PROFINEWS
PROFIBUS & PROFINET
PI INTERNATIONAL
ISSUE 58, OCTOBER 2007
Read this newsletter on-line at www.profinews.com
Official Newsletter of PI INTERNATIONAL

<< www.profibus.com
<< www.profinet.com

PI News

P1 CHIP PRICE REDUCTIONS SIGNAL ACCELERATION FOR PROFINET
P1 PNO BACKS WIRELESS INITIATIVE
P1 PROFINET COOPERATION
P1 SPS/IPC/DRIVES 2007
P2 PROFISAFE AND TCI WORKSHOPS
P2 PROFIBUS PA BOOK NOW IN CHINESE AND JAPANESE
P2 NEW WORKING GROUP FOR TRAINING
P2 CERTIFIED TRAINING
P2 PI AND PICCS MEET IN BEIJING
P3 PI=WORLDWIDE SUPPORT
P3 PROFIBUS AND PROFINET IN CHINA
P3 CZECH COMPETENCE CENTER
P3 SWISS TRAINING
P3 CERTIFIED PROFINET ENGINEERS FOR PHOENIX CONTACT
P3 NEW PROFINET TEST LAB

PI World

P3 UK
P3 USA

Applications

P5 CHINA / TOBACCO
P5 CHINA / DVD PRODUCTION
P6 UK / ENGINE ASSEMBLY

New Products

P4 FPGA PROFINET
P4 PROFINET STACK FOR FPGA
P4 PROFINET IO DEV. KIT
P4 PROFINET SWITCHES
P4 INTERBUS PROXIES
P4 ULTRA TOOL
P4 REMOTE IO
P4 MASS FLOW
P4 TCI FOR SAFETY SOFTWARE
P4 DP IO STATIONS

PI Network

CHIP PRICE REDUCTIONS SIGNAL ACCELERATION FOR PROFINET

News that the price of the ERTEC Ethernet Controller for PROFINET has been reduced by 40% (in volume) is the best indicator yet that PROFINET is now chasing PROFIBUS up the global networking success ladder.

ERTEC, sometimes seen as an IRT-focused device for high end Motion Control applications, is actually an all-purpose chip for any PROFINET application. It has conventional 'store and forward' capability as well as the 'cut through' needed for IRT, and it also has enough processing power to include the PROFINET stack, and a modest application too.

This flexibility, plus the price drop, is turning ERTEC into a highly competitive option for almost any type of end device, not just high end drives and Motion Controllers. Embedding ERTEC means one product type can meet a variety of applications across the real-time spectrum so in many cases the development of multiple product types will no longer be necessary.

ERTEC is available in a 2-port version with the Ethernet PHY, and a 4-port PCI board-based version intended for motion controllers. Embedding a 2-port version in an end device means that devices can be daisy-chained together instead of being 'star connected' like most Industrial Ethernet devices. This removes the need for external switches and restores the 'single-cable' benefits of fieldbus. Both factors make a PROFINET network easier, simpler, faster and cheaper to install and operate than any other Industrial Ethernet solution. In time more than 90% of external network switches may be eliminated, believes PI. A side-effect will be that counting installed Ethernet nodes will require a different strategy.

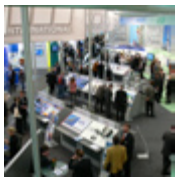
In this issue you'll find an increasing amount of PROFINET news. You'll also find widening availability of PROFINET-enabling technologies from multiple sources. Siemens, Softing and Hilscher are just three companies offering PROFINET development hardware and software. The PIC in North America and ComDec in Europe can provide development help.

A result of all this is that PI sees the use of PROFINET accelerating in coming months.

PNO BACKS WIRELESS INITIATIVE

The Profibus Nutzerorganisation e.V. (PNO) in Germany is one of three leading automation organizations supporting a 'Wireless Cooperation Team' collaborating on wireless technology for the manufacturing and process industries. The Fieldbus Foundation (FF), HART Communication Foundation (HCF) and PNO are working together in the interest of establishing a common, open standard. The aim is to agree a common interface to a wireless gateway based on WirelessHART and the emerging ISA SP 100.11a standard. Compatibility with existing wired technologies is seen as a key part of the initiative.

