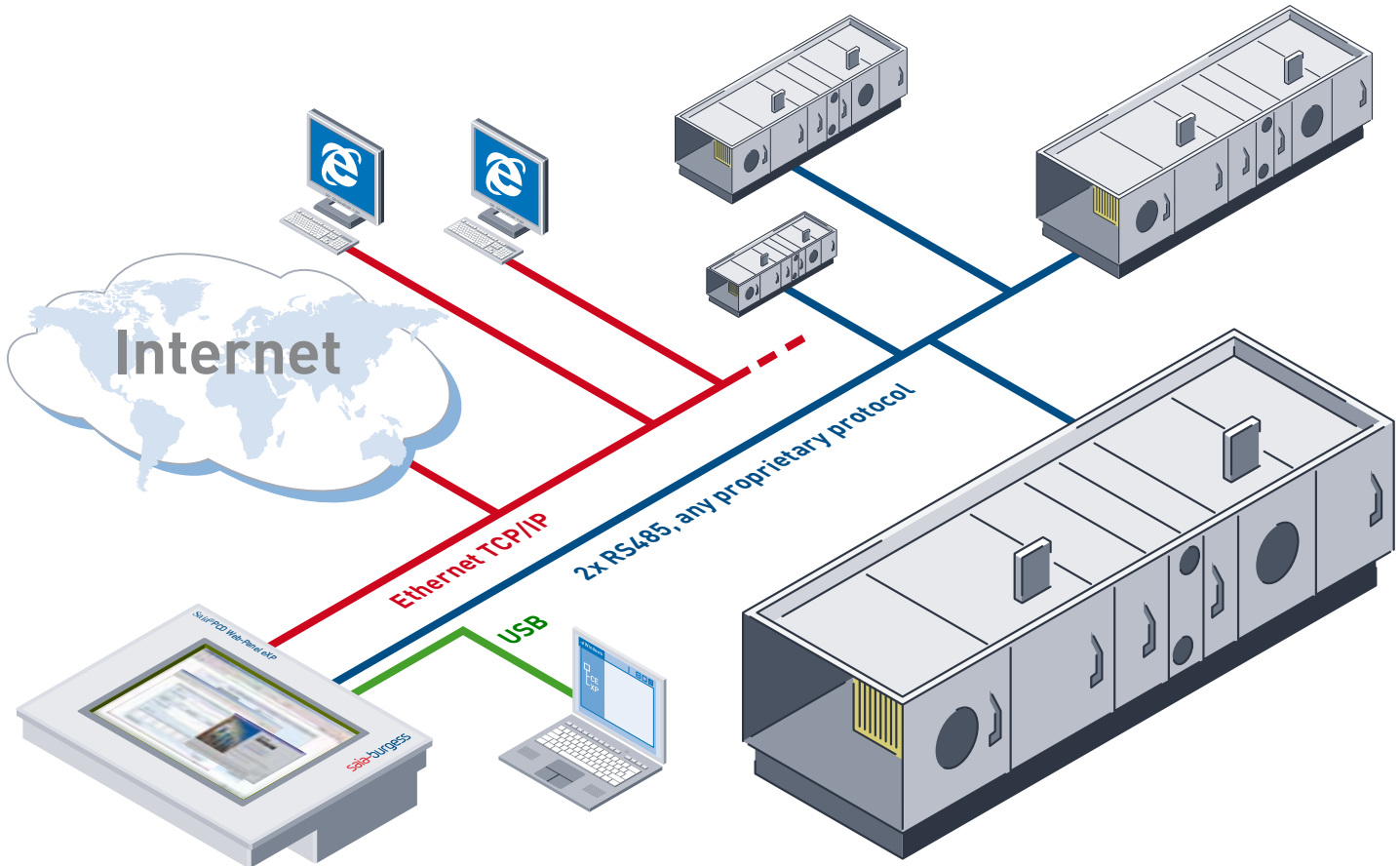


**Saia®PCD Web-Panel as system manager**

To achieve the functions demanded within the time specified, the customer needed full access to our platform, right down to the microprocessor level. This involved open access to our web and IT functions, development in C, future expansion (e.g. BACnet®) including hardware extensions, and development of the application in parallel with finalization of the chosen platform.
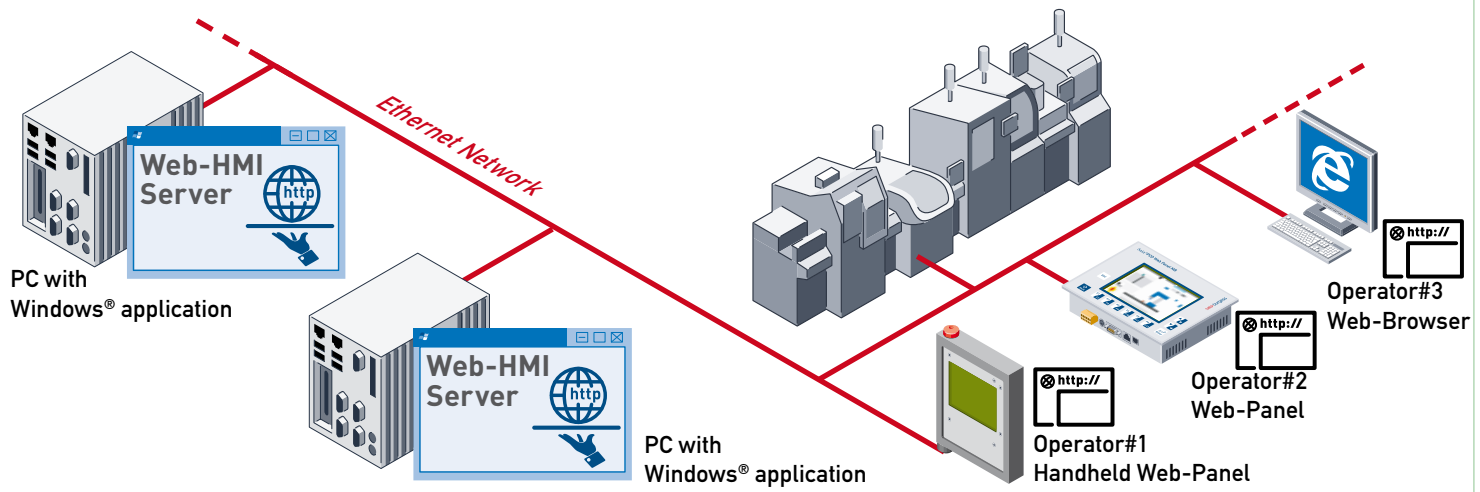
As Saia-Burgess Controls has all the technologies and competences under one roof at its headquarters in Murten, and because openness and teamwork are part of our culture, we were ready from the beginning to support the customer and find together the right combination in terms of product and cooperation.

Developments are currently running at full speed and, in the next Controls News, we hope to be ready to disclose the results of this challenging project. ∎

# Saia®.NET and Saia®HMI as components for PC users

Now Saia®PCD Micro-Browser Web-Panels can also be used as easy-to-configure, industrial control stations for PC solutions – equally suitable for simple Windows® PC solutions and for industrial PC applications. The Saia®.NET web-HMI server acts as a link between the Windows® application and the Saia®PCD Web-Panel.

Web-HMI Server

http

PC with Windows® application

Ethernet Network

Web-HMI Server

http

PC with Windows® application

http://

Operator#1 Handheld Web-Panel

http://

Operator#2 Web-Panel

http://

Operator#3 Web-Browser

Some applications, including those from classical automation, are best implemented using PC-based solutions. Typically, these will be networked management systems, ERP-linked visualization systems, or even PC-based production lines with direct connection to more complex database systems. Depending on the environment, standard, off-the-shelf PC solutions or specially designed industrial PCs can be used. Standard solutions are cheap to buy and available fast; special industrial solutions are costly and often entail long delivery times.

Individual stations can be operated directly through connected displays via VGA or DVI. This is probably the simplest solution. The disadvantages are the fact of being tied locally to just one workstation and the short connection distances. Solutions with multiple control stations via Ethernet (e.g. with industrial Windows®Touchpanels) are often expensive. In addition, licensing costs for each control station have to be taken into account.

Here Saia® takes a fresh approach. Saia®PCD Web-Panels show the way and offer many advantages. These panels, connected via Ethernet, can be used as control stations almost anywhere. In fact, with Saia®PCD handheld panels, just one free Ethernet connection is enough. – connect, select station, and they are ready to go !

With web technology and Ethernet, every web panel can operate every PC within a network. The station required is simply selected by pressing a button. Since Saia®PCD Web-Panels get by without a Windows® operating system, there is also no possibility of making changes to the operating

system via CTRL-Alt-Del. With the user only able to do exactly what is provided on the display, these panels can also be used as dummy firewalls for users. High EMC noise immunity and many years of availability characterize Saia®PCD Web-Panels as industrial components.

### Exchanging data with Windows® applications

Windows® applications can very easily exchange data (registers, flags and files) with the PLC across the CGI interface. Since this communication takes place via the http protocol, network firewalls present almost no barriers to communication between one station and another.

To make programming with CGI calls even easier, Saia®.NET provides class libraries. These libraries make the task of exchanging data with the Web-HMI server like child's play. Data is stored as bits or registers in files and can therefore be reused. The user interface of these panels is stored as a web project, which means that interfaces can be accessed from any web browser, including from Saia® Web-Panels.

Saia® web technology and Web-Panels shows not only how to use them in combination with controllers that have integral web servers, but also their use as a modern, reliable way of operating PC stations. ■

# We're moving:
# the motion concept from Saia-Burgess Controls

**Competitors in the market boast about being able to offer everything, like a one-stop shop. That is fine for some users, but for many it is restrictive and oppressive. Who wants to be told what an automation solution for motion applications should look like?**

Our approach is to place the customer's liberty at the fore: the customer is free to choose his/her optimum drive solution. At the same time, Saia-Burgess Controls guarantees that the chosen drive – stepper motor, servo or frequency converter – can quickly and reliably be integrated into the PCD application.

### How do we make certain?
– By using open communications standards like CAN, CANopen or Profibus DP.
– Through predefined, basic web templates for commissioning the drive in question.
– Through the availability of uniform, basic applications software for drives from different manufacturers.





– Through the availability of uniform, basic communications drivers for the relevant drive.
– Solutions already exist for drives/frequency converters from various manufacturers.
This enables the customer to get started quickly, with our support, if necessary.
   A one-stop shop? With some drive manufacturers our contact is good. If desired, we can always look into a possible cooperation. ■

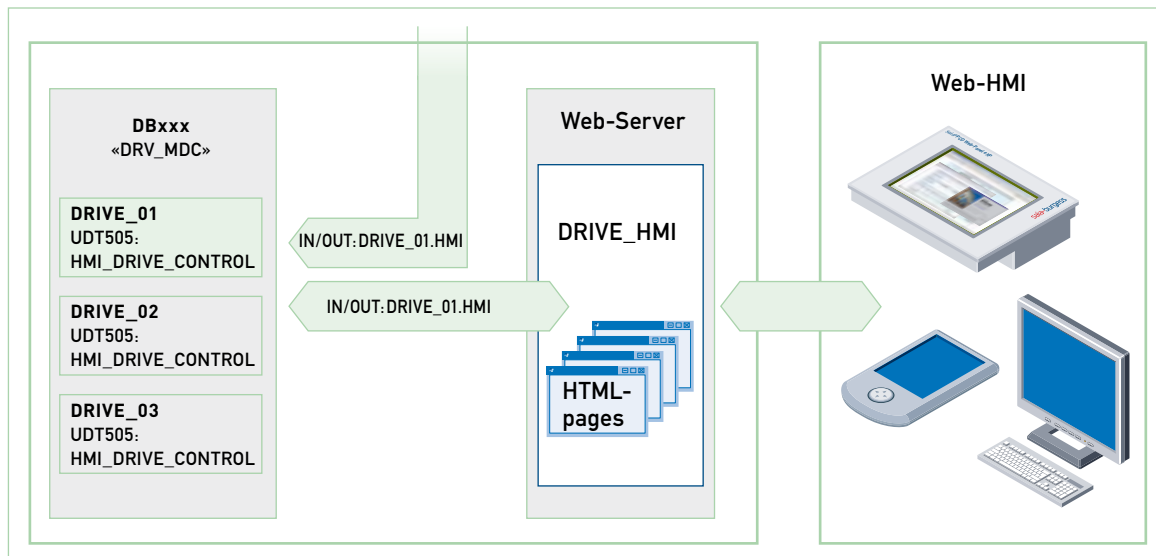**Examples of drive connections implemented:**

# Web HMI and the new Saia® PCD 2 M5 in a new type of machine for the marble industry

The Italian machine builder Pedrini has been an established supplier to the marble and stone industry since 1962. In the early years, machines were mainly built for the local market. Since then, Pedrini has grown into a medium-sized company that supplies a world-wide market, and whose export revenues now exceed those from the local market.



