

# PROFINEWS

## PROFINET and PROFIBUS News for North America

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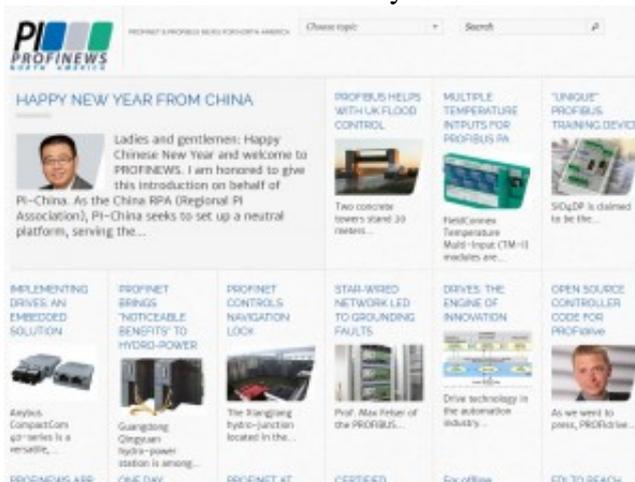
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# Welcome to our updated PROFINEWS North American Edition!

<http://profinews.us/2014/03/welcome-updated-profinews-north-american-edition/>



We've given PROFINEWS North American Edition its first major update since publication began nine years ago. It's such a major update that we've given it its own website: [profinews.us](http://profinews.us). The new version includes embedded videos and slideshows. You can browse the home page for articles in the current issue and click through to each article. Or you can select a category tailored to your interest right in the header: want a Tech Tip, click it; looking for new products, that category is there. And so are News, Opinion, App Stories, and Training. Or if you want to do a full text search, there's a box for that in the header too. Down in the footer you can click the Subscribe link or



click a social media button for more.

Once you've clicked through to an article, you can browse other articles in the same issue by clicking the Issue number tag. Be sure to use the article social sharing buttons when you find an article you really like. Oh, and our Twitter feed is live in the right hand column.

PROFINews  
 PROFINET and PROFIBUS News for North America - <http://profinews.us>

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If you can't stay online t

o read the whole issue,

download the PDF version. It is also in a new format complete with linked table of contents.

And finally, you can stay even more up-to-date on PROFINET and PROFIBUS news by downloading the [PROFNEWS App](#) for iOS and Android.

--Michael Bryant

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## Softing Joins Board of Directors

<http://profinews.us/2014/03/softing-joins-board-of-directors/>



PI North America is proud to announce the appointment of Ken Hoover, President of Softing North America, to its Board of Directors. The Board voted unanimously to approve Mr. Hoover's nomination and he plans to attend his first Board meeting later this year.

As President of its North American operations, Mr. Hoover is responsible for overseeing all development, marketing, and sales activities at Softing for the USA and Canada. Prior to joining Softing in 2001, Ken also held management positions with IDT (now Eaton), was General Manager of GN Telematic (US Subsidiary of GNT in Denmark), and was VP of Sales and Marketing at Nematron.

Mr. Hoover comments, "Softing has been involved with PROFIBUS from the very beginning with embedded solutions for the technology. Now with the growing adoption of PROFINET, we want to be an integral part of its success in North America." Softing's product portfolio also includes interface cards/gateways, network monitoring tools, and OPC solutions.

"Softing brings a unique perspective to the Board. One that we look forward to incorporating into our existing plans," says Michael Bryant, Executive Director of PI North America. "By joining the Board, the company can now play a pivotal role in determining the strategic direction of PROFIBUS and PROFINET in North America. Ken's leadership will help us expand the efforts of our Board to bring the technologies to an even wider market." Mr. Hoover will join fellow Board members Bernie Anger of GE Intelligent Platforms, Raj Batra of Siemens Industry, Mike Rothwell of Phoenix Contact, and Mr. Bryant.

## One Day Training Classes (Issue 63)

<http://profinews.us/2014/03/one-day-training-classes-i63/>



We've completed four PROFINET one-day training classes to-date: San Diego, Birmingham, Houston, and Greenville. With well over 500 registrations to-date, we are off to a great start. But don't worry, there are still 13 classes left:

City	Date
<a href="#">Dayton</a>	4/2/2014
<a href="#">Boston</a>	4/16/14
<a href="#">Kansas City</a>	4/30/14
<a href="#">Milwaukee</a>	5/15/14
<a href="#">Cleveland</a>	6/5/14
<a href="#">Philadelphia</a>	6/19/14
<a href="#">Vancouver</a>	7/29/14
<a href="#">Nashville</a>	9/9/14
<a href="#">Las Vegas</a>	10/9/14
<a href="#">Detroit</a>	10/23/14
<a href="#">Portland</a>	11/4/14
<a href="#">Salt Lake City</a>	11/18/14
<a href="#">San Jose</a>	12/4/14

Here are the reactions from some of the students at the Houston class as written on the Course Evaluation forms:

It's a great class for anyone who is working in industry.

Very informative.

Lots of good information, good take home media, good application stories. [The take home media includes a printed training manual and a CD loaded with the presentation, videos, installation guides, and much more.]

Are you registered for a class, but not attended yet? Wonder what the day is like? Here's a sample of the day:

### Video

No training class in your area? Try a [webinar](#) instead.



