

PROFINEWS

PROFIBUS & PROFINET news from around the world

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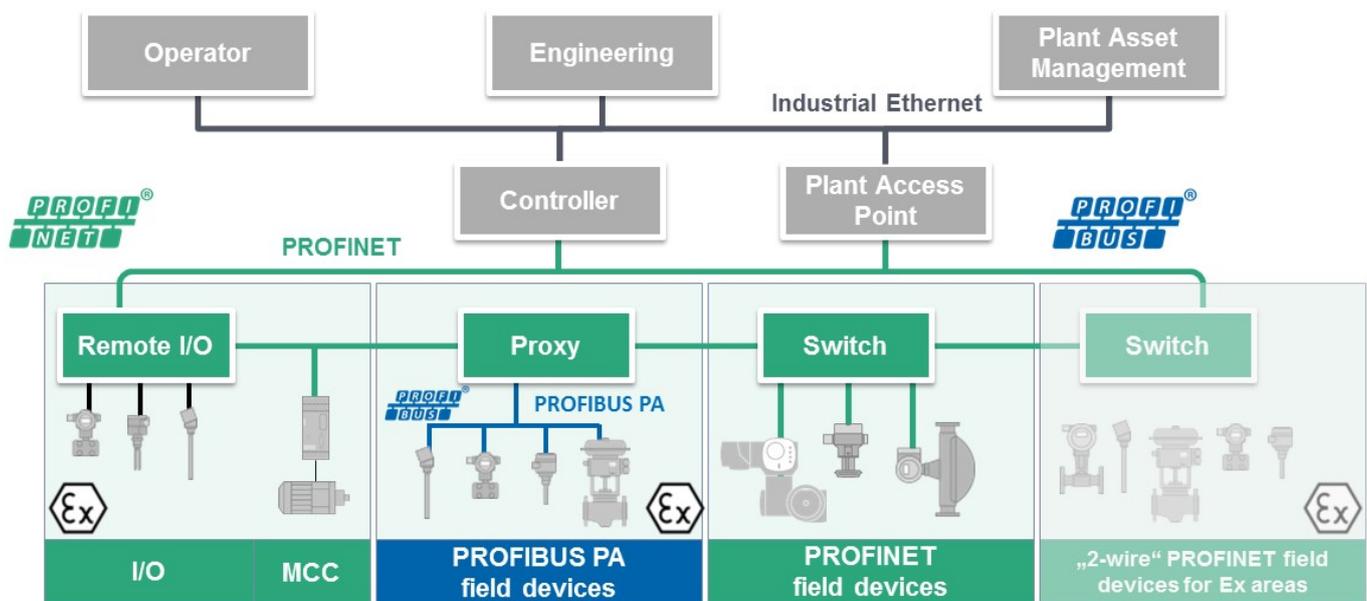
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Exciting Times in Process Automation

by Carl Henning - Wednesday, July 06, 2016

<http://profinews.com/2016/07/exciting-times-in-process-automation/>

Last year PROFIBUS and PROFINET International published a White Paper about the roadmap on how PROFINET will make its way into process automation plants in the future (“[PROFINET – The Solution Platform for Process Automation.](#)”



The exciting fact is that today – exactly one year later – we can see that two of those roadmap ideas have already come to life:

- Field devices for process automation are available with PROFINET, e.g. actuators from Auma (AC .2 series), data recorders and flow meters from Endress+Hauser (Memograph RSG45, Proline 100). Furthermore Krohne and Emersons Mircomotion have announced their plans to release PROFINET devices in the future.

The availability of PROFINET field devices makes the technology very relevant for process plants in the food & beverage, life science or water & wastewater industries – to name a few. Industrial Ethernet enables faster device exchange procedures, quicker engineering and more flexible network topologies in those plants.

- Proxies attach PROFIBUS PA segments directly to PROFINET. They are available from Softing in cooperation with R. Stahl (pnGate PA) and by Pepperl+Fuchs (PROFINET gateway for FieldConnex® Segment Coupler 3).

This fact dramatically increases the suitability of PROFINET for the process industries, but any plant requiring process automation for example in the chemical or mining business, where PROFIBUS PA has already been widely adopted.

Major automation vendors in the process industry agree on the fact, that PROFIBUS PA is the major

ingredient for digital communication on the last mile in process automation because of its unique features: It provides ignition protection for hazardous areas, 2-wire communication and bus-powering in typical and easy-to-maintain process automation network topologies (trunk + spur). The fictional characters of the “[PROFIBUS Dialogues](#)” video series on PI’s YouTube channel explain the benefits of the technology in simple terms.

Having PROFINET to PROFIBUS PA proxies in conformance to the Proxy Specification is a key element in offering a seamless integration solution for end-users, who want their “2-wire” or hazardous area devices to be fully digitally available and accessible.

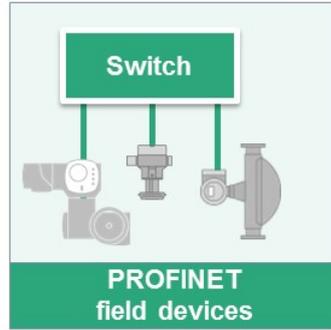
I am glad to see how equipment manufacturers now show the relevancy of PROFINET technology for process automation. I look forward to the next steps in future products and above all to customer projects accessing the benefits of Industrial Ethernet in the process industries, by using the new proxies and PROFINET devices. In the long run a new physical layer for Ethernet-based communication will bring Industrial Ethernet down to all field devices, straight to hazardous areas and FDI will improve integration and communication even more.



Karl Büttner

Chairman PI Process Automation Marketing Working Group

Components for the migration to PROFINET:



PROFINEWS App Update

by Michael Bowne - Wednesday, July 06, 2016

<http://profinews.com/2016/07/profinews-app-update/>



A brand new version of the PROFINEWS App is available today. With a completely redesigned interface, it's fast, modern, and built for ease-of-use.

A couple key features for this update:

- Improved search
- Filter by category
- Share PROFINEWS articles on your favorite platform
- Swipe left/right to read next article

Benefits include:

- Access to content before it's published in the PROFINEWS newsletter
- Push notifications for new content
- Offline reading available

There are no longer separate versions for the iPhone and iPad, it is now optimized for either device under a single unified App.