The company headquarters of Pedrini near Bergamo (Italy)

The major challenge for such a company is to ensure the very high reliability and easy serviceability of its machines. Without their own service centres close to the customer, any service intervention by the supplier tends to be time-consuming and costly.

Another challenge lies in the history of the Italian machine building industry. Being typically very strong in economical machines, it is now seriously challenged by new low-cost machine builders from the Far East, while at the same time coming under increased pressure from the top German machine makers.



The tough industrial requirements of the marble industry



The operator interface of the new machine with 3.5 ˝ Saia®Web-Panel as central part.

View into the cabinet of the new machine:
Saia®PCD2.M5540 with Profibus connection.

This was the context in which Mr. Giambattista Predini came to a decision regarding the future control system of his machines.

For many years Pedrini has used Saia®PCD2.M150 together with proprietary HMI panels and Beckhoff IPC systems.

For a completely new machine type, Pedrini decided in favour of a cost efficient, reliable and very innovative control system.

He uses the new Saia®PCD 2 M5540 as the CPU. This provides a solid, industrial platform and can in future be expanded toward the Web/IT world. With up to 1024 I/Os and a fast processor, the Saia®PCD2.M5 machine controller can also be expanded into a "production line controller", taking over automation tasks for more than just the basic machine. (see picture xx).

As the user interface for the new machine, Pedrini has chosen a 3.5" TFT Saia®PCD Web-Panel (see p 46). With its combination of web + electromechanical keypad, this HMI device is a good choice for a tough industrial environment like the stone industry.

The user can, in parallel with the Saia Web-Panel, also supervise and control the machine via a PC, both locally and remotely, thanks to the Ethernet connection. No additional licensing fees or proprietary software maintenance is required. The Browser is the universal tool. This is one element that makes the Pedrini's machine more attractive than ever before.

We wish Mr. Giambattista Pedrini and his team every success with the new machine. They can count on our full support. ∎
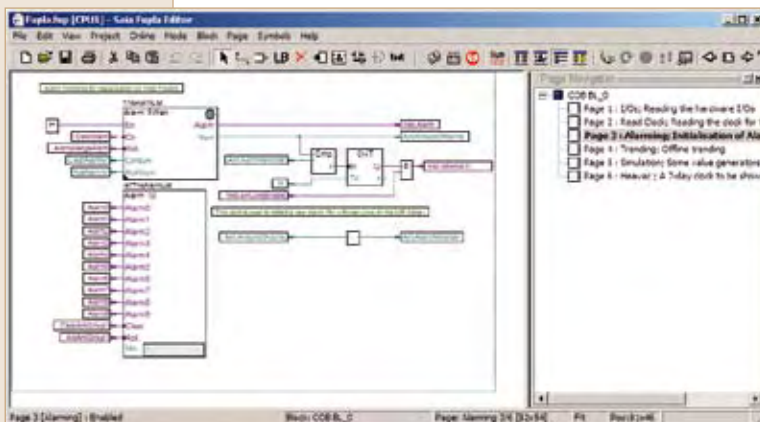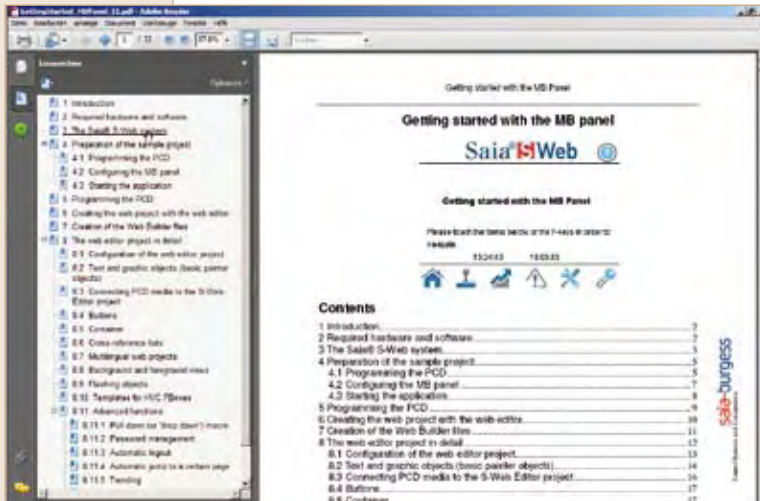


A manufacturing line



View of a Pedrini Marble oven machine installed at manufacturing site

# "Getting started" with new technologies

**New functionality requires additional knowledge**



In recent years, products from Saia-Burgess Controls have continuously extended their functional scope (some examples are: the web server, FTP server, e-mail despatch, and the file system). New products have also been added, such as HMI panels (MB panels, CE panels, and eXP-Panels).

To make successful use of these new technologies, users also require additional know-how. This can, of course, be acquired with training, and such an approach is particularly suitable for those with no prior experience of Saia-Burgess products. However, those who do have experience will only require a short introduction to the new features. For such cases, the presentation of a well documented example is recommended, as can be found under the category "Getting Started" on the support website (www.sbc-support.ch).

**Getting Started examples:
compact user knowledge**



Since a clear example often conveys more than a thorough explanation, these examples have been arranged to demonstrate the relevant points quickly and efficiently.

The "Getting Started" examples have been produced on the basis of experience and feedback gained from customers in training courses and day-to-day support. The enclosed document indicates important points to note when using the functionality.

Since not every example demands the same prerequisites from the user, they have each been marked to indicate their level of difficulty.

**Structure of an example**



The Getting Started examples are intended to offer users a quick start. They therefore mostly comprise a clear, functional project with minimum hardware requirements. The enclosed document explains the steps necessary to create a "live" functioning application with this project.
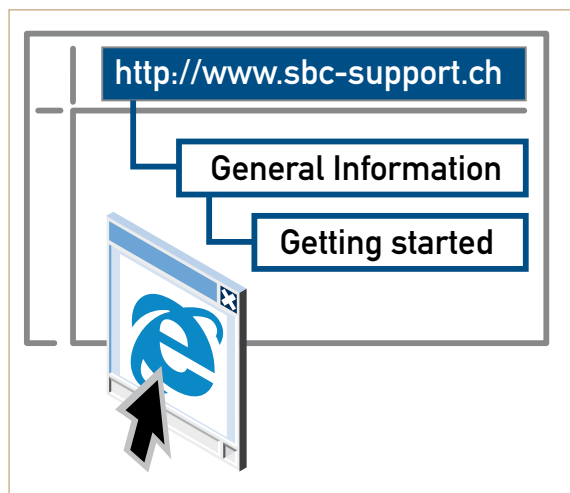
Key elements are:
– A functional PG5 project
– Definition of hardware and software requirements
– Explanation for speedy commissioning
– Explanation of individual program parts

### What are the topics of Getting Started examples?

These examples are from enquiries freqently received by the support team. As a result, they will be continuously expanded as the team receives more questions. An extract from the list of available examples is shown below:
– **MB Panel**
  Use of an MB Panels, S-Web Alarming, S-Web Trending
– **Web, E-mail, File system**
  S-Web project, reading and writing files to the PCD file system, editing *.csv files, sending e-mails
– **Modem**
  Send SMS, receive SMSn, remote access to PCD via modem connection
– **HMI-Editor**
  Editing an HMI project step-by-step

### Where can I find "Getting Started" examples?

Getting Started examples will be found on the support site of Saia-Burgess Controls (www.sbc-support.ch), directly under "General Information".  ∎

## End of production for Saia®PCD4

20 years ago, Saia-Burgess Controls launched its brand new Saia®PCD4 cassette-type product family.

We introduced lots of innovation, allowing customers in all fields of application to take a massive step forward in their automation concepts. We introduced one of the first PC-based programming tools, multiple serial communication, field-bus communication, mostion control, and even dual processor technology to run communications or safety-critical applications safely and with full availability alongside the control task.

Throughout its life, our PCD4 family was upgraded with new features and adapted to the evolving technology. Even 5 years ago, TCP/IP and web server were implemented.

This is what Saia-Burgess Controls means by "PLC values": long, trouble-free, operational life combined with constantly evolving performance features that allow our customers to enhance their automation concepts and generate added value for their investments.

Even if PCD4 is now retiring, everything that made it successful has been inherited by the latest generation. Smaller, decentralized automation platforms incorporating IT functions and open standards are a must today. Our new Saia®PCD3 fulfills all these expectations. With this new platform, we have already doubled sales compared to the best PCD4 year. This clearly demonstrates that Saia®PCD technology is more than ever a key success factor for all our partners and customers.  ∎

# FAQ Manager (http://faq.sbc-support.ch)

**There are currently over 880 FAQs available on the FAQ manager. This is a large amount of useful information.**

### FAQ Newsletter

In order to inform registered users about interesting new FAQ entries, a Newsletter has been added to the FAQ Manager which informs them by e-mail about new and updated FAQ entries on the topics of their choice.

### How to subscribe to the FAQ Newsletter

To subscribe, simply click on the "Newsletter" icon in the FAQ manager, enter your e-mail address and define a password.
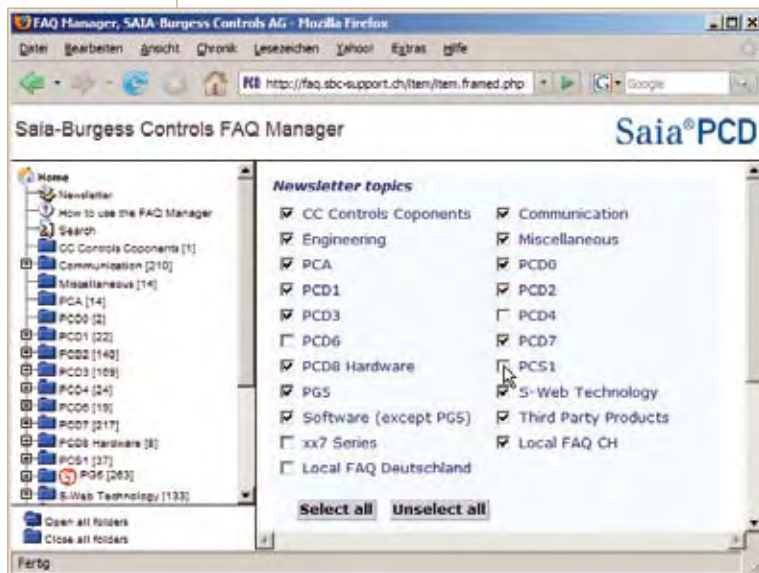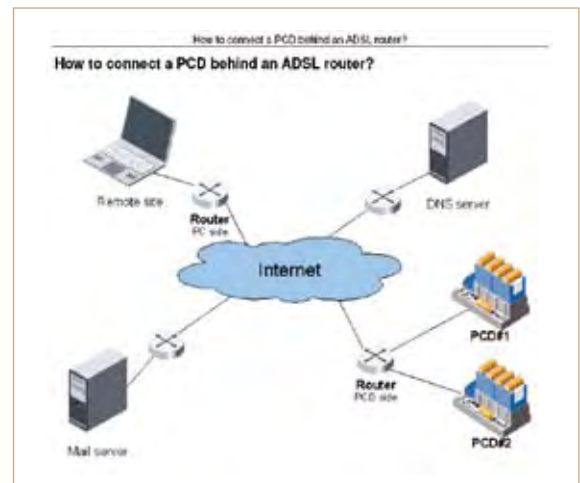


The next step allows you to specify those topics which correspond most closely to your requirements:

Once the e-mail address is registered, the FAQ Newsletter will be sent regularly according to the chosen interval (the Newsletter is always sent on a Monday).