## Are You Certifiable? In PROFINET or PROFIBUS.

<http://profinews.us/2014/03/are-you-certifiable-in-profinet-or-profibus/>

Then get certified! Certified Network Engineer classes are offered throughout the year for PROFINET and PROFIBUS:

PROFINET	PROFIBUS DP	PROFIBUS DP/PA
		<a href="#">May 12</a>
<a href="#">June 9</a>	<a href="#">August 11</a>	<a href="#">June 16*</a>
<a href="#">September 15</a>		<a href="#">November 3</a>
<a href="#">December 8</a>		

Classes are held in Johnson City, TN, unless asterisked (in Peterborough, ON.) Onsite classes can be arranged. Contact [CertifiedTrainingManager@PInorthAmerica.com](mailto:CertifiedTrainingManager@PInorthAmerica.com).

These week-long Certified Engineer classes conclude with theoretical and practical exams. Pass them and your certification will be recognized with your name on the Certified Engineer list at our international web site.

There were many students from the automotive industry in the December class. Here are a few of their comments about the class:

“This class was very intense for a maintenance level, but I came out feeling much better about how PROFINET works. I feel I can troubleshoot now on my own!”

“I enjoyed the class, lots of material to cover in one week. I came into the class knowing very little about PROFINET. Now I feel confident in my abilities to troubleshoot / commission PROFINET installations at our plant.”

“A very in-depth class that gives a fundamental knowledge of how PROFINET works and how to troubleshoot it.”

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## **Report from the PROFINET Session at ARC**

<http://profinews.us/2014/03/report-from-the-profinet-session-at-arc/>

Even though you may not have been one of the hundred in-person attendees at the PROFINET session at the ARC Forum, you can see all the presentations and the panel discussion right here. (A short report from the Forum appeared in PROFINews North American Edition 62: [PROFINET at the ARC Forum](#).) Michael Bryant, PI North America Executive Director, hosted the session which explored how PROFINET enabled the Forum theme of the information driven enterprise. After the introductions, first up, Raj Batra, president of the Industry Automation Division at Siemens Industry, Inc.

### **Batra**

Next up, Mike Bastian, controls manager for Ford's Global Powertrain group (note his plans for PROFIenergy):

### **Bastian**

Bernie Anger, General Manager at GE Intelligent Platforms notes how things have changed since we did a similar event two years ago:

### **Anger**

System integrator, ICR Engineering's David Loveridge explains why the network matters (and why they chose PROFINET):

### **Loveridge**

Michael Rothwell, Director of Control and Industry Solutions at Phoenix Contact continues the Internet of Things (IoT) story:

### **Rothwell**

Chris Muench, the CEO of C-Labs, continues the IoT theme:

### **Muench**

David Greenfield moderated a panel discussion on PROFINET. Panelists included David Loveridge of ICR Engineering, Sam Hoff of Patti Engineering, Dave Heyman of Kuka Assembly & Test, and Peter Karcz of Fori Automation. Topics included safety, security, wireless, and diagnostics. David Greenfield has reported on the latter topic in "[Industrial Ethernet: Diagnostics](#)." But you get the benefit of the full discussion in two parts:

#### **Part 1**

#### **Part 2**

The session concluded with a presentation on process and discrete synergies by Raimund Sommer, Managing Director, Endress+Hauser Process Solutions AG. Watching his presentation will provide the answer to the age-old question: "What do ice cream and Industrial Ethernet have in common?"

### **Sommer**

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## Migrating to Industrial Ethernet

<http://profinews.us/2014/03/migrating-industrial-ethernet/>



### **Manufacturing's data-driven transformation**

For many people outside advanced manufacturing industries, any mention of the “shop floor” invokes mental pictures of loud, dirty and sometimes dangerous workplaces. But people on the inside of these industries know otherwise. Modern manufacturing is highly automated and conducted in clean, well-lit environments where safety is a foremost concern. They also know that behind this lustrous picture even greater innovations are coming that will further change how manufacturing's done. One of those is data.

Data, especially in real-time, has transformational power. It can provide insights for better decisions, faster responses, greater efficiencies, simplified complexity and more production flexibility. The problem with data, however, is two-fold: its manageability and communications.

For years, Totally Integrated Automation (TIA) has made tremendous strides in addressing both these issues, with much greater visibility and transparency along manufacturing's entire value-added chain. What's more, the business ecosystem surrounding production has also experienced a data revolution that's further boosted visibility and transparency.

Yet data's growing volumes, especially outside manufacturing, challenge a manufacturer's ability to keep up. Data exchange from a variety of sources is starting to blend manufacturing with design, engineering, procurement, marketing and sales.

Today, an entire plant can be run remotely via an iPad. Factories are becoming smarter, monitoring production in real-time. This provides nearly instantaneous feedback, which can help define and refine their next generation within weeks and months instead of years.

To be sure, this blending goes far beyond a Walmart cashier ringing up a box of Pampers through a register - in effect, a data-entry terminal - that sends an EDI replenishment signal to Procter & Gamble. With technologies such as additive manufacturing and 3-D printing, we'll see more and more mass customization as well as production at the point of use.

This is just a glimpse of manufacturing's revitalization. It's a new age that will accelerate reductions in cycle times and costs, boosting competitiveness and margins. It will undermine offshoring's advantages by making the cost and time of transportation new considerations. And it will save energy and, ultimately, the environment.

