

PROFINEWS

PROFIBUS & PROFINET news from around the world

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Table Of Contents

Network of the Future	3
All the (PROFI)news That's Fit to Digitize	4
PI at SPS/IPC/Drives Show	5
How the Convergence of IT and OT Impacts Engineers	8
Ethernet Requirements in Process Automation	10
Ethernet for Process Automation	12
IO-Link Interoperability Workshop	13
IO-Link: You Know	14
Regional News - November 2016	15
New Products - November 2016	17

Network of the Future

by Carl Henning - Monday, November 07, 2016

<http://profinews.com/2016/11/network-of-the-future-2/>

Shaping today the production of tomorrow

As the popular saying goes, paths are made by being walked. In this sense, PROFINET has clearly shown that a technology can outgrow its expectations and blaze new trails as a pioneer. When an Ethernet-based communication system was first being considered 16 years ago, no-one had any idea that this technology would be a "door opener" to totally new areas of use, in this case, Industrie 4.0 and Industrial Internet of Things applications.

Industrie 4.0 is currently a hot topic for discussion, and it's being taken for granted that all the requirements and requests will be easy to implement. This includes ever-increasing networking of machines and systems, data transfer to the cloud, high real-time requirements for I/O data and new diagnostic demands, service and maintenance, to name a few. Only in very few discussions (outside automation) is it explicitly being said that the bandwidth demand for Ethernet-based data exchange is increasing and the requirements on industrial networks are growing as a result. This is to say nothing of the complexity of the task, e.g. how it will manifest in terms of asset management. Thus the question of how to handle the data of subsystems without a PROFINET interface has long gone unanswered. Not only has PI given this thought, it has already developed concrete solutions.

Potential future trails blazed by PI technologies will be presented at the next PI conference, which will be held on March 22 & 23, 2017 at the Commerzbank-Arena in Frankfurt, Germany. The guiding theme of the conference will be: "Network of the future – Shaping today the production of tomorrow." Technologies, requirements, and solutions for the planning, development, and operation of networked production systems will be the primary focuses there.



Frithjof Klasen

PI Board

All the (PROFI)news That's Fit to Digitize

by Michael Bowne - Monday, November 07, 2016

<http://profinews.com/2016/11/all-the-profinews-thats-fit-to-digitize/>

Are you reading this on the PROFINEWS App? If so, move along! If not, what are you waiting for?! Download the App today from the Apple iTunes or Google Play stores to stay up to date on the latest and greatest happenings around PI.

See what you're missing in this MinutePROFINET video:

https://www.youtube.com/watch?v=_JADvqu8_oA

PI at SPS/IPC/Drives Show

by Carl Henning - Monday, November 07, 2016

<http://profinews.com/2016/11/pi-at-spsipcdrives-show/>

PROFINET, PROFIBUS, and IO-Link will be on display at the SPS/IPC/Drives Show in Nuremberg this month. Find the PI booth at the entrance to Hall 2 in stands 220 and 221. The 3,500 sq. ft. booth is themed “PROFINET – the Backbone for Industrie 4.0.”

Features

- 36 member kiosks
- PROFINET product wall
- IO-Link wall with 220 devices from 48 manufacturers
- New process automation demo
- PROFIdrive demo
- PROFIsafe display
- PROFIenergy display



A CNC-controlled cutter for manufacturing individualized desk-top stand-up displays will be demonstrating the interaction of IT and OT using web/OPC UA technologies. PROFINET will be handling machine communication in its time-tested way.



Another highlight at the PI stand will be a new PROFIsafe model, which will show how machines can work either independently or together. The live demo will illustrate how three machines with different fail-safe controllers can work together in a single system. The device demo includes optical and electromagnetic sensors, drives, controllers, gateways, and safe I/O modules.

The IO-Link Community will be exhibiting a variety of new innovations and offering users even more advantages and an ever-increasing spectrum of products. Users will find the new centralized, cross-manufacturer database for device descriptions of IO-Link devices (IODD) of particular interest.

IODDfinder contains the IODDs of the various manufacturers and enables users and IO-Link configuration tools to have centralized access to IODDs. A prototype implementation will illustrate the capabilities of IODDfinder using various IO-Link devices.

If you cannot be at the show, follow [AllThingsPROFI](#) on Twitter for live updates.



PI

booth at SPS/IPC/Drives Show 2015

Note for English speakers: SPS is German for PLC.