### Interesting FAQ entries

### How to connect an ADSL router behind a PCD (FAQ# 101007)

A PCD system includes various internet communications features (web server, Ether-S-Bus SMTP, etc.). A DSL router is perfectly suitable for connec-



tion to the internet. FAQ 101007 explains important points to consider when accessing a PCD over the internet.

### Which possibilities do I have to configure a PCD7.D5xxx Web-Panel? (FAQ# 101041)

FAQ 101041 lists all possibilities to configure a CE panel (locally, using VNC, ftp, http).



### Instruction to copy a text into another text (FAQ# 100886)

The PCD now supports the function: "Copy text into another text". Place holders like @,$,... are supported in the source text too, which lets you include the current values of PCD media in texts. This new

feature allows the integration of explanatory text, which is then sent as an SMS, e.g. to display messages on a Web-Panel.

**What is the fastest way to communicate between Web-Panels and S-Web Servers? (FAQ# 101006)** ■

**Is there a list and description of the predefined container variables used on a Windows® CE Micro-Browser? (FAQ# 101002)**

With the container variables (resources stored locally on a Web-Panel) listed in this FAQ, the behaviour of the Micro-Browser can be controlled, panel specific information can be collected and applications can be launched and controlled.

> **What is the fastest way to communicate between Web Panels and the S-Web Server?**
> FAQ #101006
>
> The fastest communication between Web Panels and a PCD is obtained using WebConnect with a HTTP-direct connection and storing all the possible files of the project (except *.tcr) in the local directory of the WebPanel.
>
> That's the way you have to proceed:
>
> **PCD7.D4xx MicroBrowser Panel**
>
> - Define the HTTP-direct connection
> - Save the local files under M1_Flash:/WEBPAGES
> - If you browse through several PCDs you can define subdirectories for each PCD in the /WEBPAGES directory using the IP-address of the PCD as name of the directory (i.e. "192_168_12_25")
> - In the settings of the MicroBrowser you define in "Configuration" -> "Special" "local file search before remote" to be most efficient
>
> **PCD7.D5xxx and PCD7.D6xxx and PC-Browsers**
>
> - Use the WebConnect-Software and define a HTTP-direct connection
> - Save the local files under StorageCard/WEBPAGES
> - If you browse through several PCDs you can define subdirectories for each PCD in the WEBPAGES directory using the name of the connection as name of the directory (i.e. 'PCD3HTTPDirect')

# New firmware

| Produkt | Version | Was ist neu |
|---|---|---|
| PCD3.Mxxx0 | 1.08.23 | – Support for peripheral instructions (see FAQ 101046)<br>– Support for PCD3 Compact<br>– Secure data mode (see FAQ 100713)<br>– Freeze mode for serial communications (see FAQ 100916) |
| PCD2.M480 | 1.08.21 | – Secure S-Bus data mode<br>– Freeze mode for serial communications<br>– System function for reading the IP address |
| PCD2.M5xx0 | 1.08.19 | – First production version |
| PCD1.M135<br>PCD2.M150<br>PCD2.M170 | 0E6 | – S-Web alarm function<br>– Secure S-Bus data mode<br>– Certain values can be transferred on Profibus DP and Profi-S-I/O<br>– System function for reading the IP address |
| PCS1 | 0E6 | – Filter for active and unacknowledged alarms for S-Web |

**Coming soon on PCD2.M5xx0 and PCD3.Mxxx0 systems:**

– DHCP support for automatic IP configuration from the network

– DNS support for connecting a PCD using a name instead of an IP address

– SNTP support for easy synchronisation over IP networks

– PPP support for using IP based protocols, even without Ethernet interface

– Modbus support implemented in the PCD firmware (serial and IP)

– New S-Web Server (HTTP 1.1 support and higher performance)

Firmware supporting the above listed features is expected to be introduced into production in early 2009.

# New documents: Saia®PCD and Saia®CC

P+P26/455

P+P26/442

P+P26/444

P+P26/389

P+P26/446

| Name | Document-Type | Document-No. | Status |
|---|---|---|---|
| Saia®PCD – Web \| IT \| Microsoft®.NET | Technology Flyer I | P+P26/476 | new |
| Saia®PCD2 and Saia®PCD3 Hardware | Technology Flyer II | P+P26/482 | new |
| Web technology with Saia®PCD HMI | Technology Flyer III | P+P26/483 | new |
| Saia®DDC.Plus automation objects and templates | Flyer | P+P26/455 | new |
| SI-Flyer for system integrators | Flyer | P+P26/478 | new |
| SI-Flyer for investors | Flyer | P+P26/479 | new |
| BACnet | Flyer | P+P26/442 | new |
| EnOcean | Flyer | P+P26/443 | new |
| DALI | Flyer | P+P26/444 | new |
| EIB / KNX driver | Flyer | P+P26/448 | new |
| MP-Bus | Flyer | P+P26/481 | new |
| Bauer Optimation system | Flyer | P+P26/485 | new |
| Ethernet-TCP-IP modules PCD7.F65x | Flyer | P+P26/480 | new |
| New Saia®PCD2.M5 series | Flyer | P+P26/446 | new |
| Saia®PCD3.RIOs | Flyer | P+P26/389 | revised |
| PPP | Flyer | P+P26/487 | new |
| SNTP | Flyer | P+P26/488 | new |
| DHCP | Flyer | P+P26/489 | new |
| DNS | Flyer | P+P26/490 | new |
| Saia®DDC.Plus system | Brochure | P+P26/949 | revised |
| Web technology in automation | Whitepaper (Whitebook) | P+P26/260 | new |
| Ferihegy Airport, Hungary | Reference | P+P26/939 | new |
| Villa Cimbrone, Italy | Reference | P+P26/952 | new |
| Saia®PCD system catalogue | Catalogue | P+P26/215 | revised |
| Saia®CC – Control Components catalogue | Catalogue | P+P26/216 | revised |
| Saia®PCD memory media | System Information | P+P26/458 | new |
| ECO | Technical Information | P+P26/341 | revised |
| Saia®PCS1 | Technical Information | P+P26/345 | revised |
| Saia®PCD1.M137 | Technical Information | P+P26/348 | revised |
| OPC server | Technical Information | P+P26/357 | revised |
| Remote display with LED screen Saia®PCD7.D210 | Technical Information | P+P26/361 | revised |
| Saia®PCD7.D23x | Technical Information | P+P26/382 | revised |
| Single-phase A.C. meter | Technical Information | P+P26/433 | revised |
| 3-phase meter | Technical Information | P+P26/436 | revised |
| LON-Bus modules RAIL & SAFE | Technical Information | P+P26/337 | revised |
| S-Bus Interface Saia®PCD7.H104S | Technical Information | P+P26/457 | revised |
| Saia®PCD3.Mxxx0 | Technical Information | P+P26/397 | revised |
| Saia®PCD3.M series | Technical Information | P+P26/388 | revised |
| Saia®PCD1 \| Saia®PCD2 | Manual | 26-737 | revised |
| Web-Server xx7 | Manual | 26-775 | revised |
| Ethernet TCP-IP \| PCD7.F65x | Manual | 26-776 | revised |
| PCS1 | Manual | 26-781 | revised |
| Saia®PCD3 | Manual | 26-789 | revised |
| Web-Server classic | Manual | 26-790 | revised |

| Name | Document-Type | Document-No. | Status |
|------|---------------|--------------|--------|
| TCP/IP Ethernet for xx7 series | Manual | 26-791 | revised |
| Web-Connect | Manual | 26-800 | revised |
| Saia®PCD7.D290 | Manual | 26-841 | revised |
| Saia®PCD7.D4xx | Manual | 26-851 | revised |
| Saia®PCD2.W525 \| Saia®PCD3.W525 | Manual | 26-853 | revised |
| PCD7.L61x room controller with LonWorks | Manual | 26-854 | revised |
| File system | Manual | 26-855 | revised |
| PCD2.M5 | Manual | 26-856 | new |
| PCD3.F2xx | Manual | 26-857 | new |



P+P26/939

## Saia®DDC.Plus System: from building automation to building innovation

The Saia®DDC.Plus system is presented in a 16-page document. This brochure has been brought up to date and includes the new develop- ments in technology. Its visual language is now even more distinctive, provid- ing optimum support for the technical facts through visualization.

www.sbc-support.ch/references/26-949_E.pdf



P+P26/949



P+P26/952



## Technology flyer

Technology flyers have been distrib- uted in various countries as loose-leaf inserts with several technical journals. The themes of these flyers were: Tech- nology, Hardware and HMI. The next themes for new flyers in this Technol- ogy series will be: "Wide Area Aotoma- tion" and "Energy".



P+P26/476          P+P26/482          P+P26/483



26-737



26-789

## Catalogues

Saia®PCD and Saia®CC catalogues are updated each year.



P+P26/215          P+P26/216

## Whitepaper / Whitebook

Our first whitepaper in book form is entitled "Web technology in automation".

This topic is presented in a 50-page document. The creation of two new whitebooks is planned for 2009: "Infrastructure automation with Saia®PCD" and "Web-HMI with Saia®PCD".



P+P26/260



26-851

# IP protocols in automation
# For easy integration of PLC controllers
# into web/IT automation environments

**Our PCD systems already have powerful web/IT functions and protocols. To make the new PCD3 and PCD2.M5 CPUs even more open and easier to integrate into web/IT infrastructures, we have extended the IP protocols with additional standard protocols, such as DHCP, DNS, SNTP, SNMP and PPP.**

The following ISO/OSI layer model represents the IP protocols supported by Saia®PCD controllers. Protocols highlighted in colour are new and will be supported by the current firmware versions of PCD3 and PCD2.M5 CPUs.

| OSI-Layer | | | User program | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | FBox Libs | | | | | |
| | | HTTP/<br>FTP-<br>Server | | IL, CSF-commands | | | | | |
| **7** | Application | | DHCP<br>DNS<br>SNTP<br>SNMP | BACnet | E-Mail<br>SMTP | S-Bus | Modbus | Open<br>Data<br>Mode |
| **6** | Session | Not used | | | | | | | |
| **5** | Presentation | | | | | | | | |
| **4** | Transport | TCP, UDP | | | | | | | |
| **3** | Network | IP | | | | | | | |
| **2** | Data Link | Ethernet | | | | | | PPP | |
| **1** | Physical | IEEE802.3 | | | | | | RS232,<br>Modem | |

## SNTP – Simple Network Time Protocol

The Simple Network Time Protocol is a standard for synchronizing multiple devices in IP networks. This protocol allows the transmission of actual time by servers located on internet or intranet. Two modes are available: unicast point-to-point (the SNTP client initiates a time request) or broadcast point-to-multipoint (time information sent by NTP server to all clients simultaneously). The time accuracy achieved with unicast is around 500 ms and with broadcast it is 1 s. Clever algorithms ensure that the different running times are compensated by a network.

