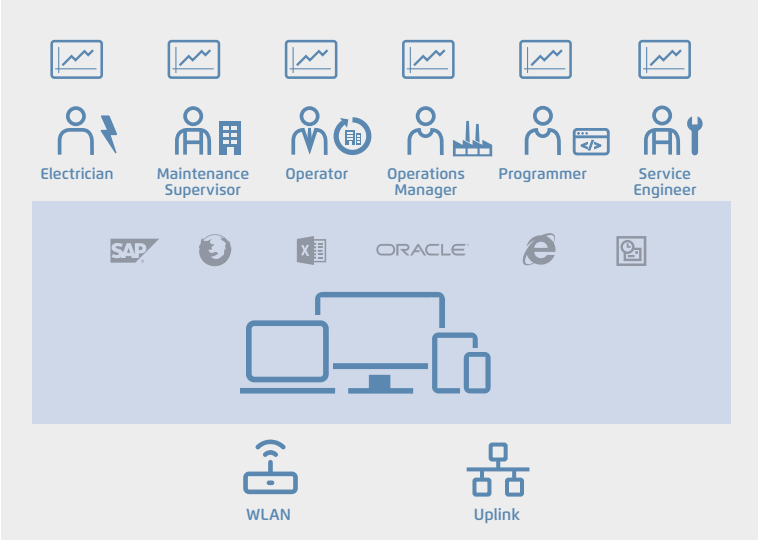
B3 SBC S-Web technology

Automation systems with sophisticated SCADA functions “embedded” in every device.
– Alarming
– Trending
– Visualisation
– Standard web browser as service interface software

3.1 The objective of S-Web

using the known and existing components. Use fewer unknown and complex elements.

As a company, we focus on being as lean as possible. The aim of being lean is to achieve ever more using less. That is only possible by exploiting what you already have. As little as possible should be added to this. SBC S-Web is dedicated to this principle.



SBC S-Web optimises use of

- Existing software
- Existing human resources
- Existing infrastructure and end devices

SBC S-Web systems

- Make special SCADA software unnecessary
- Reduce the need for trained personnel in the operation
- Make an investment project simpler and more cost-effective

◀ It is worth exploiting what already exists on-site.

Software: Management functions can be performed using dedicated software. This has to be purchased, installed, configured, maintained and personnel must receive training. It can usually perform far more functions than it is actually used for, and is therefore complex. SBC S-Web makes this dedicated management/SCADA software unnecessary. It simply uses the software which is already available everywhere.

Human resources: Monitoring, control and management functions are possible for all interest groups/individuals. Users can optimise their area of responsibility in a way that is tailored to their requirements. No users have to be an automation specialist, no specific tools are required, and there is no waiting time to carry out analysis or improvements.

Infrastructure and end devices: SBC S-Web can be integrated simply and safely into existing LAN/WAN infrastructures. Practically all the existing end devices can be used. This increases acceptance and reduces costs. This is because each control unit has sophisticated SCADA functions via many globally recognised technical standards.

Using what already exists?

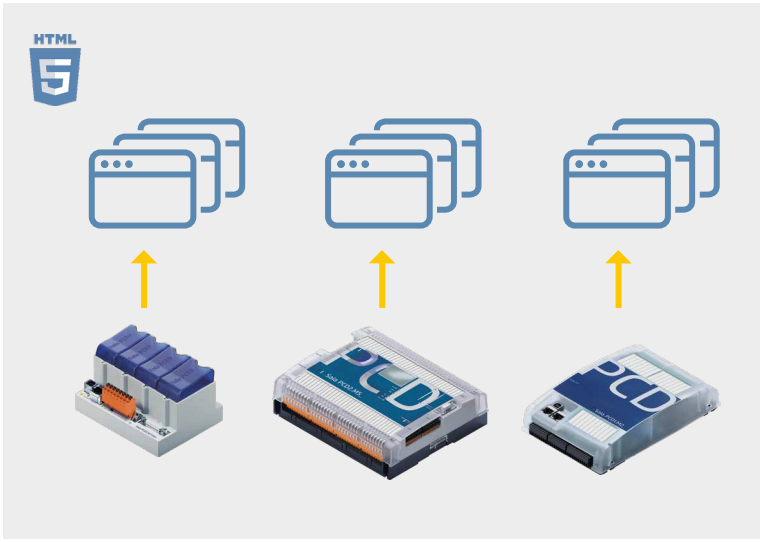
- Use as few new, unknown and complex elements as possible

In order to implement SCADA/management/operating functions using SBC S-Web, only technologies that are used and already exist have been implemented on site. They are globally recognised, non-proprietary Web+IT standards. The required functions can be flexibly adapted over the entire service life of a system and kept simple to master. This is possible because the basic characteristics of the classic PLC technology are also integrated into the S-Web systems. A unique combination!

3.2 S-Web system structure

SCADA function in every automation device

The conventional regulation/control unit of automation only regulates and controls. The third essential core component, the SCADA function, is outsourced and implemented "elsewhere". This was a practical solution 2008 ago, as memory and processor power were expensive and limited. Since then, costs have reduced in terms of both memory and performance. All the functions required for the automated system can now be implemented in one device as a single project.



Automation systems with sophisticated SCADA functions embedded in every automation station and control unit.

- Alarming
- Trending
- Visualisation
- Service interface

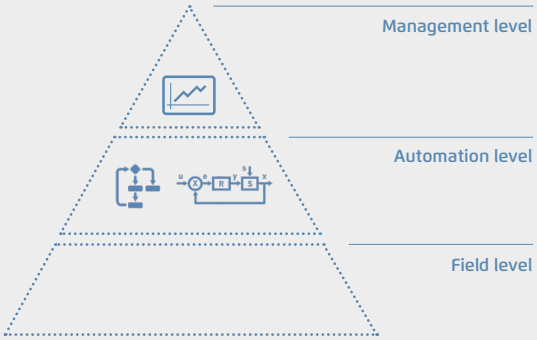
Already provided by the Saia PCD web server for a diverse range of browser devices.

▲ **Functional structure of Saia PCD® control units:** The entire automation application is onboard. The combination of globally standardised, non-proprietary Web+IT functions known as Automation Servers form the interface to the environment. The fully programmable design and modular expansion of the controller ensure the "perfect fit" for current task formulation over a service life of 15-20 years with no need for new investment.

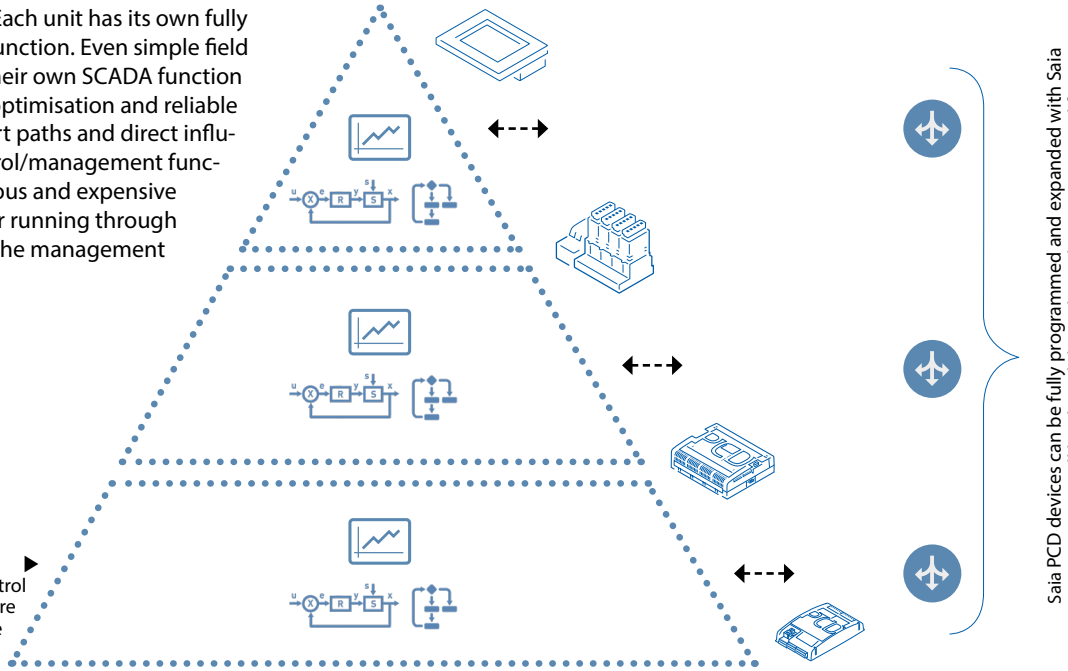
To the benefit of the users and operators of plants / properties

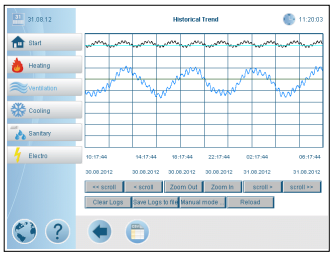
- Technological advancement creates massive structural changes in the automation pyramid

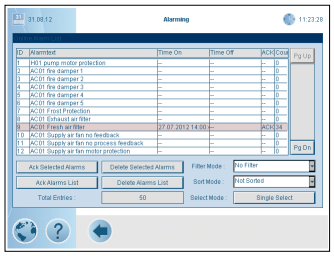
Previously only PCs had the necessary resources for management/control functions. The SCADA/management software was loaded onto them. The automation/field levels were closely linked using bus systems. This is now outdated.

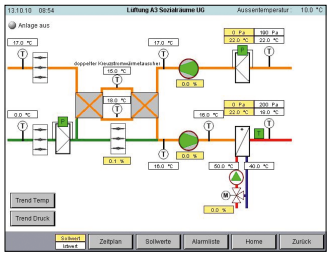


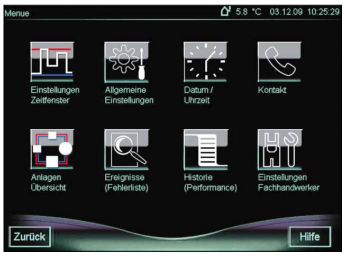
Today with SBC S-Web: Each unit has its own fully integrated automation function. Even simple field installations now have their own SCADA function which guarantees local optimisation and reliable operation. There are short paths and direct influence on processes. Control/management functions need not be laborious and expensive through the data transfer running through the automation level to the management level and back.