SPS/IPC/DRIVES 2007



Hall 6, Booth 210!
At this year's SPS/IPC/DRIVES (November 27 to 29, 2007 in Nuremberg), on a booth of about 260 square metres, PI plus more than 50 member companies will demonstrate the power and breadth of PROFIBUS and PROFINET solutions. The theme - 'PROFIBUS - Easy to Use' - emphasises the market leadership of PROFIBUS. A PROFINET presentation of over 100 products from more than 20 companies will demonstrate the continuing growth of PI's important Industrial Ethernet technology.

PROFINET COOPERATION

ABB Automation and Phoenix Contact have agreed to work together on PROFINET for the process industries. Phoenix Contact-subsidiary KW Software will take lead role for the technical integration of PROFINET technology into ABB field devices.

The common objective is to strengthen and to develop PROFINET as a global industrial standard within Process Automation (ABB) and Factory Automation (Phoenix Contact).

Peter Wendt, chief R&D officer Control Products of ABB Automation said: "With Phoenix Contact as a partner we expect excellent opportunities to meet even better the current and future customer requirements of intelligent field devices".

PI News

PROFIBUS PA BOOK NOW IN CHINESE AND JAPANESE

The PROFIBUS PA book written by Christian Diedrich and Thomas Bangemann is now available in Chinese and Japanese. A Thai version will be published soon.

This book is a must for all who need in-depth information about PROFIBUS in the process industries. It is just as useful for developers of PA devices as for planners, end users or maintenance staff.

The new books can be ordered directly from these RPAs (**see back page**). The German and English versions can be ordered from the German Oldenbourg Verlag. **More here.**

PROFIsafe AND TCI WORKSHOPS

PNO invited users, designers and system integrators to a PROFIsafe user workshop in Linz / Austria.

The workshop (October 23, 2007) provided up-to-date technical information about PROFIsafe, plant design according to IEC 62061, diagnostics with PROFIsafe, and gave an overview on responsibilities and legal regulations.

Two days later, TCI users joined PNO's workshop in Stuttgart. This workshop focused on presentations

from the user's view point, including the possibilities and benefits of TCI for the user. The use of field devices with TCI and the Engineering Tool was demonstrated, illustrated by examples from real plants and a live-demo. Participation in both was free.

NEW WORKING GROUP FOR TRAINING

PI has set up a Training Working Group, to coordinate PITC (PI Training Centers) activities. The Group has set up rules concerning how a PITC is accredited and has defined a 'Quality of Services Agreement' as well as common exams.

Today, the following certified courses are offered:

> Certified PROFIBUS Engineer
> Certified PROFIBUS Installer
> Certified PA Engineer / PA Module
> Certified PROFINET Engineer
> Certified PROFINET Installer

Engineers and installers who pass the exam get a certificate and are listed on the **PI website**.

CERTIFIED TRAINING

Ten PITCs have been accredited:

> Phoenix Contact, Blomberg, Germany
> Siemens AG, Mannheim, Germany
> University of Limerick, Ireland
> INN Tec (C.S.M.T.), Italy
> PROCENTEC, Netherlands
> IDX, Sandton, South Africa
> Berne University, Switzerland
> E+H, Reinach, Switzerland
> PIC, Johnson City, USA
> Manchester Metropolitan University, UK

TO FIND OUT MORE ABOUT PROFIsafe browse **www.profisafe.net**

PI AND PICCs MEET IN BEIJING

PI's worldwide marketing strategy was one of the major topics of this year's PI Meeting. "Strategize globally – act locally" was the message. In fact PI has been following this rule in all international activities since the start - a major reason why the PROFIBUS and PROFINET technologies have been so successful. Part of this is due to the Regional PI Associations (RPA), which represent PROFIBUS and PROFINET in individual countries. The RPAs met in Beijing to participate in the 19th PI Meeting. The meeting agreed on the global marketing strategy and defined measures how to implement and achieve common goals.