Data is driving this transformation, which in turn generates even more data. Mountains of data. Much of it in real-time with a lot of its value being extremely perishable.

To address data manageability, tools are available to mine so-called Big Data for nuggets of information and insights, and those tools are becoming ever more sophisticated. To handle data communications more effectively - and with greater scale - industrial Ethernet such as PROFINET will accelerate the inroads it's made into manufacturing over the past 15 years. It will replace aging field bus technology that continues to be serviceable but cannot keep pace with the changes going on all around it.

This white paper builds on that thesis. In the following sections, we compare field bus technologies with industrial Ethernet, provide a primer on what industrial Ethernet is, and then suggest some strategies to consider for implementing it. Our goal is to help you become better informed about industrial Ethernet, so you can determine a way forward that best suits your business.

## **1. Fieldbus and industrial Ethernet, complementary technologies**

Fieldbus is a term used to describe a group of industrial networking protocols as defined by IEC 61158. These were commercialized in the 1980s and provide real-time distributed control of the components comprising an industrial system. Among these serial bus protocols are AS-Interface, BITBUS, CAN, Interbus, Modbus and PROFIBUS. Of these, PROFIBUS is most widely used, with over 45 million nodes worldwide as of 2013.

Ethernet, also commercialized in the 1980s, is a digital networking system but one originally designed to operate in near real-time. It has since been adapted for use in industrial data communications and control. At the same time, it's become the world's de facto networking standard for wired and wireless applications.

In fact, advancements in Ethernet over the years have minimized its latencies to such an extent - below human perception levels of 21 milliseconds - that it's now used to transport voice and video in near real-time. PROFINET, one of several available industrial Ethernet technologies that we'll look at more closely in the next section, has gone further to enable real-time communications for industrial uses with cycle times of less than one millisecond.

Where do fieldbus and Ethernet technologies fit into the control hierarchy of complex, automated industrial systems? Both have long held respective roles: At the high level, the Human Machine Interface (HMI) communicates via Ethernet with a middle layer of PLCs, which in turn are linked via fieldbus technology to their various sensors, motors, switches and other devices.

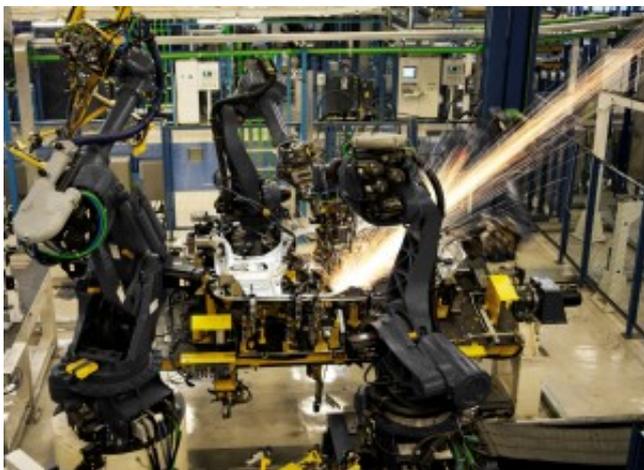
Fieldbus has been widely deployed in industrial process control for two reasons. One is that a predecessor control

technology, known as 4-20 mA current loop analog communications, required dedicated wiring between devices. This got expensive and complicated quickly, as more devices needed control within industrial environments. The other reason is that a 4-20 mA connection, although much simpler, could only transmit one parameter while fieldbus could communicate several.

To be sure, fieldbus technologies continue to serve their functions adequately, but a large number of industrial control requirements have risen that are beyond fieldbus capabilities.

Among them:

- Wireless and fail-safe communication
- More than one master in the same bus section
- Web-based management
- Redundancy through ring topology
- More than 126 connections/nodes on the same bus
- Graphical visualization and automatic topology detection
- Very high transmission rates over long distances, without separate repeaters, and without concerns about speed, adaptation, reflection and data collisions
- Transmission of large data volumes such as databases, images and files via the same cable
- Easy energy management
- Complete access to the entire network, including remote access



Ideally manufacturers can leverage the industrial experience of fieldbus deployments with the openness and flexible options of industrial Ethernet. That's what PROFINET does. With it, manufacturers that are currently operating in all fieldbus or hybrid networking environments can simplify their networks, reduce their network maintenance costs, and gain greater flexibility in configuring and adapting them to new processes and requirements. They'll also realize virtually limitless scalability in the number of PLCs and network devices their networks can support. This will lay the foundation for taking part in the world's data-driven manufacturing renaissance and sharpening their competitive edge at the same time.

## **2. Industrial Ethernet: PROFINET, the best of both worlds**

Industrial Ethernet refers to the use of standard IEEE 802.3 Ethernet for automation and process control

in manufacturing environments that may be subject to temperature extremes, dust, humidity, vibration, electromagnetic interference and other harsh conditions exceeding the limits set for most information technologies. To adapt Ethernet for these environments, equipment makers “ruggedize” their switches and connectors, while deployments often specify optical fiber cabling to shield signals from ambient electrical noise.