How the Convergence of IT and OT Impacts Engineers

by Michael Bowne - Monday, November 07, 2016

<http://profinews.com/2016/11/how-the-convergence-of-it-and-ot-impacts-engineers/>

From the domain expertise required to filter the required data in the correct way to expanding automation and IT networking knowledge requirements, the Internet of Things is dramatically altering the duties and expectations for control engineers.

A lot has changed in the last year in the Industrial Internet of Things (IIoT) space. Interestingly, advancements appear to be moving faster than ever. Instead of the hype abating, the excitement continues. Of note, there is a clear shift in language often used to describe the IIoT landscape. Many discussions now often revolve around a convergence of information technology (IT) and operational technology (OT). But it's not just the messaging that has changed; product releases in the past year have been showcases for IIoT advances.

A great case in point is IoT gateways, which are now offered by several manufacturers. These devices act like any other gateway, in that they can be programmed to speak an automation language (e.g., Profinet) on one side and a higher-level language (e.g., OPC UA) on the other. The practical need for gateways are many and varied. Perhaps the engineer does not want to load the PLC with any further responsibility. Or there might be information that simply is not germane to the PLC that is desired on the IT side. Gateways are helpful in such instances because they can bypass the PLC altogether (which is fascinating in its own right) to connect IT and OT networks.

Though gateway devices have long featured plenty of connectivity options on the OT side, all that was needed for IIoT application was something to connect to on the IT side. Enter the traditional IT companies: IBM, Amazon, SAP, Microsoft and so on. From the IT side, these companies are beginning to offer IIoT-specific solutions to tap into the industrial market. These solutions generally consist of analytics packages designed to ingest data and output business intelligence. In short: The OT side provides the data and the IT side analyzes the data. Great idea, but...

Domain expertise

How do you know what to look for? It's well known that the amount of data produced during a week of production in a factory can be huge. An analytics package cannot tell you what data is important and what data is irrelevant. With so much data to draw from, it's often like searching for a needle in a haystack.

For example, in the grain processing industry, what metrics are tied to overall equipment effectiveness (OEE)? Only someone with expertise can discern the important data and separate the wheat from the chaff (pun intended). And, rest assured, such metrics will be significantly different from an engine assembly plant in the automotive sector where, again, domain expertise will provide the ability to filter on relevant data.

Engineering effects

So if some domain expertise is required, combined with the competency to link into IT-side systems what does that say for the average control engineer? It means multi-disciplinary engineers will become the norm. In addition to knowing how to program a PLC, knowledge of how that PLC fits into the wider plant network is required.

A great example of this is seen with the move from serial fieldbuses to industrial Ethernet. From personal experience I can say that, nine times out of ten, when there is an issue with a Profibus network in the field, it's due to installation errors.

Thankfully, Profinet is much easier to install, because it's Ethernet. There is no need to worry about repeaters, segments, termination resistors, etc. However, because it's Ethernet, it becomes part of the network infrastructure upon which Profinet traffic resides as well as other traffic, such as VoIP, HTTP, etc. Needless to say, additional complexities are introduced when this happens.

As a result, the control engineer must be familiar with networking an automation environment, but also networking in general. And as IIoT solutions become more prevalent, there will inevitably be more than one protocol sharing that network environment. This could be true even for small networks, where many Ethernet complexities would otherwise be inherently mitigated by the network's small size.

In other words: as IT and OT converge, there is no longer such a thing as a small network.

-- Michael Bowne

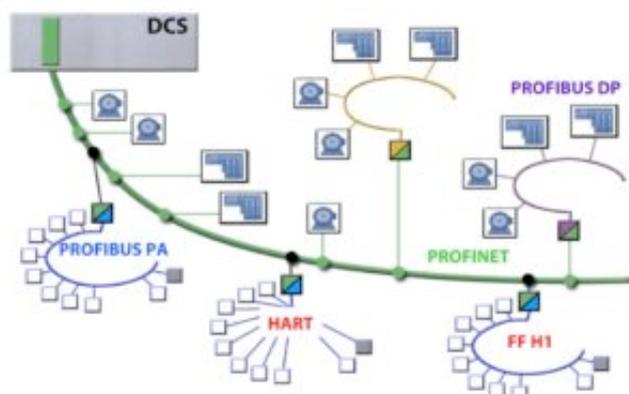
This article originally appeared in [Automation World magazine](#).