▲ SBC S-Web Trending


▲ SBC S-Web Alarming


▲ SBC S-Web System Visualisation



▲ SBC S-Web Service Interface

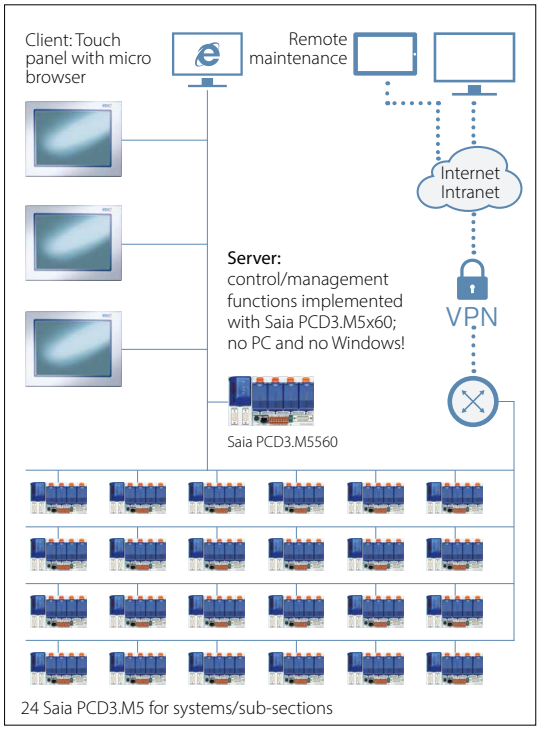
BACnet has a comparable system model: BACnet is the only globally recognised and widely spread standard for building automation systems. It is based on exactly the same system model as Saia PCD units. However, SBC S-Web implements the management/control function in buildings with the combination of the known = PLC+Web+IT; without introducing another standard to the building.

3.3 Real-life examples of SBC S-Web

Marc Cain Building
Bodelhausen/Germany

POM-certified (peace of mind) HVAC system and room control technology for the head office of this international fashion company provides a better climate and low energy consumption.

The performance requirements for the automation of the building were set at a high level right from the beginning to achieve "peace of mind" certification from the German standards authority, TÜV. Using this approach, the design study integrated all the HVAC aspects of the building into a single, flexible control project. The thermal energy, for example, is produced by various sources and its distribution is controlled to minimise energy consumption. In a complex installation, this is only possible because the control system can seamlessly integrate all devices independent of their communication capabilities.

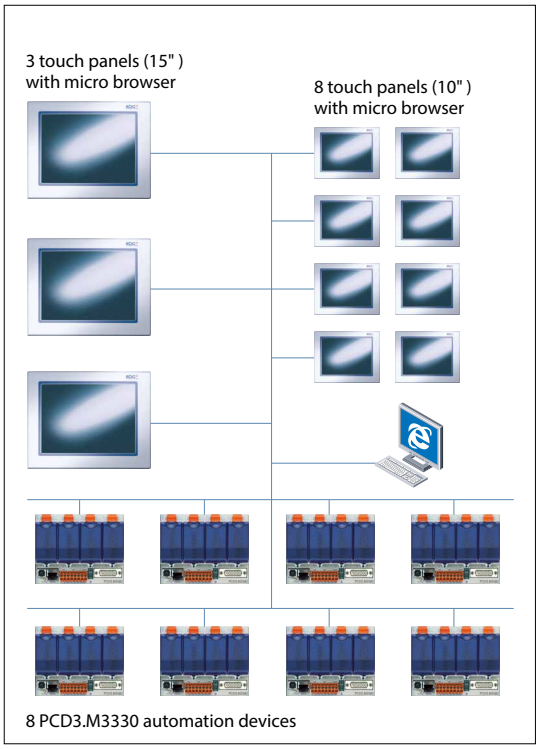


▶ The Marc Cain system comprises 25 automation devices. 24 Saia PCD3.M5x40 cover the individual system components/sub-sections. One Saia PCD3.M5x60 forms a master control/management level for the entire property. Any browser device in the network (LAN/WAN) can now be used to access the local operator application of each individual system or even directly access the control/management application of the master Saia PCD3.M5x60. Complex system schematics naturally require adequate display sizes; a PDA/mobile phone is not large enough for this.

Lucerne Conference
Centre Lucerne/Switzerland

The renovation and expansion of the Lucerne Conference Centre achieved the Minergie Standard and revitalised this important meeting place.

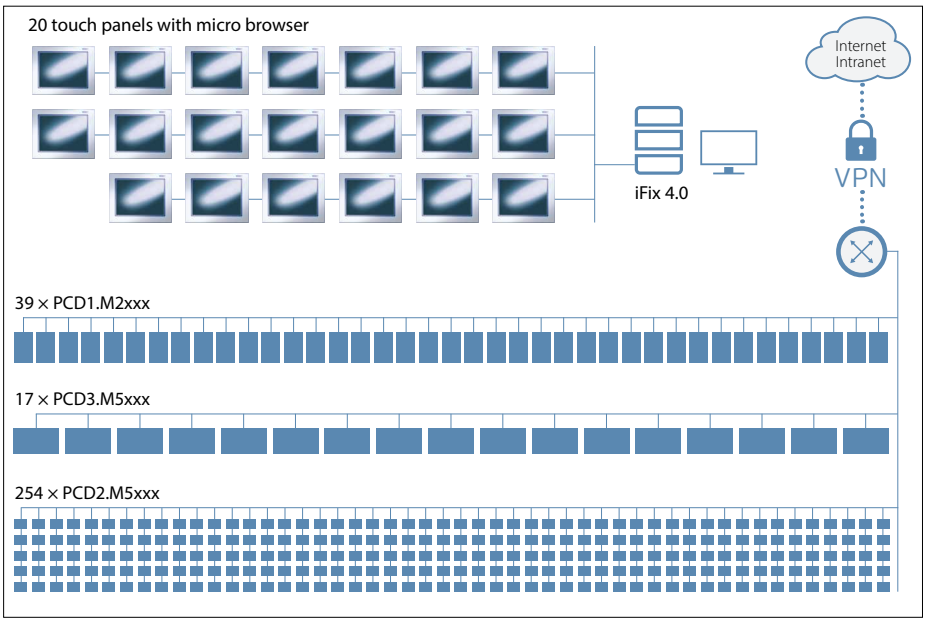
The 13,000 m^2 of the four halls of the Lucerne Conference Centre provide the most modern technological exhibition area, in order to be able to meet all usage requirements. The range of different events also require a flexible architecture for lighting, ventilation and air conditioning in order to comply with the energy efficiency requirements of "Minergie" certified conference centres. The extensive use of bus technology in the planned building services, such as DALI for the lighting and MP Bus for the HVAC, enables it to be integrated into the Saia PCD controller with little effort and operated using web technology. The very high level of flexibility of our programmable controllers and a design based on open-web technology, which made high levels of investment in expensive visualisation systems superfluous, were crucial to the award.



▶ The Lucerne Conference Centre operating and monitoring concept is based entirely on SBC S-Web. It does not require a PC/Windows-based control or management system. Trend data are recorded directly in the automation device and visualised using the available web templates. The system comprises 2000 physical data points distributed among eight PCD3.M3330 automation devices. There are eight 10" micro browser devices installed per system component for operational purposes. There are three 15" web panels with the Windows CE operating system for providing a global overview.

Academic Medical Centre
Amsterdam/Netherlands

One of the top ten academic hospitals in the world relies on Saia PCD controllers for improved air-conditioning and reduced energy consumption

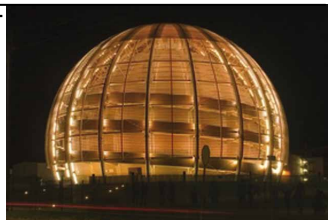


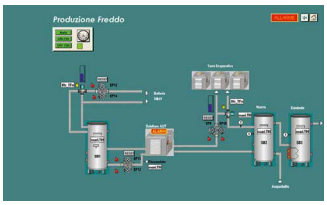
AMC wanted to refurbish and expand the control systems gradually over a period of several years without incurring costs and problems arising from potential changes in automation station generation. They started using Saia PCD controllers in their buildings, processes and utilities in 2000. More than 10 years later, the choice is still considered as the correct one. This is supported by the transparent integration of the newest Saia PCD generation, the general use of Ethernet, data capture on the Flash memory and the reliability of the installed base. The communication capabilities of Saia PCDs enable users to connect to all systems and make the life of the system integrator simpler.

The local conditions in the individual parts of the system and building were resolved in this application using S-Web. A total of 310 automation stations (Saia PCD) are integrated into the property automation system. The entire clinic is operated, controlled and managed as a functional unit. In hospitals, the high volume of visitors and the ventilation/cooling system are "mission critical". In this respect, it is therefore preferable to operate a central iFIX 4.0 PC/Windows-based control/management system parallel to SBC S-Web. In this instance, SBC S-Web cannot make the classic SCADA software totally superfluous.

European Research Centre CERN
Geneva/Switzerland

The entire enormous CERN site consisting of 430 operational buildings relies entirely on SBC S-Web. The Web+IT standards mean it needs no dedicated central office or master control/management level.





Around 10,000 people work in the 430 buildings at CERN. Each building is fully independent. SBC S-Web forms their control/management level. There is no need for dedicated SCADA software/PC hardware. The existing and already mastered CERN Web+IT technology is sufficient for integrating the consumption data across the site and for monitoring purposes. Operation of the building technology does not require the purchase of, installation of or training on, dedicated Windows software. Automation projects are awarded by CERN throughout Europe. Thanks to SBC S-Web, system integrators all over Europe are able to implement autonomous projects for CERN or improve existing systems. There is no need to involve or reintegrate a central BMS application.

