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It is not possible for me to miss an opportunity to comment on the Intel International Science and Engineering Fair (Intel ISEF) that I recently had the privilege of attending. More than 1 700 finalists from 78 countries, regions and territories competed; 2 000 judges and volunteers joined the event. I had the pleasure of serving as a volunteer in my capacity as a Grand Award judge.

The Intel ISEF was convened in Pittsburgh, and is essentially for school students to display their skills in a competitive environment. There are 18 categories and the competition is fierce. Eleven students from South Africa participated – bringing home six awards! Three of these were Special Awards (where organisations provide their own judges and are looking for something quite specific); and three were Grand Awards – judged on merit.

Of the three Grand Awards, two were for third places in category, and one was for a second place in category. By all accounts, this is an outstanding achievement by the South African team.

There are two important reasons for this to be relevant to Electricity+Control readers and advertisers. Firstly, the event speaks to the international future of Science, Technology, Engineering, and Mathematics (STEM). These form the basis necessary for any economy to lift itself to the next level.

The future of technical fields, to a large extent, relies heavily on what we see happening amongst the youth of the world.

Secondly, the Eskom Expo for Young Scientists in South Africa is affiliated to the event. The Eskom Expo allows us to bench-mark the top end of South African school-level STEM, and it represents a profoundly important contribution that the much-maligned Eskom continues to make to this country.

This contribution to STEM education is critical; and whereas I must immediately declare my personal interest in the Eskom Expo for Young Scientists, I think no one could be critical of this major contribution that Eskom makes to education.

What we can see clearly is that, at the top end, South Africa is world class. However, there is a problem. The biggest-ever global school rankings have just been published by the Organisation for Economic Cooperation and Development (OECD).

The analysis was based on test scores in Mathematics and Science. Of the 76 countries assessed, South Africa (again) came out second from the bottom.

This is appalling and tragic. Even sadder is that only one country assessed ranked below South Africa, and that is Ghana – also on our continent.

So why is competing in a Science Expo so important?

It is generally agreed that knowledge on its own does not make competence. What makes competence is applying knowledge in new settings. In effect, this is what builds up understanding.

'Understanding' happens when you allow students to explore and apply their knowledge, make mistakes, and experience the theory in practice. Participation in a Science Expo, where students work on their own (with support) is an essential (and largely missing) ingredient of a successful education system.

If you are not already involved in the Eskom Expo for Young Scientists, or if your youngster's school is not involved, please make an effort to learn more about it.

It is one of very few programmes that I honestly believe is addressing the challenging situation in which we find ourselves as a country.