Get it for free from the Apple App and Google Play stores.

[Apple Download](#)

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Industrie 4.0 and IIoT for Process Automation

by Michael Bowne - Wednesday, July 06, 2016

<http://profinews.com/2016/07/industrie-4-0-and-iiot-for-process-automation/>

Departure for New Worlds

The chemical industry is well acquainted with networks. Many locations operate in close raw material and energy networks. This is now to be extended to the data level – or at least the measured value level. For it is apparent that analog measured value transmission in chemical plants is often no longer adequate for future tasks. For this reason, the process industry is now openly discussing the topic of Industrie 4.0 and the use of Ethernet technologies.

Competitive pressure in the process industry is increasing. New ways of making production more efficient are being sought. This is accompanied by a trend toward smaller batches and customized products that nevertheless require intelligent process control. New approaches are therefore needed in the future for items such as remote parameter assignment of instrumentation for optimizing control loops and automatic data acquisition of measurement series in an ERP system. In addition, the whole subject of modularized plants is only partially covered with existing automation technologies.

This has led to increasing discussion over the past two years of aspects such as Industrie 4.0, networked production, and intelligent communication. Accordingly, the use of Ethernet technologies in the process industry is now conceivable. This is particularly true because PROFINET is shaping up as the backbone for Industrie 4.0 applications in other industries. Manufacturers have followed suit by offering more and more field devices with a PROFINET interface, ranging from flow meters to data recorders, for example. In this way the portfolio is being gradually expanded and the introduction to PROFINET is being made easier for process industry users as well.

Gradual Transition to the Industrie 4.0 World

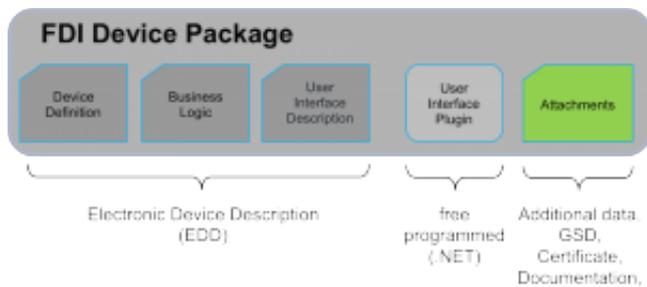
PROFIBUS DP is already being gradually replaced by PROFINET in factory automation. A similar trend is also anticipated in process automation. However, the hurdles in the process industry are somewhat higher. The production process, which is often continuous, cannot be easily stopped and when problems occur the potential for harm to humans and the environment is usually high. Apart from that, an unscheduled stoppage results in high financial losses. What is needed, therefore, are easy to use solutions that are characterized by high performance capability with regard to availability, flexible topologies, robust connection technology, redundancy, and consistency – even over long distances. Explosion protection also plays a role. At the same time, the technologies should have a long service life – in view of long life cycles of 20 years and more.

Nevertheless, implementation is further along than it seems at first glance. In recent years, PROFIBUS & PROFINET International (PI) has brought about numerous technological developments that meet these requirements. These include topics such as PROFINET for the process industry, diagnostics and condition monitoring, integration with FDI, PROFIenergy, and PROFINET Security.

Especially important to the teammates of PI is that these technologies are sustainable; that is, they will still be usable decades from now. This will be achieved mainly through open technology but also through the fact that close collaboration with users, manufacturers, and other organizations is taking place at an early stage. This is the only way that a joint standard can be developed that meets all requirements. Against this backdrop, the reference architecture model Industrie 4.0 (RAMI4.0) is currently playing a major role. RAMI 4.0 was developed by an interest organization made up of the BITKOM, VDMA, ZVEI, and VDI associations and the IEC and ISO standards organizations with their national bodies DKE and DIN. Despite the somewhat unwieldy name, the model was introduced to simplify the work on Industrie 4.0. The background for this type of reference architecture model is enable tasks and sequences to be broken down into manageable parts. As a result, the transition to the world of Industrie 4.0 can take place gradually. If multiple standards exist for the same thing or similar things from the view of the model view, a preferred standard in the reference architecture model can be discussed.

In detail, layers of different view points, such as data image, functional description, communication characteristics, hardware/assets, and business processes, are used in the vertical axis of the model. The product life cycle is mapped onto a horizontal axis. The location of functionalities and responsibilities within the plants is established on a third axis. Six layers describe machines, components, and plants.

Using a flow meter as an example, it will be shown how the RAMI model works in practice and how the technologies of PROFIBUS and PROFINET are already contributing to Industrie 4.0. A flow meter is clearly described and identifiable in the RAMI model as a device (Asset Layer). The Integration Layer contains device descriptions, from the EDDL or FDT/DTM, or in the future FDI.



PROFIBUS and PROFINET are intrinsically found in the Communication Layer. Ultimately, PROFINET combines horizontal and vertical integration with its integrated Ethernet communication, thus establishing a direct communication connection to the corporate management level and across production locations.

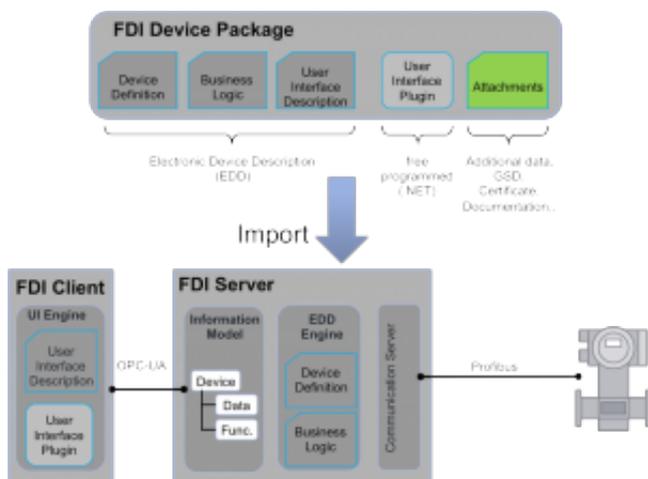
The service and maintenance functions (I&M functions) of PROFINET contain, for example, the running time and make this available in the Information Layer. The different profiles are affiliated there. As a result, it is possible not only to transfer pure data but also to semantically augment it as well. In this way, the PA profile not only defines a measured value but it also names units, limits, etc. Such additional data is necessary for preventive maintenance, e.g., for specifying process-related conditions.