Advantages of industrial Ethernet include:

- Increased speed, from 9.6 Kbit/s with serial connections to 1 Gbit/s with Gigabit Ethernet
- Increased distance and wireless capabilities
- Greater precision with less complexity
- Compatibility with standard access points, routers, switches, cables and optical fiber
- Greater scalability by having more than two nodes on a link
- Consumer-provider architectures, replacing masterslave ones
- Topology options, including Ring, Star and Tree topologies
- Better interoperability
- Remote access options

PROFINET is the world’s leading industrial Ethernet protocol with almost five million nodes in operation. It uses Ethernet’s TCP/IP standards for non-time critical communications, like diagnostics, but adds deterministic real-time channels to achieve real-time communications in as little as 31.25 microseconds. Specifically, PROFINET offers scalable communications in three modes:

- TCP/IP, for non-time critical applications, with reaction times of up to 100 milliseconds
- Real Time (RT), for real-time transfer of time-critical process data, with reaction times of less than 10 milliseconds
- Isochronous Real Time (IRT), for motion control applications, with reaction times of less than 1 millisecond

Users of industrial Ethernet in general and PROFINET in particular can realize greater productivity in several ways. One is by way of more flexibility, using wireless PLCs and mixing topologies, to tailor plant layouts for optimal output instead of having to adapt output to plant layouts. Another is greater efficiency, thanks to standardized cabling and plug-and-play parts and energy savings. The third is improved overall performance, given faster transmission speeds, much larger data packets, and greater precision control.

Another PROFINET benefit is up to 50 percent less downtime when errors occur. That’s because device, network and process error alarms are transmitted within milliseconds from the device to the controller. Resets can be programmed to trigger automatically if errors are minor. For major ones needing human intervention, remote diagnostics can be done and remedies implemented via tablets and smartphones. This contrasts with time consuming diagnostics requiring much more manual interventions that can cost thousands of dollars an hour when production lines are stopped.

Importantly, PROFINET also integrates with existing fieldbus systems using a gateway/proxy concept. It is possible to integrate equipment using existing fieldbuses like PROFIBUS, DeviceNet and Interbus, without changes to existing devices, protecting legacy investments. That provides industrial engineers and

plant operators tremendous flexibility in how they migrate to industrial Ethernet.

### 3. Practical migration strategies

Unlike other available fieldbus and industrial Ethernet technologies, PROFIBUS and PROFINET are interrelated to the extent that both are governed by PROFIBUS and PROFINET International (PI), the world's largest automation community with over 1,400 member companies. At the same time, PI collaborates with many other industrial standards bodies to ensure compatibility and interoperability.

The kinship between PROFIBUS and PROFINET goes deeper than their names and PI's oversight: PROFINET leverages PROFIBUS technologies with care to ensure migration can occur smoothly and without significant costs in components or production downtime. To deploy PROFINET, the following three approaches depend on the situational environment:

- **Greenfields:** These deployments are easiest, of course, because no legacy infrastructure needs consideration and accommodation. A production process can be completely tailored to achieve optimal results, then quickly reconfigured in response to the demands of new opportunities or requirements.
- **Step-wise migration:** To conserve legacy fieldbus investments, plant operators can choose to upgrade one part of a facility at a time, perhaps during seasonal slack times, during cyclical down times, or when retooling. This avoids potentially expensive disruptions to plant production, and project management is much easier.
- **Rip-and-replace:** For fieldbus infrastructures that have clearly outlived their utility, this approach may be appropriate. Although inherently disruptive, plant operators will gain Ethernet benefits immediately. Similar to a step-wise migration, rip-and-replace migrations obviously are best done during plant downtimes.

One of the most important factors in successfully migrating to industrial Ethernet, whether PROFINET or another such technology, is the team in charge of the project. It has to empathize with a fieldbus culture that may prefer to leave that infrastructure in place, while selling the vision not only of the Ethernet migration but also of how that will enable the plant - and all employees - to take part in the manufacturing renaissance now underway around the world.

### 4. Why "doing nothing" isn't an option

For many manufacturing and industrial facilities, now is the best time for migrating to PROFINET. Why? Because standing still has its own costs - opportunity costs - that grow larger and compound with each passing day. Of course, that point gets amplified whenever a production line goes down and has to be troubleshooted manually while output and customer shipments wait for it to be fixed.

As a technology, PROFINET is mature and proven in thousands of customer applications spanning just about every production industry, from aerospace to mining to food processing. More and more devices with PROFINET connections are continually expanding the range of applications across all industry sectors that offer more operational visibility, flexibility, efficiency and performance.

PROFINET is a key enabler of manufacturing's data-driven transformation. With it, manufacturing gains a single network for I/O, process instruments, motion controllers and functional safety. And it's all integrated within the IT environment for top-to-bottom, stem-to-stern enterprise transparency on and off the production floor.