Ethernet Requirements in Process Automation

by Michael Bowne - Monday, November 07, 2016

<http://profinews.com/2016/11/ethernet-requirements-in-process-automation/>

PROFIBUS PA cables can land in hazardous environments; Ethernet cables cannot --yet. However, PROFINET is still a great backbone in process applications for today and tomorrow. Meaning, PROFINET can form the backbone of the control network, and intrinsically safe networks can be used where Ethernet cannot. Proxies allow for the integration of HART, PROFIBUS PA, and Foundation Fieldbus networks into the PROFINET backbone.



Other benefits of PROFINET here include direct connection to motor control centers, drives, and PLCs, greater bandwidth, larger address spaces, bigger messages, faster communication speeds, and more diagnostics. This is the current status of networking process control applications. In the future, work is being done to implement Ethernet in hazardous environments too.

Just as PROFIBUS DP and PROFIBUS PA use the same protocol on different physical layers, PROFINET is looking to a similar future. PROFIBUS DP uses RS485 whereas PROFIBUS PA uses MBP (Manchester-encoded Bus Powered). Similarly, the physical layer requirements allowing PROFINET to land in hazardous environments would be very similar to PROFIBUS PA's physical layer requirements, namely:

- Limited current/voltage (intrinsically safe)
- Two-wire connection
- Power over the two-wire cable
- Wired segments longer than Ethernet's 100-meter limit
- Same PROFINET protocol on new physical layer

So the same PROFINET protocol that currently runs over standard unmodified Ethernet would additionally run over an Ethernet variant suitable to process environments. These results may be a few years away. In the meantime, PROFINET is still the right backbone for process applications. That is why for non-hazardous environments, PROFINET is already available as an interface on many process instruments.

To see PROFINET in action in a process control demo, visit the PI booth on the SPS/IPC/Drives Show.

Ethernet for Process Automation

by Carl Henning - Monday, November 07, 2016

<http://profinews.com/2016/11/ethernet-for-process-automation/>

At a joint symposium, PROFIBUS & PROFINET International (PI) and NAMUR e.V. discussed the use of Ethernet in the process industry. The goal of the event was to evaluate, coordinate and prioritize the requirements placed on an Ethernet communication system for process automation. The results of the discussions by experienced specialists from system and device manufacturers and expert users in this field were compiled in a position paper of the NAMUR Working Group 2.6 "Fieldbus" (convened by Sven Seintsch of Bilfinger), which will serve as the basis for the development of a next-generation digital communication system for use at process plants. Previous experience with existing fieldbus systems and future required features are taken into account here.

In every phase of a plant's life cycle, digital bus systems meet important user requirements while significantly outmatching analog communication in terms of quality, cost and speed. A glance at modern, large-scale process industry plants, however, shows that this is not always the case from our present point of view. The reason for this is the high degree of complexity experienced by the user. The next generation is intended to simplify the handling of digital communication at a broad range of different process automation plants (i.e. facilitate ease of use), while at the same time defining the technological requirements for topics associated with Industry 4.0.

Michael Pelz (Clariant Plastics&Coatings), head of Namur Working Area 2, "Automation Systems for Processes and Plants," summarized the benefits of this activity: "Close cooperation between manufacturer and user organizations beginning at the early phase of a new technology unleashes great synergy potential. This provides the best opportunity for introducing a new technology, both cost-effectively in production by the supplier and efficiently at the plants of the user."

Dr. Peter Wenzel, Managing Director of PI, sees "special challenges for digital and networked communication structures" in the specific characteristics of the process industry, such as long plant service lives and accordingly long-term use of process control and field device technology, complex devices and high requirements on security and availability. He continued: "This is why the successful introduction of an Ethernet-based communication system requires early coordination of requirements with users. The experts at PI are happy to engage in this task and are looking forward to intensive and fruitful cooperation with NAMUR experts."

IO-Link Interoperability Workshop

by Carl Henning - Monday, November 07, 2016

<http://profinews.com/2016/11/io-link-interoperability-workshop/>

On October 13 and 14, 2016, the IO-Link Community met in Frankfurt, Germany for the 16th annual IO-Link Interoperability Workshop. 75 participants from 33 companies spent both days intensively putting their new IO-Link devices through their paces. The participant turnout also set a new record in the number of different countries from which attending companies originated. Most participants were from Germany, but the IO-Link Community was also happy to welcome many international participants this year from Japan, the US, the Czech Republic, the Netherlands, Sweden, Spain, France, Switzerland, Turkey, and Hungary. This reflects the increasing global interest in simple point-to-point technology.

