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PROFIenergy WHITE PAPER PUBLISHED

'Smart energy management is the key': Freitag, PI Chairman

PI's key new technology profile PROFIenergy has generated a lot of interest worldwide. Articles have been published in key technical journals and magazines and analysts are discussing what the cost savings can be.

To help, PI has published a White Paper called '*THE PROFIenergy Profile: Smart Energy Management over PROFINET*' to explain how controller, network and end devices collaborate to manage energy consumption intelligently.

PROFIenergy eliminates the need for external systems. Two significant forces in automation came together to make it happen: AIDA, the German association of automotive manufacturers, comprising Audi, BMW, Mercedes, Porsche and VW, and PI.

Electrical energy is one of the largest costs in automobile manufacturing, particularly in high power devices like robot cells, which routinely stay semi-active during pauses at weekends and holidays, consuming up to 60% of normal production power.

Jörg Freitag, PI Chairman: "We believe that smart energy management with PROFIenergy is the future for all automation users"

With PROFIenergy, the PLC tells devices on the network when pauses are to happen. End devices respond in ways to suit conditions. Vendors embed software 'agents' in their equipment to initiate the responses. No external systems are used: all switching takes place inside the devices so no additional installation costs are incurred. Unexpected events such as breakdowns can be accommodated and PROFIenergy can even transmit energy data back to the controller, opening up further possibilities, such as peak load management.

With PROFIenergy, end users can save large amounts of energy. "We are more excited about PROFIenergy than almost anything since the launch of PROFINET itself," said Jörg Freitag, Chairman of PI. "We believe that smart energy management with PROFIenergy is the key to big savings for all automation users"

DOWNLOAD THE WHITE PAPER

PTO PROMOTES IO-Link IN USA

PTO, the Regional PI Association (RPA) in North America, is to introduce the benefits of IO-LINK to USA and Canadian users via its continent-wide series of free one day training classes.
IO-LINK is a digital connection system for latest generation sensors and actuators. Increasingly, these offer powerful features such as parameterization on the fly and high resolution measurements which cannot be handled over conventional 2-wire systems. IO-LINK provides the digital communications needed to connect such sensors. However, conventional sensors can still be used with IO-LINK.

An IO-LINK education module will be added to PTO's existing classes. **MORE DETAILS HERE** about the classes. More about **IO-LINK HERE**, or **READ PROFIBLOG HERE.**

VISIT PI AT HANNOVER FAIR

Hannover Fair, Europe's largest industrial fair, is coming up in April. PI will be there as usual with a booth in Hall 11. PROFINET will feature strongly, with plenty of products on display. For the first time, guided tours of the booth will be available, in both German and English. Hannover Fair is April 19-23, 2010 in Hannover, Germany!

PI News

PI World

New Products

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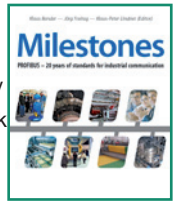
ANNIVERSARY BOOK PUBLISHED IN ENGLISH



An English version of the 20th Anniversary PROFIBUS Book will be available at end of March. The translation is edited by Geoff Hodgkinson, editor of PROFINEWS, and includes much of the history of fieldbuses as well as the story of PROFIBUS itself. A special international introduction has been written by Michael Bryant, Executive Director of PTO in North America and Deputy Chairman of PI. Copies are being distributed through RPAs around the world. Watch this space for details.

CERTIFICATION FOR PA V3.02

Effective immediately, certification is available for the PROFIBUS PA profile V3.02. PI views this quality measure as very important, since error-free communication between devices of different manufacturers is only guaranteed when products are certified. The test cases have already been implemented at PI Test Laboratories. The profile meets user requests for enhanced version management of devices, device files and software platforms, to minimize maintenance costs over the life cycle of production equipment as well as user requests for device replacement during operation. It facilitates device integration and makes it easier for 4-20mA users to upgrade to the many possibilities offered by digital fieldbus technology.

TRAINING CLASSES: PROFIsafe CERTIFIED DESIGNER

The required quality of PROFIsafe products and systems highly depends on the quality of the know-how of the development teams and on the deployed methods and procedures. An adequate range of training can assure the necessary level.

Thus, the responsible PI working groups in cooperation with TÜV developed a training scheme, which is available to all interested PI members for their employees in charge of PROFIsafe and safety.

The three-day sessions include a written test at the end of each day. Experts having passed all tests receive a TÜV certificate 'Certified PROFIsafe Designer'.

The training should be repeated every second year in order to continuously keep PROFIsafe knowledge up-to-date.

PROFIsafe and associated safety training activities are undertaken in English.