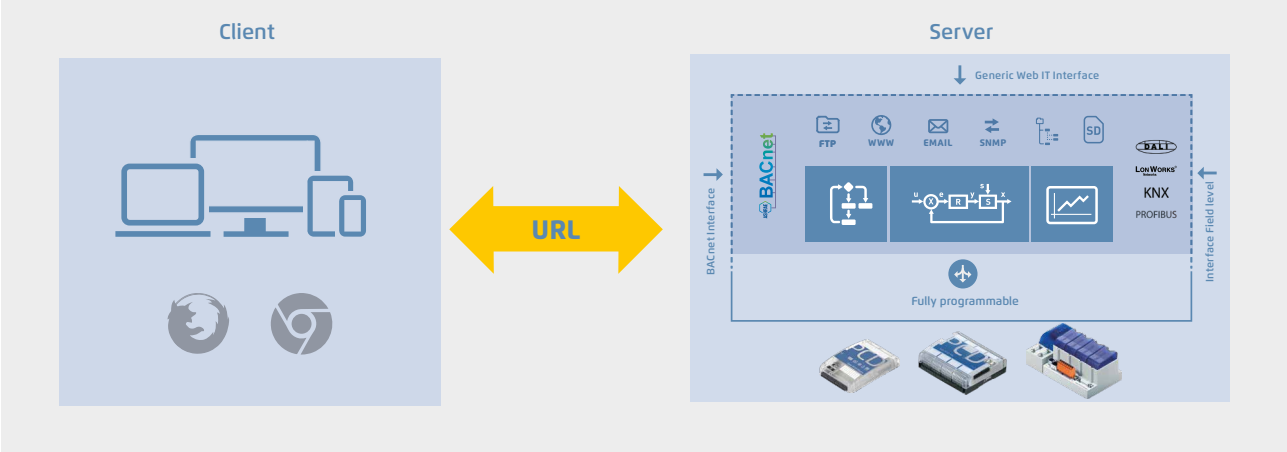
With S-Web, CERN benefits from a technology it invented itself in 1989. *Source: Wikipedia*

3.4 Engineering information

Which resources does a Saia PCD® require for SBC S-Web?

The basic structure of an operational S-Web system

The basic structure is simple. Enter the device addresses in the client. The Automation Server of the Saia PCD devices provides the application/data of the Saia PCD. How large and comprehensive can this be in the various types of Saia PCD devices?



Browser device Which display size?
Which display resolution?
Which device type?

The browser device is usually determined by the mounting/installation location and the requirements in terms of display size and resolution.

Saia PCD controller application server How many data points?
How many trends?
How many images/elements?

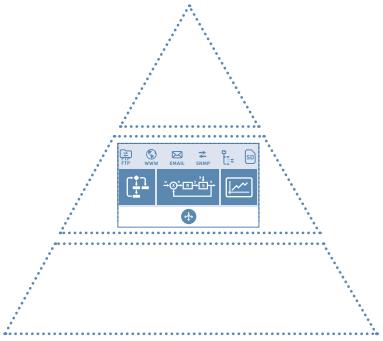
The type of controller is determined by the number of required inputs/outputs, the range of functions and the memory requirements.

Basic orientation: Device selection

Every fully independent functional automation system can be illustrated as a hierarchy in the classic form of a pyramid. The differences between systems lie in the scope/power of the respective applications. In other words, the range of required functions and connected field levels.
Pyramids with 2-3 hierarchy levels can be created in the case of large, complex properties. The resources must be designed in accordance with the size of the pyramid and the position at which a Saia PCD automation device is used. The ability to move Saia PCD applications to all three basic platforms and the high modularity even in terms of expanding the memory capacity means that SBC S-Web systems can be continuously expanded even after commissioning. The following illustrates a good basic orientation to ensure the initial installation is compatible.

Basic applications

- Up to 50 I/Os
- Up to 20 trends
- Up to 100 alarms
- Up to 30 web pages



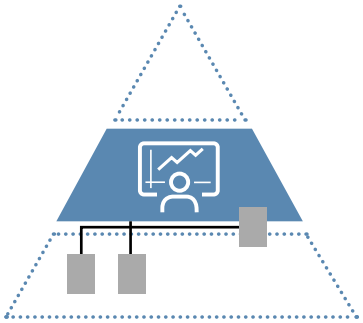
Saia PCD® controller	Max I/O	Program memory	Onboard flash memory	Additional memory	
PCD1.M2120	50	128 kByte	8 MB[1)]	1× PCD7.R562	1× 128 MByte
PCD1.M2160	50	1 MB	128 MB[2)]	1× PCD7.R562	1× 128 MByte
PCD3.M3xxx	1023	512 kByte	---	4× PCD7.R-SDxxxx[1)]	4× 1 GB

[1)] 900 files per memory module
[2)] 2400 files per onboard memory

The Saia PCD controls and visualises a machine, a simple building with a ventilation system, a heating circuit or a complex room, etc.

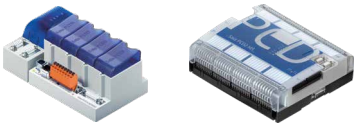
Mid-level applications

- Up to 500 I/Os
- Up to 60 trends
- Up to 1000 alarms
- Up to 100 web pages



Saia PCD® controller	Max I/O	Program memory	Onboard flash memory	Additional memory	
PCD3.M5xxx	1023	1 MB	---	2× PCD7.R562[1)] 4× PCD7.R-SDxxxx[1)]	2× 128 MB 4× 1 GB
PCD2.M5xxx	1023	1 MB	---	2× PCD7.R562[1)] 4× PCD7.R-SDxxxx[1)]	2× 128 MB 4× 1 GB

[1)] 900 files per memory module



◀ Die Saia PCD controls several system components and includes the SCADA/ visualisation functions of the entire system/all parts of the building

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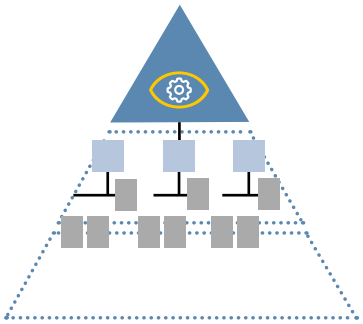
Top-level applications

- Up to 2500 I/O (entire system)
- Up to 120 trends
- Up to 2000 alarms
- Up to 300 web pages



Saia PCD® controller	Max I/O	Program memory	Onboard flash memory	Additional memory	
PCD3.Mxx60	1023	2 MB	128 MB[2)]	2× PCD7.R562[1)] 4× PCD7.R-SDxxxx[1)]	2× 128 MB 4× 1 GB
PCD7.D4xxxT5F	---	1 MB	128 MB[2)]	---	---

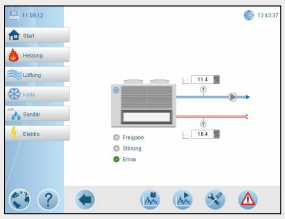
[1)] 900 files per memory module
[2)] 2400 files per onboard memory

Client and server in one device: The Saia PCD7.D4xxxT5F micro browser panels are simultaneously server and client. The demanding control function can be implemented using the Saia PG5® software tool.

◀ The Saia PCD contains the master control and management functions for many distributed systems or large integrated buildings.

Dimensioning the data storage for S-Web applications
The dimensioning of the data storage must take into consideration the size of the web project and the historical data (trend data) that needs to be stored. The following reference values can be used as a guideline to provide a rough estimate.

Memory requirement for S-Web pages:
The calculation of the memory requirements for web pages is based on the number of web pages, number of GIF graphics used and the IMaster Java applets. The following reference values can be used as a guideline to provide a rough estimate.



S-Web page approx.
10 kByte/page

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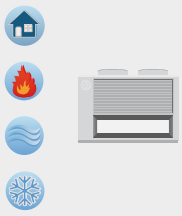

GIF graphics 1…10 kByte

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Java Applet approx.
350 kByte

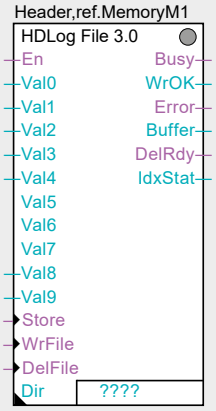
= **Memory requirement for web projects**

A project with 30 HMI pages will therefore need approx. the following memory requirement:
(30 × 10 kByte) + (100 **× 5 KByte GIF graphics) + 350 kByte = memory requirement for web project approx. 1150 kByte**

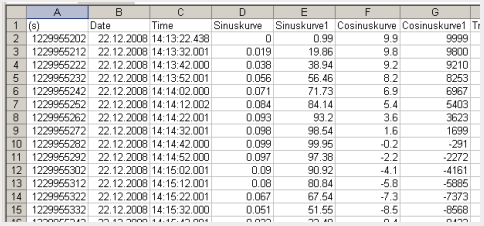
Memory requirement for trend data

Recorded using CSV files in flash file system

The trend data are saved in groups of max. 10 data points per Saia PG5® Fupla FBox and CSV file.