Synchronisation occurs for several network stations at a time. The internal clocks of individual network stations are synchronized centrally from a time server. A single time source in the network is enough for everything else to proceed automatically. Since the protocol is a fixed element of Saia®PCD firmware, it can be used quickly and easily.

Maintaining the internal clocks is child's play. On-site staffs do not have to concern themselves with each network station individually. Events like the changeover between summer and winter time happen automatically for all network stations at once. The protocol can be used in large networks to synchronize several stations, so that events registered can also be stored in the correct chronological order.
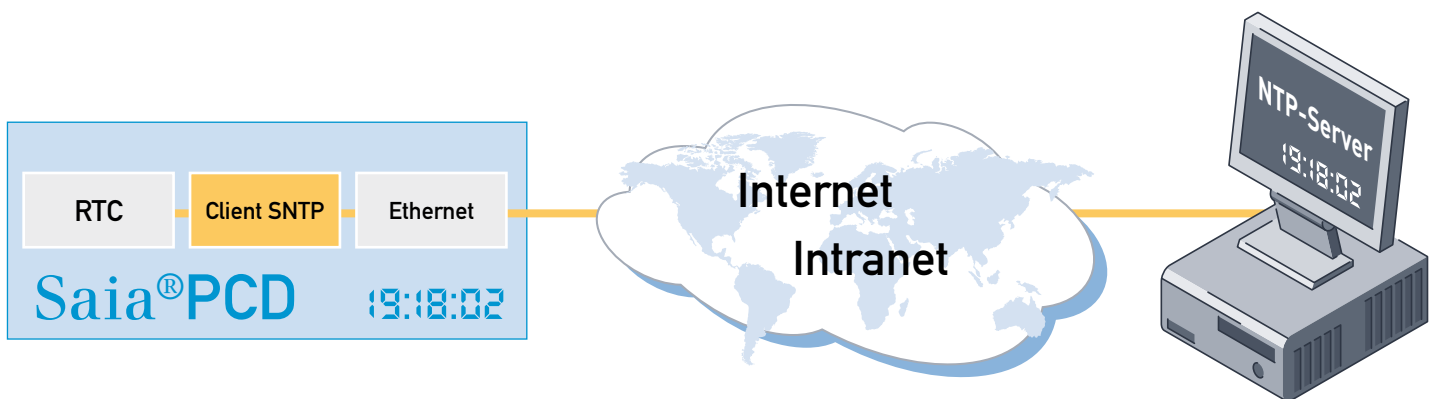


## DHCP – Dynamic Host Configuration Protocol

This is a protocol for the automatic configuration of Ethernet communication. Lengthy manual entry of communications parameters is no longer necessary; instead they are assigned directly from a central server. After a request, a DHCP client receives the parameter IP address, subnet mask, gateway and DNS address automatically.

The integration of devices in existing networks takes place automatically. The only manual setting on the client device is the one that tells it to take its configuration automatically from a DHCP server.

Without knowing the network parameters, devices can be integrated into existing networks. This also makes it easier to increase the availability of devices and simplify the management of addresses used. Even service personnel with no technical background or knowledge of the precise data can exchange devices.

Larger networks become child's play. Networks of any size can be created through optimum assignment of IP addresses. It is possible, without major clarification, to connect devices directly even to networks that are constantly expanding.



❶ Request

DHCP (DNS) Server

❷ IP Address
Subnet Mask
Gateway
DNS Address
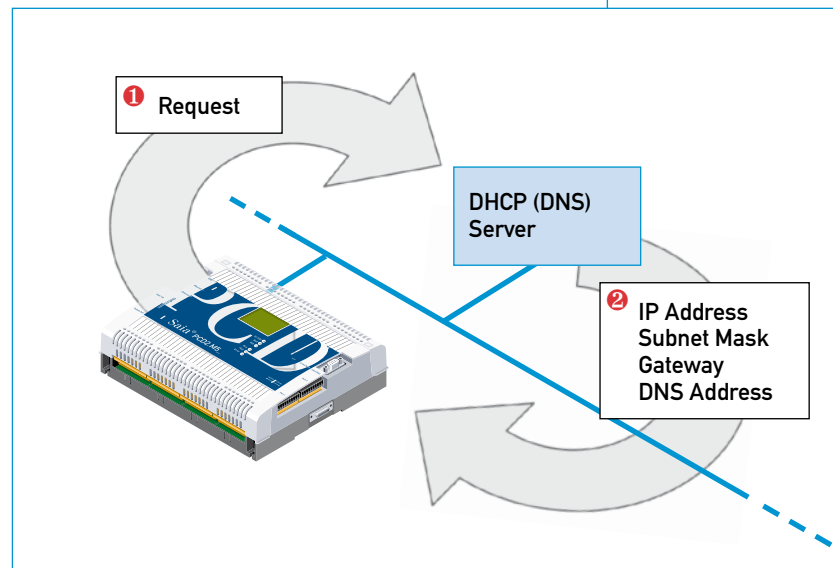
### DNS – Domain Name System

Access to controllers through the assignment of fixed hostnames. To establish communication between two controllers, it is not necessary to know the IP address of the target controller, only its hostname. Using this name, the IP address can be requested from a DNS server.

Devices no longer use anonymous IP addresses that contain little information. The structure and availability of individual networks are defined once, and do not need to be adapted to changes in the available IP addresses. Controllers are supplied pre-configured and programmed. The IP addresses are only transferred on-site and are generally not known.

On-site users only need to know the user-friendly device names. Systems therefore become easier and their operation more intuitive. The hostnames can contain relevant and useful information, such as the location or function of the device, making it much more intelligible than IP addresses. Documentation of networks with multiple stations can be displayed more clearly.

It is possible to create relatively large or small networks that are regularly accessed from different locations. The topologies of these networks can be adapted to circumstances, without restricting station availability. To the outside world, station names can still be used.
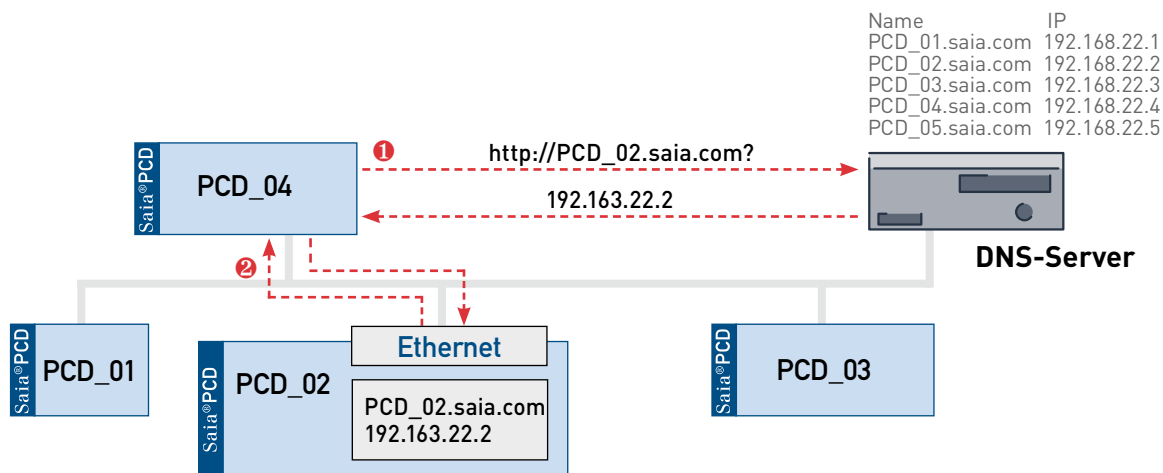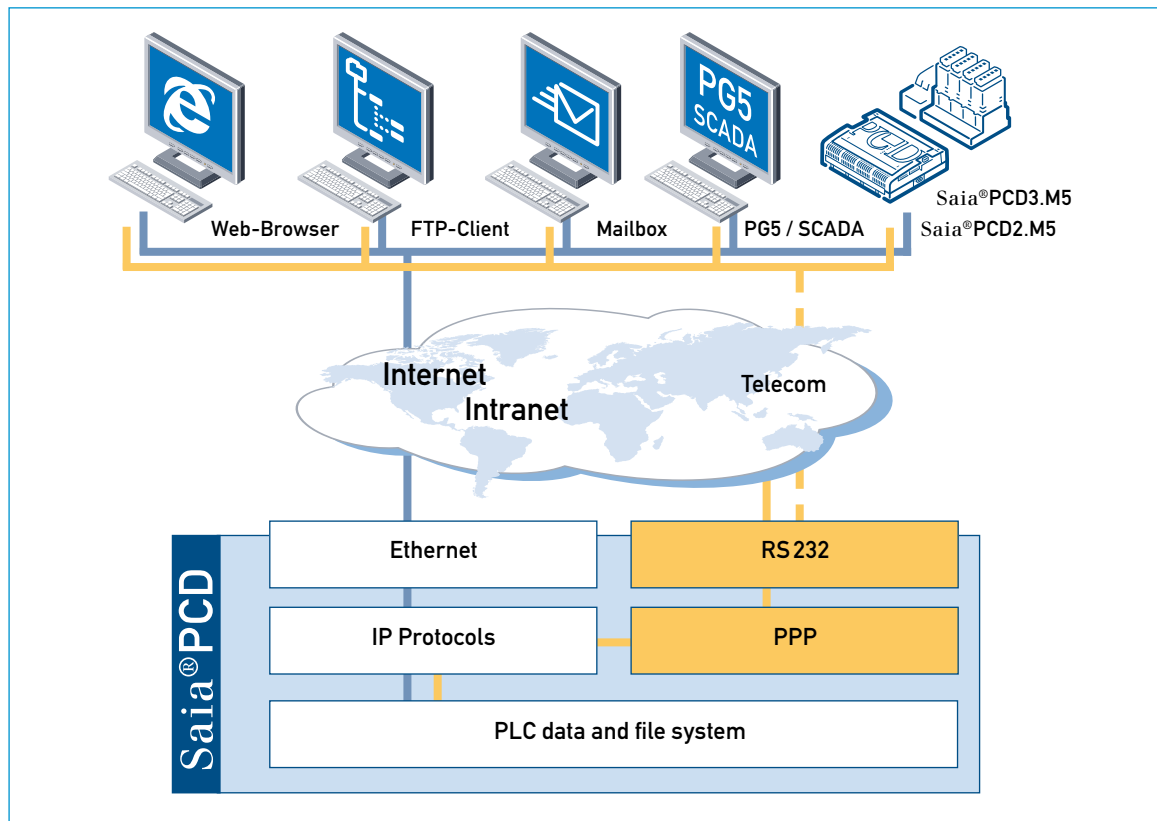


### PPP – Point-to-point protocol

This is a protocol that establishes communication between one point (location) and another.

PPP is mainly used to transport the TCP/IP protocol across a serial line or modem connection. PPP operates at the bottom 2 layers of the ISO/OSI model and allows the same functions as an Ethernet connection.