All goals and activities are based on the requirements and interests of PI's member companies. Members can participate in projects like international roadshows or "Meet the Experts" events, and

they do so with great success. PI's international Website offers members the possibility to present their products and services, publish seminar data or banner advertising. Further activities include international and regional PR campaigns, newsletters like PROFINEWS, publication of technical and marketing literature, and many more. All activities have a common goal: to support PI's more than 1400 members in promoting the PROFIBUS and PROFINET technologies.

There's no doubting the worldwide success of PROFIBUS with an estimated sales value of $50 BILLION, and PROFINET, PI's Industrial Ethernet solution, is destined to follow.

Edgar Küster, PI Chairman, predicted uninterrupted growth: "We are continuing to attend to the constant growth of the world's most accepted fieldbus system. At the same time, we are smoothing the path for a simple changeover to PROFINET. With the simultaneous availability of PROFIBUS and PROFINET solutions, the customer can freely decide when the right point for him to change over has come."

PI News

PI=WORLDWIDE SUPPORT

25 Regional PI Associations (RPA) offer worldwide support. The RPAs are backed by more than 35 PI Competence Centers (PICC) in technical matters and by newly-installed PI Training Centers (PITC) who offer certified seminars for PROFIBUS and PROFINET. Certification tests for PROFIBUS and PROFINET devices are offered by 10 PI Test Labs (PITL).

PROFIBUS AND PROFINET IN CHINA

CPO (Chinese PROFIBUS Organisation) representing PROFIBUS and PROFINET in China is celebrating its 10th anniversary this year. CPO has been very successful in promoting PROFIBUS and PROFINET in China. An important step was the standardization of PROFIBUS and PROFINET as Chinese GB/T and GB/Z standards, achieved last year.

Jiyang Tang, Chairman of CPO

Today, the CPO counts more than 150 members in China. Jiyang Tang (pictured) has been the chairman of the CPO since end of 2006. He has re-organized the CPO and established Working Groups for Chinese members dealing with technology, standardization and marketing topics.

CPO also organizes roadshows and seminars to inform Chinese markets about PROFIBUS and PROFINET technology. Two PI Competence Centers, the CPCC and the newly founded ITEI, both in Beijing, support CPO in all technical matters. Development and certification of devices in China are supported by a PI Test Lab in Beijing, where more than 25 devices have been tested since its accreditation. A second PI Test Lab was accredited in October 2007 at ITEI in Beijing.

CZECH COMPETENCE CENTER

ANF DATA, a member of Siemens IT Solutions and Services, founded its PROFINET integration testing laboratory in 2004. Since then it has focused on PROFINET and in 2005 became an accredited PROFINET Competence Center. Now, due to extensive expertise in Isochronous Real Time communication it has gained accreditation as a PROFINET Certification Laboratory for Isochronous Real-Time (IRT) and PROFIdrive.

ANF DATA has provided PROFINET services for customers around the world and since 2004 has helped many companies bring their own PROFINET products to the market. Today, ANF DATA has evolved into a one stop supplier for PROFINET, providing consulting, training, software development, testing and certification services. ANF DATA provides specialist know-how for Isochronous Motion Control and PROFIdrive applications based on PROFINET. **ANF DATA**: +420 24 1010 611 or profinet@anfdata.cz

SWISS TRAINING

The PICC and PITC at the Bern University of Science in Burgdorf held their 4th Training Workshop for Certified PROFINET IO Network Engineers in August. About 90 % of the 44 participants passed the exam at the first attempt. This training session was enhanced with additional practical exercises by the addition of automatic topology detection and network management. The duration was also extended to 3 days. The next Workshop will start in September. **More here**.