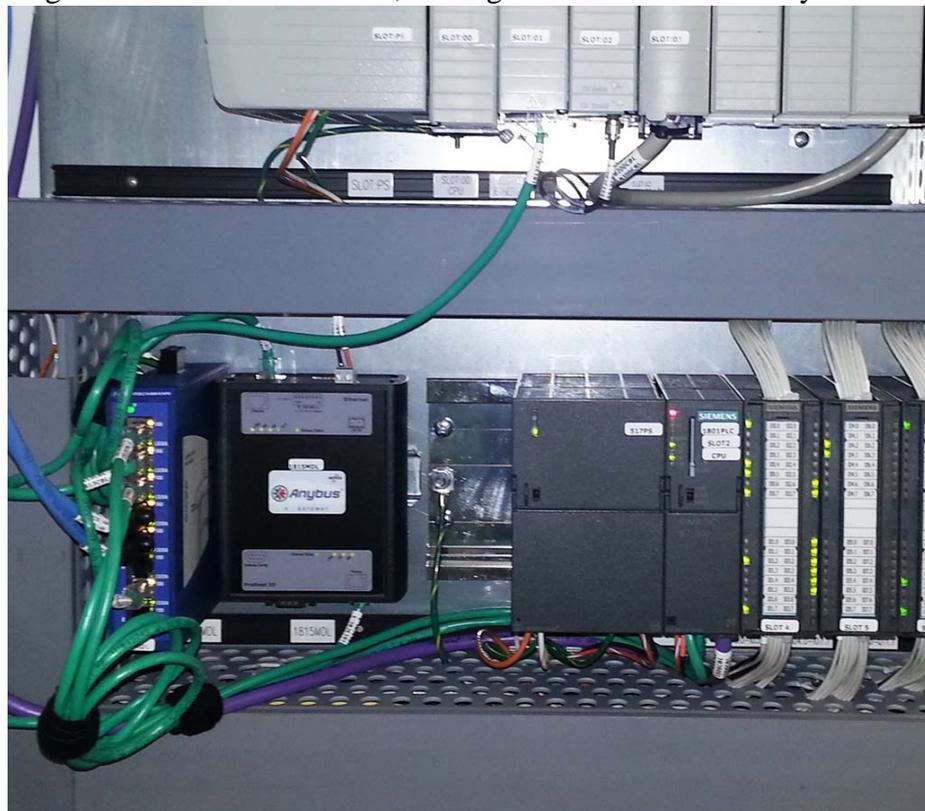
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## Honing Machines Connect to PROFINET

<http://profinews.us/2014/03/honing-machines-connect-to-profinet/>

**How one OEM found a solution for connecting to PROFINET systems anywhere in the world.**

Nagel Precision in Ann Arbor, Michigan is the U.S. subsidiary of Ger



man Nagel Maschinen- u.

Werkzeugfabrik GmbH.

They create machines for honing, superfinishing, and deep hole drilling which are used to manufacture engine blocks, transmissions, pinion gears, valves and other metal artefacts which require a very smooth surface.

The machines are installed in manufacturing plants around the world by companies such as GM, Chrysler, KIA, Hyundai, and Ford to name but a few.

Nagel uses a non-PI networking protocol for control. However, they export all over the world and must communicate with other networks, especially PROFINET, which is frequently used in car manufacturing plants.

We started out with third party network cards, says Jim Saule, Information Technology Director at Nagel Precision Inc. However, these were cumbersome and quite expensive. That's when I started investigating the Anybus X-gateway from HMS. I liked the fact that you could support several different networks with the same configuration. We don't want to understand every type of controller out there. We'd rather focus

on perfecting our machines. Anybus X-gateways have allowed us to do just that and at around half the cost.

The Anybus X-gateway works as a translator between the competitor's protocol and PROFINET. The communication stream is transparent on both sides of the gateway making the honing machine a separate node on the factory floor, fully able to communicate with the plant-wide network.

We've been using the Anybus X-gateway for more than two years now and it has been flawless, says Saule. I really appreciate the fact that we can support several different networks. This enables us focus on our core business. I would recommend any machine builder to look into Anybus. The variety is great and there are substantial savings to be made." [ANYBUS](#)

This originally appeared in the PROFINEWS App. Get the [App](#).

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## **Social Media Update (Issue 63)**

<http://profinews.us/2014/03/social-media-update-issue-63/>

### **MinutePROFINET: PROFINET and Drives**

new MinutePROFINET video has been produced, focusing on drive technology. Drives and motors are one of the fastest growing segments in industrial automation. So much so that it's rare these days to find an application that does *not* employ these devices. This MinutePROFINET video describes what PI is doing to help users and vendors employ drives over PROFINET with the PROFIdrive Application Profile. [Watch here.](#)

### **Latest from the PROFIBLOG**

Couldn't make it to the PROFINET Executive Leadership Forum at ARC back in February? The PROFIBLOG has a roundup of the talks, with video. We had an excellent turnout, despite the weather, including talks from Endress+Hauser, Ford, GE, Phoenix Contact, and Siemens. Head over to the [PROFIBLOG](#) to read more, or see Carl's report elsewhere in this Issue.

If you're considering using wireless in your plant, you're not alone. We've collected a [list of Application Stories](#) in industries ranging from automotive manufacturing, to steel mills, to amusement parks.

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## World News (Issue 63)

<http://profinews.us/2014/03/world-news-issue-63/>

### Embedded World

Embedded World opened its doors in Nuremberg, Germany recently and PI was part of it. The booth included how to use and implement the technology. And the booth was busy! In seemingly endless discussions we explained how vendors can leverage PROFINET in their products. There are many options. Today you don't have to adapt your hardware to the protocol; you pick the right solution for your system or device. The choices are wide: specialized ASICs, multi-protocol chips, boards, modules, and software stacks. All are available from multiple sources so you have plenty of options, and each has particular benefits.