In the Functional Layer, the profiles provide specific functions such as parameters and diagnostic information (from the GSD file) for each measurement principle and actuator, independent of device model and manufacturer. With this information, the field device reacts to events in the real world (e.g., a fault) and executes an action in the digital world.

The Business Layer ultimately allows modeling of business-relevant processes and offers the options of linking together the information and functions provided in the other levels for realization of new business models. A possible application would be the exchange of calibration data between a company and a calibration service provider. This provider performs the calibration and directly stores the new expiration dates in the customer system. Because live data are involved, it is possible to prioritize especially heavy-duty devices, for example.

Secured Access to Sensitive Data

Whatever data is collected, it is crucial that these data are collected in a type of secured container in the course of the life cycle. Other companies, machines, and plants can thus access it reaction-free. The FDI (Field Device Integration) technology shows one idea of how reaction-free access might function. FDI standardizes the integration of configuration and diagnostic tools of field devices in a Plant Asset Management System. The advantages are, briefly, the standardized user interface, the access to special functions, and that a Big Data integration via OPC UA is possible.



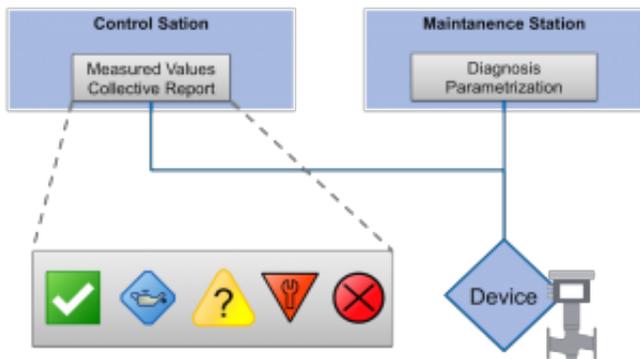
The reference architecture model expressly names the FDI technology as an effective means. With its device information model (set forth in IEC 62541-100), the client/server architecture of FDI technology provides all functions for modeling real devices as virtual objects for the industrial Internet of Things. It is interesting to note that the initiative for development of the FDI technology began before the term Industrie 4.0 was even invented. This shows that many developments have prevailed even without the term 'Industrie 4.0' simply because users need them.

PROFIBUS PA to Become the Key Technology

The basis for Industrie 4.0 applications is PROFINET, which masters both fast transmission of small data quantities and efficient transmission of large data quantities with simultaneous protection of real-time capability. Critical for process industry users is the inventory protection of installed automation components. For this reason, the following points are currently in the foreground of development activities:

- Inventory protection of instrumentation with legacy systems
- Migration strategies from PROFIBUS to PROFINET

- Connection and installation technology of Ethernet-based devices in process technology



PI sees PROFIBUS PA as the current key technology for digitization of field communication. PROFIBUS PA enables long cable distances and explosion protection for the harsh environments of process automation and offers complete digital integration of field instrumentation in control and asset management systems. The connection is made using a link/coupler typically via PROFIBUS DP. The user benefits of PROFIBUS PA result from, among other things, the use of digital instead of analog communication with all the positive consequences from this, the suitability for especially easy proof of intrinsic safety type of protection (FISCO Model), and the properties of the PA 3.02 device profile oriented to the process industry. The fieldbus combination "PROFIBUS DP with connected PA segment" is currently being used in many installations worldwide, where it is proving itself over and over as a high-performance and stable solution.

The proxy specification now allows the integration of today's installations (e.g. PROFIBUS DP/PA, HART) as well as future installations in PROFINET environments. With the use of these proxies, it becomes possible to combine the strengths of two technologies already proven for years in practice (PROFIBUS PA and PROFINET) and thus also to ensure investment protection for other established technologies over the long term.

Outlook

PROFINET provides an open solution platform based on Fast Ethernet. This is designed compatibly with today's existing technologies and for the long term. The result will be a PA Device Profile 4.0 that can be used uniformly with PROFIBUS and PROFINET systems. Examples of the resulting user benefits include the significantly easier and uniform processes for engineering, installation, commissioning, and replacement of devices. For vendor-neutral configuration of field devices in the control system, devices with the PA profile offer a standard interface in the form of the "neutral channel", which represents the combined functions of the devices and provides these in the form of an expanded profile GSD for the device integration. The transmission of large data quantities made possible by Industrial Ethernet expands the former data exchange into an information exchange. As a result, not only data and keywords but also meaningful information from the entire plant is made available to the owner.

PI is also contributing to the field of activity on security – another important issue that many potential users are keeping an eye on. These endeavors show that with the help of current technologies, future concepts such as Industrie 4.0 and Big Data can already be realized today.

Process Migration to PROFINET

by Carl Henning - Wednesday, July 06, 2016

<http://profinews.com/2016/07/process-migration-to-profinet/>

Seamless technology transfer

Standards guarantee the seamless interaction of devices and systems. But technical development never stops and the process automation world is already approaching the next technology generation. However, this time it is not about something completely new but rather about merging established solutions.

Digitalization has already taken over the process industry and an increasing number of chemical process plants have changed to data communication via PROFIBUS PA. At the same time, automation systems are still a world of their own. They offer full transparency from the control center all the way down to individual field devices. Yet, their systems and standards have little to do with the world of information technology where Ethernet is the established communication standard from servers to desktop computers and even mobile devices.

With PROFINET this separation into two technology worlds is finally approaching its end. PROFINET is not only based on Industrial Ethernet which allows a transparent flow of information way beyond the process plant. PROFINET also includes the well-established technologies of PROFIBUS PA and is therefore fully compatible with the requirements of process control systems.

Key technologies opening news opportunities

The Chemical Industry is operating in highly competitive international markets. This means, process plants need to be flexible and offer maximum efficiency in combination with superior availability. PROFIBUS PA offers the best technological basis to achieve such goals. It supports a seamless communication infrastructure which allows having an eye on each individual field device and solve recognizable problems way before they can lead to a plant shutdown.