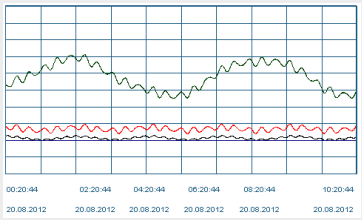


▲ Saia PG5® Fupla FBox records and saves up to 10 data points



	A	B	C	D	E	F	G
1	(s)	Date	Time	Sinuskurve	Sinuskurve1	Cosinuskurve	Cosinuskurve1
2	1229955202	22.12.2008	14:13:22.438	0	0.99	9.9	9999
3	1229955212	22.12.2008	14:13:32.001	0.019	19.86	9.8	9800
4	1229955222	22.12.2008	14:13:42.000	0.038	38.94	9.2	9210
5	1229955232	22.12.2008	14:13:52.001	0.056	56.46	8.2	8253
6	1229955242	22.12.2008	14:14:02.000	0.071	71.73	6.9	6967
7	1229955252	22.12.2008	14:14:12.002	0.084	84.14	5.4	5403
8	1229955262	22.12.2008	14:14:22.001	0.093	93.2	3.6	3623
9	1229955272	22.12.2008	14:14:32.001	0.098	98.54	1.6	1699
10	1229955282	22.12.2008	14:14:42.000	0.099	99.95	-0.2	-291
11	1229955292	22.12.2008	14:14:52.000	0.097	97.38	-2.2	-2272
12	1229955302	22.12.2008	14:15:02.001	0.09	90.92	-4.1	-4161
13	1229955312	22.12.2008	14:15:12.001	0.08	80.84	-5.8	-5885
14	1229955322	22.12.2008	14:15:22.001	0.067	67.54	-7.3	-7373
15	1229955332	22.12.2008	14:15:32.000	0.051	51.55	-8.5	-8568

▲ A CSV file is generated for each FBox with max. 10 data point values per entry. The memory requirement for one entry: approx. 30 Byte (time stamp) + 10 Byte/data point



▲ Trend display in the web browser. A max. of 10 trend curves can be displayed per window

In the following sample calculation, 20 data points are recorded for visualisation in trend curves. 10 data points should be recorded for the optimisation phase at intervals of 1 minute and a further 10 data points should be recorded for long-term monitoring at intervals of 15 minutes.

The memory requirement for 10 data points at 1 minute intervals in one day:

60 (mins) × 24 (hours) × [30 Byte (timestamp) + 10 (data points) × 10 Byte] = **187.2 kByte per day**

With this quantity of data it is worth creating a new file every day.
The data should be stored in the controller for a month.
This produces a memory requirement of approx. 30 × 187.2 kByte = **5.616 MB per month divided among 30 files.**

The memory requirement for 10 data points at 15 minute intervals in one day:

4 (15 min.) × 24 (hours) × [30 Byte (timestamp) + 10 (data points) × 10 Byte] = **12.48 kByte per day**

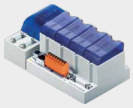
With this quantity of data, a new file can be created each week → 7 × **12.48 = 87.36 kByte per week**
The data should be stored in the PCD for a year.
This produces a memory requirement of approx. 52 (weeks)× 87.36 kByte = **4.53 MB per year divided among 52 files.**

What type of memory modules should be used?
Web pages and log data can be stored in the onboard flash memory and/or the plug-in flash cards.

The web projects and basic data logging with small quantities of data can be stored on the onboard flash memory (depending on the type of CPU) or the plug-in **PCD7.R562** flash memory module. Unlike the onboard memory, flash cards can be exchanged and replaced with new cards. It is therefore easy to archive data or transfer it from one controller to another.

Only the **PCD7.R-SDxxxx** SD flash card module should be used for intensive data logging.

Onboard memory for **6 years** of data monitoring



A Saia PCD3.Mxx60 CPU can record 10 data points for up to 6 years for long-term monitoring in the 128 MB onboard flash memory. The programmable PCD7.D4xxxT5F microbrowser panel and the PCD1.M2160 both also have a large onboard flash memory and are ideal for monitoring tasks. The plug-in PCD7.R-SDxxxx SD flash card with a memory capacity of up to 1 GB lasts even longer and can store data for decades in a Saia PCD controller.

Important information for using the flash memory module
A max. 900 files are supported in a memory module.
S-Web uses up to 70% of the nominal physical memory.
The size of a single file should not exceed 1 MB.
This guarantees that all the files can be sent via the Saia PCD as email attachments.

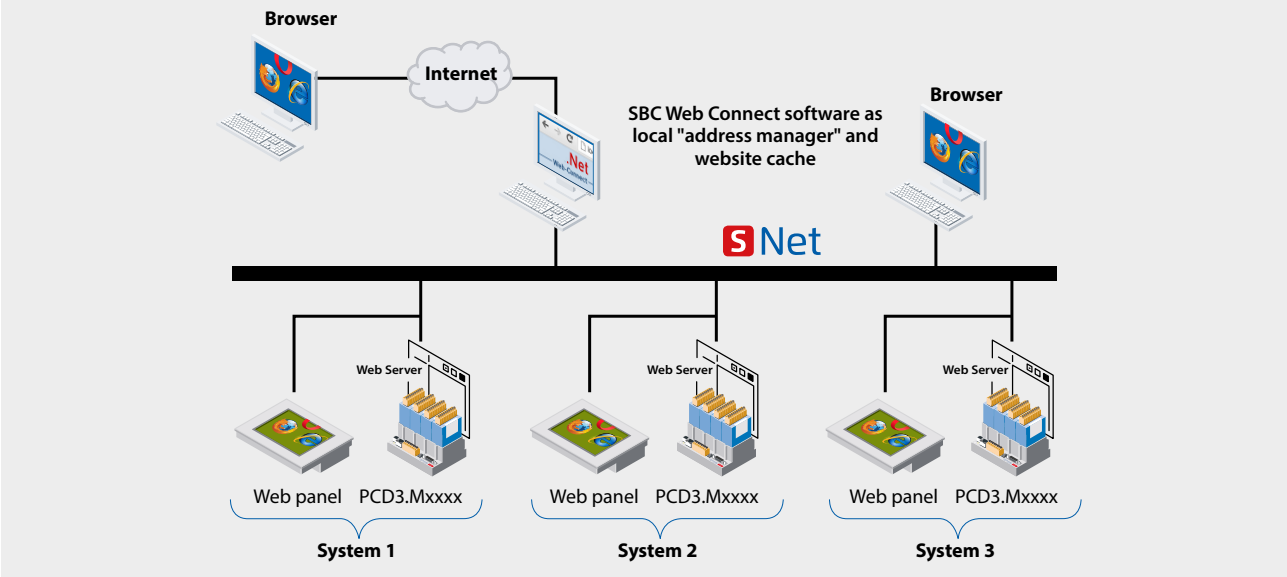
The calculation examples are reference values without BACnet or LON communication.


PCD7.R-SDxxxx


PCD7.R562

Internet access without public IP addresses and reducing the load times

The S-Web concept with the SBC Web connect software (part of Saia PG5® Controls Suite) enables access to all web servers, even with no public IP addresses. This is achieved by installing the SBC Web Connect software on a local frontend PC. In this case, the frontend PC simply requires a registered IP address. This provides all browser PCs (without additional software) on the Intranet and Internet access to the web servers in all PCD devices, and the gateway function also enables this over several network levels. This makes the SBC Web Connect software fully transparent for the user. The connection is established in the browser as usual by entering the URL (e.g. www.frontend.com/PCD-controller/web-page.html). Large files such as images or summary pages can also be stored on the frontend PC to unburden the memory in the PCD controller and to optimise download times. If required, OPC servers or a SCADA system can also be operated on the frontend PC in addition to the web application.



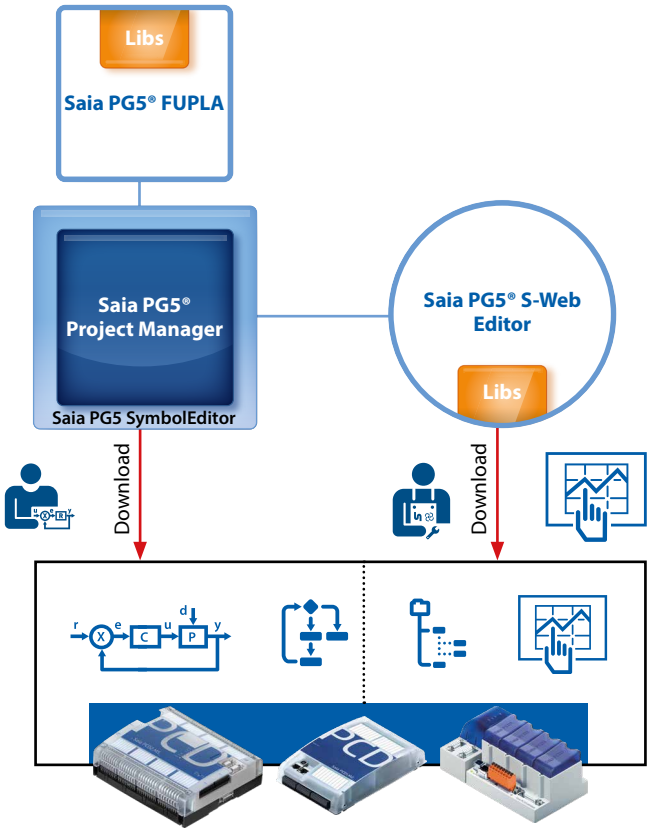
▲ SBC Web Connect can also be used to access the PCD Web Server in the local network even without public IP addresses. The user interface is always the same whether it is operated locally or remotely.

Local or "remote" operation

The same user interface with the same current data from the remote PCD Web Servers is available anytime, everywhere. The remote operation of the data and functions considerably reduces the cost of developing the application, administration and support.

The S-Web operation and monitoring interface is partially independent of the ICA application

The Saia PG5® Web Editor and the Saia PG5® are two independent, autonomous applications. However, the Saia PG5® Web Editor 8 can access the Saia PG5® defined symbols/names direct in the background. Symbols/names that are only used locally can also be defined in the Web Editor application.
The ICA application created in the Saia PG5® does not have to be modified or recreated if the visualisation application is modified. The Web Editor automatically links the defined symbols to the physical addresses used on the automation device.



▲ ICA and Web HMI applications can be loaded independent of one another in the PCD controller

If the ICA application is modified so that the physical addresses change (which is the case if Clean All Files is activated, for example), the web application does not have to be adjusted. However, a download is required to link the new symbolic addresses.