Ian

Ian Jandrell

Pr Eng,
BSc (Eng) GDE PhD,
FSAIIE SMIEE

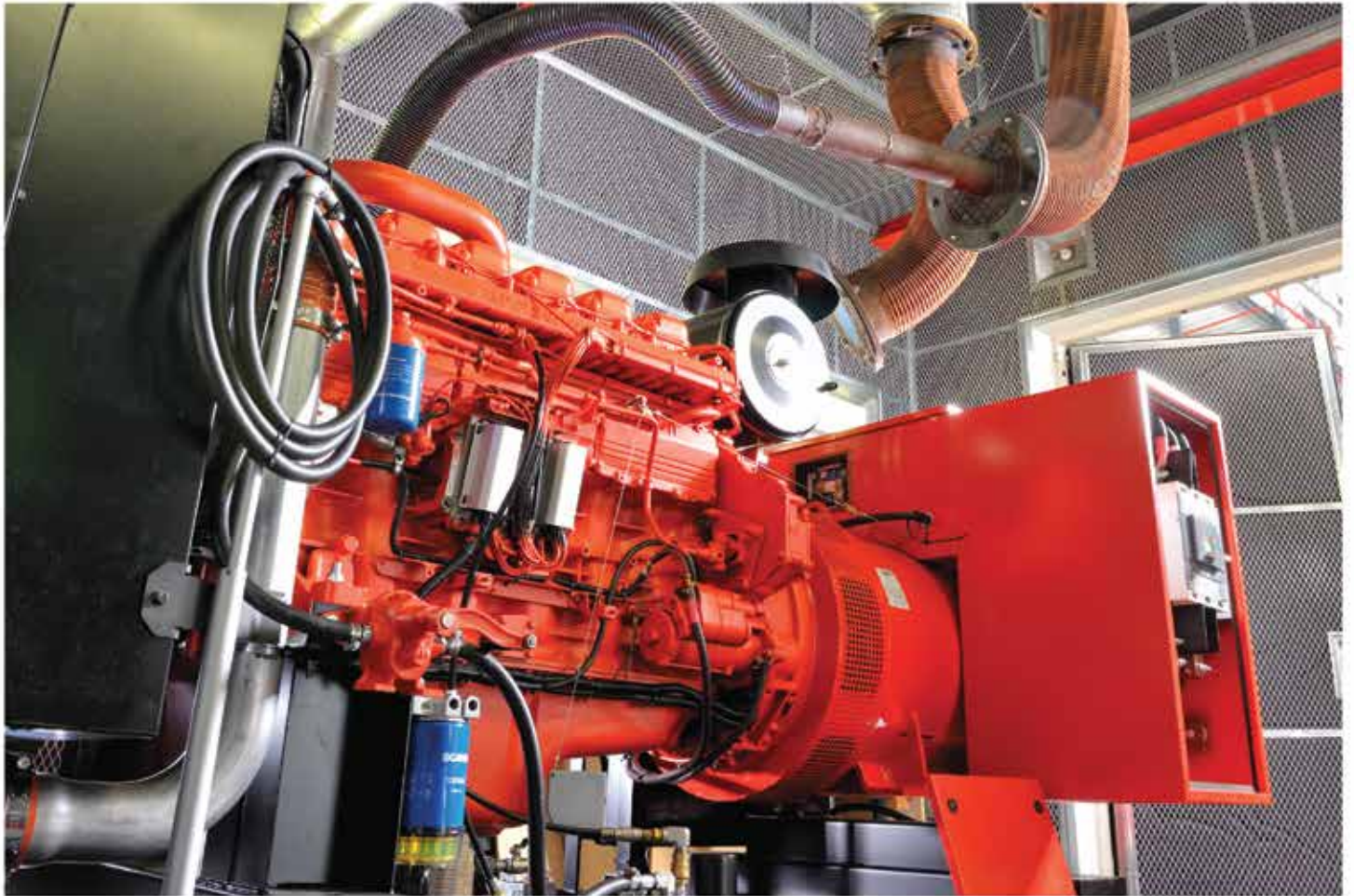


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Scientific automation in wind turbines

By P Dresselhaus, Beckhoff Automation

The degree of automation in wind turbines is increasing continuously. In addition to the actual system control, monitoring and networking play increasingly important roles. Many control suppliers that offer conventional controllers are reaching their performance limits. The solution lies in an automation system that is essentially based on a scientific approach and integrates the required measuring equipment in a standard control architecture.

Scientific Automation from Beckhoff represents a combination of high performance Industrial or Embedded PCs, the highly deterministic EtherCAT fieldbus system and intelligent software. These components are also required for automating modern wind turbines. Wind turbine manufacturers want to use the same system for control tasks, monitoring, grid synchronisation and system-wide communication. Just thinking of the complex Condition Monitoring algorithms which are to be processed on the controller, it becomes clear that it makes sense to use multi-core CPUs. With the new CX2000 series from Beckhoff, such powerful CPUs are now available in the Embedded PC format preferred by wind turbine manufacturers. The CX2000 devices are equipped with Sandy Bridge processors from Intel. In addition to economical Sandy Bridge Celeron types, Intel Core i7 processors are available. Even the CX2030, which is equipped with a 1,5 GHz processor (dual-core), is fanless and therefore exceptionally stable because it has no rotating components.

Suitable software must be used to take full advantage of this enhanced performance. This is where TwinCAT 3 control software from Beckhoff comes in. The real-time environment of TwinCAT 3 is designed to enable almost any number of PLCs, safety PLCs and C++ tasks to be executed on the same or on different CPU cores.