### Hanover Fair

Hanover Fair, one of the biggest fairs world-wide for industrial automation, takes place from 7th-11th April 2014.

For the fourth time PI will participate in the Field Communication Lounge, a joint booth supported by leading networking organizations, which this year has added the ISA100 Wireless Compliance Institute as the 6th organization to participate.

On the joint booth there will more than 80 exhibitors showing their products and services. The PI focus is on integration. A PROFIBUS PA live demo will demonstrate the trend-setting topic of PROFINET as a solution for process automation.

Further, a huge multi-vendor demo is showing the broad range of PROFINET, PROFIdrive, PROFInergy and PROFIsafe products from various manufacturers. There will be live presentations in the on-booth Forum between 10:00 and 15:30 hrs.

- **DATES: April 7th-11th**
- **BOOTH: Hall 9, Booth 68**

### Netherlands

PROCENTEC is relocating its headquarters in the Netherlands. The building was designed especially for PROCENTEC. The building has training rooms and advanced research/development and production departments. [PROCENTEC](#)

### Australia

Bernd Lieberth, Chairman of PI South East Asia, is supporting PROFIBUS Australia with a technical seminar held in Sydney, March 25th. [AUSTRALIA](#)

## **China**

To help Chinese device manufacturers understand and use PROFINET PI-China held a 2-day Developer Workshop in Nanjing. Training was provided for 20 customers from 10 companies. The following day, PI-China held a 1-day technical workshop, with 100 participants. [CHINA](#)

For more details visit the international edition of [PROFINEWS](#).

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## Product News (Issue 63)

<http://profinews.us/2014/03/product-news-issue-63/>

See the latest products available for PROFIBUS and PROFINET.

### [Anybus CompactCom: Multi-Network Connectivity](#)



With an Anybus CompactCom integrated into a drive, it is possible to connect to PROFINET while supporting PROFIdrive, PROFInergy and clock synchronous operation. Not to mention that it is possible to connect to any other network by simply switching Anybus product.

### [Softing's PROFINET FPGA passes Net Load Class III](#)



Softing's PROFINET device implementation has passed the Class III category of the "Net Load Test" performed by PROFIBUS & PROFINET International (PI). This tough-to-reach performance objective ensures that PROFINET field devices that are based on Softing's protocol software will operate at the highest level of robustness and reliability even under tremendous network load.



### [Inch-Wide Analog Input Modules with 16 Channels](#)

Acromag has released two of their newest models in the BusWorks® XT Series of Ethernet I/O modules. The XT1230 and XT1240 models provide a 16-channel interface for single-ended analog current or voltage input signals with Profinet and other Industrial Ethernet communication.



### [Innovasic Embeddable Switch Handles IRT](#)

The Real-time Ethernet Multi-protocol (REM) Switch, or fido5000 REM, is an Industrial Ethernet switch IC from Innovasic that can be embedded into any application. It supports PROFINET IRT and has two Ethernet ports - necessary today for practically all Industrial Ethernet protocols.



### [T+H Report Generator aids PROFINET Acceptance Tests](#)

The currently available version of the report generation template from Trebing + Himstedt checks parameters such as the maximum line depth, device names, firmware versions, absorption, port utilization and number of error packets. The generated report is structured to include a one page summary, detailed test results, and recommended actions (if applicable).



### [IRT Switch from Phoenix Contact is IP 65/6](#)

FL Switch IRT real-time switches from Phoenix Contact are now available with IP65/67 protection to facilitate PROFINET fiber-optic networking. The switches use ERTEC chip technology. Cut-through

switching provides shorter latency times and a built-in PROFINET IO device allows for configuration and monitoring via the PROFINET controller.

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## **Anybus CompactCom: Multi-Network Connectivity**

<http://profinews.us/2014/03/anybus-compactcom-multi-network-connectivity/>

### **A Single Project - Multi-network Connectivity**

With an Anybus CompactCom integrated into a drive, it is possible to connect to PROFINET while supporting PROFIdrive, PROFIenergy and clock synchronous operation.

Not to mention that it is possible to connect to any other network by simply switching Anybus product.

More and more industrial devices are being connected to industrial networks. This is especially true when it comes to drives or inverters which are the most networked devices of all – 3.5 million inverter drives and 800,000 servo drives are expected to be networked in 2015.

But developing and maintaining connectivity to different networks is both time-consuming and resource-demanding. By embedding an Anybus product into a drive, it is possible to connect to PROFIBUS, PROFINET and all major industrial networks on the international market with one development project – while supporting drive profiles for all networks.

### **How it works**

Different industrial networks have different methods of communicating an event or a message to a drive. These methods are specified in “drive profiles.” Anybus CompactCom re-arranges the incoming bytes from the different networks and their drive profiles so that they can be understood by the state machine in the drive (for example, to tell the drive to operate at a certain speed). It works the same way in the other direction — information from the drive is converted into an intelligible format for the network.

### **Fast PROFINET Communications**

The new Anybus CompactCom 40-series enables very fast communication between the host device and PROFINET IRT (process data latency is less than 15 $\mu$ s through the product). This is especially important for drives with high performance demands such as synchronized or motion profile drives.