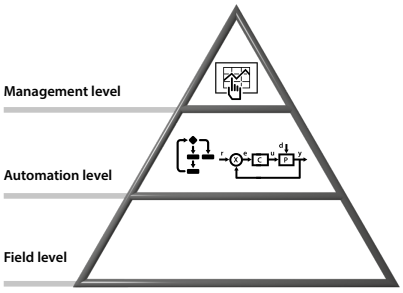
3.5 Tender information

What changes with S-Web?

The on-site technology is mainly determined by the planning and tender specification processes. In single incremental developments, it is enough to continue maintaining existing planning and design specification standards. However, if the technological development results in large structural changes, the planning process also requires significant changes that can then affect the resulting tender specification. This chapter is a guide for planners who want to further develop their tender specification standard in this sense.

Technical basis of the "old" automation pyramid

- Replacement of the analogue control technology
- Master ↔ Slave
- MHz/MB PC technology
- Proprietary/closed technology



Functional structure of "old" automation pyramids

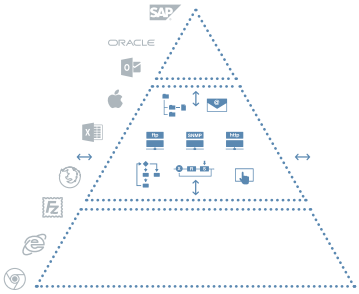
Core functions of the automation are distributed to various levels and different devices
→ Proprietary bus diversity, gateways and expensive integration.
"Total integration" is propagated as an "emergency" solution by large manufacturers.

Total integrated system pyramid

Everything from a single source.
Single operator. Opposite of lean.

Technical basis of "lean" automation pyramids:

- Replacement of dedicated control/management PCs
- Client ↔ Server/local remote
- GHz/GByte technology in automation device
- Web + IT technology/open to all



Functional structure of "lean" automation pyramids

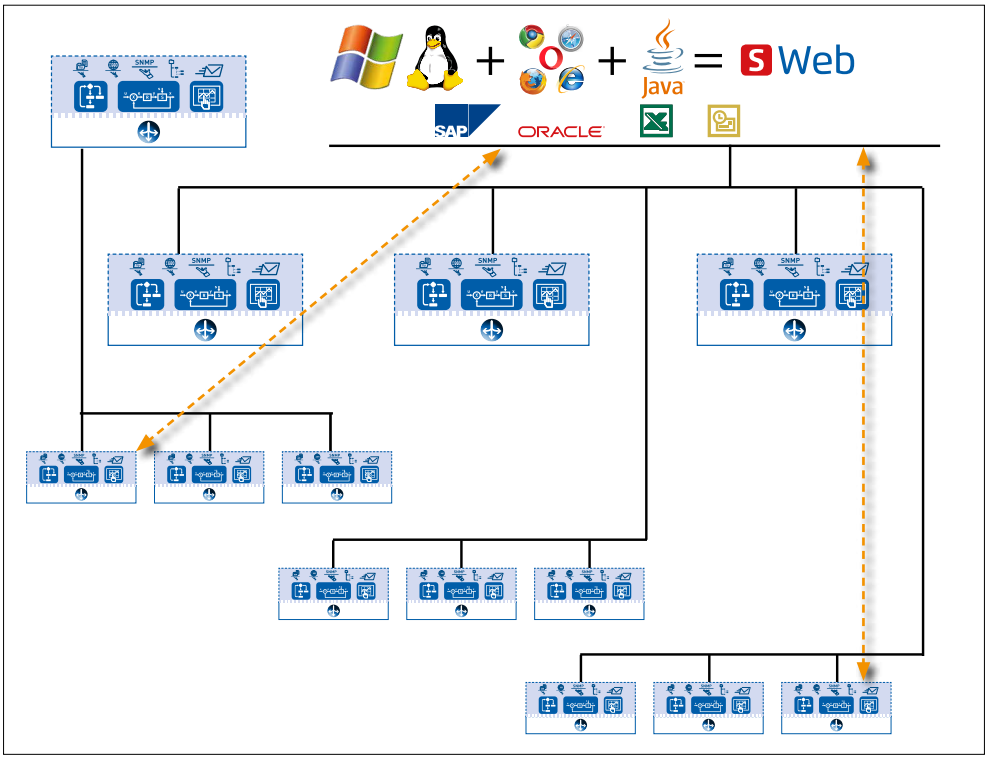
All core functions of the automation together in one unit is possible.
Interaction of all devices via Web+IT standards.
Integration from field to control level provided via LAN/WAN.

SBC S-Web is an innovative system comprising a combination of technical innovations and non-proprietary, globally recognised technologies. It has therefore been steadily developing for more than 10 years.
SBC S-Web is causing a paradigm change in automation technology in terms of operation, monitoring and management.
It makes the boundaries of the classic automation pyramids transparent and integrated, both internally and externally.

Structure of lean automation systems

All the measuring, regulating and control devices of this structure have the same functional structure and capabilities = **SPS** + **Web** + **IT**
Each automation device can be included in the client and server relationship with any other automation device and other web/IT technology in the property.

This makes it possible to maximise use, reduce operational expenses and create a highly flexible service life. But how does this impact on tender specifications?



Lean automation system: all core functions of the automation (PLC+Web+IT) integrated into that automation device enable the integration and interaction of all devices from the field level to the control level.

What changes for Lean Automation tender specifications with S-Web?

▲ Extract: Structure of a conventional tender specification

1. **Should the PC be included in the automation pyramid?**
   Specifically designed control PC (Windows PC) and control/management software are no longer required for recording and for the regular operation of the ICA technology of a property/site. Each device and system already has its own integrated control/management function.

2. **Local versus central – bottom-up versus top-down**
   In the individual systems, the control/management function is already designed as part of the "automation levels". This is implemented in the form of SCADA web pages which are loaded via the automation device web servers and displayed in the browser. This allows the maintenance, optimisation and monitoring of a system and all connected devices/equipment. The historical operating data and alarms are stored locally in the automation devices.
   Analogy: As with SBC S-Web, with BACnet the "SCADA" function is integrated as an object in the BACnet automation device!

3. **The end of extremes:**
   Text displays in the field - 21" system images in the control centre
   A single text display on the system does not meet the operator's needs. A large screen in the remote control centre is also of little help: its complexity is also slightly daunting for non-specialists. S-Web provides usable, practical system conditions "on site" and anywhere a network connection is available. Depending on the complexity of the application, a 5…10" touch panel with web browser is designed for the system control cabinet. A text display is not suitable for the web technology. The local browser panel works only as a client and loads its applications from the control devices (server) as required. Each browser device connected to the LAN/WLAN (PC/mobile device) also has access to the plant operating/monitoring.

15,00 pcs System services SDI V-GLT
Visualisation of the process data
with the following program points:

- full graphical, object oriented plant images (including scanned photos) with dynamic fade-in, change of color and animation
- resp. creation of html pages for web based visualisation
- Operation out of the plant image
- Graphical, user defined selection menus
- Installation and activation of the visualisation

▲ Example of a real design specification for lean automation: Each system already has a SCADA function embedded.

S-Web requires fewer fixed on-site panels compared to classic technology. This reduces costs and saves space.

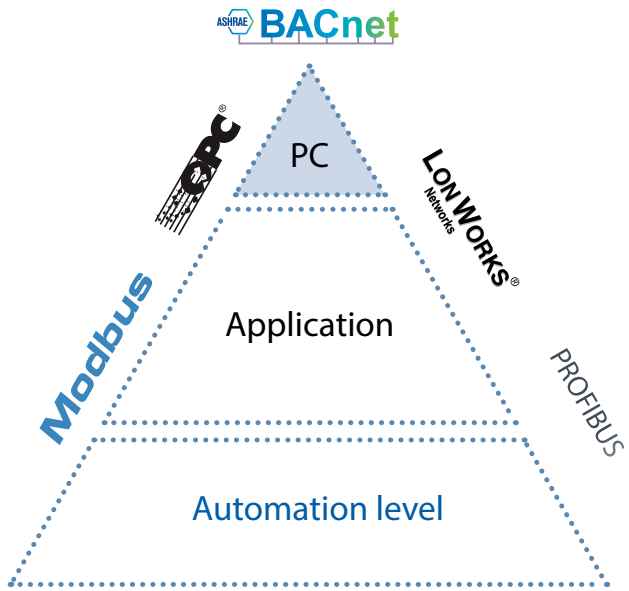
OZ	Quantity	Unit	unit price EUR	total amount EUR
*** required position without total amount				
03.02.0020	**oftware for operator device**			
	as OZ (Pos.-Nb. 10))			
	however, as a cabinet operator panel without graphical images and without storing the data to the harddisk			

◀ This separate item is no longer required with SBC S-Web. Browser touch panels require no dedicated software.

4. Quo Vadis: PC-based control/management software?

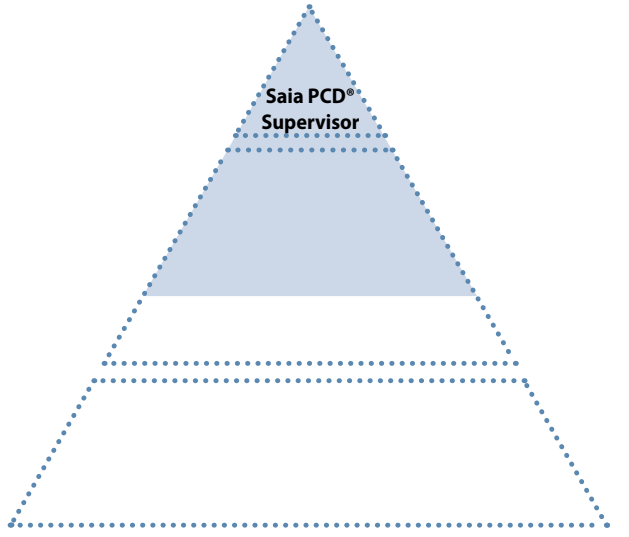
With S-Web, the entire automated system/ICA operation of a property is ensured without PC/Windows applications. However, classic PC applications are still useful and necessary in many cases. The autonomy of the automation level enables these PC applications to be less closely coupled to the automation pyramid and therefore more "replaceable".
The use of S-Web reduces the service expense associated with integrating PC applications. It is only necessary to implement the truly over-arching, global process views. The system- and object-specific views are already implemented by S-Web and can be requested via a browser.