World News

UK

PROFIBUS UK has issued a Call for Papers for its annual PROFIBUS & PROFINET User Conference to be held at Stratford Manor, Stratford upon Avon, June 24 & 25 2008. The focus in 2008 will stay on the User community. Thus, the conference will concentrate on issues such as implementation, maintenance and management of PROFIBUS and PROFINET systems. In addition, it will cover latest developments in PROFIBUS and PROFINET technology for factory and process automation. The event will be supported by an exhibition of the latest products, and technology demonstrations from the UK PROFIBUS Competence Centre. **More here**.

USA

Road show activity continues apace, with very effective results. A number of PROFINET and Ethernet webinars have been organized in conjunction with the PIC, attracting several hundred participants, and plans are afoot to expand these into the process automation arena. PTO webinar recordings are archived on the **PTO web site** and are attracting considerable ongoing interest, adding further value to the campaign.

CERTIFIED PROFINET ENGINEERS FOR PHOENIX CONTACT

The first Certified PROFINET Engineers have been qualified by the PHOENIX PITC. Six participants had been asked by their customers to attend the seminar and all successfully completed the theoretical and practical tests. Their new knowledge will be immediately applied to projects in the areas of testing technology and automation.

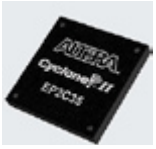
Certified Engineer status is 'value added' to the employee's personal qualifications. The names of all certified participants are listed on the PI website and it's worth remembering that the services of a certified engineer ensure reliability when selecting a PROFINET supplier.

NEW PROFINET TEST LAB

Phoenix Contact, has become accredited as a PI Test Lab for PROFINET devices. This is the fifth PI Test Lab for PROFINET devices where tests for the mandatory certification of PROFINET devices can be carried out.

New Products

FPGA PROFINET



Altera Corporation has announced FPGA-based support for PROFINET on its low-cost Cyclone series FPGAs, enabling the deployment of single board PROFINET solutions. The FPGA's design flexibility allows the support of multiple protocols in a single product. "Altera is the only company bringing low-cost FPGA solutions to the industrial market", said Michael Samuelian, director of Altera's industrial business unit. To support Cyclone-based designs, IXXAT, one of Altera's IP partners, is offering a development kit consisting of a reference design and evaluation board, schematics and executables, a protocol stack, MAC, TCP/IP stack, interface application and a host API in source code. **ALTERA CORPORATION.**

PROFINET STACK FOR FPGA

Softing has announced an optimized PROFINET IO stack for Altera Cyclone series FPGAs. The stack supports the eCOS RTOS for Altera's Nios® II embedded processor. Softing's 'Access Kit', a unified RT Ethernet API (in source code), is an efficient protocol abstraction layer that offers a single application interface for all protocols, helping to speed-up device integration. Softing's RT Ethernet stacks also offer support for the switch-core of the FPGAs, enabling devices to 'daisy-chain', thereby reducing the number of switches and hubs needed. Softing can provide engineering services for the entire product development cycle too. **SOFTING.**

PROFINET IO DEV. KIT

Woodhead Industries has launched the BradCommunications PROFINET IO Development Kit, which allows manufacturers to develop PROFINET IO controller products such as PLCs, couplers, PC-based interface cards, panel PC and robot controllers etc. more quickly. The Development Kit supports any hardware platform (Intel, ARM, PowerPC) and is compatible with operating systems including Windows®, VxWorks, or LinuxRT. The kit package includes library files, electronic documentation and samples of implementation in various OS. Woodhead Industries also provides a Windows-based PROFINET software Console to generate configuration files in order to initialize the IO Controller Stack. The Console can be customized and includes features to quickly setup and define IO devices. A network detection mechanism builds a network topology based on the integrated GSD device library. **WOODHEAD INDUSTRIES:** eric.gory@molex.com.