Condition monitoring library for TwinCAT 3

The new TwinCAT 3 Condition Monitoring library facilitates the utilisation of these options. Raw data can be logged with a fast task and processed further with a somewhat slower task. This permits measured data to be logged continuously and analysed with algorithms such as power spectrum, kurtosis, crest factor and envelope spectrum. The user does not have to worry about task-spanning communication, which is automatically handled by the Condition Monitoring library. The results from the individual function blocks in the library are stored in a global transfer tray, a kind of memory table. From there the results can be copied to variables or processed further with the aid of other algorithms. In this way users can configure their own individual measuring and analysis chains. Particularly in the wind industry, such developments must be tested and simulated



- CPU – Central Processing Unit
- IEPE – Integrated Electronics Piezo-Electric
- PC – Personal Computer
- PLC – Programmable Logic Controller

Abbreviations/Acronyms



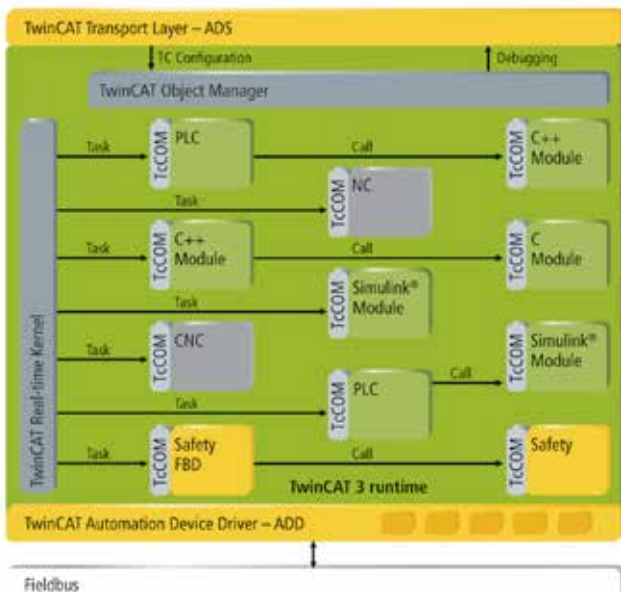
extensively because once a wind turbine has been commissioned, modifications and updates in the field would be time-consuming and expensive. In order to save time and development costs, a Matlab/Simulink simulation of the system can be tested against the original control program code in real-time, for example. In this way many problems can be detected and rectified before commissioning.

No Beckhoff-specific components or other modifications of the original model are required for creating Matlab/Simulink modules for the TwinCAT 3 runtime environment. The Matlab and Simulink coders generate C++ code, which is then compiled into a TwinCAT 3 module. Modules can be re-used easily through instantiation. The block diagram from Simulink can be visualised directly in TwinCAT for setting break points, for example.

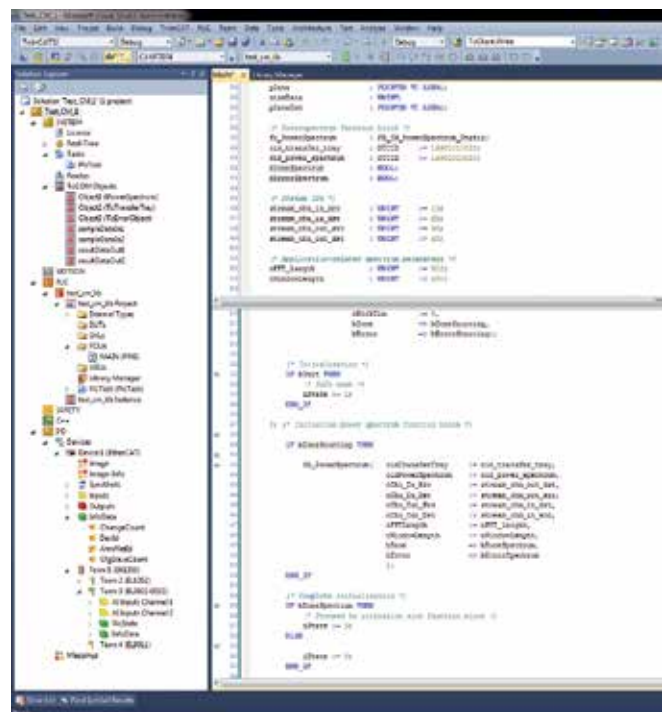
In addition to TwinCAT 3 and the auxiliary Condition Monitoring and Matlab/Simulink integration packages, TwinCAT Scope enables visualisation of all relevant signals of a scientific automation soft-

ware. The TwinCAT Scope consists of two components. The View component is used for displaying signals in the form of charts. The Server component records the data on the target device. A TwinCAT 3 installation always includes a basic version of Scope.