The PC application undertakes the useful task of automatically capturing the remotely distributed operating data/applications of a property. If the remote data files are not deleted, the backup has a heterogeneous data redundancy.



◀ Classic PC-based control and management systems can be easily combined with S-Web. Existing control/management/SCADA software can be used in parallel with S-Web by using tried-and-tested mechanisms (e.g. OPC, BACnet). SBC S-Web also allows access to data direct via the web server CGI calls; with no middleware such as OPC (for more information on this, see page 260 "Web server standard CGI interface")

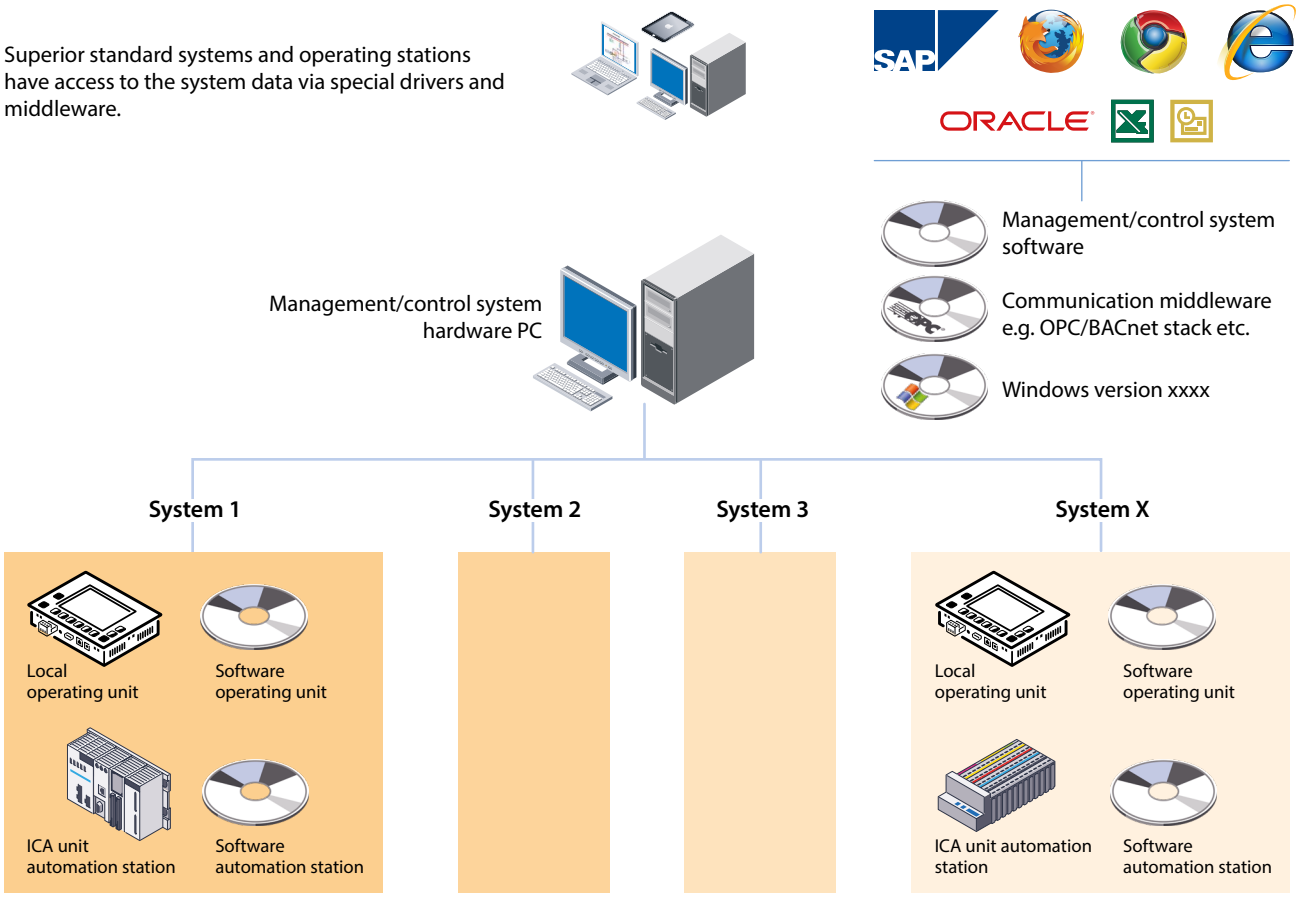
Saia PCD® Supervisor: The PC-based management/SCADA software with ideal fit for SBC S-Web.
The Saia Visi.Plus objects/templates are visually/graphically identical to those of SBC S-Web. This means it has the same look and feel both for Windows and browser applications. This makes the boundaries seamless. In practice, SBC S-Web and Saia PCD® Supervisor are often used in parallel. This is particularly the case when optimising the operation of many systems and large properties. Saia PCD® Supervisor can be used with no licence fees required for these tasks. (For more details please see Chapter B1.2 "Application software for Windows PCs")



◀ Saia PCD® Supervisor: ideally integrated with Saia PCD and S-Web.

The results of classic tenders

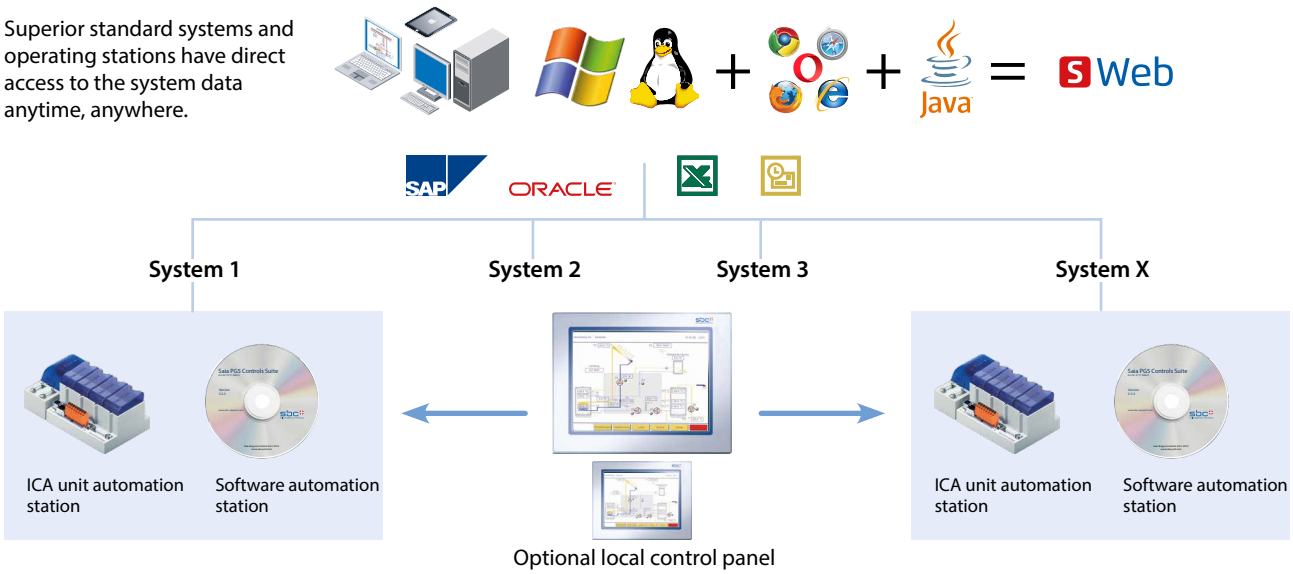
This technology is installed in properties and then has to be maintained and expanded over the subsequent 15–20 year service life!



▲ Conventional structure with complex hierarchies ➞ consuming installation, inflexible and expensive in maintenance and care.

The results of lean automation system design specifications with S-Web

The control/management function will be used where it is required. The automated system uses minimal additional software/hardware. Direct coupling of all devices via Web+IT standards – without middleware/special products.



▲ **Lean automation with slimline structures:**
Web/IT interfaces and SCADA functions integrated into the ICA device ➞ high degree of flexibility and easy to maintain and expand.

3.6 Products/tools

PC Software

Saia PG5® Web Editor
Efficient engineering of graphic interaction interfaces

SBC.Net Gateway and proxy server functions

Detailed information in Chapter B1 Software

SBC Micro Browser

Dedicated web browser for automation with SBC S-Web. Integrated into Saia PCD Web Panel MB

SBC micro browser apps for "third-party hardware"

- Apple App
- Android App

Detailed information in Chapter A2 Operation and monitoring

S-Web accessories

Memory for the automation station to store historical data. **Base module for the SD flash memory**

PCD3.R600

SD flash memory

512 MB
PCD7.R-SD512

1024 MB
PCD7.R-SD1024

Memory module
PCD7.R562

Detailed information in Chapter A1.1 Saia PCD System Description

Using a SBC S-Web system with devices belonging to the existing infrastructure

Each PC can be used to visualise the Saia PG5® Web HMI pages. The web HMI pages created using the Web Editor are interpreted by a Java applet in the browser on the PC.

Operating system

Browser

Java Virtual Machine JVM

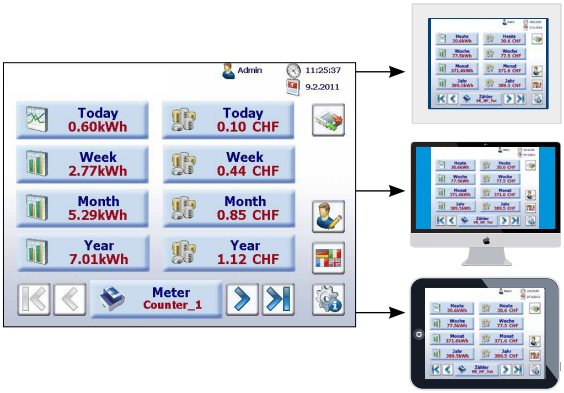
Office PC with browser and Java on board

Any device made available by an operating system with the support of a browser and Java engine can be used with SBC S-Web.