Anybus CompactCom supports PROFINET RT Class 1 and 3 and comes with a PROFINET IRT Ethernet switch implemented in the module’s processor (the Anybus NP40). The CompactCom M40 module is available for both fiber optics and for copper cabling.

Both versions include support for PROFIenergy, Media Redundancy Protocol, Synchronization and Fast Start Up. Besides all standard Ethernet communication, the CompactCom 40-series also provides isochronous real time connectivity for high-end applications like coordinated motion control.

### **What is Anybus CompactCom?**

Anybus CompactCom is a series of communication products which are integrated into an industrial

device to offer connectivity to different industrial networks. CompactCom comes in chip, brick or module format, allowing the user to choose level of integration.

The Anybus CompactCom 30-series is already in use in millions of industrial automation devices. The new 40-series will be released to the market in April 2014.

[HMS](#)

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## **Softing's PROFINET FPGA passes Net Load Class III**

<http://profinews.us/2014/03/softing-fpga-passes-net-load-class-iii/>

Softing's PROFINET device implementation has passed the Class III category of the "Net Load Test" performed by PROFIBUS & PROFINET International (PI). This tough-to-reach performance objective ensures that PROFINET field devices that are based on Softing's protocol software will operate at the highest level of robustness and reliability even under tremendous network load.

Softing's off-the-shelf industrial Ethernet communications board FPGA RTEM CIII served as the hardware platform for the Net Load Test. The PROFINET protocol software is optimized for and executed by the on-board FPGA. The use of FPGA technology ensures that the tested behavior is also achieved in customized scenarios, e.g. if using the same CPU for the application and for the communication.

The data security aspect in production networks is becoming more and more important. At the same time, it is essential to ensure stable communication links and predictable device behavior even under extreme conditions such as the integration of production and company network into one secure subnet. The PI Net Load Test is designed to evaluate the effects of extra network load on a PROFINET protocol implementation by introducing additional data traffic up-to the total available network bandwidth. Depending on how well the PROFINET protocol software is able to sustain a reliable communication link determines its ranking into Net Load Classes I, II, or III with Class III identifying the highest level of reliability.

### **About Softing**

In industrial automation, Softing is a specialist for fieldbus technology and has established itself as a world-leading partner for networking automation systems and control solutions. Softing provides customers the key technology to connect devices, controls, and systems with the leading communication technologies. In fieldbus technology, Softing is a world-class expert for Foundation™ fieldbus, PROFIBUS, and CAN/CANopen/DeviceNet. The company's wide range of expertise includes solutions for OPC, FDT, and Real-Time-Ethernet protocols such as, PROFINET IO, EtherNet/IP, and Modbus/TCP. Many of the products and services developed by Softing since the company was founded in 1979 have become reference standards throughout the world. In addition, Softing has established itself as a provider of sophisticated diagnostic tools for fieldbus systems.

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## Inch-Wide Analog Input Modules with 16 Channels

<http://profinews.us/2014/03/inch-wide-analog-input-modules-16-channels/>

Acromag has released two of their newest models in the BusWorks® XT Series of Ethernet I/O modules. The XT1230 and XT1240 models provide a 16-channel interface for single-ended analog current or voltage input signals with Profinet and other Industrial Ethernet communication. The space-saving inch-wide design features dual Ethernet ports, removable front-facing terminal blocks, and DIN rail power bus support. Its convenient USB-to-PC connection and free Windows software makes configuration quick and uncomplicated. Suitable for use in harsh environments, all modules operate from -40 to 70°C with noise immunity, surge protection, and CE compliance. UL/cUL Class 1 Division 2 Zone 2 hazardous location approval is pending. All units are available at \$595 USD each.



“We are continually expanding the BusWorks XT Series in order to provide more modules with even greater versatility,” explained Acromag sales manager Rob Frewald. “Beyond our digital offerings, we now support up to 16 channels of analog input for our customers to squeeze in more channels at a lower cost, even when space is scarce.”

The XT1230 accepts current inputs of 0-11mA, 0-20mA, 4-20mA,  $\pm 20$ mA, or 0-20 amps AC with optional toroid sensor. The XT1240 accommodates  $\pm 5$ V,  $\pm 10$ V, 0-5V, or 0-10V input ranges. All units run off a 12-32V DC power source (2.8W) at the terminals or through an integrated power connector bussed along the DIN rail that can provide primary or redundant power. Each model offers a choice of Ethernet/IP, Profinet, or Modbus TCP/IP protocols with peer-to-peer i2o communication support. Dual 10/100 Ethernet ports allow daisy-chaining units together to simplify cabling and minimize the network switches required, reducing overall system costs.

For even more dependable communication, BusWorks XT units employ Innovasic PriorityChannel technology which makes certain that critical data is received on time regardless of traffic on the network. PriorityChannel provides determinism at the device for consistent transmission of time-sensitive data with any of the Ethernet protocols.

Many other features add greater flexibility and performance. High input impedance reduces loading on voltage loops with XT1240 models, with the XT1230 models' low input impedance reduces loading on current loops. The configuration software enables use of sample averaging on a per-channel basis. For reliability, operation and diagnostic LEDs offer visual status updates and aid in trouble-shooting.

