PROFINEWS

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PROFIBUS PROCESS FIELD BUS

in this issue

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CONTENTS

Blue = PROFIBUS story
Green = PROFINET story
Black = PI story

Click any item to jump to the relevant page

LATEST ARC STUDY CONFIRMS FIELDBUS PRIORITIES

A new process industry end user fieldbus study from Boston-based market analysts ARC is set to reveal fresh insights into long established 'fieldbus' beliefs.

The study reveals that the most desirable feature of a fieldbus is the closely-coupled nature of process and discrete automation. Guess what? That is what PROFIBUS has been saying for years, in the face of entrenched alternative thinking.

More than 200 users across the world - the largest percentage (39%) from North America - responded to ARC with their fieldbus views, answering a range of questions designed to compare today's beliefs with a similar survey carried out in 2003.

Then, the fieldbus 'vision' for most process users was still in its infancy. With more experience behind them, process users now feel that simple and close integration of mainstream processes with upstream and downstream segments is their biggest need.

So, finally, the true advantage of the tightly-coupled PROFIBUS DP and PA fieldbus protocols is revealed. The study also contains many other interesting facts about the world's fieldbus 'vision'. Read more in our December issue

INDUSTRIAL COMMUNICATION CONGRESS

Martin Müller (left) from Phoenix Contact, with Herbert Serwota (center) of EDAG and Gerhard Bethauser of Audi (right) in the discussion forum.

The use of Ethernet - in particular PROFINET - was a focus of the 10th Industrial Communication Congress, hosted in Blomberg, Germany, by Phoenix Contact in September. The event provides an opportunity to present proven transmission technologies such as PROFIBUS and INTERBUS, and acts as a catalyst for trends such as Ethernet, PROFINET and wireless technology.

Ulrich Lichtblau of Volkswagen, another of the speakers.

Over 400 participants attended and the speakers included representatives from Audi, BMW, EDAG Engineering + Design and Volkswagen.

PROFIBUS International Chairman Edgar Küster (above) presented the basic principles and further development of Ethernet while automotive manufacturers provided an insight into the introduction of PROFINET to their PLANTS. A discussion forum gave manufacturers and users the opportunity to discuss Ethernet and PROFINET in automation. Phoenix Contact will host the Industrial Communication Congress in 2006.

SEE PROFINET AND PROFIBUS AT ...

SPS/IPC/DRIVES/
Electric Automation
Systems and Components
Exhibition & Conference
22 – 24 Nov. 2005
Nuremberg

More than 40 companies will participate on the 200+ sq.m. PROFIBUS and PROFINET joint Fair booth in Hall 6. Multivendor demonstrations of Safety (PROFIsafe), Motion Control (PROFIdrive) and PROFIBUS PA will be featured. There will also be two PROFINET demonstrators:

- Multivendor-live Demo
- Demo-Wall showing PROFINET devices

A new "PROFINET Product News" flyer will be available at the ISA EXPO (download here) and at SPS/IPC/ Drives and in PROFINEWS. Read more about SPS in the next PROFINEWS.

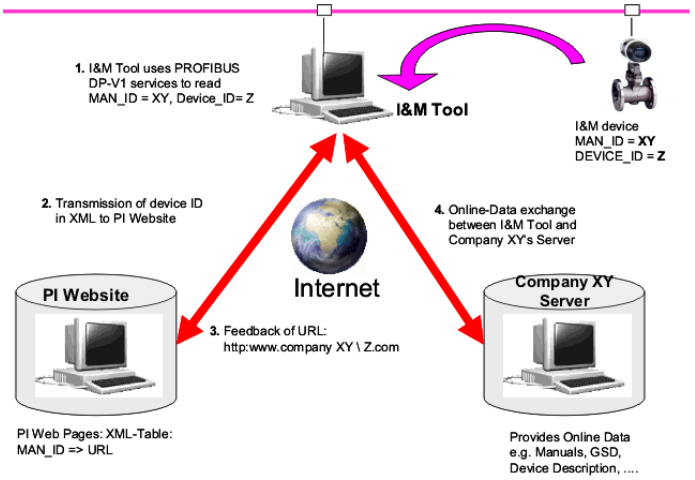
PROFIsafe/ PROFIdrive FOR PROFINET

The PROFIsafe V2 and PROFIdrive V4 specifications have been formally adopted and are now available for use. They are applicable to both PROFIBUS and PROFINET, enhancing further their common functionality and making development, use and maintenance much easier.