To fulfil the greater safety needs defined for dialling in company networks or in installations with critical tasks, the CHAP protocol (Challenge Handshake Authentication Protocol) has been introduced. Unlike PAP (Password Authentication Protocol) the password transmitted here is encrypted.
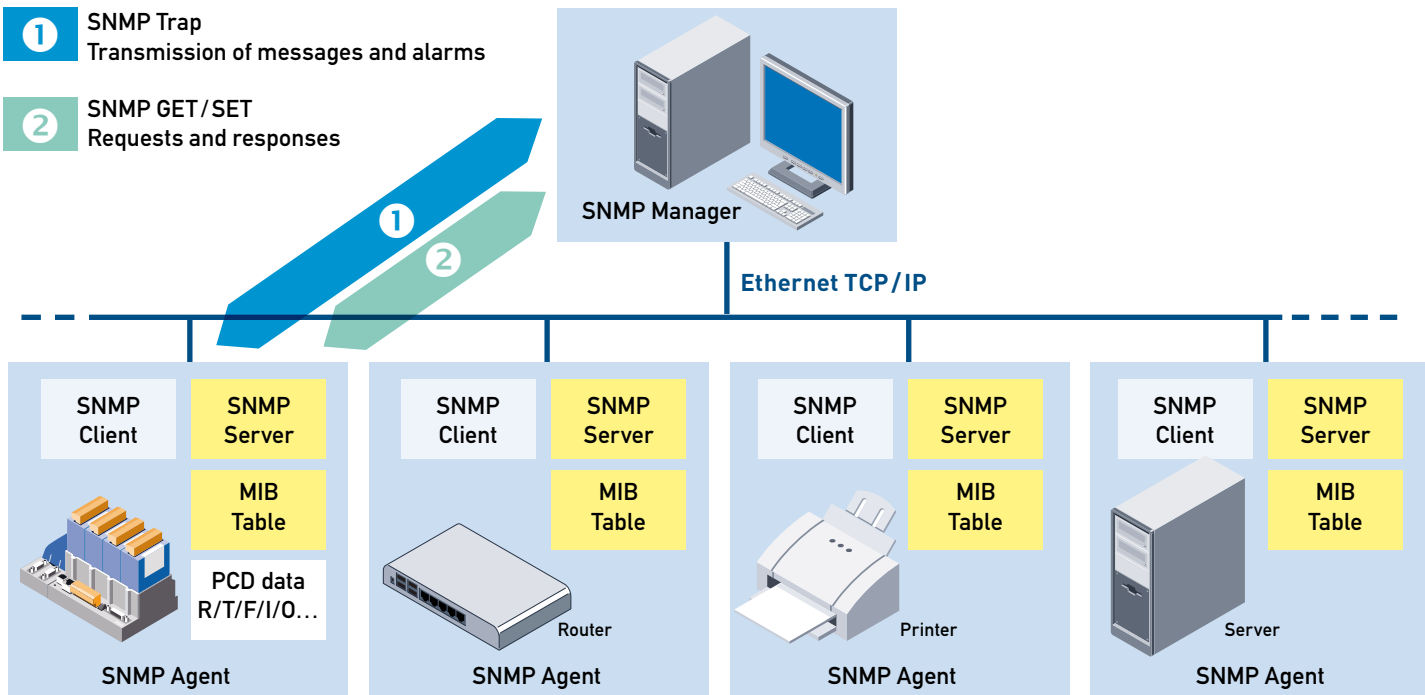
Web and FTP servers can be accessed, even with the cheaper devices that have no Ethernet connection. They can be integrated into IP environments via serial ports. Modems connected to the serial port of a such devices can directly be used to connect the devices to internet or intranet. Standard web browsers can be utilized without additional software with all Saia®PCD controllers. Saia®PCD controllers can now also be connected directly using modern communications methods, like GPRS and UMTS networks.

Web-Browser   FTP-Client   Mailbox   PG5 / SCADA

Saia®PCD3.M5
Saia®PCD2.M5

Internet
Intranet

Telecom

Saia®PCD

Ethernet | RS 232
IP Protocols | PPP
PLC data and file system

### SNMP – Simple Network Management Protocol

The simple network management protocol was developed to allow network elements (e.g. routers, servers, switches, etc.) to be monitored and controlled from a central station.

SNMP uses the UDP protocol. The SNMP manager is usually software that runs on a server. It monitors and controls the SNMP agents. These can be any chosen device that can be reached via

**1** SNMP Trap
Transmission of messages and alarms

**2** SNMP GET / SET
Requests and responses

SNMP Manager

Ethernet TCP / IP

| SNMP Client | SNMP Server |
| MIB Table |
| PCD data R/T/F/I/O… |
SNMP Agent

| SNMP Client | SNMP Server |
| MIB Table |
Router
SNMP Agent

| SNMP Client | SNMP Server |
| MIB Table |
Printer
SNMP Agent

| SNMP Client | SNMP Server |
| MIB Table |
Server
SNMP Agent

the network and supports SNMP (e.g. routers, servers, or Saia®PCD).

The SNMP manager reads and sends data from the agent by means of SET and GET commands. This enables the manager to query states, make settings, and enable actions.

The SNMP agent can also send unrequested "trap" messages to the SNMP manager. This allows, for example, faults to be reported directly.

To standardize the data structures that SNMP-compatible devices are intended to provide, MIB tables have been introduced. MIB stands for management information base. Every SNMP device possesses managed objects. These objects are stored in a text file using a particular format.

Since the common basis is the network to which the devices are connected, most of them already support MIB-2. It contains general information about the system, network interfaces, protocol properties, etc.

For Saia®PCDs with SNMP support, a Saia®MIB has been defined.

It sets out all the resources that can be requested and modified with SNMP. This file is translated into a standard format that can be imported by the usual management systems. Basically, all PCD media (inputs/outputs, registers, flags, DBs, etc.) can be accessed. In the MIB file, the programmer can limit access to selected areas only.

Trap messages can be sent by means of CSF commands to the SNMP manager.

Due to their support for the SNMP protocol, Saia®PCDs can be integrated flexibly and at no extra cost into IT networks with an existing SNMP manager.

In many cases, therefore, the SNMP manager takes over tasks that are usually looked after by a separate management system.

### Modbus

Modbus is a communications protocol based on a master/slave or client/server architecture. It is widely used and supported by many manufacturers and devices. In many cases, therefore, Modbus is the common denominator for exchanging data between different devices and systems.



Modbus-TCP

Ethernet

Modbus-ASCII / Modbus-RTU

> **Modbus exists in three different versions:**
>
> **Modbus ASCII:**
> Data is transmitted in ASCII format
> via serial interfaces (RS232, RS485)
> **Modbus RTU:**
> Data is transmitted in binary format
> via serial interfaces (RS232, RS485)
> **Mobus TCP:**
> Data is transmitted in TCP/IP or UDP/IP packages
> via Ethernet

The Modbus protocol is now supported in the firmware of all Saia®PCD3 devices and the new Saia®PCD2.M5 CPU.

For the configuration and programming of data exchange, CSF commands and convenient Fupla FBoxes are available.

For all Modbus protocols, client and server functionality is supported by PCD systems

In association with our built-in Automation-Server, even third-party systems can easily be integrated via Modbus into higher ranking web/IT automation environments. ∎
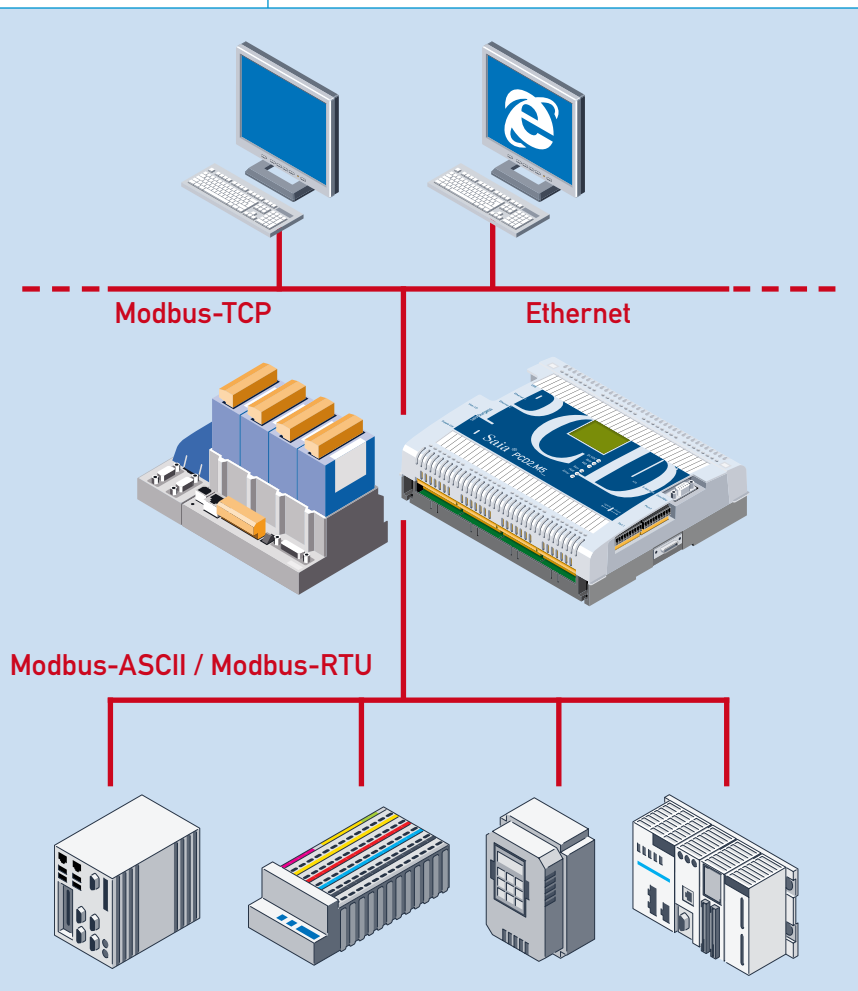
# Saia®**PCD**

------------------------------------------------

## the controllers with an integral web server and IT functions



# Saia®**PCD**

www.saia-pcd.com

# Saia®PCD production upgraded

**In April 2008, the new Saia®PCD factory in Murten started production. Expansion – particularly in our HMI business – had necessitated a larger, more modern production infrastructure.**



View of the production area of the new Saia®PCD factory

By October we had already carried out the first expansion to make room for a new high-tech production machine.

Growth for Saia®PCD3 CPUs was so high in the first half of the year that we had reached the limit of existing capacity in the soldering process. Since the Saia®PCD3 CPU is very tightly packed and, regarding the components used, really sophisticated, a normal wave soldering machine would not be adequate to satisfy the stringent quality requirements placed on soldering technology.

We therefore decided to buy a new selective soldering machine from the company ERSA. Together with the necessary infrastructural measures (e.g. nitrogen supply) the total investment amounted to around half a million Euros.

The selective soldering machine is a robot that "selectively" processes each individual soldering point automatically. Each soldering process is monitored by a camera and recorded. Solder quality is verified during actual processing in real time.

We have installed a machine that will double productivity. However, we hope that further healthy growth with Saia®PCD over the next two to three years will mean we will have to increase our capacity yet again! ∎



New selective soldering machine for Saia®PCD production



Individual solder point as monitored by the camera during welding

# Press conferences in the Murten factory

**In the future, we will increasingly use our new factory and many attractive technological innovations to present our company and the Saia®PCD product range to the international technical press at conferences in our Murten headquarters.**



Our climbing wall for technical journalists!



Press conference in Murten on 29th September 2008

The live rehearsal for future Murten press conferences took place on 29th September 2008, with 12 editors from Germany and 6 from Switzerland. For those who had come a long way, we arranged a climbing excursion to the mountains nearby, as a small incentive prior to the conference.

In early 2009, another German language press conference is planned to take place in Murten, with the emphasis on infrastructure automation. It will be followed by a press conference in Italian.