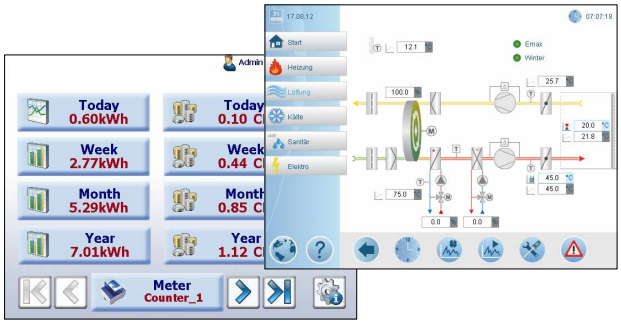
S-Web pages and S-Web projects are created using Saia PG5® Web Editor

The Saia PG5® Web Editor is designed with simplicity and efficiency in mind. Suitable using web technology. The Web Editor also places no limitation on the number of pages and allows maximum freedom in terms of function and design. If that is what you want and need. A large standard library with graphic objects and templates is provided for normal users.

In Web Editor you are not bound to a fixed grid and are free to structure the design and structure of the web HMI pages. Visualisation elements can be arranged freely. System images can aid the user during operation. The entire application can be split into smaller sectional views across several pages.



▲ Projects created using the Web Editor can be used across various devices.



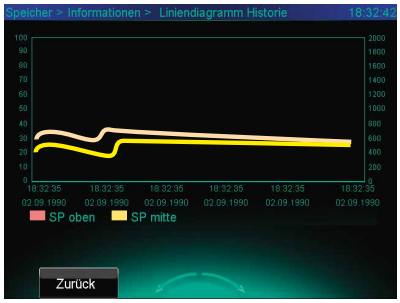
▲ No specifications for the placement of visible elements. Free graphic design possible.

Create once, use on many devices

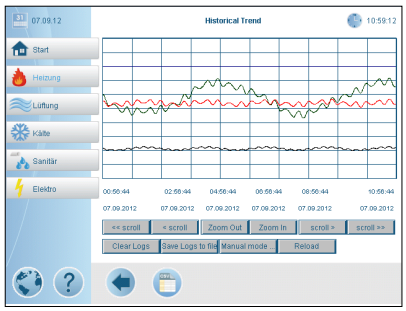
An S-Web project which has been created using the Saia PG5® Web Editor can be used simultaneously by various browser devices.
The appearance of the page and the operating philosophy do not change.
The S-Web application is executed using a standard web browser and Java applet. With Saia PCD Web Panel the application runs in the SBC Micro Browser, which has been developed specifically for ICA technology/automation.

Implementing management and optimisation functions

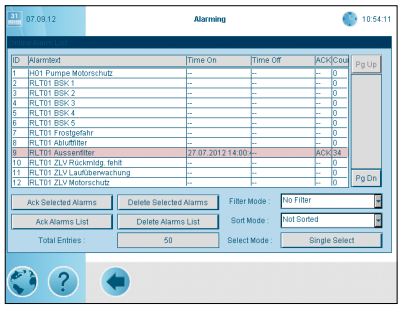
The trending and alarming functions are stored as templates in the libraries of the Web Editor and can be used direct in this form.
Various templates are available for displaying trend curves. All the media in the automation device can be historically recorded and visualised in an online trend curve.
The alarming function records and stores alarms and events and visualises current and historical alarms with different template objects.
The templates consist of a collection of standard elements. They can be adjusted at any time as required to the application conditions using Saia PG5® Web Editor. They can also be used as a basis for creating your own collection of templates.



▲ Trending template adjusted to meet the specific needs of the customer



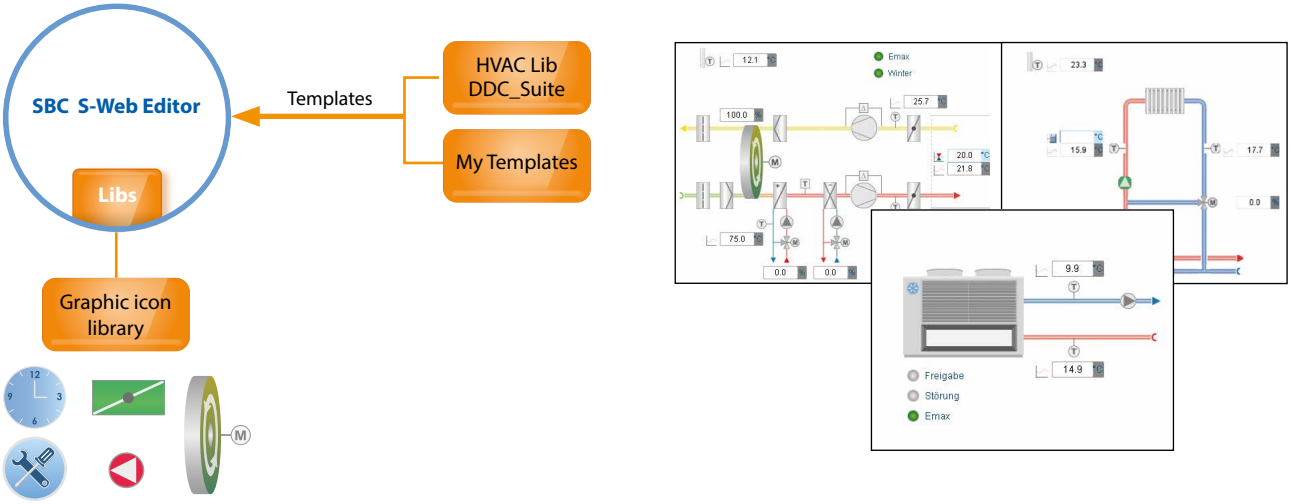
▲ Historical trending with the default template



▲ Alarming with the default template

Using Saia PCD® HVAC Lib and Saia PG5® DDC Suite templates

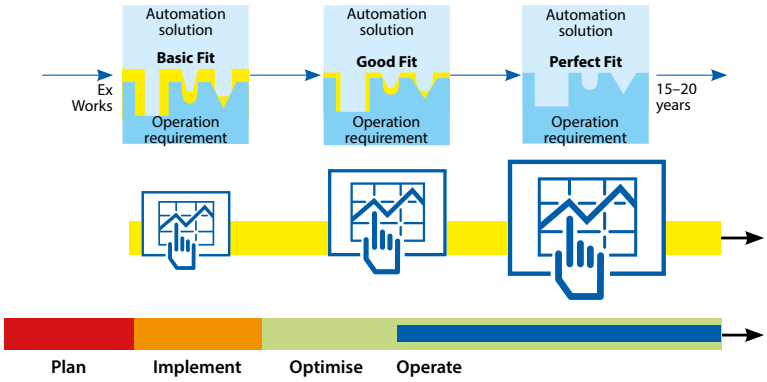
The Saia PCD HVAC and Saia PG5® DDC Suite library provide the user with a collection of pre-assembled function and system objects with graphic templates. They are designed for primary HVAC technologies and general building automation systems. The templates can be transferred unmodified and adjusted to the requirements of the application if necessary. A detailed description of the libraries can be found in Chapter B1 Software.



▲ The Web Editor provides the programmer with a comprehensive template and graphics library for efficient engineering. It is also possible to create your own templates.

Minimal time required to create a successful result

Saia PG5® Web Editor makes it possible to achieve a "basic fit" quickly and efficiently. This means that the basic necessary functions for acceptance are implemented.

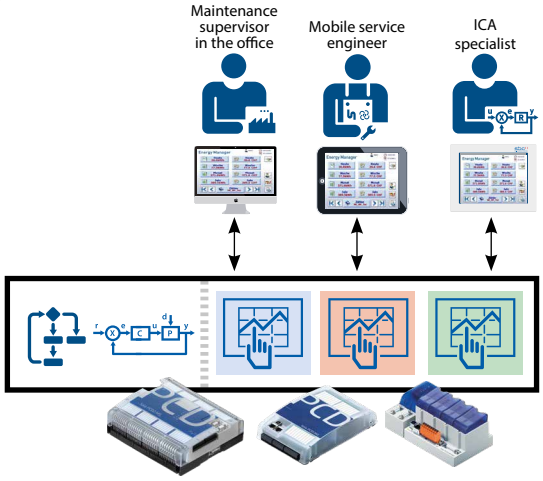


The SBC S-Web application can be adjusted at any time during the initial optimisation phase of the system, and subsequently during continuous operation to meet actual, individual requirements. The way to good fit and perfect is always open, nothing is installed and nothing is closed off.

▲ The maximum degree of engineering freedom is provided over the entire service life for optimisation and adjustment; for operators, installers and service providers.