PI NEWS

IMPLEMENTING I&M FUNCTIONS

Making familiarization with the I&M topic easier was the goal of PNO's workshop on October 13, 2005. The advantages and added value gained by using I&M functions, e.g. for asset management, were described during this one-day event. Consultants introduced how the I&M functions are optimally implemented with regard to devices and development of tools, e.g. configuration and adjustment tools for PROFIBUS devices.



MORE ABOUT I&M

I&M Functions represent a quantum leap towards industry- and manufacturer-independent identification of PROFIBUS devices.

The Identification&Maintenance functions (I&M) are an important component for integrating PROFIBUS devices into asset management solutions. They represent a uniform basis for recognizing PROFIBUS devices and make easier and, above all, open, device integration possible.

In addition to unique device identification, I&M contains a concept for accessing device-related online information via the Internet. All such information needed in the current phase of the device life cycle can be provided in real-time. The usefulness of I&M lies in that the Web URL is determined by an I&M-compatible tool, making it possible to efficiently access information without complex manual Internet searches.

I&M functions must be implemented in all slave devices with MS1/MS2 channel for which a new ID number is assigned. This is checked during certification of all slave devices submitted for testing after October 1, 2005.

WORKSHOP SUCCESS!

Two workshops for developing PROFINET products were held recently. Different development platforms and support services were presented by leading vendors including Hilscher, HMS, Siemens, Softing and TMG. The first part of the event overviewed PROFINET, PROFINET IO and real-time, and connector standards. Then, technology providers presented their development concepts for comparison. Technology providers meanwhile, presented their offerings in a 'micro fair'.

GUIDELINE TRILOGY

This new publication is the first of a trilogy covering planning, cabling and assembly, and commissioning. 'Recommendations for Cabling and Assembly' is now available and can be ordered via www.profibus.com (order No: 8.021 german / 8.022 english). The next part, 'Recommendations for Commissioning' will follow at the end of 2005 and the 'Recommendations for Planning' will complete the trilogy by mid 2006. The three parts are/will be spiral bound and printed on tough, cleanable paper with a plastic laminated cover.

WEB SITES RE-LAUNCH SOON

Germany: New content is being developed for www.profibus.com. With over 10,000 pages a review is timely. A new look and feel with a better browsing experience is one objective, supported by a separation into PROFIBUS and PROFINET segments. Easier updates will be enabled by a new Content Management System so the website can always provide latest information. 'Go live' day will be November 22nd - at www.profibus.com and at www.profinet.com!

North America: A complete revision of the old www.us.profibus.com web site is underway, focused on the North American market. Front page pointers will make it easy for visitors to find what they need based on job function and new product and press release information will feature strongly on the home page. Included will be a North American product catalog to help visitors locate local sourcing.

EASTERN EUROPE SUPPORT GROWS

PI has a worldwide network of 32 PICCs which offer technical support for PROFIBUS and/or PROFINET, working closely with the Regional PROFIBUS Associations (RPAs). Browse www.PROFIBUS.com > SUPPORT for a list of PICCs. News from Eastern Europe shows that PROFIBUS is growing fast there.

POLAND: The young PROFIBUS Organisation in Poland and its members get technical support from the new PI Competence Center (PICC) at INTEX in Gliwice. Pietro Zappa and Artur Szymiczek, experts at the new PICC, have been working with PROFIBUS for many years. The PICC offers consultancy, project support and training, and can show PROFIBUS functionality on a demo system with several PROFIBUS master and slave devices.

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e-mail: intex@intex.com.pl

CZECH REPUBLIC: Following the accreditation of ANF Data as PICC for PROFINET, the PROFIBUS Organisation in Czech Republic now has a PICC for PROFIBUS at Czech Technical University in Prague. Pavel Burget there has been working for PROFIBUS for many years and is well-known. Being located at the university brings synergies for industry and students. HW/SW development, protocol implementation, real-time behavior analysis, training courses and much more are provided.

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APPLICATIONS

BRAZIL/ COFFEE

Smar has supplied more than 130 PROFIBUS PA devices for a new coffee plant in Cornelio Procopio, Parana state, Brazil.

Cia. Iguacu is one of the largest Brazilian exporters of coffees. PROFIBUS technology was chosen to improve the production and the quality of the process in the evaporation and concentration areas. In the concentration process, some of the water is removed from the coffee extract, using three different systems:

- Multiple effects evaporator, descendant film;
- Thermo-centrifuge concentrator;
- Freeze concentrator (operating at temperatures below 0ºC).

