PROFINEWS

PROFIBUS & PROFINET news from around the world

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Welcome to PROFINEWS!

by Michael Bryant - Friday, October 02, 2015

http://profinews.com/2015/10/welcome-to-profinews/

Welcome to the 133rd edition of PROFINEWS! Having just wrapped up our 21st General Assembly Meeting here in Scottsdale, AZ, I can say with confidence that our organization is stronger than ever. After 21 years it's exciting to see so much new development happening, and we're still pushing the envelope to remain innovative in this space.

Assessing the marketplace for PROFIBUS and PROFINET here in North America, compared to that first GAM in 1995, is always an interesting exercise. Now, more than ever, a dialogue is evolving between end-users, OEMs, and automation vendors. People are talking about automation as it relates to other, wider manufacturing processes. Cutting edge end-users are employing PROFINET to handle the management of energy consumption on their lines. They're not just looking at PROFIBUS and PROFINET as automation protocols, but going a step further employing them as data access protocols. They're being used for things like functional safety, and even asset management.

And now with the hype growing around the Industrial Internet of Things, other sectors of the economy are beginning to implement some of the things we've been doing in automation for a long time. That's why we feel PROFINET is well suited to be a foundational pillar to any IIoT strategy for a manufacturer. There has been plenty of time to prepare for this evolution, which is a long time coming.

I sincerely hope you enjoy this issue of PROFINEWS, where you'll read more about the "PROFINET of Things", our General Assembly Meeting, and other events around the world.

--Mike Bryant
Executive Director
PI North America

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PROFINET of Things Webinar

by Michael Bowne - Friday, October 02, 2015

http://profinews.com/2015/10/profinet-of-things-webinar/

A new webinar has been posted giving some background and description to what the 'PROFINET of Things' is. The video is approximately 15 minutes long. Watch it and learn how PROFINET provides a foundation for IIoT and Industrie 4.0.

https://youtu.be/3hWypcaUnac

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Report from the General Assembly Meeting

by Carl Henning - Friday, October 02, 2015

http://profinews.com/2015/10/report-from-the-general-assembly-meeting/

Michael Bryant introduced this issue of PROFINEWS with a hint about PI North America's recent General Assembly Meeting (GAM). Michael Bowne in the article immediately above took the introduction to the PROFINET of Things at the GAM and distilled them into a webcast. Carl Henning in the PROFIblog is portioning out an informal reporting of the event.

Here are the highlights from the meeting.

The meeting started with a time of formal introductions, including new Board of Directors member Barry Lynch. He was elected to the Board on Tuesday at the Board of Directors meeting. Local and international staff were introduced as were members of related organizations - PI Competence Centers, PI Training Centers, and PI Test Labs. All attendees got to introduce themselves as well.

Michael Bryant provided a state of the organization session: highest number of members ever and financial stability were highlighted. PI North America's mission is to promote the PROFINET and PROFIBUS technologies.

Michel Bowne presented the PROFINET of Things strategy as included in the webcast. As you can see from the webcast PROFINET collects the data; OPC UA takes it from the controller up and directly from some complex devices. Because PROFINET uses standard unmodified Ethernet, PROFINET and OPC (and other protocols) can coexist on the same infrastructure (cable and switches).

This architecture is already being used as this example (one of several) from Barry Lynch's Brilliant Machines presentation showed:

Click to enlarge

Raj Batra also had several examples in his session. This one shows PROFINET being used to make PROFINET devices:

Click to enlarge

Examples like these show that the PROFINET of Things is a real thing – being used now.

Other sessions included:

PI Report. Karsten Schneider, PI Chairman, updated international standardizations, PROFINET's role in Industrie 4.0, and provided a great application story on utility savings from an auto manufacturer using PROFIenergy.

PROFI Interface Center (PIC) Report. Torsten Paulsen, PIC manager, provided some important numbers from the PIC: 20 years of service, over 1000 engineers trained, over 400 product certified, and countless one-day training classes. His staff returned on Thursday to provide additional details of Certified Network Engineer training updates and test lab requirements.

PROFINET and IIoT at Riceland Foods. Adrian Merrill of TempuTech provided additional details about their application that was featured as the cover story in the May issue of Automation World.

There were two excellent security presentations, tips and techniques for planning a large scale PROFINET installation, and PROFINET in Microgrid Experiments at Penn State. More details on these presentations are in the PROFIblog.

Members and users with great PROFINET and PROFIBUS stories to tell should note the time for next year's General Assembly Meeting: September 20-23.