PROFINET SWITCHES

Rail and MICE series switches from Hirschmann Automation and Control have been certified by PI. The certifications include the Fast Ethernet series RS 20/30/40 as well as MS 20 and MS 30 with the Enhanced and Professional software versions. This guarantees that these switches support the PROFINET standard and can be totally integrated into applications. **HIRSCHMANN AUTOMATION AND CONTROL:** +49 7127-14-1872

INTERBUS PROXIES

Phoenix Contact is now offering two more Interbus proxies for PROFINET, with copper and fiber optic technology. They combine a four-port switch based on the ERTEC400 chip with an Interbus master. The switch can be used to implement various topologies. For example, it can implement the uplink to a higher-level control system or be connected in a linear structure in distributed applications in the field. Seamless access to Interbus devices via PROFINET is delivered so data exchange, diagnostics, and parameterization are carried out via the PROFINET protocol. The device can therefore be integrated into any control system with PROFINET functions and parameterized with the relevant programming tool. A PROFIBUS proxy with four-port switch is under development. **PHOENIX CONTACT**: eweppen@phoenixcontact.com or +49 52 35 3-41713.

ULTRA TOOL

A "giant leap forward" for PROFIBUS is claimed for ProfiTrace II and ProfiCore Ultra tools, which allow oscilloscope, busmonitoring and master activities to be carried out simultaneously via a USB connection. Technicians can now check and troubleshoot PROFIBUS networks with one software package and one piece of hardware. This results in an enormous reduction in equipment, weight, costs and training. The USB hardware (ProfiCore Ultra) is internally equipped with a high speed oscilloscope and able to capture bus signals running at 12 Mbps. **PROCENTEC**: info@procentec.com

REMOTE IO

The cRIO PB module features cyclic DP-V0 Master class 1 services for the fast exchange of I/O data as well as acyclic DP-V1 Master class 2 services for configuration and diagnosis purposes. The module additionally supports DP Slave mode for the integration in existing PROFIBUS DP networks, e.g. in combination with a PLC. A direct LabVIEW™ VI interface for a seamless integration of the module and a full graphical Windows-based PROFIBUS DP configuration tool are available. Source code for DP Masters and DP Slaves are included. **COMSOFT**: +49 (0)721 9497 290 or infoicp@comsoft.de

MASS FLOW

The FlexMASSter ST98 Flow Meter Series from Fluid Components International now meets PROFIBUS standards and has its own Device Type Manager (DTM) for use in large scale process and plant automation systems. The ST98 is a drop-in network replacement instrument for any similar PROFIBUS flow meter, and provides process flow and totalized flow data in minutes. FCI offers both single instrument and enterprise level DTM software to facilitate integration with PROFIBUS. **FCI**: +1 760 744 6950 or brownr@rbmarketing.com

TCI FOR SAFETY SOFTWARE

With the implementation of a TCI interface, Leuze lumiflex supports the integration of diagnostics and parameterization software for its RS4soft package for the ROTOSCAN RS4/PROFIsafe safety laser scanner and SafetyLab for the COMPACTplus/ PROFIsafe safety light curtain. This significantly simplifies access, says Leuze. The Leuze TCI tool also enables the diagnosis and management of the devices via the field bus as a standalone application. In addition to the local PC interface, standardized access via the bus is provided without necessarily having to use an engineering system. **LEUZE LUMIFLEX**: +49 (0)8141 5350 123 or matthias.may@leuze.de