Smar provided Pressure, Level, Transmitters, Temperature and Density Transmitters and Valve Positioners. The system is controlled with a Siemens PLC and configuration of PROFIBUS PA is performed with Simatic PDM.

The main reason for choosing PROFIBUS was the advantage of working with PDM in generating valve signatures, graphs and trend performance, making maintenance easy. Cesar Cassiolato from Smar gave all necessary support.

The new plant has been operating since the beginning of 2005 and results are excellent. “This is the first time that Iguacu has deployed intelligent instrumentation. We thank Smar for helping us meet this challenge and we count on them in our next steps,” stated Cia. Iguacu automation leader Osvaldo Vitorino.

“Smar field devices are very easy to use, and configuration using PDM makes simple tasks such as commissioning, tests and calibration”, said Joao Eduardo Carvalho, automation technician.

“Although we started up only a few months ago we can see the quality and performance of Smar PROFIBUS PA devices”, added Luis Sartori, Iguacu automation project leader.

SINGAPORE/ WATER

Rotork Valvekit PROFIBUS-enabled switchboxes have been specified for the control of hundreds of pneumatic actuators on the giant new waste water treatment plant at Changi in Singapore. The switchboxes are fitted to Rotork Fluid System pneumatic actuators which, combined with a quantity of Rotork IQ electric actuators currently exceeding 2000, represent the largest PROFIBUS-controlled valve actuation networks in the world. Rotork Valvekit Circa 7000 ATEX switchboxes were specified by USA- and Singapore-based Changi design consultants CH2M Hill. Each Circa box is capable of controlling up to 64 valve actuators on a single 2-wire loop of up to 3 km in length.

UK/ CONTACT LENSES

PROFIBUS, working together with advanced automation components from Festo, have helped system integrator Barr & Paatz produce what is believed to be the first fully-automated contact lens manufacturing machine.

Developed for Clearlab, the international supplier of daily disposable lenses, the new machinery integrates a complete lens manufacturing process - from injection moulding to foil packaging - into a footprint just eight metres square. Using highly versatile robotic handling arms, the machine can produce over 24 million lenses a year.

Seven major stations were required to meet Clearlab’s

process requirements - injection moulding of a cast, plastic dosing, two stages of curing, hydration, packaging and autoclaving - so the physical size of the automation was critical.

Over 400 Festo pneumatic actuators are used, organised into process cells. Each cell - consisting of one or two valve terminals - operates semi-autonomously as an I/O extension to the control system inside a Bosch Rexroth articulated robot. Nine robots perform the pick-and-place loading/unloading between the station and the conveyor. PROFIBUS is used as the communications mechanism, for both the real-time I/O commands that control the cell’s operation and the handshaking between robot arms that coordinate downstream and upstream handovers.

The sheer size of the pneumatics system made the choice of valve terminal critical. Barr & Paatz selected the modular MPA valve, which provides a high flow capability in a width of just 10mm. These valves are mounted on Festo’s high density CPX valve terminal backplane. The MPA portion accommodates up to 32 single- or dual-port valves - fitted with a PROFIBUS interface for system integration. Over a dozen of these backplanes are used.

“Festo components have clever surface features and a common interface that provide a very tidy way to build a large automation system”, said Stirling Paatz. “This has saved a considerable amount of space, which in turn allows our client to increase manufacturing capacity within a very small footprint.”

APPLICATIONS

BELGIUM/ MILK

Campina in Aalter, Belgium - part of the international Campina cooperative - was one of the first plants to use 'PROFIBUS in Process' networking technology, which allows process automation and discrete manufacturing functions to be connected over a single network.

Products such as milk have been driven down in price until profitability is at an all time low. Campina therefore decided some time ago that it had to focus on innovation and today makes many added-value products which command higher prices. However, consumer tastes are notoriously fickle so the strategy also depends on being able to change quickly.

All this requires considerable flexibility. "This is not a facility that likes to have its feet nailed to the floor," says Automation Engineer Paul Jongbloet: "We have to be able to react quickly and we need to be able to alter production almost daily. Automation is part of our credo and the progressive upgrading of our processes is a constant pressure.

"We were probably the first plant to use PROFIBUS PA in Europe. PROFIBUS DP and PROFIBUS PA work together well, and that suits us because we have a mix of classic process measurements plus many discrete-like functions."