Member News

NEW UK SALES OFFICE

HMS Industrial Networks is to open a UK sales office in March. Located in the Midlands the office will provide local sales and marketing support for HMS UK and Irish based customers as well as for HMS distributors Routeco and Hanley Automation. The office will be headed by Mr. Bjorn Franzén. One of HMS's first events will be participation at the Drives & Controls Fair in June.

Product News

FLEX/ INTEGRA ADAPTERS

This adapter allows up to eight Rockwell Automation FLEX and/or Integra I/O modules to interface directly with a PROFIBUS DP Master/Scanner. It's "easy to use", requiring only the setting of the node address and the connection of 24V DC power. The FLEX and Integra module data images are configured using standard PROFIBUS tools. The GSD file is available from ProSoft's website. **PROSOFT**

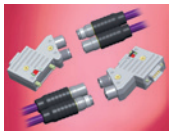
REAL-TIME I/O

Phoenix Contact has a new Axioline real-time I/O system for control cabinets. Response times of less than 1ms can be achieved thanks to an offset of only 1µs per I/O module. The I/O system is simple to handle: it uses the PIT direct connector system for wiring without tools. Outlets at both sides ensure transparent cabling in the control cabinet. The system is optimized for PROFINET. **PHOENIX CONTACT**

IRT ENCODERS

POSITAL's OPTOCODE range has received the first ever certification for PROFINET IRT applications. The encoders support isochronous real-time, real-time and non-real-time communications according to the V4 encoder profile, and achieve cycle times as low as 1ms (IRT) and 10ms (RT). A GSDML device file facilitates configuration. Existing PROFIBUS systems can be easily migrated. **POSITAL**

PLUG&PLAY M12



The new Plug&Play bus connector range from Provertha with two M12 connector interfaces ensure a fast and fault-free PROFIBUS connection within seconds. There are 3 connector styles, designated Compact, Special and Axial. "No reflections" are promised. **PROVERTHA** or manfred.schock@provertha.com

GATEWAYS WITH 2-PORT SWITCH

HMS has 3 new PROFINET Anybus X-gateways, supporting PROFINET IRT. They enable easy integration of PROFIBUS, Interbus or CANopen networks into PROFINET-based applications. Typical uses include automobile manufacturing where existing fieldbus-based machinery is integrated "as is" into new PROFINET-based plant. An integrated 2-port switch allows direct integration into line topologies. **ANYBUS**

PROFINET FOR FUJI INVERTERS

ICC has a new interface module for Fuji Electric FRENIC-Eco inverters. It mounts directly onto an inverter's control board and supports PROFINET IO (with PROFIdrive). Configuration and parameter monitoring/control are via a web server. A virtual keypad is provided, plus a dashboard GUI with multiple gage windows. Network timeout can be programmed for 'fail-safe' responses. **INDUSTRIAL CONTROL COMMUNICATIONS**.

PROFINET CONVERTER

echolink one2Profinet connects popular serial protocols to PROFINET networks. Modbus, ASCII, RTU, 3964R protocols are available, with customer-specific requirements possible. Units are compatible with major PLC providers such as Siemens, Schneider and Omron and support the functionality defined in Conformance Class A. **INAT**

Applications

AUSTRALIA / **METALS**: The Pilbara region in Western Australia has some of the world's most ancient natural landscapes, dating back two billion years and stretching over 400,000

square kilometres. It is also the engine room of Australia's mining industry, rich in crude oil, salt, natural gas and iron ore.

In the Paraburdoo area of the Pilbara region, PROFIBUS is helping Rio Tinto Iron Ore achieve higher productivity and improved product quality at the Further Fines Processing Plant (FFPP).

Raw iron ore is sourced from the Paraburdoo, Channar and Eastern Range mines. These produce hematite ore in lump and fines, the latter being upgraded in the Paraburdoo FFPP. Processing around 22 million tonnes of iron ore per annum, the FFPP is a central part of the operation, reducing impurities and increasing iron concentration.

Trials identified that a range of issues were compromising expected throughput, leading Rio Tinto to commission optimization works to reinstate the plant to original design levels. Ed Tsang, Senior Electrical Engineer, Rio Tinto Iron Ore said "There were several issues with the FFPP, but the main one was an inability to control pressure in the slurry process. Crude knife gate valves presented us with massive maintainability issues, leading to very poor process performance and an inability to adapt to sudden in-feed changes to ore quality."

To resolve the issues, Mr. Tsang made the decision to implement a robust control solution with intelligent devices, selecting SIMATIC PCS 7 with drives connected via PROFIBUS DP and redundant PROFIBUS PA for instrument communication.

Using a PROFIBUS PA ring not only provided protection against loss of communications, but the Active Field Distributors (AFD's) also provided short circuit proof spur lines and active termination. "With plant availability critical for us, the ring architecture provided the robustness and assurance we needed," said Tsang.