The goal of workshops organized by the IO-Link Member Community is to test and ensure the interaction between devices, masters, and tools under real-world practical conditions. During the 2-day event in October, the "meat" of the latest IO-Link device developments was tested with regard to the interface itself, as well as to cross-system integration into a variety of different engineering tools. The entire spectrum of sensors, actuators and a wide variety of field bus-specific master interfaces and diagnostic tools were presented. IO-Link data integration concepts have been included in Industry 4.0 cloud-based services.

Community experts were happy to lend their support by fielding participants' questions on implementation. Special-issue groups included "test systems, system integration, and data management functionality." There was plenty of opportunity for suggestions and a lively exchange of experience among users. A number of technical talks on optimum device implementation and user-friendliness were given, and discussions held.

IO-Link: You Know

by Carl Henning - Monday, November 07, 2016

<http://profinews.com/2016/11/io-link-you-know/>

Did you know that IO-Link drastically reduces electrical installation costs?

IO-Link results in significant cost savings even for classic binary sensors. For use as an installation system, IO-Link sensor hubs are available on the market that condense up to 16 binary sensors with one switching output or 8 sensors with two switching outputs (e.g. antivalent or Desina sensors) into a single serial IO-Link connection. Hubs for binary actuators as well as hubs with analog inputs and outputs are also available. Thanks to IP67 degree of protection, the low-cost sensor hubs and actuator hubs eliminate terminal boxes and terminal blocks along with the associated electrical installation effort.

With IO-Link, the installation costs can be reduced even when measuring devices are connected. If a measuring sensor or a freely positionable actuator is equipped with an IO-Link interface, the device can be connected directly to an IO-Link port of the master using an unshielded standard cable. Besides the additional data communication possibilities (additional diagnostics and parameter channel), this reduces more than just the installation costs. The purchase costs for measuring sensors are actually lower with IO-Link than with conventional devices. Measuring sensors normally have no microprocessor that can directly control the serial IO-Link interface. The D/A converter in the sensor is omitted as well as an A/D converter in the interface module of the controller. Thanks to the noise-free digital transmission, a shielded cable is also unnecessary and multi-pin connectors are omitted in favor of a standard connector. Especially significant is the combined benefit of an extremely easy installation and upgraded functionality of mechatronic devices such as grippers, vacuum generators, and signaling devices, all of which would be inconceivable without IO-Link.

[IO-Link](#)

Regional News - November 2016

by Carl Henning - Monday, November 07, 2016

<http://profinews.com/2016/11/regional-news-november-2016/>

PI Brazil has had a full slate of meetings and activities including some featuring PI Chairman, Karsten Schneider. On November 9, PI Italy held their final PROFIBUS and PROFINET event of 2016 in the industrial district in southern Italy. PI Middle East is hosting another PROFIday featuring the food and beverage industry on November 15.

Brazil

PI Brazil will continue their successful PROFINET Road Shows that were first reported in [PROFINET in August](#).

In June PI Chairman Karsten Schneider traveled with PI Brazil President Robert Gries. During a visit to Westcon Industrial Instruments, certified Profibus Competence Center, he met with the local press. He also spoke at a technological seminar sponsored by PI about how Profibus and Profinet communication technologies help industrial activity, preparing businesses for the future. During the event, PI Brazil signed an agreement with the National Institute of Telecommunications, Inatel, to establish an additional Profibus Competence Center.

On July 12, PI Brazil held another edition of the onsite seminar Profibus, Profinet, and AS-Interface, in the Sanitation Company of Minas Gerais - Copasa, in Belo Horizonte. The meeting was divided into two phases, the morning period was dedicated to theoretical presentations and the afternoon provided demonstrations using educational kits.

[PI Brazil](#)

Italy

Engineers, technicians, and developers met November 9th in Bari (South of Italy) to improve their knowledge and understanding of how to improve their industrial plants' performance.

The Bari industrial district is well-known for important companies in food, chemicals, oil & gas, textile, wood, and mechanical industries.

PI Italia competence centers provided the visitors with academic topics, while renowned companies such as TEKNA Automazione e Controllo, and INTESIS shared their concrete experience in the use of PROFIBUS and PROFINET.