PROFINET can do the very same. But PROFINET goes one step further. It is the very first platform to allow fully transparent communication between the automation technology and the IT world. This turns PROFINET into a key technology which opens the process world to the latest trends, such as Industry 4.0, Big Data and the Internet of Things. Thanks to PROFINET systems will be able to analyze the huge amount of process and device data which a chemical process plant generates continuously. This not only offers a completely new insight into the process and will lead to new levels of knowledge. It also frees the access to the plant from time and space limitations and enables completely new applications for optimized and flexible process control.

Technology upgrade in small steps

Chemical process plants not only expand over large areas. They are also governed by such vital aspects as

process reliability and explosion protection. Since PROFIBUS PA perfectly matches such requirements it has developed into an internationally established standard for the chemical process industry. For example, it allows digitally integrating field devices into the control system and linking them seamlessly with an Asset Management System. This is supported by the standard PA profile which guarantees the compatibility of devices independently from manufacturers in order to allow easy exchange of devices.

Although automation specialists are fully aware of the additional advantages offered by PROFINET, most plant operators are not ready yet to opt for a general technology upgrade. That's why organizations such as PROFIBUS & PROFINET International work on migration paths supporting a gradual change from an existing PROFIBUS PA based system environment to a comprehensive PROFINET network.

Industrial Ethernet as core argument

The typical scenario in the chemical industry is a complex process plant that is controlled by field devices and infrastructure components resembling different technology generations. Such a heterogeneous system environment does not only represent a true challenge as far as system maintenance and technical service are concerned. It also calls for numerous interfaces which usually only allow limited compatibility and prevent a truly transparent view of the process plant. Not to forget the relatively strict separation between the automation world at plant level and the IT systems of an organization.

PROFINET offers ideal conditions to unite different system worlds. PROFINET is not only well established in the manufacturing industry for many years. PROFINET is also based on the well-known Industrial Ethernet which was expanded to include PROFIBUS DP functionality.

In other words, PROFINET is not a completely new system, but basically combines the best of two worlds. That's why insiders are convinced that PROFINET will be the communication infrastructure of the future. This is emphasized by characteristics, such as standardization, consistency, ease of operation, and security. Not to mention advantages such as cost reductions, considerably higher efficiency, and a completely new range of applications.

Manufacturers are getting on board

Manufacturers of infrastructure components are also aware of the development and start offering new solutions on the basis of PROFINET. For the plant operator this considerably simplifies the setup of a consistently homogeneous communication infrastructure ranging from each individual field device all the way to the control room.

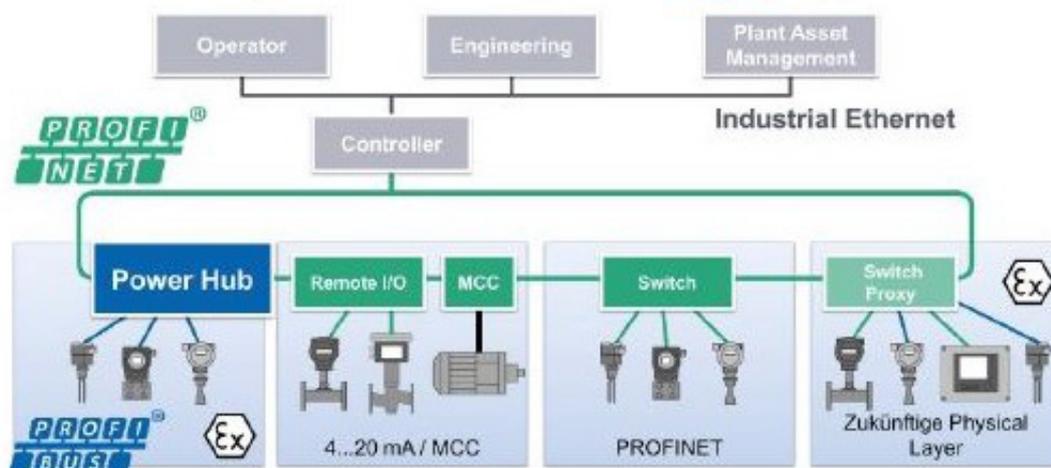


Fig. 1: PROFINET

integrates all system components via Ethernet. PROFIBUS PA takes care of the connection of field instrumentation.

The same is true of the latest generation of Plant Management Systems. The effectiveness of such systems increases considerably if they can access a wealth of data provided by the latest generation of field instruments and other devices. PROFINET is the key to realize the vision of a process plant that monitors itself and offers everything needed to realize targeted servicing and wear-dependent maintenance concepts.

Supported by a PROFINET-enabled Asset Management System, maintenance technicians will always be aware of upcoming problems and know exactly where and when maintenance work will be required. This will not only turn plant shutdowns into rare situations. If they do occur, the service technician will be fully prepared when he arrives on site, because the system not only issues an alarm message, but also provides specific information on the type of problem that has caused the shutdown.

New components for new opportunities

PROFINET will be a key aspect of a new generation of infrastructure components. Typical examples are the new Power Hubs of the FieldConnex® range from Pepperl+Fuchs. It consists of power supplies for up to four fieldbus segments which are used to supply power to the field devices directly via the signal line.



Fig. 2: Highly compact and easy to install: The FiedlConnex Power Hub combines PROFIBUS PA with PROFIBUS DP or PROFINET.

The latest generation Power Hubs are not only considerably more compact than previous models, but they also feature a lower level of power loss on the market. They also allow connecting more field devices. A completely new component added to the line is the PROFINET gateway. It allows a direct and electrically separated connection between PROFINET and PROFIBUS PA without the need of any additional devices.

Using a Device Type Manager or web server, a Power Hub can be configured and diagnosed comfortably from any remote location. It also comes with configuration tools for all established automation system on the market. Additionally, the integrated Advanced Diagnostic Module supports the continuous monitoring of the physical fieldbus layer.

Using PROFINET as the enabling technology not only leads to a considerable increase of operating safety, efficiency, and availability of a process plant. PROFINET also allows easy integration into IT systems and the use of a new generation of applications in relation to Big Data, Industrie 4.0, and the Industrial Internet of Things. The combination of PROFIBUS DP and PROFINET is a migration path leading directly into the future and paving the way for a wealth of totally new opportunities.