Siemens SIPART PS2 electro-pneumatic positioners were connected to the AFDs, which not only resolved many of the valve issues but also helped to reduce air consumption while easing set-up and calibration. They also provided advanced diagnostic information for performance monitoring.

Both electrical and instrument devices were engineered and monitored through the PDM (Process Device Manager) package within PCS 7. This enabled swift implementation while reducing training needs, a bonus for a project with a tight nine month schedule.

The project was completed on time and within budget, and Rio Tinto have been reaping the rewards ever since. "Our initial goals have been exceeded, with significant financial returns and improvements in production quality and throughput. There is also the added bonus of reduced maintenance and greater visibility of device data," commented Tsang. **SIEMENS**

BRAZIL / **ETHANOL**:The biggest Ethanol plant in the world has been successfully commissioned using a Smar PROFIBUS Automation System.

The plant, at Jatai, Goias state, belongs to the COSAN Group. It is equipped with two turbines generating 65 MW, and it mills 21,000 tons of sugar cane per day, producing 2,249 m^3 of ethanol.

According to Fernando Liboni, the project manager from Smar, this is a modern plant using PROFIBUS with System302 Smar Automation System. There are 800 Smar PROFIBUS PA devices, including pressure and temperature transmitters, and valve positioners in different areas of the plant, including Utilities, Juice Preparation, Fermentation,

Syrup Treatment, Distillation, Power Generation, Water Feeding & Treatment, Steam Boiler and Diffuser.

There are 14 redundant operation stations arranged in a modern control room, everything integrated and operated by a System302 from Smar. According to Mr Armando Viotti, Cosan Group Operational General Director, the plant shows "auspicious and positive results." He highlights the importance of the PROFIBUS automation system from Smar in delivering the results and benefits. **WATCH VIDEO HERE**

Applications

BELGIUM / CANAL MANAGEMENT: Waterwegen en Zeekanaal's responsibilities include the **Leuven-Dijle canal** (comprising 15 structures such as bridges and locks over a distance of 30 km) and the **Bruxelles-Escaut Maritime Canal** (with 16 structures over 30 km).

Traditionally, (and sometimes still today), locks and bridges were controlled by a keeper. Often, keepers were in charge of two or three structures if they were located within easy reach by bicycle or moped. Today, an effort is underway to centralize the control of all structures. The Kampenhout central control station will be in charge of four locks and ten bridges on the Leuven-Dijle canal.

Local automation retained

A single lock, located at Zennegat, near the confluence of the Dijle and the Senne rivers, maintains local control due to the volume of work and because it is a tidal lock (and therefore busy from 6:00 a.m. to midnight).

Each engineering structure has retained its existing automation system based on a local PLC. These support automatic execution of the main functions, i.e. stopping traffic, opening the bridge, closing

the bridge, and the reverse maneuver in case of trouble.

A complete "operator console" has been preserved at the local level, with former pushbuttons replaced by a touch screen PC. Local control is the same as control at the centralized control station; however, to allow for maintenance, it can also support local operation of the different steps in sequential order.

Centralized control

Kampenhout will comprise three dual workstations (two of which are already in service). Willebroek will have seven to control the Maritime Canal, plus one for diagnostics and remote monitoring.

Each workstation is equipped with four to six video screens, three pushbuttons (coupling, emergency shutdown and reverse) and one touch screen (displaying a real-time image of the bridge or lock control). This allows the operator to control two structures at the same time. The workstations are linked to the servers via KVM (keyboard/video/mouse) modules and a multi-cable. These are the servers that are connected via Ethernet fiber optics to the local PLC control of each structure. A PROFIsafe network is planned via a separate fiber-optic connection.

Alongside of and in support of the "control," voice and video communication is supported via Ethernet. The voice communication consists of a one-way audio channel from the control center to loudspeakers located around the structure, plus a two-way radio connection via marine telephone, also using fiber optics.

Emergency shutdown

By pressing the "coupling" button at a workstation, an operator can request authorization to control the structure from that control console. This initiates a connection procedure via a fiber-optic Ethernet connection. If the connection is OK the emergency situation is lifted at the engineering structure via a procedure on the safety PLC through the fiber-optic PROFIBUS connection (via PROFIsafe).Only then can the actual control begin.

A requirement was that the signal from the emergency switch should always be transferred within 100 ms to the local back-up circuit. Given the large distances the choice was made for fiber-optic PROFIBUS, OLM Hirschmann (electronic/optic converters) and ET200S safety I/O.

The activation of the entire PROFIBUS safety network is monitored via PROFIsafe, whereas the safety I/O control the safety connections locally. At the slightest interruption of this network, operation of the engineering structure switches automatically to the emergency shutdown procedure.

A t the time of the public tendering in 2001, the availability of PROFINET, long-distance switches from Siemens and PROFIsafe on PROFINET made it possible to eliminate a large number of switches/amplifiers and to reduce response times. The result is a response time of 50 ms, half the time required in the project specification.