PI North America Announces New Board Member

by Michael Bowne - Friday, October 02, 2015

http://profinews.com/2015/10/pi-north-america-announces-new-board-member/

PI North America, is proud to announce the appointment of Barry Lynch, Global Marketing Director at GE Intelligent Platforms, to its Board of Directors. The Board voted unanimously to approve Mr. Lynch's nomination earlier this month.

As Global Marketing Director, Mr. Lynch is responsible for leading GE's automation marketing strategy enabling companies to realize the benefits of the Industrial Internet. He brings 25+ years of experience and expertise in sales, product development and marketing in industrial automation and manufacturing operations software. Mr. Lynch takes over the seat vacated by Bernie Anger, formerly of GE, who retired from the Board of Directors.

"GE has been an ardent supporter of PROFINET for a number of years now, and Barry has been at the forefront of their adoption of the technology," says Michael Bryant, Executive Director of PI North America. "By joining the Board, Barry can now play a pivotal role in determining the strategic direction of PROFIBUS and PROFINET in North America. Barry's expertise will help us expand the efforts of our Board to bring the technologies to an even wider market." Mr. Lynch will join fellow Board members Phil Marshall of Hilscher, Raj Batra of Siemens, Mike Rothwell of Phoenix Contact, and Mr. Bryant.

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IO-Link Adds 100th Member

by Carl Henning - Friday, October 02, 2015

http://profinews.com/2015/10/io-link-adds-100th-member/

IO-Link has established itself in the market faster than almost any other communication technology. This is confirmed by the number of members in the IO-Link member community and the current node counts. Weiss Robotics was the 100th company to join the member community.

In 2006 work on specification of the IO-Link standard began with just 21 companies. This ultimately led to publication of IEC 61131-9 in 2013. At the market launch in 2009, there were already 41 member companies on board. Now Joachim Lorenz, Speaker for the Steering Committee, welcomed Weiss Robotics GmbH & Co. KG as the 100th member of the IO-Link member community. He awarded the certificate to Dr. Karsten Weiß, Managing Director of Weiss Robotics, at the office of the mechatronics specialists in Ludwigsburg.

Joachim Lorenz (left) , Dr. Karsten Weiß

A communication system with many advantages

On the question of what motivated him to join the IO-Link member community, Dr. Karsten Weiß answered: "Based on customer needs we recognized early the need to enable intelligent communication in our products. That was already implemented with Profinet. That proved not to be enough, however, especially on the global market. For small companies like us, it is not feasible to develop, maintain, test, and support all interfaces such as Ethercat, Ethernet/IP, Profibus, and Powerlink. For small quantities, in particular, the effort and related costs are out of proportion to the benefits. The fieldbus-independent standard IO-Link is the ideal solution for us to allow us to connect our products to different systems and controllers worldwide."

The managing director also reported that IO-Link is not very complicated: "We were able to develop our own device stack based on the specification without any problems. No consultation, which some IO-Link members offer, was necessary. We received support from the "Technology Management Group" in Karlsruhe only for certification.

The next gripper modules, which should be available in the 2nd quarter of 2016 will contain an IO-Link interface and optionally a radio module. Customers can choose which bus system they want to use and connect the gripper modules easily using an IO-Link master. In this context Weiss Robotics would also be interested in a wireless variant of IO-Link. "The gripper modules and tactile sensors are very compact. It would be practical here if we could transmit the sensor signals wirelessly with the open communication standard," said Dr. Weiß.

The success story of IO-Link

The current node counts also reflect the arrival of IO-Link in the market. A notarized analysis found that

the number of IO-Link nodes in the field nearly doubled from 2013 to 2014 to almost 2.2 million. Joachim Lorenz emphasized: "Experience from the fieldbus area has shown that a new technology takes approximately 10 years to establish itself in the automation market. With IO-Link we are just at the start of the market launch and are already demonstrating a stronger growth rate than was found in the fieldbus area in recent years."

IO-Link

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IO-Link: Did You Know?

by Carl Henning - Friday, October 02, 2015

http://profinews.com/2015/10/io-link-did-you-know-9/

Did you know that IO-Link can transmit up to 32 bytes in one cycle?

The IO-Link interface standardized in IEC 61131-9 is based on simple serial data transmission via conventional connecting cables. With IO-Link, it is over exactly this cable that data packets are exchanged cyclically between the IO-Link master and an IO-Link device packed in one protocol. These data packets are called M-sequences in 'IO-Link language'. The information contained in these data packets is defined for IO-Link but can be scaled to a large degree. Process data are completely transmitted cyclically with each data packet to guarantee deterministic response times in an application. Parameter and event data, on the other hand, are subject to less time-critical requirements These are transmitted distributed among multiple data packets.