The plant runs a plant-wide IT Ethernet network which connects to the HMI/SCADA equipment of individual production units. Further Ethernet networks connect down to

the PLC level. Underneath these are PROFIBUS DP networks which act as the backbone for the production control systems and underneath them are the PROFIBUS PA segments that connect to the field instruments.

The first PROFIBUS PA installation came about 7 years ago in the storage tanks. The primary motive here was to get a remote means of checking all the gauge transmitters. Better measurement was another

Paul Jungbloet shows off a space-saving PROFIBUS cabinet

benefit. Roughly 5000 points are monitored, of which about 20% has been implemented with PROFIBUS DP. From here information is distributed throughout the plant.

The next area to be updated was the batch mixing facility. Existing tanks were retained and everything went on to PROFIBUS, including valves. Next in line was an extension to the mixing plant and that was followed by a newly-installed fermentation plant, consisting of 6 tanks. This was engineered totally by Campina using PROFIBUS. Fifty process instruments are connected via six PROFIBUS PA segments. On/Off use PROFIBUS DP to AS-interface gateways.

Says Jongbloet, "Fieldbus solutions usually cost more to buy, but this is outweighed by savings in cabling and engineering. It's also easier to make electrical drawings. There are fewer and smaller cabinets. Overall, costs tend to equalize during engineering and commissioning. The biggest savings come later because measurement accuracy is improved, digital data is more reliable, maintenance is easier and managing the plant is so much simpler and more effective, especially if you have the right higher level systems."

Last year also saw the deployment of a new Clean in Place system which was built entirely with PROFIBUS. Here, 5 tanks and 8 cleaning lines – in total more than 70 PROFIBUS PA - are used.

PROFIBUS is also used on four of the five finishing lines.

GERMANY/ PERFUMES

At BASF in Ludwigshafen, a new fragrance production system is based on 1,000 PROFIBUS PA measuring instruments.

An early decision was made to use the independent Fieldcare configuration tool based on FDT/ DTM. Decoupling the field device parameterization allows for connecting a device to a running system without first having to conduct any special engineering. As soon as the device is connected, the user has access to all functions, and field devices can be placed in operation at the site independently of the process master. That saves time and money during the handling of the project.

DTM functionality was proved using application tests done shortly after the contract was awarded. PROFIBUS PA devices were examined in detail and every DTM was thoroughly checked and found to be good, giving BASF the confidence to proceed.

PROFIBUS DP is converted to PROFIBUS PA via segment couplers. Four transparent power link modules supply the PA lines, which are up to 1,900 meters long. 4 fieldbus barriers responsible for Exi / Exe- separation are attached to one line. Four nodes are connected to each fieldbus barrier. Bus cycle times from 32 to 280 milliseconds are predefined for sending and receiving all the data from the field. A motor must start within 600 milliseconds. The pre-specified system components are: Operate IT control system from ABB, segment couplers and fieldbus barriers from Pepperl+Fuchs, sensing technology from Endress+Hauser, completed by products from Krohne, actuators from Samson. Lang and Peitler secured the bus-capable low-voltage switching station from Siemens.

PRODUCT NEWS

ControlLogix SCANNER

This PROFIBUS module for the ControlLogix platform acts as a network scanner, providing high-speed transfer of Input and Output data between PROFIBUS devices and the ControlLogix memory table. It supports PROFIBUS DP-V1 allowing virtually unlimited acyclic online parameterization, alarming and extended diagnostics for up to 125 slaves at all baud rates. Multiple modules can be placed in a single rack. FDT/DTM software is available. **Prosoft: +1 661-716-5100 or prosoft@prosoft-technology.com or www.prosoft-technology.com**

OPC FOR PLC

Softing's S7/S5 OPC Server and OPC Client Controls provide immediate access over PROFIBUS to data in any SIMATIC S5 or S7 and WinAC. Installation and configuration takes just a few minutes by simply importing symbolic names from STEP7 projects or Excel and selecting the preferred PROFIBUS interface. OPC Client Controls allow the user to browse the server's name space and select data points for automatic Excel updates. **Softing: + 49 89 45656 340 or info.automation@softing.com or www.softing.com**

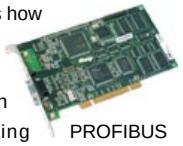
SECURITY MODULE

The new Scalance Security module for PROFINET controls data traffic between networks, protecting automation cells from unauthorized access and unnecessary loads. It protects up to 64 devices and can have 128 simultaneous VPN channels. A Firewall feature is incorporated. Easy configuration means no specialist IT skills are needed. **Siemens: +1 770 871 3971**