Andreas Hennecke

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PROFIBUS PA Sentiments

by Carl Henning - Wednesday, July 06, 2016

<http://profinews.com/2016/07/profibus-pa-sentiments/>

In this article (and next month's) I am going to shed the light on questions that some of our novice PROFIBUS PA users have asked us recently. There are specialists all over the world who are on the eve of kicking off an implementation of PROFIBUS PA for the first time in their automation projects. This is the legacy of the conservative nature of our industry. I was about to write that I am feeling old after 'looking' at PA installations for almost 20 years.

The good thing for the novice users, is the mature status of PROFIBUS PA with the availability of many products, services, and a widely supported standard. When I got the assignment to be chairman of the team to standardize the certification guidelines for profile 3.0 in the beginning of 2000, we had many obstacles to cross. Already a stack of submitted exceptions coming from instrument manufacturers was piling up and testing methods in the current test labs had to be redefined. After a long stretch I was proud to be part of a group of PROFIBUS 'heroes' who could submit the PROFIBUS PA certification guidelines, in order to make the document official by the advisory board. Let's look at the questions regarding PA Profiles:

What is a Profile within PROFIBUS PA?

PROFIBUS PA devices are relatively intelligent and can execute part of the information processing in automation systems. This was previously done by the PLCs or DCS systems (translating 4-20 mA to digital). The process industry demands among other criteria more data reliability and accuracy compared to discrete automation. The PA profile was designed in close cooperation with the process industry and defines all functions and parameters for different classes of instruments to ensure data reliability and pre-processing of data.

The PA Profile is based on internationally accepted function block technology. The profile contains descriptions for the following instrument types: pressure, level, temperature, flow, analog/digital I/O, analyzers, valves, and actuators. It all comes down to pre-processing of the cyclical data within the instrument according to provided settings. In parallel attached status values and alarms are generated to inform the host system about the reliability of the data.

The profile is divided into 2 classes (A and B):

- Class A of the profile describes common parameters of simple devices. The scope is limited to the basic functions. This set consists of the process variables (e.g. temperature, pressure, level) added by measured value state, the tag name, and the engineering unit.
- Class B is an extension to class A and covers more complex application functions for identification, commissioning, maintenance and diagnosis. The relationship of the parameters to the classes is visible within the parameter definitions and in the conformance statements.

Personally, I am really an enthusiast of the Simulation Value. This overrides the process value which the instrument has to cyclically transfer to the host system. By adjusting the simulation value, the user can test the behavior of the entire algorithm in the host system. Also, it's helpful when adjustments to the installation have to be made and unnecessary alarms want to be avoided. The quick change to another unit is also awesome – just set a temperature transmitter to Kelvin and immediately the digital process value has adapted. In my opinion, the PROFIBUS organization is offering the process automation industry a technical platform that is able to cover most applications and create value for the end-user.

Next month: What is a Profile Ident Number?



Dennis van Booma

PROCENTEC

For more background on profiles, see these past PROFINET & PROFIBUS News articles:

- [Tech Tip: How PROFIBUS PA Profiles Work](#)
 - [Tech Tip: What Are Application Profiles?](#)
-

Tech Tip: Suite and Simple Network Management with PROFINET (Part 3)

by Carl Henning - Wednesday, July 06, 2016

<http://profinews.com/2016/07/tech-tip-suite-and-simple-network-management-with-profinet-part-3/>

In [part one](#) of this series, we discussed how PROFINET leverages IT protocols such as Simple Network Management Protocol (SNMP), File Transfer Protocol (FTP), and Hyper Text Transfer Protocol (HTTP) to provide easy configuration and diagnostics over the network. In [part two](#), we covered PROFINET device naming, PROFINET Discovery and Configuration Protocol (DCP), and Link Layer Discovery Protocol (LLDP), which makes network management a cinch. Now, in part 3 we'll cover PROFINET application layer device diagnostics and alarms, data records, and additional features, which give us complete accessibility and control in the event of a diagnostic or issue with the network. We often refer to this as "diagnostics down to the wire" which we'll explain in detail below.

PROFINET devices support a diagnostic hierarchy which can not only notify the user of an issue on a device, but also can isolate the location of the issue within the device. This is a priceless benefit as it gives you the ability to find the error quickly. It could be a device wide issue, a problem with a network port, a module fault, or a channel within a module for instance. Not only are you informed where the alarm occurred in the device, but you are also given some error information about the type of the alarm and an error code. Examples could be a diagnostic alarm like a wire break, process alarm such as an over temperature on a running process, or a network alarm where a port got unplugged from the device.

Every PROFINET device has to be modeled in a standard way, and this is described in the device GSD (General Station Description) file, which is imported prior to device

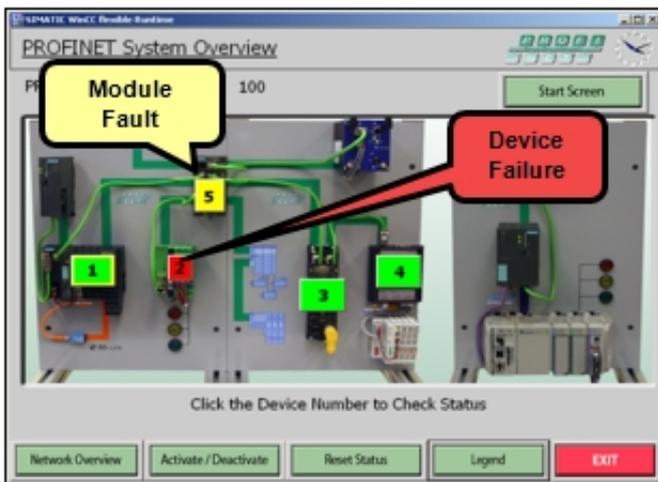


Figure 1: PROFINET diagnostics overview displayed on a HMI (Human Machine Interface)

configuration into the PROFINET engineering tool. A list of supported diagnostics and standard PROFINET errors, including manufacturer specific errors are included in the GSD file. Some modules might have diagnostic settings which are changeable by the user during configuration, allowing a custom tailoring of the settings for your application.

Once your system starts up, in the event the diagnostic condition occurs in a device, an alarm is sent to the PROFINET controller as well as being stored locally in the device. The user can then react to it in the user application if needed. The diagnostic information can also be read out with a tool by maintenance directly using read / write record services.

Part of the PROFINET application layer diagnostics come in the form of standard data records which are always present in the device. That record can be read from a configuration tool or IO supervisor/controller at any time using a read record service. These records can contain diagnostic information, IO information, parameter sets, device information and more.