Data widths of 1 bit to 32 bytes (256 bits) can be defined in each case for process input data (e.g., sensor signals) and process output data (e.g., actuator control signals). This enables the cycle time to be optimized for a fixed transmission rate. This applies regardless of the transmission involved – whether a single inductive sensor that supplies only 1 bit of switching information as process data, a light array that transmits a detection state of each individual channel of its over 200 channels, or a combined sensor-actuator device that generates or requires pressure measurements, status information and valve control data.

Even at a maximum process data width of 32 bytes, cycle times of less than 3 milliseconds can be realized with IO-Link – and over simple, 3-wire unshielded connecting cables.

IO-Link

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Tech Tip: PROFINET Options for Devices

by Carl Henning - Friday, October 02, 2015

http://profinews.com/2015/10/tech-tip-profinet-options-for-devices/

We often use an age old catch phrase during our PROFINET one day classes, "But wait, there's more!" when we get to the latter part of the day. At that time we've usually covered the standard PROFINET application functionality and continue talking about additional PROFINET features and options. We've found that most engineers and developers don't realize what the optional features of PROFINET are and their purpose. Many are surprised when we say "PROFINET does that, just check with the vendor and see if they've implemented it." This tech tip will clarify PROFINET's optional features and give the reader a quick list which they can use when looking at their next PROFINET project.

Since these features are optional, application engineers should check with the product vendor if they are looking for one of the items below for their application. This list can also be used by developers and product managers (vendors) when determining their PROFINET product scope.

Optional PROFINET features	Description
Network Redundancy with Media Redundancy Protocol (MRP)	Media Redundancy Protocol provides network ring redundancy for PROFINET IO real time networks
System Redundancy	Allows a primary and backup controller for redundant applications with PROFINET
Device Redundancy	Allows a device to have multiple interfaces and redundancy with PROFINET
Shared Device	Distribution of device functions to various controllers
Shared Inputs	Multiple access to inputs by various controllers
Device Access	Allows a device to be accessed by a configuration tool and parameters to be read or written
Supervisor Access	Allows takeover of an IO device by an IO supervisor to check inputs, outputs and device function
Extended Device Information (Identification & Maintenance Records 1-4)	Extended device identification (location designation, installation date, etc.)
Direct data exchange / Multicast Communication relation (MCR)	Multicast communication relation allows multiple devices to communicate in direct data exchange
Simple Network Management Protocol (SNMP)	Allows Simple network management protocol and topology information to be read out
Simple device replacement	Allows a controller to automatically name a replaced IO device in case of device failure and replacement
Configuration in Run (CiR)	Allows a device to be configured and set up even with the controller in run
Time Stamping	Allows time stamps to be used and based off a real time clock
Fiber Optic Cable diagnostics	Fiber Optic cable diagnostics provide enhanced diagnostics for maintenance in case the cable is losing

Optional PROFINET features	Description
	signal strength over time
Fast Startup (FSU)	Fast startup after power cycle in around 500ms for specific applications (ex: tool changer)
Isochronous Real Time (IRT)	Isochronous Real Time allows for synchronous communication using bandwidth reservation and scheduling down to 250 ?S with < 1?S jitter for motion control applications
Dynamic Frame Packing (DFP)	Dynamic Frame Packing with IRT is optimized for line structures and allows 31.25?S update times for high speed motion control applications
IRT with Media Redundancy for Planned Duplication (MRPD)	Network Media Redundancy for Planned Duplication for IRT systems, two way transmission
Tool Calling Interface (TCI)	Tool Calling Interface used to call up a device specific engineering tool
Individual Parameter Server (iPar)	Individual Parameter Server (iPar) for automatic parameter assignment of devices (ex: for safety)
Application and Device Profiles	Special application / device profiles for certain applications (ex: safety, energy, drives) or device data sets for specific device types (ex: encoders). PN-PA for process automation PROFINET International (PI) provides multiple application profiles on their website
Manufacturer Specific Alarms	Manufacturer specific PROFINET diagnostic alarms (ex: redundant power supply fault and manufacturer specific error code)

As we see PROFINET continuing to grow, we are finding that most vendors now support many of these optional services as it benefits their customers. In the future PI may change some of these options to be mandatory backed by popular demand. Who knows? What features do you think are necessary? Are we missing anything you would like to see? Become a member of PI and influence the direction and future of PROFINET. More information about these options and mandatory ones can be obtained by looking at the descriptions in the PROFINET Conformance Classes document in "Section 6 - Complete overview of functions" and you can also see our previous article about conformance classes. These describe the features that have to be supported based on a particular conformance class A, B or C.