The safety PLC also ensures that the operator sees images of the selected structure, rather than images of another structure.

Three engineering structures on the Leuven-Dijle canal have been operated by remote-control since September 2006. The next four are under conversion now. The PROFINET connection between the Kampenhout and Willebroek control centers has been fully implemented and tested.

PI World

NORTH AMERICA

PTO has ten PROFINET classes and eight PROFIBUS one day training classes already scheduled for 2010, with more coming. **FIRM DATES** are set for the earliest ones with dates soon for the balance. This year, PROFINET classes are focusing on ***using*** PROFINET. "When students leave a class this year, they'll be ready for their first PROFINET project," says class leader Carl Henning. PTO returns to its traditional in-person General Assembly Meeting (GAM) in 2010, following the virtual event staged in 2009. "August 3rd,through August 5th is the schedule for GAM Week," says Executive Director Mike Bryant. "We know you are interested in PROFIBUS and PROFINET if you are willing to brave the 110º Arizona temperatures!" GAM week begins with a PROFINET educational class. Tuesday evening features a 'Welcome' Reception. Wednesday and Thursday gets into details, with plenty of opportunity for networking (the personal kind). **PTO**

INDIA

IPA (the Indian PROFIBUS, PROFINET Association) was founded in December 2009. It has an office in Pune. There are 15 members with more expected soon. IPA also has membership from Universities and Engineering colleges who will be helping with PROFIBUS development. IPA participated in the Hannover Fair IA2009 in Mumbai in December where members showcased their products and services. A multi-vendor demo system was on display, with PROFIBUS and PROFINET devices demonstrating the open architecture and connectivity of both protocols. Member companies UL Group, Siemens, Turck India, Profichip Germany and VIPA India participated with table top displays. IPA has decided to participate in Automation 2010 scheduled for September 2010, and plans to hold road shows during mid 2010. **INDIA@PROFIBUS.COM**

BRAZIL

PROFIBUS Brazil Latin America has announced its first ever User Conference, covering PROFIBUS, PROFINET and AS-interface. The event will be held 30th - 31st March in Sao Paulo, Brazil. **DETAILS HERE**. Among the speakers are professionals with extensive experience of using PROFIBUS, PROFINET and AS-i in Brazilian plants, as well as international experts in automation. They will present case studies covering project specification, choices of technology, installation, commissioning, start up, operations and maintenance. The event is a *must* for anyone working on plant expansions and projects using PROFIBUS. It's also an ideal opportunity for checking trends in PROFIBUS. Brazilian members will have mini-booths at an associated exhibition. More than 500 delegates are expected to attend. **BRAZIL@PROFIBUS.COM**

UK

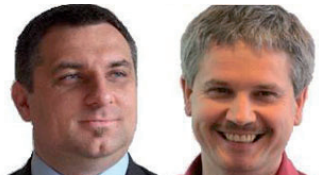
The PROFIBUS Group in the UK is organizing a series of events in 2010. The annual two day User Conference is scheduled for 29th-30th June at Stratford Manor, Stratford-upon-Avon, Warwickshire (above). The program offers a user-focused conference, hands-on workshops and an exhibition. **CONFERENCE WEBSITE.** During March there are two events scheduled for new users to PROFIBUS: 'Practical Aspects of PROFIBUS & PROFINET in Factory Automation' is a one-day seminar on 11th March covering application areas such as packaging, printing, electrical and electronics assembly, robotics, automotive engineering, drives, mechanical handling and logistics, control systems and energy management. **MORE DETAILS.** At Frimley in Surrey, on 17th March, a parallel event will introduce the 'Practical Aspects of PROFIBUS in Process'. **MORE DETAILS**.

KOREA

A PROFIBUS/PROFINET VIP Workshop was held in December in Seoul. It attracted 220 delegates, far more than expected. 35% were from end user companies such as POSCO, Samsung Electronics, LG electronics, KIA Motors, GM DAEWOO Motors, Samsung Heavy Industries, Hyosung Heavy Industries and Dongbu Steel, with the balance coming from SIs and device makers/suppliers. A press conference was held the previous day for members of the Korean trade press. **KOREA@PROFIBUS.COM**

PROFIpeople

NEW MAN IN POLAND



Konrad Jastrzab (left) has joined Darius Germanek (right) at the Polish RPA to help promote PROFIBUS in Poland. Konrad worked as an electronic R&D engineer for many years and is very familiar with PROFIBUS, especially PROFIBUS PA. He will be responsible for the Polish PNO web site, also for giving technical advice on PROFIBUS communication, devices, development and diagnostic tools. Together, Dariusz and Konrad plan to make PROFIBUS and PROFINET more popular and widely-used in Poland.

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