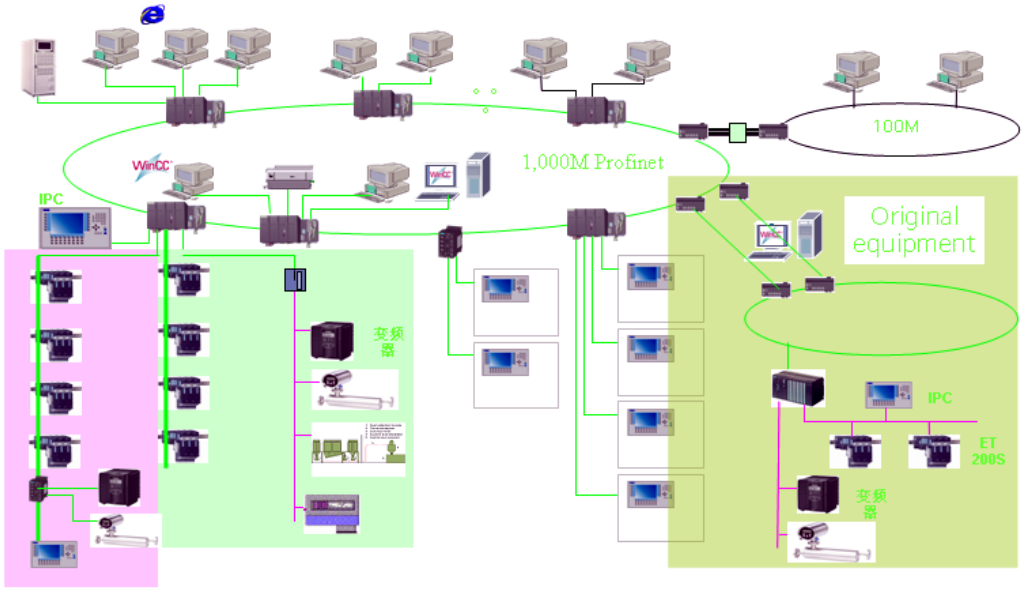
DP IO STATIONS

TURCK Inc has added FDP20 I/O stations to its line of PROFIBUS DP I/O stations. This is 'superb' says Turck for automotive, pharmaceutical, chemical and material handling industries where I/O needs to be integrated onto PROFIBUS DP networks. FDP20 stations are available in three versions: 16 inputs, 16 input/outputs, and 8 input and 8 input/outputs. In addition to providing IP 20 protection, FDP20 stations are ideal for integrating I/O in existing panels onto PROFIBUS. A 9-pin female D-connector provides connection to PROFIBUS DP, and all power is derived from a separate power source. **TURCK USA**: 1 800 544 7769 or turckusa@turck.com.

MORE PRODUCTS ON-LINE

Our **On-line Product Guide** now has over 2500 product entries. Search on keywords, text or profile.

Applications



CHINA/ TOBACCO: Founded in 1939, the Xuzhou Tobacco Factory, located in the eastern province of Jiangsu, is one of the largest tobacco factories in China with fixed assets of 1.7 billion RMB (around $125M) and an annual production yield of 0.5 million cartons of cigarettes.

The cigarette manufacturer was interested in implementing an innovative automation solution that would offer the flexibility to produce a larger number of product variants. In addition, customer system requirements called for easy traceability of production processes and an overall reduction of production costs.

Siemens provided a PROFINET-based solution which included 10 SIMATIC S7-400 CPUs with SIMATIC NET CP 443-1 Advanced Ethernet communication processors and over 60 SIMATIC ET 200S stations with integrated PROFINET interfaces.

WinCC HMI stations with SIMATIC Panel PCs and CP 1616 were also installed. SCALANCE X-400 industrial switches form the backbone of the network. Using PROFINET CBA (Component Based Automation) whereby modules of automation not only provided fast engineering but also the necessary production flexibility.

By shortening production duration and requirements, the new solution resulted in substantial cost reductions.

The increased system flexibility offered by the modularity of the PROFINET CBA solution made faster production adaptation to market requirements possible.

Moreover, the system now enables real-time recording of all aspects of the production processes.

CHINA/ DVD PRODUCTION: Founded in 2000, ANWELL Technologies headquartered in Hong Kong is a global supplier of advanced optical media equipment and process technologies.

The company offers customers in the DVDR and CD-R replication industries a variety of integrated manufacturing solutions, including replication lines for a wide range of formats. Customers' requirements called for a flexible, scalable and future-oriented system solution that employees simple, intelligent and compact equipment capable of delivering CDs at cycle times of three seconds, or about 1,200 discs per hour.