CABLE FEEDTHROUGH

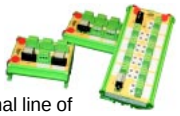
This circular feed-through system makes interfacing and data acquisition from control and communication panels a snap. It's IP68 rated, will meet/exceed the NEMA rating on most panels and is available at a "very attractive" price, say its makers. **RDE Connectors & Cables: +1 954 746 6400 or www.rde-usa.com**

CARDS AND TOOLS



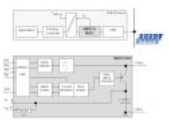
"3rd Generation" is how this vendor describes its latest PB3 solution for accessing PROFIBUS networks. It includes configuration tools and diagnostics, an OPC DA 3.0 Server for DP-V0 and DP-V1 variables and a CommDTM driver compliant with FDT 1.2. Universal PCI, ISA, PC/104 and VMEbus are supported. The NICs run under Windows® XP, NT4, 2000, and real-time Operating Systems. **Woodhead: www.woodhead.com/products/automation/networkinterface/nic/PROFIBUS/**

PRODUCTS ACQUIRED



Moore Industries International has acquired the Hawke International line of PROFIBUS PA device couplers and fieldbus power supplies. Marketed under the banner Moore-Hawke, these include TRUNKGUARD, the first coupler to provide fully automatic segment termination. MooreHawke also offers ROUTE-MASTER I.S. Power Supplies, which provide up to 350mA per segment in hazardous locations. **MooreHawke: www.ehawke.com/fieldbus or +1 818 894 7111 or www.miinet.com**

DISCRETE MAU

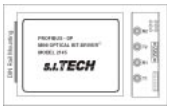


Functional replacements for the discontinued SIM1 and µSAA22Q ASICs for a Medium Attachment Unit (MAU) can now be obtained from MESCO as a discrete circuitry design. Allowing for the implementation of the IEC 61158 physical layer, the design ensures complete independence from ASIC suppliers. **Mesco: www.mesco-systems.com or +49 07621 89031 0 or info@mesco-systems.com**

MARQUEE DISPLAY

EZMarquees start at $349 and provide cost effective ways for productivity and safety information to be communicated factory-wide, keeping workers and management in touch with the manufacturing process. 2"-8" high LED characters are viewable at a distance of 50-200'. Red and Tricolor models are available. **EZAutomation: +1 563 359 7501 or bsandrock@avg.net or www.ezautomation.net/products/ezmarquee.php**

FIBER REPEATER (1)



The Fiber Optic Bit Driver is a two optic port repeater designed for interfacing PROFIBUS with fiber cable, for long distance transmissions or EMI sensitive applications and redundancy. It can be used with plastic, Multimode and Singlemode fiber and mounts on a DIN rail. **S.I.Tech: +1 630 761 3640 or sales@sitech-bitdriver.com**

CABLE

3079A is a 150 ohm twisted pair cable designed for use with PROFIBUS systems. It incorporates a BeldFoilR shield plus a tinned copper braid for maximum shielding. It also has a UL NEC Type PLTC listing to achieve maximum installation versatility. A cable for IEC 61158 PROFIBUS PA use is also available, featuring a blue PVC IS jacket. **Belden: www.belden.com**

FIBER REPEATER (2)

This electrical interface facilitates onward transmission of PROFIBUS signals over a redundant, self-healing, fiber optic network. It performs near instantaneous automatic switchover if one path fails. Two relay alarm outputs alert the user to pending fault conditions. Status displays are fitted. **Weed Instrument: +1 512 434 2850 or fiberop@weedinstrument.com or www.weedinstrument.com**

WIRELESS PROFIBUS & PROFIsafe

DATAEAGLE 3002 is a new wireless transfer system for PROFIBUS. It supports speeds up to 1.5Mbit and uses the license-free 2.4GHz band. Numerous wireless receivers can be connected slave-side as well as numerous PROFIBUS DP slaves. DATAEAGLE is so reliable and available that PROFIsafe applications have been realized with it. Ranges of 400m outdoors or up to 100m indoors have been achieved. **Schildknecht Industrieelektronik Systeme: +49 7042 84106 0 or office@schildknecht.info or www.schildknecht.info**