To explain this: a common issue is a configuration fault. The user did not setup the device with the proper configuration and it does not match the real configuration in the device. An example would be if the user configured the wrong device such as a variable frequency drive (VFD) instead of a valve and attempted to start it with the IO controller. The IO device would detect that the startup data was not matching its real identity and the device at startup would signal a configuration fault to the IO controller. The error could be read out using "Application Log Data".

Another example would be if the user configured the correct device, but didn't configure all of the modules properly also signaling a fault for the incorrect modules. The engineer could verify this by comparing in the engineering tool or by reading device diagnostics the "Module Diff Block" which would show a difference. And finally, there are many other diagnostic and information records available to provide information on the latest diagnostic error, log data, identification and maintenance (I&M0) information such as part number, serial number, firmware revision, input and output data status, and more. A few records even can be written to, for example the user could add further identification information, like installation date, whom to call if there is a problem with the device, location, etc.

In conclusion, PROFINET has the most collective and comprehensive diagnostics suite available of any Industrial Ethernet protocol and its focus is to be simple. This helps make it easy to manage your network, implement diagnostics in your applications, and keep downtime to a minimum. And PROFINET supports diagnostics not only at the application layers, but also on the network which is a unique feature of the technology.

To learn more and see how simple it is firsthand, attend one of our hands-on [PROFINET Certified Network Engineer classes](#) (North America) or [here](#) (internationally) in the near future.

From the [PROFI Interface Center](#) in Johnson City, TN

Training and Events - July 2016

by **Carl Henning** - Wednesday, July 06, 2016

<http://profinews.com/2016/07/training-and-events-july-2016/>

Plugfests are in the news with a recent PROFINET plugfest in Germany and an upcoming PROFINET plugfest in the US. IO-Link has a similar event scheduled for October.

Recent events included an international meeting of PI Competence Centers (PICC), PI Training Centers (PITCs) and PI Test Labs (PITLs) plus an IO-Link member meeting.

PROFINET Plugfest Germany

Open and straightforward testing and exchange of experience are the main highlights of the Plugfest events held by PI (PROFIBUS & PROFINET International). The two-day Plugfest of the PROFINET community at the beginning of June proved to be no different. The focus of this year's event was on PROFIdrive- and PROFIsafe-based PROFINET communication.

The Plugfest event took place at the Siemens AG Erlangen facility. Most notably, this site produces motion control and drive technology and is thus a suitable environment for tackling all related developer issues. Around 80 participants brought their newly developed technology, thus enabling many interesting configuration variations to be tested. During the event, basic technology, devices, controllers, systems, engineering tools, and diagnostic tools were tested both with pilot devices as well as with devices just introduced on the market.

Testing was carried out in a proven fashion in various systems ranging from small groups up to larger shared networks. Participants particularly appreciated the open exchange of experience among specification experts, device developers, and certification bodies.

"It is simply very helpful and above all effective to test the many different integration possibilities in direct contact with my developer colleagues. Of course, we also actively participate in specification and test definition work, but the additional experience at Plugfest helps us to optimize our specific implementations. There are always new devices and advances that give us new ideas," said Benjamin Meyer, Group Leader for PROFINET protocol stack development at Hilscher.

The event also included tests and issues related to certification, both for PROFINET communication and for the profile testers of PROFIsafe and PROFIdrive. The findings from the Plugfest not only flow into the respective device implementations but are also the basis for further development of documentation and certification.



Around 80 participants attended this year's PI Plugfest in Germany. Participants particularly appreciated the open exchange of experience among specification experts, device developers, and certification bodies.

PROFINET Plugfest USA

PI North America members are invited to participate in a plugfest for PROFINET devices. Even though all PROFINET devices are certified in test labs, the plugfest presents the opportunity for product developers to sit with their products in a large system environment. The event will be held August 3-4 at Phoenix Contact's Ann Arbor, MI facility. Registration is nearing capacity so registering soon is recommended. For details and registration visit the [Plugfest page](#).

IO-Link Interoperability Workshop

The 16th IO-Link Interoperability workshop will take place on October 13th/14th in Frankfurt (Germany). This 2-day workshop is for developers of Devices, Masters, and Tools.

The goal is to perform interoperability tests. Master and Device suppliers gather to test and improve interoperability, to share implementation tips and clarify questions regarding the technology. Experts of the technology from IO-Link will support with their expertise on-site as well.

You can register [here](#).

PI Competence Center Meeting

This year the annual meeting of PI Competence Centers, Training Centers, and Test Laboratories took place in Genova, Italy. For three days the experts for PROFIBUS and PROFINET have been trained and updated to the current technological state of PI's automation technologies. They shared their experience and saw interesting live demonstrations about PROFINET+PROFIBUS in process automation and EMC, grounding and shielding. In addition the booming IO-Link technology was introduced. Beside this the

participants enjoyed Italian meals and lifestyle and had a short look at the biggest historical ancient center in Europe. A lot of discussions in small groups during breaks and in informal talks put the more than 70 professionals from 22 countries around the world closer together and cemented the global family of PROFIBUS and PROFINET International (PI). Thus this meeting got an informative success for all participants. Sincere thanks to the PICC Genoa Fieldbus Competence Centre s.r.l. which organized the meeting in a professional way and with Italian charm.

IO-Link Member Meeting

This year's IO-Link Members Assembly was held on June 08, 2016 in Frankfurt, Germany. The more than 50 participants were updated on the latest developments and trends for IO-Link. Besides the new profiles Firmware Updated and Smart Sensor Profile the topics wireless and IO-Link safety were on the agenda. Information was also presented about the newly established Test Labs as well as a license model for non-members. A highlight was the report of the 100th IO-Link member, Weiss Robotics, about their development of a gripper with IO-Link. Compelling conclusion of Weiss Robotics: Implementation of an IO-Link stack using the specification is feasible and the integration of IO-Link into new products is as easy as implementing PROFINET.

More Training and Events around the World

There are hundreds more classes and events scheduled through 2016. Visit the [website training and events page](#) to filter the view for the technology and country you are interested in.