From the *PROFI Interface Center* in Johnson City, TN where you can learn more about PROFINET in our certification or developer training,

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Regional and Member News

by Michael Bowne - Friday, October 02, 2015

http://profinews.com/2015/10/regional-and-member-news/

A combined Regional PI Chairman meeting and Industry Forum has been announced for Australia. HARTING announces a North American roadshow truck to showcase connectivity solutions. Ireland held a one-day demo consisting of two sessions on PROFIBUS diagnostics.

Australia Announces Global Forum

The PROFIBUS Association of Australia (PAA) is delighted to announce that they will, for the first time, be hosting the Global PI Chairmen's meeting in May next year in Sydney. This event will see some of the world's leading experts visit their shores and it would be un-Australian not to take advantage of their presence. Therefore you are invited to an unprecedented industry event, dubbed "Forward Thinking". What can be said already is that it will be about the future of network technology and how global and international companies can contribute to shape our the automation industry!

HARTING Nationwide Tour

HARTING announced that it has developed a Roadshow Truck that will travel across North America showcasing leading connectivity solutions. The truck showcases industrial and small form industrial connectors, cable assemblies, board level connectors, backplane assemblies, industrial Ethernet switches, and HARTING's industrial RFID solution. It brings HARTING one step closer to their goal of supporting the engineering community with the industry knowledge they need for their daily tasks.

PROFIBUS Diagnostics Demo Day - Ireland

PROFIBUS Ireland held a one day demo in two sessions on diagnosing PROFIBUS networks using PROCENTEC products. The demo used the Profitrace portable diagnostic tool and Combricks continuous monitoring tool. Over 25 participants from industry participated on the day. The sessions covered the basics of PROFIBUS technology followed by demonstrations to identify issues such as missing or additional terminations, or shorted and broken lines. Training kits were used to provide the participants with hands-on learning.

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Training and Events

by Michael Bowne - Friday, October 02, 2015

http://profinews.com/2015/10/training-and-events/

With Certified Training available in England, France, Germany, Italy, Spain, USA, and the Netherlands over the next month, there are ample opportunities to get trained on PROFIBUS, PROFINET, and IO-Link.

The main trade-show for industrial automation is fast approaching at the end of November: SPS/IPC/Drives in Nuremberg, Germany. PI will again host a booth at the event, so plan on attending.

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- FOR TRAINING AND EVENTS AROUND THE WORLD, CLICK HERE -
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Or, scroll down to see a list below:

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New Products

by Michael Bowne - Friday, October 02, 2015

http://profinews.com/2015/10/new-products/

New products this month include interconnectivity devices for PROFIBUS and PROFINET from HMS, CNCs from Siemens and industrial displays from Binar with PROFINET (pictured), and gateways to EnDat from Leine & Linde and to CANopen from Helmholz.

Click the headlines for details.

New Ways to Interconnect the PROFI-world

Automation engineers frequently need to bridge the gap between different protocols and networks used in a plant, but they also need to enable communication between equipment within the same network family. For example, in the PROFINET and PROFIBUS-world, there are many devices and sub-systems that cannot necessarily communicate with each other. With their recently upgraded Anybus X-gateways, HMS Industrial Networks can offer ways to get heterogeneous PROFI-equipment connected.

PROFINET Gateway – Extends Possibilites

Leine & Linde Gateway products allow the motion system designers to include virtually any encoder with an EnDat interface into their application. Now adding a PROFINET Gateway to the mix, Leine & Linde makes this addition simpler than ever, and will also support the PROFIBUS interface as well. Furthermore, the use of a Gateway allows for exchanging encoders without interrupting bus communication to other nodes in the network, thereby reducing downtime when disaster strikes.

Industrial Display now PROFINET Approved

A new flexible, robust and bright display from Binar in Trollhättan has recently been approved by the PI. The display – BiDisp3 – has only been on the market for about a year but has already become a standard component for the visualization of production information at Volvo Car Corporation plants in Sweden and Belgium.

Easily Connect CANopen devices to PROFINET

With the new PROFINET/CANopen gateway from Systeme Helmholz GmbH, it is simple and straightforward to connect CANopen devices to PROFINET. At the same time, the PN/CAN gateway is a full-fledged CANopen master. As such it supports gateway network management, SYNC telegrams, and node guarding / heartbeat for monitoring the participants. On the PROFINET network, the PN/CAN gateway is a PROFINET IO device that supports transfer rates up to 100 Mbps full duplex, and on the CAN bus up to 1 Mbps is supported.

Performance boost for CNC hardware

In the course of introducing version 4.7 of the Sinumerik Operate software, Siemens is presenting new, more powerful CPUs, and 15 and 19 inch "Blackline" panels in widescreen format for the Sinumerik 840D sl CNC. The new 7x0.3B PN processors are PROFINET-compatible NCUs (Numerical Control Units).

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