We feel confident that those technical journalists who, on the day, experienced a real encounter with us will also pass on their own enthusiasm to readers in the different countries. ∎



### Press Releases for press conference

The six press releases on this press conference can be found under www.saia-marketing.com
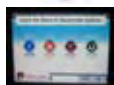
Company News

New Saia®PCD2

New Saia®PCD3.WAC Controller

News 10˝ Micro-Browser Web-Panel

Web-HMI now also for Simatic® S7

Innovation:
Saia®Haptic Web-Panel

### Press conference impressions 29.9.2008

# 10 years Saia-Burgess Controls Kft and 25 years Saia®PCD in Hungary

At end of September, we celebrated the 10th anniversary of our company and the 25th anniversary of Saia®PCD in Hungary. We had the pleasure of welcoming customers from every part of the country. Most of our customers were able to join us, including the Kecskemét Water Company and Budapest Airport.

The slogan we chose for this event was: "Automating your flights of fancy for 25 years", and Budaörs Airfield therefore provided the perfect location. Before dinner and speeches, we invited our customers to discover Budapest and its region from the air on board a reconstructed twin engine LI2, an old DC3 built under licence. For all, the atmosphere of the flight, the sound of the engine and the views of Budapest were a marvellous experience, and everything combined to reflect happily the successful collaboration between us over so many years.

The presentations started with Patrick Marti, Director Corporate Sales, who highlighted how much value is packed into Saia®PCD. Then the General Manager of the Kecskemét Water Company spoke about his work, illustrating his talk with many pictures from their first cooperation with Saia Burgess. Mr. Varga, a marketing specialist, covered milestones in the history of Saia-Burgess Controls Kft, including exhibitions and marketing campaigns. Last but not least, Gabor Opitzer, the Managing Director, closed the official part with stories from his 25 years of experience in applications with Saia® products all over the world. Then the Young Jazz Ensemble of Budaörs entertained us all with a concert. As they played, we dined – and continued to exchange many ideas throughout a very enjoyable dinner.

A warm thanks to all our customers, who made this unforgettable event possible and whom we hope to invite for the next jubilee.  ∎

## ControlsNews Number 11

The ControlsNews editorial team

## New Saia®PCD Product Manager in Murten factory (CH)

On 1st October 2008 we were particularly happy to welcome a new member of Staff. Mr Austin Wang has started work with us as the Product Manager for Saia®PCD Systems. Austin Wang is the only son of the CEO and majority shareholder of Johnson Electric. Since 2005, Saia-Burgess Controls has been owned by Johnson Electric.

The fact that we have been able to win Austin for ourselves shows the serious interest taken by Johnson Electric in the business model and capabilities of Saia-Burgess Controls.

Austin Wang is a talented electronic engineer, 28 years old, who comes to us with a university training from the USA and many years experience as a Support Engineer with a grid computing company in England.

For the further expansion of HMI business it will certainly be an advantage for us to have a colleague in product management who can communicate with well known suppliers of components (e.g. LCD displays) in their mother tongue.  ∎

# Malthe Winje and Saia®PCD:
## a success story for nearly 20 years

**Malthe Winje was established in 1922, based on sales of high voltage equipment. In 1990 the automation business was 20% of its total turnover and MW already had good relations with the maritime market. They were also about to deliver the first Saia®PCD based project for water distribution, with the PCD4. Over the following 18 years, the Group grew from 14 employees and Euro 5 million sales to 80 employees and Euro 30 million sales. Today the Group consists of the holding company, Malthe Winje AS, with 11 subsidiaries and 2 affiliates, mainly active in Norway, Sweden and Finland.**

Terje Bratlie, Malthe Winje's Managing Director and co-owner, believes in straightforward management principles, which are applied within the company and are extended to partners. He puts the customer at the center of his strategy and develops the business for the longer term. Clear values – like strong technical competence, credibility, trust and a careful selection of top suppliers – are essential. His word counts. Timely criticism and compliments make sure that progress up the learning curve is quick.

Developing a company in this way means Malthe Winje has to regularly assess the quality of the
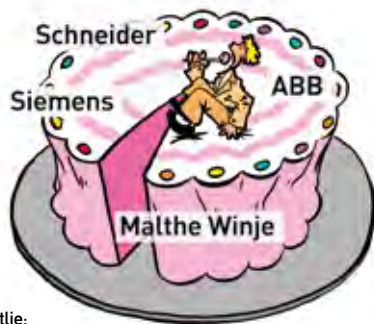


Terje Bratlie:
"The 'cake' is big enough for natural growth."

suppliers, who in turn contribute to MW's ambitious growth objectives.

Talking to his team regarding Saia®, he said: "With Saia® we have very good products, competitive prices and the 'cake' is big enough for natural growth. If you don't succeed, blame yourself or find another job!". And: "In general, we have to thank Saia® for a lot of strong sales arguments: a wide choice of communication protocols, built-in modem facilities, extremely good price/performance ratio overall, and huge flexibility meeting specific demands (with a certain volume..). But most importantly: innovative focus!"

These comments show the mutual respect and success shared by both our companies after nearly 20 years of partnership in many challenging projects.

**Examples of markets and applications in which the expertise of Malthe Winje and Saia®PCD are used**

**Maritime automation**
Brunvoll delivers propeller (thruster) control based on Saia®PCD worldwide.
The cabinets are designed in Molde, Norway and used in a huge variety of vessels from small fishing boats to big cruise liners (see p 40).
Saia®PCD2 is standard in their systems for fire door supervision and control, named Autronica Fire & Security.
Off-shore cranes represent another important segment where we have good references.

**Sewage treatment and water supply**
As one of the main players on the Norwegian market for the control of sewage treatment plants and water distribution, we are able to state that Saia®PCD has been crucial to this success.

**Building automation**
In Sweden we have about 50 system integrators in building automation; they facilitate all kinds of automation in office buildings, shopping malls, schools and also facility automation for rail and industry. ∎
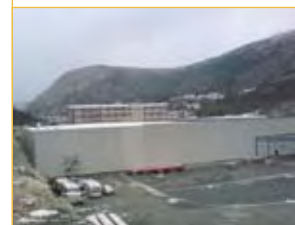
# Saia®PCD3 controls refrigeration plants for NorgesGruppen, Norway's largest trading company

**NorgesGruppen, Norway's largest wholesale and retail company, generates € 4.6 billion in sales and includes the ASKO retail chain. NorgesGruppen is building a series of new central distribution stores in Norway. Simmersholm Automation Ltd was awarded the contract to automate their refrigeration plants, with control and monitoring by Saia®PCD3.**

Central distribution stores operate large industrial refrigeration plants to maintain precise temperature conditions in freezer rooms, cold storage rooms and cold areas.

These plants utilize ammonia, glycol and carbon dioxyde for the +2 °C air-conditioning system, the -8°C cold room system, and the -35 °C cold storage rooms.



Near Bergen, the recently commissioned 35 000 m$^2$ ASKO Vest project relies on 2 Saia®PCD3 devices with 200 analogue inputs and outputs to measure temperature and pressure from 11 Grasso reciprocating compressors and more than 60 evaporators.

Thanks to 25 years of flawless references in the use of Saia®PCD and to the company's recognized engineering expertise, Simmersholm Automation Ltd won 3 similar projects from ASKO. This means that today there are over 100 000 m$^2$ of refrigerated rooms are successfully controlled by Saia®PCD. ∎
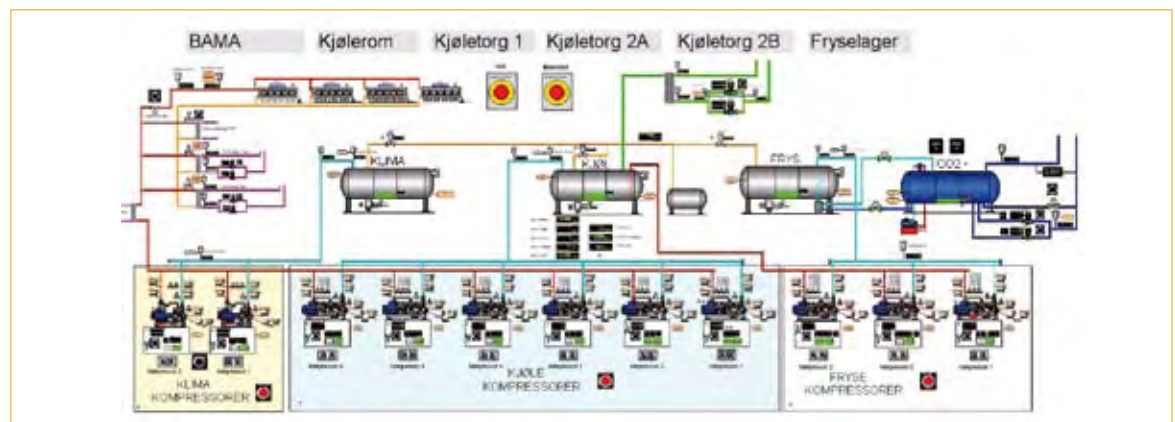
# Saia®PCD3 controls high-tech calcium-carbide furnace for cheaper production of plastics raw material

Raw materials used for the production of plastic are usually extracted from oil. As the oil price increases, this material becomes more expensive and profits naturally fall. A new way to produce plastic raw material from calcium-carbide has been developed and large scale manufacturing plants are now in operation in China. The raw material produced this way is cheaper.

However, the process control for feeding material to the calcium-carbide furnace is sophisticated, requiring very fast reaction times and high accuracy. Thanks to Saia®PCD3 – our fast, reliable and flexible controller – it has been possible to fulfill all these expectations. A PCD3.M5540 with several PCD3.T760 Profibus remote I/O units is used to collect all field data and to execute precisely all the necessary controls. Full scale production has been running without interruption in the first plant for over 6 months. ∎
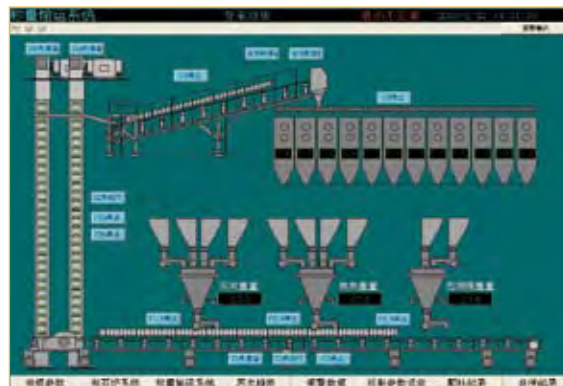


# Dalian XiGong (西岗) Stadium

The Dalian XiGong Stadium is the newest most prestigious construction project in the booming city of Dalian on northern China's Yellow Sea coast. The stadium was built by local government to provide sporting facilities for citizens in their leisure time and as a first-class facility for international sporting competitions, such as volleyball, table tennis, etc.



In this project, a special requirement from the HEVAC designer was the integration of all control valves and damper actuators via the Belimo MP BUS into the control system. A long list of reference projects, in which Saia®PCD and PCS successfully manage MP Bus actuators, made Saia the natural first choice.

In Dalian XiGong Stadium, 15 Saia®PCS controllers have been installed. Besides collecting data from I/Os, the controllers communicating via MP-BUS, collecting information and managing the exact positioning of valves and dampers.

As a result, the whole installation is more accurately controlled for maximum energy savings. Thanks to better use of energy, easier engineering and reduced wiring costs, this project has brought substantial advantages to the government and more comfort to all people in the stadium. ∎

# Migros Westside Berne – unique in the World. With the latest energy-saving technology, controlled by $\text{Saia}^{®}$PCD3

On 8th October 2008 the largest shopping and lifestyle centre in Switzerland, at the gateway to Berne, opened its doors to the public. This architectural masterpiece by the star architect Daniel Liebeskind does not just impress with its timeless design, but is also a unique concept for shopping, entertainment, wellness, and community living on a scale very rare in Switzerland.