This is particularly suitable for commissioning of systems. The Scope provides the user with a quick graphic overview of the machine state. Different cursors enable precise reading of the measured data, even in the μ s range.

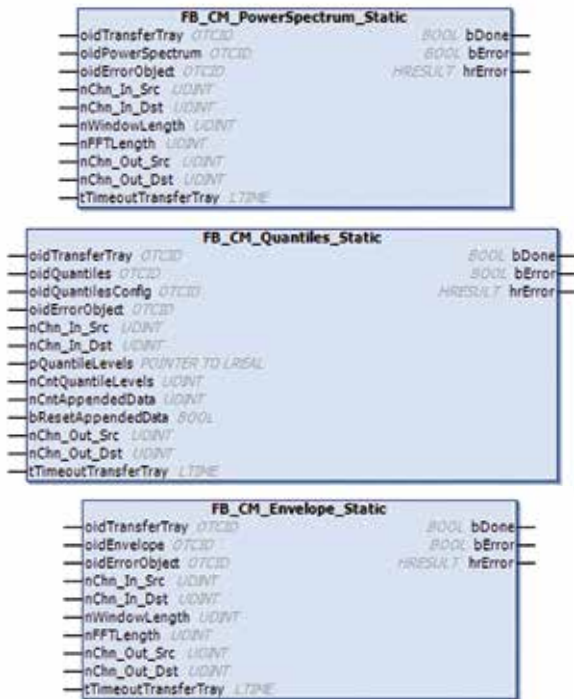


The compiled TwinCAT 3 modules can call each other during runtime, irrespective of the programming language.



Calling up the power spectrum function block in TwinCAT 3.

For large value ranges it makes sense to switch to a logarithmic display. The Scope product level enables additional functions such as long-term recording or integrability in custom .NET visualisations. All Scope product levels permit visualisation of oversampling values from EtherCAT measuring terminals.

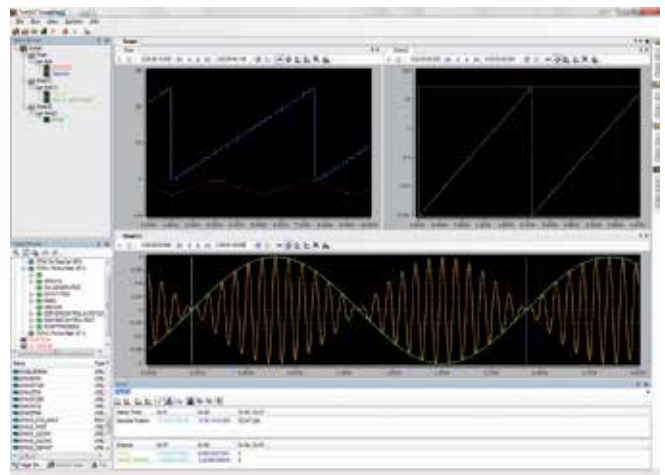


The TwinCAT Condition Monitoring library offers different function blocks for signal analysis.

High-precision measuring technology

EtherCAT as a fast, real-time capable bus system rounds off the scientific automation solution from Beckhoff. EtherCAT has not only become established as a control fieldbus, but also as a measurement fieldbus. Only this Ethernet-based, highly deterministic and fast fieldbus protocol enables complex applications, such as the integration of Condition Monitoring, to be realised. The functional principle of EtherCAT delivers usable data rates far in excess of 90 % with full-duplex fast Ethernet and bus cycle times of a few microseconds. In conjunction with the oversampling function and buffering of values directly in the EtherCAT slave, the sampling rates can be increased far beyond the actual bus cycle. The EL1262 digital input terminals, for example, can scan signals with up to one million samples per second. The EL3702 EtherCAT Terminal samples analogue signals of ± 10 V with 16 bit resolution and up to 100 kHz. Distributed clocks in EtherCAT slaves ensure time-synchronised data sampling across the network. The jitter is significantly less than one microsecond, usually even less than one hundred nanoseconds. The EL3632 is also an EtherCAT oversampling terminal. This terminal is suitable for Condition Monitoring applications, in which oscillations must be sampled via acceleration sensors or microphones. Piezo sensors with IEPE interface (Integrated Electronics Piezo-Electric) can be connected directly to the two-channel terminal without a pre-amplifier.