Regional News - July 2016

by Michael Bowne - Wednesday, July 06, 2016

<http://profinews.com/2016/07/regional-news-july-2016/>

Unlike many other organizations in industrial automation, PI is large enough that it can support a decentralized structure (as opposed to a centralized one). This means each Regional PI Association can deliver support and events that are suited to their local market. More importantly, it means there's a lot happening around the globe, all the time. Newsworthy topics highlighted in this article are from:

- China
- India
- Italy
- Korea
- Norway

China

Drive Technology & Innovation -- Promote Chinese Manufacturing



Currently, the deep integration of industrialization and informatization is triggering a profound change in the manufacturing industry, and more industrial devices are connected into industrial networks. Facing increasingly complex networks, industrial users are looking forward to simple and innovative solution that meets their needs.

On May 11 of 2016, the forum "***PROFINET--Drive Technology Innovation, Promote Chinese Manufacturing***" was held at the same time during the IA-BEIJING Fair. It was hosted by China PROFIBUS & PROFINET Association, and supported by a number of research institutions and leading enterprises in the manufacturing industry. Many experts from industry, academia, and technology associations gave content-rich presentations, and provided various competitive solutions and actual application cases, attracting over 200 attendees to the forum.



To begin the forum, Mr. Ouyang Jinsong, the director of ITEI & the Chairman of PI-China, gave the opening speech- "*China's industrial intelligent manufacturing and Industrie4.0*" and explained in details from three aspects: manufacturing industry and related concepts; digitalized factory and Industrie 4.0; and 'Made in China 2025' & intelligent manufacturing. He expressed ardent hope for the future of China manufacturing. Next, PI Chairman Mr.Karsten Schneider, discussed "*PROFINET-the backbone of Industrie 4.0*". He analyzed how PROFINET played an important role in realizing Industrie 4.0 from a technical point of view.



During the company presentation parts, experts from Phoenix Contact, GE, and Siemens gave talks on "*PROFINET innovative solutions*", "*PROFINET application of industrial Internet*", and "*Digitalized Factory created by TIA and PROFINET*" respectively. They each introduced in detail, the successful combination of PROFINET and their products.

In the afternoon, Mr. Ben Zhigang from OPC UA China association gave his speech of "*Industrie 4.0, IoT & OPC UA*", and introduced the applications and advantages of a combination solution of OPC UA & PROFINET. Then Mr. Zhang Hualiang from Shenyang Institute of Automation, Chinese Academy of Sciences gave a talk on "*Key technology and demo system of intelligent manufacturing*", and interpreted several popular concepts- Industrie 4.0 / CPS / IIoT / Intelligent Factory, and introduced some successful intelligent manufacturing solutions.



Next, experts from RedLion and INDU-SOL explained from their points of view how PROFINET technology interconnected with third party systems. Engineers from Beijing Benz and PI-China analyzed PROFINET applications in the automotive industry. Finally, Dr. Liu Dan, the PI-China secretary made a summary statement of *"Intelligent manufacturing vertical integration and PROFINET"*, and drew the forum to a close.

India

The **Indian Profibus/Profinet Association (IPA)** participated at SPS Automation India in Ahmadabad, Gujarat on April 7-9, 2016. The exhibition served as the ideal platform for showcasing leading process automation technology and innovations. Innovation is increasingly becoming imperative for every industry to keep pace with the changing world. Technology is rapidly advancing and is further fuelled by the *"Make in India"* campaign initiated by the Govt. of India. The IPA booth focused on promoting PROFIBUS / PROFINET, and showcasing support available from exhibiting members. The event also saw the release of the *IPA Newsletter 2016* by Secretary Mr. Dileep Miskin and other members. The IPA common system showcased the smooth & seamless integration of products from various manufacturers on the unified platform.

Italy

Barilla Pasta chooses PROFINET



The second stop for the PROFIBUS & PROFINET Day in Italy was dedicated to the most innovative applications in Industrial Communication. On the 28th of June, engineers, technicians, developers, and designers gathered in Florence at the Hotel 500 in order to

share and increase their knowledge. Among the illustrious speakers at the event, Barilla took part to the event to share its experience with PROFINET.



Guests from well-known companies in the food, textile, shoes, gold, and paper industries, attended to understand how to use PROFIBUS and PROFINET technologies to increase their plant's productivity together with energy efficiency and security. The Italian PI Competence Centers provided academic information and speakers from companies like Tecnav, MTC, and Barilla provided personal success stories.

Korea

PROFINET Seminar in Busan and Seoul, Korea



Two seminars took place on April 19th and 21st in Korea, the former in Busan, and the latter in Seoul. Each opening lecture was started by PI Chairman Mr. Karsten Schneider with his “*PROFINET, The backbone of Industry 4.0.*” talk, followed by a “*Smart Factory introduction*” from SIEMENS and “*PROFINET Technology Update*” by RPA Korea Chairman Mr. CHA Young-Sik.

Customers were deeply interested in PROFINET as the backbone of a Smart Factory as it pertains to motion control, process automation as well as factory automation all on a standard Ethernet platform.

On the day between Busan and Seoul, Mr. Karsten Schneider visited POSCO - a leading global company of in the steel industry and presented “*PROFINET for Process Automation*”.

Norway

The **Eliaden 2016 Fair** located in Lillestrøm close to Oslo took place with an attendance record of almost 20,000. The PROFIBUS Norway Association had a common booth with ABB Electrification-products-division, ABB Instrumentation, AD Elektronikk, Bihl + + Widemann, Eaton Electric, Festo, Hecotron, and Siemens. The "Eliaden" is the only fair in Norway for Electricity, Electronics and Automation and arranged every second Year.



Member News - July 2016

by Michael Bowne - Wednesday, July 06, 2016

<http://profinews.com/2016/07/member-news-july-2016/>

There is news this month from Hilscher, who announces a partnership to integrate IT and OT networks. Also, Phoenix Contact has opened a brand new training facility in Germany to further collaboration with universities there.

Partnership for Seamless IT/OT Integration

Hilscher has formed a milestone partnership with SAP that allows for the seamless integration of information technology (IT) with operational technology (OT). With this agreement, the two companies are able to provide bi-directional access of the sensor/actuator level, via the netIOT Edge® Gateway from Hilscher, to the SAP HANA Cloud Platform and the SAP Asset Intelligence Network. A first demonstration was shown at the SAP booth during Hanover Fair, April 25-29, 2016.