To maximise production stability, ANWELL chose to go with a solution based on PROFINET CBA. SIMATIC 317-2 PN/ DP CPUs are utilized with integrated PROFINET interfaces To communicate between the intelligent field devices distributed across the plant. The modular design architecture greatly simplifies the network topology.

PROFINET CBA offers ANWELL extensive advantages, including improved DVDR / CD manufacturing system efficiency, increased flexibility and accelerated system adaptation. The easy linking of pre-tested CBA modules also provides time savings during commissioning.

Applications

UK/ ENGINE ASSEMBLY:
Cummins, the world's largest independent manufacturer of diesel engines, builds over 62,000 engines for customers in Europe, Middle East, Africa and the Far East in 2006, and employs 1,000 people. There are more than 2,000 possible engine variants and Cummins recently decided to upgrade a large part of their assembly and pressure test process.

Engines had previously been transported through the manufacturing process by a combination of overhead chain conveyor, powered floor conveyor and an AGV system. This was all replaced by an EMS (Electric Monorail System) during a two week shutdown in 2006.

The EMS comprises 600 metres of overhead monorail, 50 carriers, 14 switchpoints, 3 lift units, 1 rotate unit, 34 assembly stations and 4 pressure test stations. There are a number of PROFIBUS DP networks in the system, providing communication to RFID devices, HMI operator panels, maintenance touch panels, LJU carrier controllers and distributed I/O. These networks are also used to interface between the S7-317DP PLC's which control the system.

All fifty carriers have a Moby data tag attached. This stores an engine's build attributes and determines its route through the system.

At each of the assembly and test stations there is a Moby SLG read/write device which communicates the engine data and operational status back to one of the S7-317DP PLC's controlling the system.

There are three production pressure test lanes and one repair test lane. Each carrier has an onboard LJU controller which constantly reads an encoded rail to determine its position in the system. Status and Command words are received and sent to each carrier from the S7-317DP PLC again via PROFIBUS DP.

There are six colour touch panel HMI's on the line, used for pressure test control and display and for maintenance functions such as alarms and manual functions. At every assembly station an OP77A HMI panel allows the operator to raise and lower the engine to a suitable working position, to offload engines to the floor, to reload engines into the system and to release an engine to the next station when work is complete. When engines are offloaded or reloaded the RFID tag is updated to reflect its new status. The OP77A was chosen because of its PROFIBUS connectivity and also because of it's alphanumeric keypad, which is used to enter engine serial numbers.

The rotate unit accepts engines from one of two input lanes and delivers them to one of two pressure test lanes.

In the year since the system was installed, production rates have increased from 220 engines per day to 350 engines per day.

The system was designed and built by Cleveland Systems Engineering Limited in co-operation with Trackfit Engineering Services, who designed and installed the supporting steelwork and mechanical elements.

CLEVELAND SYSTEMS ENGINEERING: 01325 485098 or sales@cleveland-system.com

PI Network

Australia - *Mr. John Immelman*
Tel: +61 3 9761 5599; Fax: +61 3 9761 5525
Email: australia@profibus.com
www.aus.profibus.com

Belgium - *Mr. Herman Looghe*
Tel: +32 2 706 80 00; Fax: +32 2 706 80 09
Email: belgium@profibus.com
www.be.profibus.com

Brazil - *Mr. Cesar Cassiolato*
Tel: +55 16 3946 3519; Fax: +55 16 3946 3595
Email: brazil@profibus.com
www.br.profibus.com

China - *Mrs. Wang Jun*
Tel.: +86 10 62 02 92 18; Fax: +86 10 62 01 78 73
Email: china@profibus.com
www.cn.profibus.com

Czech Republic - *Mr. Zdenek Hanzalek*
Tel.: +420 2 2435 7610; Fax: +420 2 2435 7610
Email: czechrepublic@profibus.com
www.cz.profibus.com

Denmark - *Mr. Kim Husmer*
Tel.: +45 40 78 96 36; Fax: +45 44 07 77 36
Email: denmark@profibus.com
www.dk.profibus.com