During the planning of Westside, aspects considered were not only economic, but also ecological. The planners of Migros Westside took on responsibility for the environment and built the project according to the "minergie" standard. This means that 20 percent of energy need is covered by renewable sources. Only 15 percent of Westside's annual heating requirement is met with fuel oil, 35 percent with heat recovery, and around 50 percent with a modern wood-chip heating system.

For implementation of Westside's technology, products from Saia-Burgess Controls Ltd were chosen as the control components. This was because of the great flexibility of their hardware and software, and the ideal interaction between three Swiss system integrators. In order to meet strict deadlines, the lead contractor in the fields of electrical engineering, measurement, control and automation, Burkhalter Technics AG, decided to appoint two additional companies to share the assembly, project planning, electrical design and execution.

The dimensions of such a mega project demand, in every regard, extraordinary hardware performance and seamless integration. Thanks to outstanding cooperation between the three Saia-Burgess Controls system integrators, this multi-layered project was completed on time, ready for the clients to move in and start operations.



## Project data

### Cooperation of system integrators

– Burkhalter Technics AG
– Müller Systemtechnik AG
– Renergy AG



### Project size

| | |
|---|---|
| Shopping | 23 000 m$^2$ |
| Mall | 9000 m$^2$ |
| Gastronomie | 3000 m$^2$ |
| Wellness/Fitness | 10 000 m$^2$ |
| Cinema | 11 screens, 2400 seats |
| Hotel | 144 rooms, 11 seminar rooms |
| Retirement accommodation | 95 apartments |
| Parking | 1275 parking spaces |
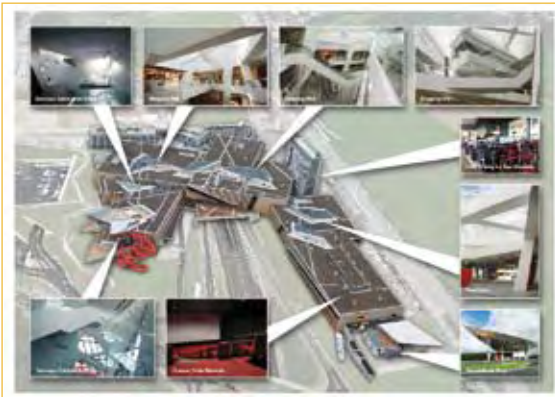
**Teamwork around** Saia®PCD

System integration was achieved by a strong team: "use it". This was a collaboration project between three of the top Saia® integrators in Switzerland: MST, Burkhalter, and Renergy.

Control, display and visualization components from Saia-Burgess Controls cover the entire spectrum offered. Using Saia®PCD3 for basic control in the measurement, control and automation fields, all main and substations for heating, ventilation and air-conditioning are connected together via ethernet. The different user zones are monitored

and controlled by a total of five independent Visi. Plus management systems with an overall data-point volume of 12 000 DP. Connection between individual project zones is ensured by fast, optical fibre router connections.

On-site operation is via 10" CE Web-Panels, available to the operator in each of the larger air-conditioning control centres.

The 144 rooms of the Holiday Inn (incl. seminar rooms) are equipped with fan-coil circulating air conditioners. Each room has a PCD7.L601 controller and a PCD7.L643 digital room control unit with display to provide the desired level of comfort.

Integrated into a network of PCD systems with TCP/IP communication via ethernet and optical fibres, all operating states are permanently on-call from Web-Panels using a comprehensive SCADA system. ■
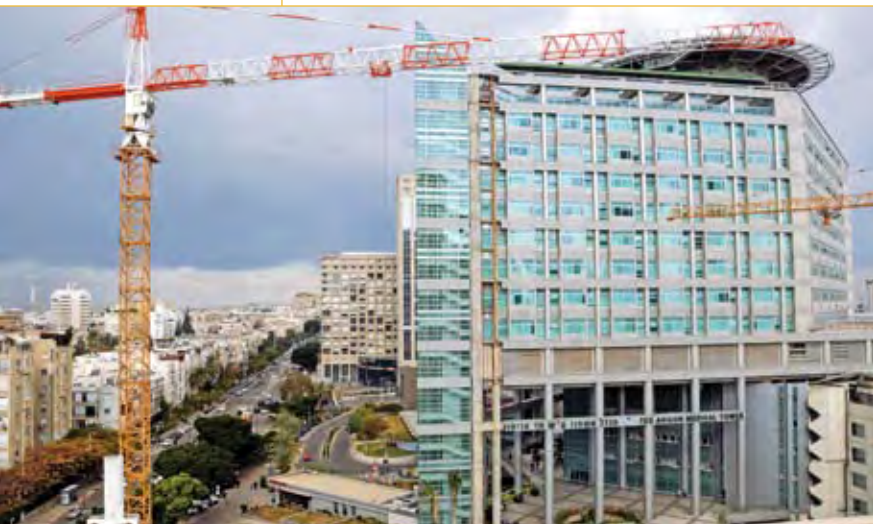




| | |
|---|---|
| Data points: | 12 000 Hardware-DP |
| Manual control: | Saia®PCD3.A810/Saia®PCD3.W800 |
| M-Bus connection: | approx. 300 heating and electric meters from Aquametro/Optec |
| EIB connection: | 5 EIB main lines for lighting/blinds/installation monitoring |
| Management system: | 5 Visi.Plus management systems |
| Remote maintenance: | via internet/intranet |
| Alarms: | via SMS and E-Mail |
| Controllers: | 70 Saia®PCD3.M5/Saia®PCD3.M3 controllers |
| Web-Panels: | 70 Saia®PCD Web-Panels PCD7.D5100TX010 |
| Hotel room control: | 225 single room controllers PCD7.L601 |

# Saia®PCD Web+IT functions look after control, data logging, trending, alarming and data access for the largest immunotherapy centre in Israel

**With its 150 000 m², the Tel Aviv Sourasky Medical Center (TMC) is one of the largest hospitals in Israel. Its laboratories excel in various fields, placing them among the best in Israel.**

## Main system characteristics

– control of air conditioning and high-tech anti-virus air filtering

– data collection, trending and alarming of all controllers and all connected critical hardware (incubators, filters, etc.)

– SMS messaging for alarms & events including acknowledgement

– FTP entry from an unlimited number of stations

– Data editing by authorized personal only (log in)

– Data logging function in csv format on SD flash

– Accessing web server using IE6/IE7 from an unlimited number of stations.

– Data monitoring & management via PDAs using micro-browser and wireless networks

As part of their therapy development, TMC launched a vast immunotherapy program for which they needed first-class, bug-free controls. The contract was awarded to LCS as integrator and Saia®PCD for the control system.

LCS has an excellent track record in innovative and special solutions for hospitals. Working with Saia®PCD and its standard, on-board web and IT technologies, LCS was able to propose a high-tech solution at very affordable costs.

Since Saia®PCD integrates PLC functions with such IT features as a web server, ftp server, SD flash and open communication, there was guaranteed operational safety and simplicity for both process and data.

In addition, the combination of robust PLC functions and advanced IT functions simplified the architecture and the integration. This optimum solution is now fully operational, and is running to the satisfaction of hospital researchers, maintenance crews and management.

### Cancer and immunotherapy

Because cancer is an internal cell, it is not registered by the immune system as an intruder, so the body won't fight it.

Cancer immunotherapy is the use of the immune system to reject cancer. By growing cancer cells in the laboratory and assimilating a coded antigen into them, the body will recognize and fight them. With some luck, the immune system will continue to destroy all similar tumours. ∎

# Wafi City wins the Middle East's first gold rating for energy and environmental design with its district cooling chiller plant, thanks to the unique communication capabilities of $\mathrm{Saia}^{®}$PCD3



Wafi City is one of Dubai's luxury shopping malls. With an architecture inspired by the pyramids of Egypt, it provides an exciting and beautiful setting for luxury shops, commercial and residential apartments, a spa, restaurants, a food court and multi-storey car park. It is also home to the Raffles Dubai – the first Middle East property of the internationally renowned Raffles Hotels and Resorts.

Wafi Property, a division of Dubai-based MKM Commercial Holdings, scooped a gold rating in the UAE's first Leadership in Energy and Environmental Design (LEED) awards for DCCP ONE, its district cooling chiller plant. DCCP ONE is the first phase of a 20000 ton district cooling system planned for Wafi City. The LEED rating is awarded for outstanding design and construction practice that is environmentally responsible, cost effective, and provides healthy living and working spaces.
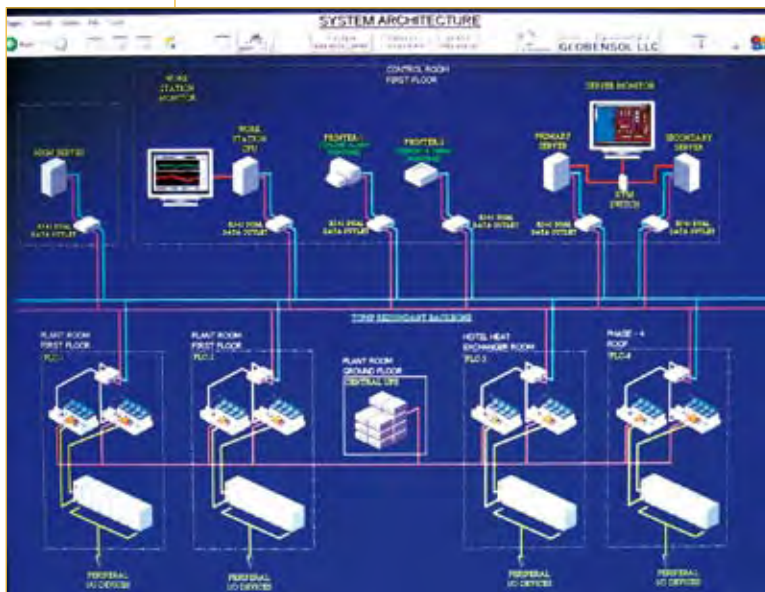
DCCP ONE was planned, engineered and the construction managed from concept to completion by the mechanical and electrical engineers and project managers of Dubai-based Green Technologies. The first phase of the project was built by ETA's Gulf District Cooling Division and Khansaheb Civil Engineering.

Administrators are always on the lookout for ways to decrease overall operating costs and run the facility more efficiently. They want to optimize the performance of the whole HVAC-related system through overall control by the building management system. Our solution provides a very efficient management system for this purpose.
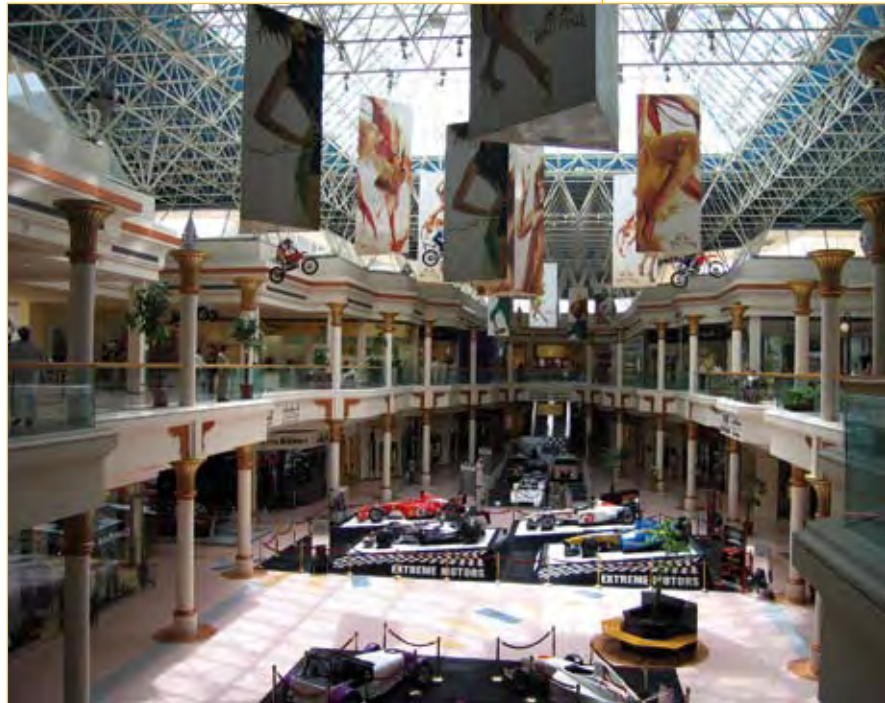


### Challenge

As energy prices continue to increase, individuals and organizations alike seek to control energy costs. A facility solution should provide an opportunity to improve the performance of HVAC systems with adjustable frequency drives and fine tuning for operational efficiency.