The integration into the Asset Intelligence Network is carried out without the need for additional configuration, and offers device manufacturers the opportunity to access their own devices regardless of the PLC and the production network.

This results in benefits for plant operators and device manufacturers:

- Production technology can be optimized through integrated installation and preventive maintenance procedures, and in parallel, the device manufacturers can monitor and improve the usage and service of their products in the field.
- New business models, such as pay-per-use and function-based billing, can be implemented.

In addition, access down to the field level from the Asset Intelligence Network is possible, allowing integration into the business processes during installation, maintenance and service of the production system. The integrated solution from the sensor to the cloud allows the implementation of the reference architectures of the Platform Industry 4.0 and the Industrial Internet Consortium.

“The netIOT Edge Gateway has four Ethernet ports, two for PROFINET and two for cloud and IT network connections,” says Phil Marshall, Hilscher North America CEO and PI North America Board of Directors member. “The first implementation of the netIOT Edge Gateway will support PROFINET for field-level communications.”

Phoenix Contact Training Center officially opened

With Garrelt Duin, the State Minister for Economic Affairs for North Rhine-Westphalia in attendance, Phoenix Contact officially opened its new Training Center in Schieder on June 10, 2016.

Built on the site previously used by the Schieder-Möbel company, the new multi-story building has a

floor space of 13,000 sqm and is home to vocational training as well as further training for Phoenix Contact. In future, training workshops, laboratories, and seminar rooms will be available not only to Phoenix Contact Group trainees and staff, but also external providers such as adult education centers, Chambers of Industry and Commerce or colleges and universities.



Over 30 million euros have been invested in the project.

A particular area of focus this year is the qualification of employees for digitalization in industry (Industrie 4.0), which affects all the business divisions along the value added chain. A digital laboratory has been set up on site for training production staff, where they will be able to try and test processes in practice.

The event opened with a welcoming address by video from the German Minister of Education and Research, Professor Johanna Wanka. Welcoming addresses then followed from Garrelt Duin, the State Minister for Economic Affairs for North Rhine-Westphalia, and President of the Federal Institute for Vocational Training and Education, Professor Friedrich H. Esser.

New Products - July 2016

by Michael Bowne - Wednesday, July 06, 2016

<http://profinews.com/2016/07/new-products-july-2016/>

Click on a headline or picture below to read more about a new product.

[High-Density Signal Conditioning Modules Offer Bluetooth](#)



A full line of microBlox™ isolated signal conditioning modules are now available from **Acromag**. Offering over 175 models, microBlox uB modules can safely interface a wide variety of voltage, current, temperature, frequency, and other field signals with a $\pm 5V$ or 0-5V DC output to host measurement & control systems. Users can select modules with fixed ranges or wireless configuration via *Bluetooth*® wireless technology on an Android™ or iOS® mobile device. With 1500Vac peak (350Vdc continuous) channel-to-channel and field-to-host isolation, the hot-swappable modules are ideal to front-end data acquisition systems or Acromag remote I/O for communication to PROFIBUS or other networks.

[PROFINET Interface for Actuators](#)



A new interface for AC actuator controls now allows electric actuators from **AUMA** to be integrated into PROFINET networks. The interface meets the requirements of PROFINET specification 2.3 and supports Conformance Class B (CC-B). Baud rates of up to 100 Mbit/s are possible. Implementation into line and loop topologies is facilitated by the integrated switch function. Loop topologies additionally provide redundancy via the Media Redundancy Protocol (MRP). Physical connection is made via field-assembled RJ45 connectors. Commissioning, handling of actuators, and fault diagnostics are easy and convenient, thanks to features including automatic address assignment.

[Segment Coupler Provides Speed on PROFIBUS DP](#)



The basic segment coupler from **Pepperl+Fuchs**, the successor to its SK1 and SK2, brings PROFIBUS PA segments via its unique transparent fashion into PROFIBUS DP. The irony is, that it should be named “de-coupler” instead. With the basic segment coupler PROFIBUS PA nodes appear as DP nodes in the DCS and can be configured and diagnosed without additional tools. At the same time, both transmission rate and timing of the two bus systems are completely de-coupled. Communication to the DCS benefits from responses with zero delay by the PA nodes at a transmission rate of up to 1.5 MBit/s on PROFIBUS DP.

[Narrow Switches for Long Distances](#)



The particularly narrow Smart Managed Narrow Switches from **Phoenix Contact** are now available with fiberglass ports for covering medium and large distances. Thanks to two integrated FO ports in multimode or single mode version, the devices cover distances of up to 15 kilometers. They therefore also enable the connection of widely distributed network parts. Thanks to the integrated PROFINET device function, the switches are ideal for use in control environments in PROFINET applications. This enables the user to configure and diagnose the switch via the controller.

[Absolute Rotary Encoders for Safety-Critical Systems](#)



POSITAL has expanded its family of IXARC absolute rotary encoders to

include models explicitly designed for use in safety-critical motion control systems. The new encoders feature redundant measurement elements and are certified to Safety Integrity Level 2 (SIL 2) and Performance Level d (PL d). They feature a PROFINET communications interface and support the PROFIsafe protocol. PROFIsafe-based control systems are used for critical applications such as industrial robots or material handling equipment, where loss of control could result in hazardous situation. The encoder transmits a safety position and/or safety velocity value.

[ATEX/IECEX-Certified Absolute Rotary Encoder](#)



The **POSITAL** ATEX/IECEX-certified rotary encoder with PROFINET is designed to operate safely in atmospheres where there are potentially dangerous levels of explosive gases or dust. These devices are part of the IXARC family of magnetic rotary sensors and are available in single- or multiturn versions. Rugged, reliable, and highly accurate, these devices can be ordered with a wide range of mounting and coupling options that ensure that they can be installed in zones 1 and 21 (as defined from the ATEX directive).

[New Generation of Controllers for Rail Applications](#)



New **Siemens** automation controllers for rail applications are being launched on the market. The new rail-tested and approved Siplus extreme rail devices are based on the latest generation of Simatic S7 controllers and are specially designed for the extreme conditions encountered in rail applications. Using this coordinated system, comprising new Siplus extreme rail equipment, PROFINET-based communication and engineering in the TIA Portal, the user can create efficient automation solutions for rail applications quickly and easily.

PROFINETS

PROFIBUS & PROFINET news from around the world

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