Acromag has designed and manufactured measurement and control products for more than 50 years. With a headquarters near Detroit, Michigan and a global network of sales representatives and distributors, Acromag products are sold worldwide. They offer a complete line of industrial I/O products including process instruments, signal conditioning equipment, data acquisition boards, distributed I/O modules, and network communication devices. Industries served include manufacturing, water services, power generation, mining, defense, and transportation.

[Acromag](#)

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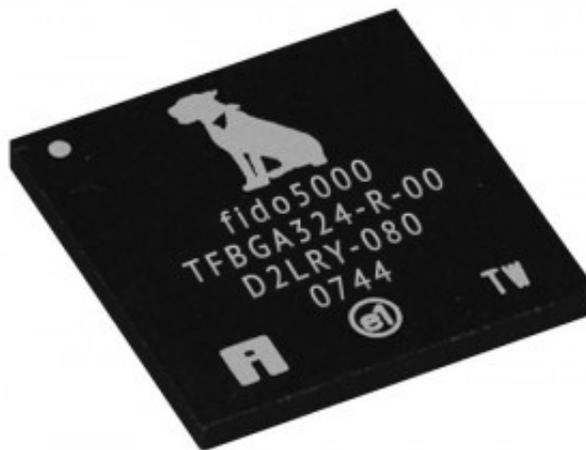
## Net Load Class III Certification for Embeddable 2-Port Switch

<http://profinews.us/2014/03/net-load-class-iii-certification-for-embeddable-2-port-switch/>

The Real-time Ethernet Multi-protocol (REM) Switch, or fido5000 REM, is an Industrial Ethernet switch IC that can be embedded into any application. It supports PROFINET IRT and has two Ethernet ports - necessary today for practically all Industrial Ethernet protocols.

In Industrial Ethernet, the de-facto standard is a data rate of 100 MBit/sec, but fido5000 REM itself is designed to handle gigabit Ethernet.

Volker Goller, European Manager Real-Time Ethernet Solutions at Innovasic, explains: "It is sometimes assumed that our REM is actually a three-port switch, because in addition to the two Ethernet ports you also need a local Ethernet port to connect to a microprocessor. That's solved differently in the fido5000. The connection to the microprocessor doesn't use the typical MII interface, but a processor bus." This arrangement has two advantages. First, it's faster. A bandwidth of up to 167 Mbytes/sec is available



between the REM and the microprocessor.

The interface bandwidth in combination with PriorityChannel guarantees real-time messages get from the wire to the microprocessor without delay – enabling cycle times to be accurately achieved and ensuring maximum device up-time.

PriorityChannel interrupts low priority data to send or receive higher-priority packets first. Once high priority packets complete, low priority packet processing resumes. PriorityChannel has allowed Innovasic to certify its products to Net Load CLASS III using the Security Tester Level 1 from PI.

Implementing PROFINET IRT and other protocols requires a high level of adaptability on the part of the fido5000. PROFINET IRT divides the Ethernet into an IRT channel and RT channel.

REM supports all the mechanisms needed, including IEEE1588 and the performance enhancements of Version 2.3 such as dynamic frame packaging, fragmentation, and fast forwarding. Fast Start-Up (FSU)

and redundancy (MRP and MRPD) are also be supported.

fido5000 REM achieves flexible configurability and protocol flexibility using technologies that Innovasic developed for the first time in its fido1100 microcontroller. The configuration is loaded into the REM during system startup, defining its functionality. The details are taken from the drivers available in the "C" language.

The driver is also protocol-specific, so its adaptation to any existing protocol stack can be carried out very efficiently.

The fido5000 REM switch IC handles the lowest levels of the protocol, the ones closest to the hardware. The upper protocol layers are implemented on the microprocessor. Since the REM handles all the time-critical tasks, the load on the microprocessor is significantly reduced. [INNOVASIC](#)

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## Acceptance Test Report Generator

<http://profinews.us/2014/03/acceptance-test-report-generator/>

With larger networks and the growing complexity of PROFINET applications, customers and suppliers are challenged to find an efficient yet reliable way to commission their PROFINET networks.

Device certification and robust device behavior are preconditions for reliable network behavior, but not necessarily sufficient. A network acceptance test should also take network properties into account.

Responding to this situation, the diagnostics software package TH SCOPE is now being shipped with an Excel-based template enabling easy and efficient report generation during start-up and commissioning of PROFINET networks. This template uses data exported by TH SCOPE, processed automatically and



converted into a pdf document.

### Standardization in sight

In a typical application, a systems integrator or plant manufacturer will supply such a report to its customer as part of a larger plant commissioning project. While detailed acceptance criteria may vary from project to project, there should be a largely standardized approach to commissioning and acceptance testing of PROFINET networks.

The new report generation template aims to take into account several current standardization and research activities, including that of the PI Working Group "Installation Guides". This work group is currently extending PROFINET Planning and Installation guidelines. Final results are expected by the end of this year.

### Being tested now

The currently available version of the report generation template checks parameters such as the maximum

line depth, device names, firmware versions, absorption, port utilization and number of error packets.

The generated report is structured to include a one page summary, detailed test results, and recommended actions (if applicable). In typical projects, the report will be complemented by additional documents, such as a topology printout, an inventory list, and a reference measurement.

TH SCOPE and the new report generation template are currently deployed and being tested by customers in the automotive industry. A full sample report in pdf format (German and English language) is available for download at [T+H](#)

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