Many people gathered to take part in the event and take this opportunity to gain knowledge and to network.

[PI Italy](#)

Middle East



PI Middle East recently completed an onsite training session for Saudi Arabian Mining Company - Ma'aden. Topics included How, When, and What is needed to reduce downtime and quickly identify issues.

The Food and Beverage Industry (F&B) is an industry for consumers and it's not affected by oil prices. PROFIBUS and PROFINET are growing in this industry towards Internet of Things (IOT) and Industry 4.0. PI Middle East welcomes you to this event on November 15 in Kuwait City to meet the Experts.

[Details and registration.](#)

[PI Middle East](#)

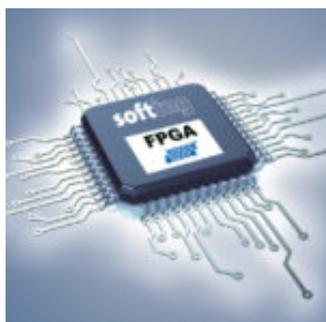
New Products - November 2016

by Michael Bowne - Monday, November 07, 2016

<http://profinews.com/2016/11/new-products-november-2016/>

Click on a headline or picture to learn more.

[PROFIBUS IP core and protocol software for Xilinx FPGAs](#)



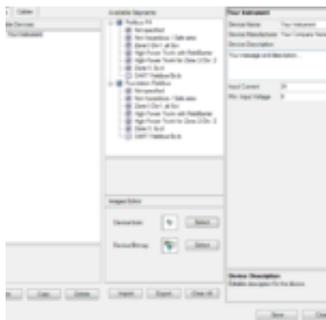
With the PROFIBUS DP Master for Xilinx FPGAs, Softing is expanding its range of loadable logic with integrated protocol software for industrial communication protocols. In addition to the familiar solution for Altera FPGAs, the PROFIBUS master is now also available for Xilinx FPGAs. This gives users the opportunity to choose the FPGA provider according to their requirements and to use their familiar development environment.

[Gateway Bridges Any Two Industrial Ethernet Networks](#)



Hilscher is pleased to announce the release and immediate availability of an innovative new gateway that easily interconnects any two real-time Ethernet networks. The netTAP 151 is a four-port device that exchanges I/O data between different industrial Ethernet networks by acting as a protocol converter. Because the netTAP 151 is integrated as a simple I/O device into the primary network, it is compatible with any PLC.

[PROFIBUS PA: Simplify Planning for Your Users](#)



As an instrument or device manufacturer you can simplify the work life of your users: Create a device library of your instruments for Pepperl+Fuchs' Segment Checker. This is one of the popular planning tools for fieldbus infrastructure with more than 1,200 downloads annually. With the integrated device editor this simple task takes only a few mouse clicks per device.

[8-port IO-Link Master Certified for PROFINET](#)



The IO-Link Master 8-PNIO from Control features rugged IP67 housing with M12 connectors for harsh environments. This industrial IO-Link gateway has a wide operating temperature from -25° to 60°C. Features include: PLC access to IO-Link ISDU blocks without complex programming, the IOL_CALL function module, and a web GUI for configuration and diagnostics.

[New Power Modules Enhance Energy Efficiency](#)



The Sinamics G120P is specifically tailored as a converter solution for use in industrial applications in the process industries such as pharmaceuticals, chemicals and also building technology. Siemens introduces new power modules, PM240P-2 and PM330, for the G120P, which extend the portfolio for built-in and cabinet units at the 400 and 690 voltage level. They are now PROFIsafe enabled for "Safe Torque-Off" or "Safe Stop 1" functionality.

[Synchronous Reluctance Motors with Converters](#)



From Siemens: firmware V4.8 enables Sinamics S120 converters to operate with Simotics synchronous reluctance motors. This connection is ideally suited for drive solutions in which the dynamic response of induction motors is no longer sufficient but the high performance of permanently excited synchronous motors would be excessive. PROFIBUS and PROFINET interfaces enable integration into the TIA landscape.

[IP67 IO-Link Solutions for PROFINET Networks](#)



Molex has introduced its new Brad® HarshIO modules based on IO-Link technology, the open standard protocol for industrial communication, which allows fieldbus and manufacturer independent connection of smart sensors and actuators to the network. The PROFINET module features eight M12 ports and each port combines one IO-Link master channel and one configured digital I/O channel.

PROFINETS

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