Finland - *Mr. Taisto Kaijanen*
Tel: +35 8 9 5307259; Fax: +35 8 9 5307360
Email: finland@profibus.com
www.sf.profibus.com

France - *Mrs. Christiane Bigot*
Tel: +33 1 42 83 79 13; Fax: +33 1 42 83 79 13
Email: france@profibus.com
www.fr.profibus.com

Germany - *Mr. Peter Wenzel*
Tel: +49 721 96 58590; Fax: +49 721 96 58589
Email: germany@profibus.com
www.de.profibus.com

Ireland - *Mr. Hassan Kaghazchi*
Tel: +353 61 202 107; Fax: +353 61 202 582
Email: ireland@profibus.com
www.ir.profibus.com

Italy - *Mr. Maurizio Ghizzoni*
Tel: +39 030 3384030; Fax: +39 030 396999
Email: debonbonde@libero.it
www.it.profibus.com

Japan - *Mr. Shinichi Motoyoshi*
Tel: +81 3 54 23 86 28; Fax: +81 3 54 23 87 34
Email: japan@profibus.com
www.jp.profibus.com

Korea - *Mr. Cha Young Sik*
Tel: +82 2 523 5143; Fax: +82 2 523 5149
Email: korea@profibus.com
www.rk.profibus.com

Middle East - *Mr. S C Sanu*
Tel.: +971 4 398 2760; Fax: +971 4 398 2761
Email: middle.east@profibus.com
www.profime.com

Netherlands - *Mr. Dolf van Eendenburg*
Tel: +31 33 469 0507; Fax: +31 33 461 6638
Email: netherlands@profibus.com
www.nl.profibus.com

Norway - *Mr. Ivar Sorlie*
Tel: +47 2272 8972; Fax: +47 904 05509
Email: norway@profibus.com
www.no.profibus.com

Poland - *Mr. Dariusz Germanek*
Tel: +48 32 371365; Fax: +48 32 372680
Email: poland@profibus.com
www.profibus.com

Russia - *Mrs. Olga Sinenko*
Tel: +7 095 742 68 28; Fax: +7 095 742 68 29
Email: russia@profibus.com
www.rus.profibus.com

Slovakia - *Mr. Richard Balogh*
Tel: +421 7 6029 1411, Fax: +421 2 6542 9051
Email: slovakia@profibus.com
www.sk.profibus.com

South-East Asia - *Mr. Volker Schulz*
Tel: +65 6490 6464; Fax: +65 6490 6465
Email: southeastasia@profibus.com
www.sea.profibus.com

Southern Africa - *Mr. Dieter Dilchert*
Tel: +27 11 201 3200; Fax:: +27 11 609 5950
Email: southernafrica@profibus.com
www.rsa.profibus.com

Sweden - *Mr. Peter Bengtsson*
Tel: +46 4 51 49 460; Fax: + 46 4 51 89 833
Email: sweden@profibus.com
www.se.profibus.com

Switzerland - *Ms. Karin Beyeler*
Tel: +41 32 672 03 25; Fax: +41 32 672 03 26
Email: switzerland@profibus.com
www.ch.profibus.com

UK - *Mr. Bob Squirrell*
Tel: +44 20 7871 7413; Fax: +44 870 141 7378
Email: uk@profibus.com
www.uk.profibus.com

USA & CANADA - *Mr. Michael Bryant*
Tel: +1 480 483 2456; Fax: +1 480 483 7202
Email: usa@profibus.com
www.us.profibus.com

Addresses of PI Competence Centers and Test Labs can be found at www.profibus.com and www.profinet.com

Editor: Geoff Hodgkinson
1 West St, Titchfield, Hants, UK PO14 4DH.
Tel: +44 (0) 1329 846166; Fax: +44 (0) 1329 512063
geoff@ggh.co.uk

Published by: PNO
Haid-und-Neu-Str. 7
D-76131 Karlsruhe, Germany