Adjustment of S-Web projects after acceptance

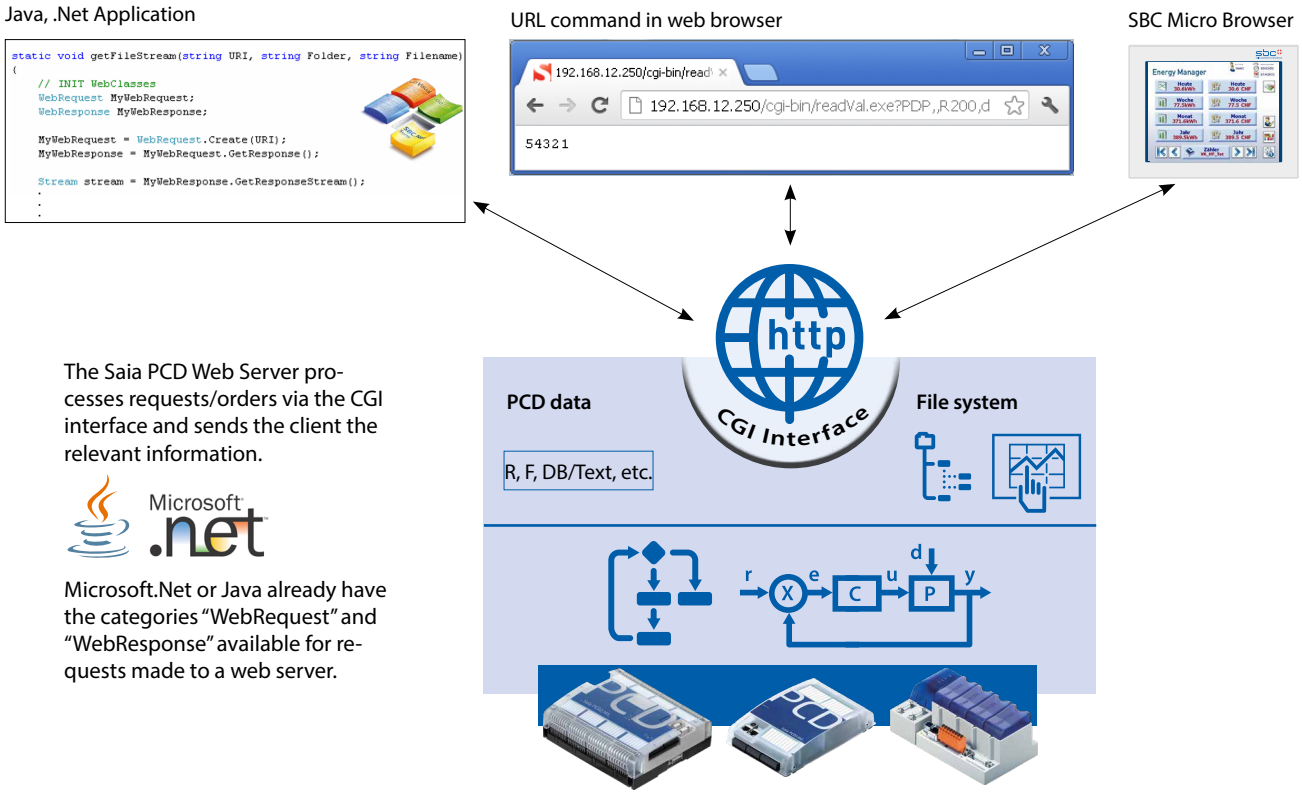
The S-Web applications of a Saia PCD automation station can be adjusted and expanded independently of the local regulation/logic project. The core ICA functions are implemented using the Saia PG5 software tool and loaded into the Saia PCD. The Saia PG5® Web Editor can also be used to load new S-Web applications into the Saia PCD. It is also possible for several S-Web projects to work on the same automation device in parallel. This enables users to create sub-projects for specific user groups (e.g. for service or operators). It is therefore possible to influence the diversity of the browser devices being used.



▲ Several HMI applications adjusted/optimised to the respective user groups are possible on one controller.

Standard PCD Web Server CGI interface

The COSinus integrated HTTP web server has a standardised Common Gateway Interface (CGI). The CGI interface supports the direct access (reading and writing) to all PCD media (register, flags, DB/texts, I/Os, etc.) as well as on the file system (up/download, delete, …)
A client (browser, Java or MS.Net application) can then access the data on a PCD controller by entering the URL and corresponding CGI command direct (with no specific drivers required).



The Saia PCD Web Server processes requests/orders via the CGI interface and sends the client the relevant information.

Microsoft.Net or Java already have the categories "WebRequest" and "WebResponse" available for requests made to a web server.

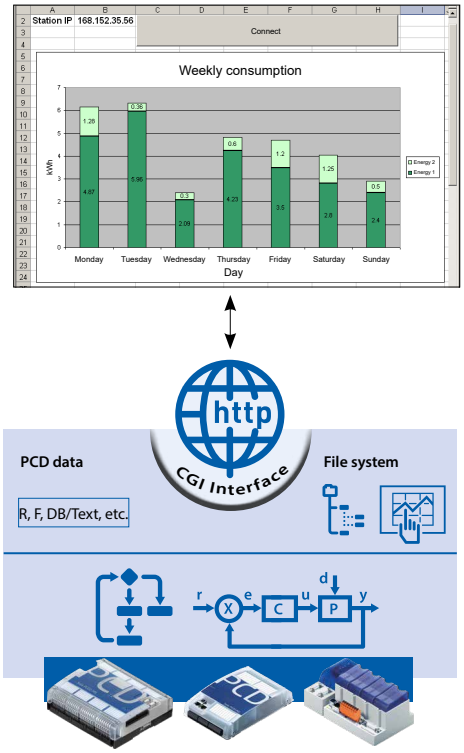
▲ The Saia PCD Web Server provides an open CGI interface in addition to the HTTP server.

SBC.Net Suite

The SBC.Net Suite includes components and class libraries for communicating via S-Bus (master and slave) or the CGI interface. It enables the basic integration of Saia PCD data in a Windows application without worrying about communication drivers (middleware) or CGI syntax. Further information is contained in Chapter B1 Software.

Accessing the Saia PCD® Web Server with MS Office applications

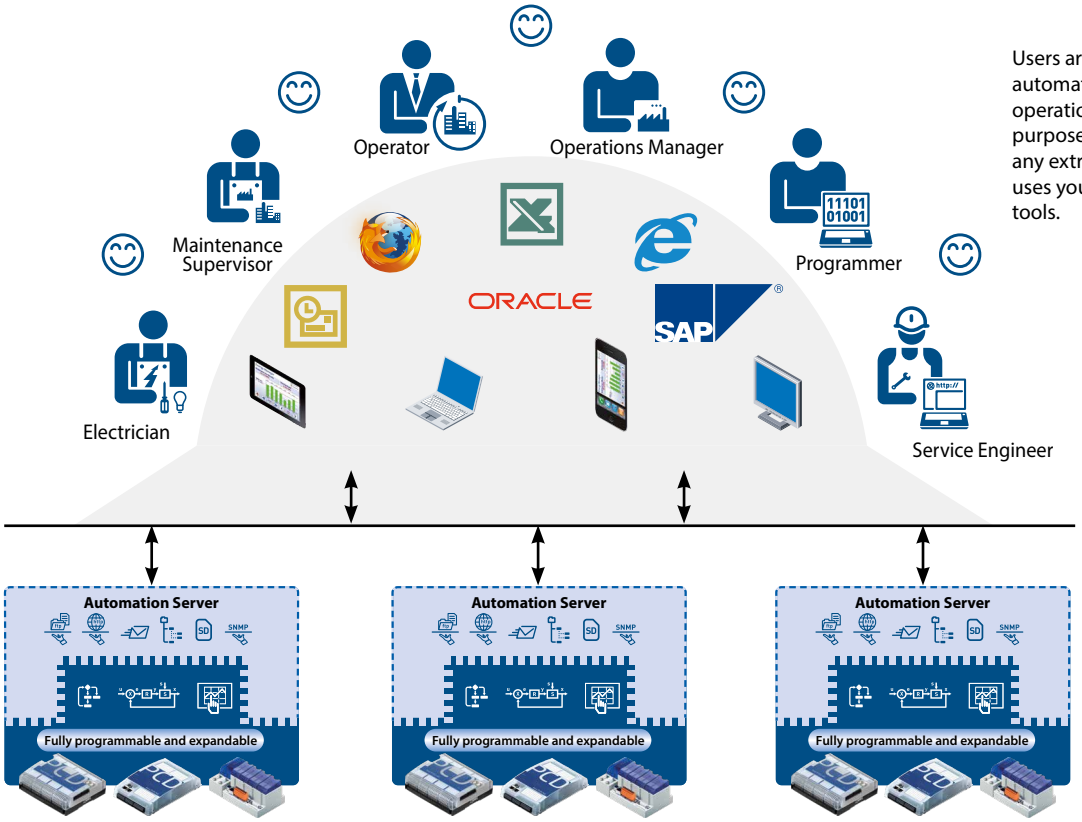
Microsoft Office products support the integration of external web sources. This makes it very easy to visualise the data of a Saia PCD controller in an MS Office application. The MS Office products can also access via the CGI interface of a Saia PCD Web Server to read or write data using the VBA programming language.



▶ Saia PCD data can be linked to a cell using Microsoft Excel. The data in the linked Saia PCD will be permanently updated while the Excel application is running. All this with no specific driver software/ middleware required by other systems.

3.7 Using an Automation Server as a technical basis for S-Web

An Automation Server is part of the COSinus operating system and is therefore integrated into all Saia PCD controllers. It comprises common web/IT technologies and guarantees the exchange of data between the operator/user and automation without any proprietary hardware or software. Specifically adjusted automation functions and objects form the relevant counterpiece in the controller application. The IT/web functions are therefore seamlessly and optimally integrated into the automation device and can be used efficiently.



Users are able to access the automation device direct for operation and maintenance purposes . There is no need for any extra software, as it simply uses your standard software tools.

Ideally, every automation device will have an Automation Server: each device can be accessed equally, and complex communication hierarchies are unnecessary.

Automation Server components

Web Server
The system and process are visualised in the form of web pages and can be requested from the web server using browsers such as Internet Explorer, Firefox, etc.

File system
Process data, records, etc. are stored in easy-to-access files. Standard formats make it easy to process them further, e.g. with Microsoft Excel

Flash memory
Their large storage capacity means Saia PCD controllers do not rely on a master PC system, even over a long period. The data storage capacity of the Saia PCD controller can be expanded to up to 4 GB by installing a SD flash card.

FTP Server
Load files into or select files in the automation device over the network using a standard FTP client (e.g. Filezilla).

Email
Critical system statuses, alarms and log data can be sent by email.

SNMP agent
Messages and alarms are transmitted in accordance with IT standards. Access to automation data using the IT management system.

SNTP, DHCP, DNS, etc.
Other standard protocols for simple integration into existing IT infrastructures