– Intelligent facility management system with supervisory control and data acquisition (SCADA)

– Computer-based management system to monitor and control different systems throughout the facility.

Saia®PCD controllers are engineered and designed to help building managers solve their energy consumption and control problems in any kind of commercial or industrial infrastructure. The system integrates with building automation, energy management and HVAC systems to optimize performance throughout facilities, resulting in lower total costs for operation and maintenance.

The main issue was to control and monitor all equipment to achieve a real, overall improvement in energy and resource efficiency.

Globensol met this challenge with its choice of automation control of the chiller plant, including the sub-systems and field equipment. Globensol gave the facility a value-added solution, using the latest technology for automation, the HVAC system, and building management. In this way, Globensol provided a solution with integrated capabilities.

### Solution

The engineering advantage was easy and transparent of access to all the equipment necessary to operate such a huge plant. Unnecessary gateways had been eliminated and the architecture simplified.

Whereas many other competitors struggled to do this, Saia®PCD, the Swiss made PLC-based controllers, put all the necessary functions and communication at our fingertips.

We could fully concentrate on engineering a solution that optimizes the use of each individual component.

– Saia®PCD3 series controllers are used for the automatic control of different systems like chillers, cooling towers, chilled water pumps, AHUs, etc. to reduce energy and water consumption.

– Saia®HMI, I/Os and communication as required for each operation.

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### Solution highlights

– PLC-based control automation – Saia®PCDs
– Real-time automation system
– Redundancy
– Inter-operability and interconnectivity
– Integration with different standard protocols for access to all data like
  TCP/IP, BACnet, S-Bus, ProfiBus, M-Bus, Modbus
– Multi-user environment with security levels
– User friendly graphical interface based on Citect SCADA software
– Report generation and printing for Status, Error and Alarms
– Automatic report generation for plant efficiency calculation

### Globensol's solution allows full control and monitoring of the following systems throughout the facility

– Chilled water pumps

– Heat exchanger valves

– Pressurization unit

– Air handling units

– Extractor fans

– Medium voltage & low voltage panels

– Motor control centre

– Room temperature monitoring

– Transformer voltage monitoring and load sharing

– UPS monitoring and battery charging system

– Chemical dosing equipment

– Sump sweeper pumps

– Refrigerant leak detection system

– Lighting system

– Hose reel system (fire fighting)

– Make-up water system for the cooling towers

– Utility water system monitoring

– BTU metering

– Valves and actuators

This solution also links together all equipment supplied by a variety of manufacturers (Trane, Conzerv, Danfoss, Siemens, Benshaw, Endress+Hauser, Belimo, TAC, calectro, S+S, Huba Control, Marley, Gent)



### Results

Compared with any previous project, this newly engineered, controlled and monitored district cooling plant uses 25% less energy and 30% less water. In addition, users feel a real improvement in indoor environmental quality.

The key to achieving these ambitious energy saving targets was the control of the interaction between the industrial process and the building automation infrastructure. This is exactly the kind of challenge where it is good to rely on the openness, reliability and communication capabilities of Saia®PCD. It allows you to concentrate more on results and less on dealing with the engineering barriers of many different vendors and their equipment. ∎
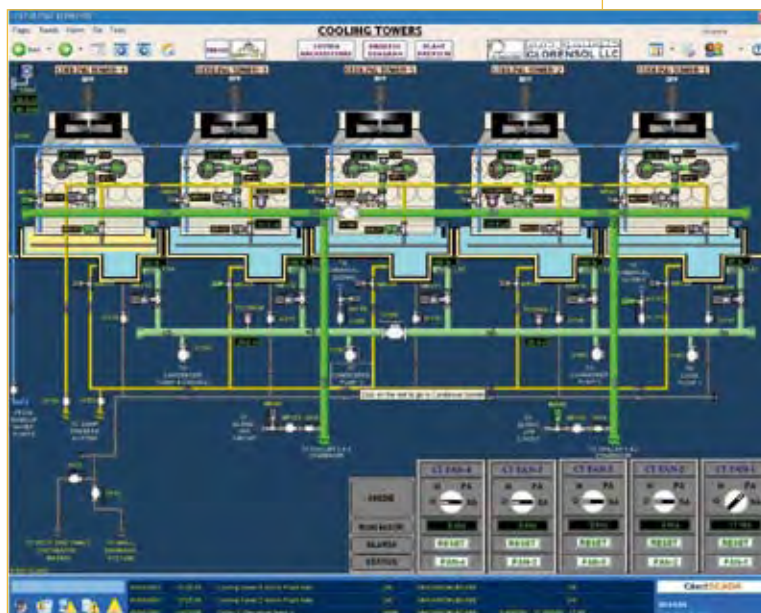
# Newest City Tunnel in Poland controlled by Saia®PCD

**One of the most impressive and visible road projects in Katowice, in the southern part of Poland, relies on Saia®PCD for its entire automation**



## Tunnel data

– Length of tunnel 665m
– 3 lanes of traffic
  in both directions
– 50 000 vehicles per hour
– 130 000 m³ earth removed
– 240 min fire resistance
  for whole construction
– 6.5 km cable channels
– 77 km wires
– 8 signalling niches
– 5 emergency exits

58 Saia®PCD2 and Saia®PCD3 substations with touch-screens, 1440 digital inputs and outputs and 270 analogue inputs are linked together by a redundant ethernet network.



This project was realized by Carboautomatyka, a Polish system integrator specializing in tunnel projects. The tunnel has been open to traffic for nearly one year. ■

**This Saia®PCD network controls the following processes:**

– Data collection about dangerous traffic situations
– Control of event-oriented traffic scenarios
– Control of traffic barriers independently of traffic scenario
– Data collection for traffic information (number of vehicles, lane occupation…)
– Data collection for air quality parameters (NOx, $CO_2$, air purity, …)

# Building Management of the new Hotel Casino Chaves – A Saia®PCD project entirely made by Infocontrol

**The most recent touristy and entertainment facility of Solverde, the Hotel Casino, has been officially inaugurated on September 13th with the presence of the Portuguese Prime-Minister, Eng. José Sócrates.**

Solverde choose Infocontrol to take over this prestigious building management project. The main parts of this building management were the control of heat and cold production, the whole lighting control, the ventilation and air- conditioning control, the monitoring of the electrical and water networks and the monitoring of CO in the parking.

The entire project is realized with a network of 21 Saia®PCD3 with 1500 I/Os. The supervision is made with Genesis32, allowing operators to visualize easily all data from the system, execute commands, visualize trends, visualize and acknowledge alarms and configure schedules.

As usual with PCD project, the communication has the central role. All PCD3 are connected on Ethernet to the customer's internal LAN, allowing data transmission with high debit, multi-master communications and remote access to control and to program all PCD3. The energy analysers from each cabinet are connected in Modbus to a PCD3, allowing to receive online all electrical measures like voltage, current, power. All chillers are also connected in Modbus to PCD3.

The project was delivered on time and to the full satisfaction of the customer who appreciate a control system of unequalled openness, flexibility and efficiency. ■

**Technical profile**
– 21 Saia®PCD3 controls stations
– 1500 analogue and digital I/O's
– Communication protocols:
  – S-Bus over TCP/IP
  – S-Bus over RS485
  – ModBus RTU over RS485 and RS232
– Supervision: ICONICS Genesis32

**Project**
**Customer:** Solverde
**Integrator:** Infocontrol Lda.
**Equipments:** Saia®PCD, Phoenix Contact, Iconics

# New application perspectives: Saia®PCD is certified by Czech Railways

Since end of 2007, Saia®PCD2 and Saia®PCD3 are officially approved by the Czech Railways for projects in traction mains sectors control and switching, railways station platform lighting control, railways switch automatic heating and other fixed railway infrastructure applications.

The official designation is „Approval of Technical Conditions No. 3/2007 – E for programmable control systems Saia®PCD2 and Saia®PCD3". This approval is confirmed by a "Letter of approval 19317/07-OP", issued by the head administration of Czech Railway.

This unlimited agreement was awarded after the complete review of all our PCD specification and the compliance with EN 61131-2 and the detailed review of the first project made with 27 PCD2 and PCD3 substations. As all specifications could be positively verified and the project proved to be 100% reliable fro over one year, SBsys, our local partner received this important certificate.

Saia®PCD is the only control system with that unlimited "Technical conditions". We have the door open to the railway applications and we can say that it is our biggest customer with a long time perspective. ■
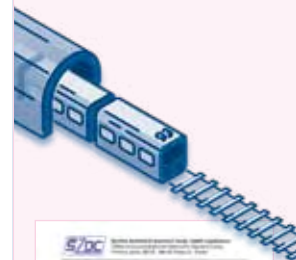
## Compact Drinking Water Systems from Malthe Winje (Norway)
## An intelligent technical contribution for better health in developing regions



The access to drinking water is not guaranteed to many rural populations. By proposing a compact and easy to maintain installation, Malthe Winje (Norway) proposes instant access to drinking water from salt water or contaminated fresh water anywhere.

DWS are completely automated and rely on Saia®PCD3 and Saia®S-Web technology to manage the water flow from pumping to distribution, via pre-treatment, disinfection and quality monitoring. Online measurement and frequent laboratory tests ensure water quality and safety to European Drinking Water Standard as well as city water used for instance for toilet flushing or washing.

One DWS produces 1 to 10 m³ per hour with an energy consumption of 4 to 10 kWh. Thank to DWS, water cost is much lower than barrelled water, allowing governments and NGO to supply more people with this precious resource.

More on www.mwdws.com ∎



## VIP Day in Portugal

After the success of last year's VIP Day event in Lisbon Infocontrol invited, early in the year, their 20 Top customers and user of Saia®PCD from the North's region of Portugal in the "Caves Porto Calèm".

This was again a good opportunity fro Infocontrol and Saia-Burgess Controls to present to decision makers the latest evolution of the Saia®PCD portfolio.

A special accent was put on the Web+IT and file systems technologies combined with Saia®PCD; a unique combination allowing system integrators to add value for automation solutions and system owners within a control network unprecedented access and use of data at lowest costs.





The new PCD2.M5 and the PCD3 Compact as well as the Saia®Web HMI and the extended memory management possibilities illustrated adequately how to use these decisive and competitive new features in any applications.

Our guests not only appreciate a direct access to key information to increase their competitiveness but also the recreative part by visiting the famous and well-known Caves Calèm, each participant has received a bottle of Porto wine as souvenir, and a small excursion on the river Douro. ∎

## Saia®PCD at the BIG 5 Show in Dubai

Saia-Burgess Controls was actively present in November 2008 at the BIG 5 Show in Dubai, the biggest fair dedicated to construction in the Middle East.
In GCC, over 100 references in building control applications, energy management, district cooling and Smart Home bring daily operational costs advantages to our customers. This motivates many more to optimize their infrastructure with our unique open control system. ∎