PNEUMATICS INTERFACE

This Fieldbus / Pneumatics Interface valve island integrates binary signals into digital PROFIBUS communications. The Zone 1 mounted stainless steel housing incorporates Fieldbus Interfaces and pneumatic steering valves with compact, standarized connection techniques. It allows efficient actuation and control of several pneumatic high-power valves over PROFIBUS PA. 3/2 way and 5/2 way valves can be used. **Pepperl+Fuchs: +49 621 776 1197 or www.fieldconnex.info**

ANALYZER UPDATE

A free software update for the PROFITrace analyzer is now available for download. "It has even more features that boost your PROFIBUS activities," claim its makers, and it is "an essential tool for trouble-shooting, maintenance and commissioning." **PROFIBUS Center Netherlands: www.PROFIBUScenter.nl/profitrace**

AROUND THE WORLD

NETHERLANDS

A service team from the Finnish company KCI Konecranes has been trained on-site by the PROFIBUS Center on fault finding bus systems. Kone Crane control has been completely automated with PROFIBUS DP and in three days the Kone engineers received intensive instruction on how to use the PROFIBUS Analyzer and oscilloscope. A field trip allowed them to try out their skills!

www.PROFIBUScenter.nl

NORTH AMERICA

Carl Henning reports: "Rather than change our name to PROFIBUSnetDRIVEsafe Trade Organization, the Board of Directors has shortened it to just PTO! With the increasing emergence of PROFINET, the general naming is more appropriate." Carl has been promoted to be Deputy Director of the PTO, to assist Executive Director Mike Bryant, while retaining focus on PROFINET. In other Board news Filomena Wardzel replaces Tom Kapanski. Road Shows and Seminars continue to draw crowds, with even more dates and venues being added. The ISA EXPO show is now looming.

JAPAN

The Japanese PROFIBUS Organization (JPO) reports intensive ongoing activities. PROFIBUS is continuing to be introduced to beginners via 3-hour seminars. A PROFIBUS DP technical seminar was held in May at Osaka, using PROFITrace. PROFINET seminars supported by Hilscher, HMS and Siemens were held in Osaka and Nagoya. PI Chairman Edgar Küster explained PROFINET at the ARC Japan forum in July. The PROFIBUS/PROFINET Catalog, which features Japanese products and services, has had 35 items added this year to bring the total to 210. These are all listed on the JPO web site (www.profibus.jp) and will be published on a CD. Recent document translations include 'The Rapid Way to PROFINET', the new PROFINET Catalog, the ARC Insight 'AIDA Activity' and the ARC White Paper 'The Value Proposition of PROFIBUS in the Process Industries.' Forthcoming events include three fairs (Measurement and Control, System Control and Semicon), plus more seminars. JPO summarises activities as follows: "The market share of PROFIBUS is increasing in Japan and will accellerate. For vendors, the development and production costs of PROFINET are key; for users, it is how to merge the network with IT". M-System joined the PROFIBUS PA Road Show in China and JPO is considering how to better promote PROFIBUS PA in Japan.

THAILAND

'Getting the Message Through' - the theme from the PROFIBUS Road Show South East Asia (SEA) 2005 - was the motto for the RPA Thailand booth at the IMAC 2005 fair, held in Bangkok in July. PROFIBUS Thailand showed the latest innovations, presented technical papers and provided local language documentation. Sponsors were: ABB, E+H, Festo, MIMI, Lapp Kabel, Mettler-Toledo, P+F, smar, Siemens, Softing, WAGO and Weidmueller. A survey taken at the fair showed how important the process industry is. It also confirmed that PROFIBUS is the most popular fieldbus in Thailand.

SWITZERLAND

The first PROFINET IO training course was held in August at the Berne University of Applied

Science in Burgdorf. Participants from Norway, Germany and Switzerland learned about PROFINET IO system engineering, its Real-Time protocol and the practical use of Ethereal for diagnostics. The next training course is scheduled for mid-November. The first Swiss Industrial Networks Day takes place on November 15th and the first 3 people to register online can do so FREE! So hurry!

www.PROFIBUS.ch

FRANCE

The French PROFIBUS Competence Center held a PROFINET developers course in Paris in October, covering the three communications technologies, proxy and profile details, web integration and the CBA and IO options. The event was organized in conjunction with Agilicom and full details were published here (link). **www.agilicom.fr**

UK

November 2nd sees a seminar called 'Solving Process Problems with PROFIBUS' being held. Manfred Popp, author of 'The Rapid Way to PROFINET' is visiting soon to speak. PROFIBUS Maintenance courses continue, with even more dates being added. **uk@profibus.com**

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