- The degree of automation in wind turbines is increasing.
- Wind turbine manufacturers want to use the same system for control tasks, monitoring, grid synchronisation and system-wide communication.
- Scientific automation enables the integration of engineering findings in the automation of wind turbines beyond the scope of conventional controllers.



Logarithmic signal analysis display with TwinCAT Scope.

Owing to different hardware filter stages, signal sampling frequencies between 0,05 Hz and 50 kHz are possible. The same principle of operation as in the EL3632 is used in the EL3773. The EL3773 is a power monitoring terminal that samples raw grid data, as opposed to raw oscillation data. Current and voltage can be sampled with up to 10 kHz, which makes the terminal suitable for synchronisation with other networks. The main advantage of these 12 mm wide modules is their high degree of flexibility. EtherCAT bus systems offer virtually unlimited expansion capabilities. This means that measuring applications, such as gear unit monitoring, can be implemented in new systems or retrofitted in existing systems. Thanks to the compact size of the controller and the wide range of open TwinCAT interfaces, stand-alone systems are becoming increasingly popular. Such stand-alone systems are currently retrofitted in some onshore turbines for monitoring the main bearing and the gear unit based on a CX5020 Embedded PC. To this end a terminal box is equipped with five EL3632 oversampling terminals and an EL3413 power measurement terminal. UMTS modems and compact heaters can be integrated as additional options. Depending on the available interface, the monitoring system can be integrated with the existing controller.

Thanks to the compact size of the controller and the wide range of open TwinCAT interfaces, standalone systems are becoming increasingly popular.

Conclusion

Scientific automation enables the integration of engineering findings in the automation of wind turbines beyond the scope of conventional controllers. The power of the PC control philosophy offers sufficient capacity to integrate numerous advanced functions beyond standard control. High-performance CPUs, fast I/O terminals, EtherCAT communication and TwinCAT software provide the basic technologies required for this purpose.

Pascal Dresselhaus is a TwinCAT product manager at Beckhoff Automation in Germany. (Photographs courtesy Beckhoff Automation).
Enquiries: Email KMCPerson@beckhoff.com

Collaboration creates single platform for electrical engineering solutions

Schneider Electric, the global specialist in energy management and automation, has stated that Eplan is its major E-CAD solutions provider to design the products of its energy division on a global scale. Eplan Platform enables Schneider Electric to optimise its complete workflow from design to production. The solution helps to structure and to centralise the components' database and facilitate knowledge management. All the know-how is embedded, up-to-date and available for each entity. With Eplan Platform, Schneider Electric plans to significantly increase productivity by standardising all the components and reusing them.

"For a long time, each entity of Schneider Electric's Energy Division across the world has worked with its own tools and implemented

specific design processes, explains M Frédéric Abbal, Executive Vice-President, Energy division at Schneider Electric. With the implementation of Eplan Platform, Schneider Electric expects to centralise its know-how, enhance collaboration between sites and balance workload according to the different projects."

Haluk Menderes, Managing Director Eplan, adds: "The combination of our 30 years of experience in engineering solutions and the know-how of one of the worldwide largest player in the energy domain will bring the best in class processes and a greater electrical engineering and manufacturing efficiency to Schneider Electric."

Enquiries: Ntombi Mhangwani. Tel. 011 254 6400 or email ntombi.mhangwani@schneider-electric.com

New controllers for heat-process industry

Yokogawa Electric Corporation has released a number of new UTAdvanced series controllers including four DIN rail 1 mounting type controllers and one 1/8DIN panel type program controller. This is part of Yokogawa's ongoing effort to expand its controller business by satisfying market needs and giving customers a greater range of choices.

UTAdvanced series controllers are mounted on furnaces and other types of heat process-related industrial facilities for the measurement, display, and control of operating variables such as temperature, pressure, and flow rate. In recent years, it has become more common for equipment manufacturers to integrate the setting, manipulation, and display functions of programmable logic controllers (PLC) and other embedded control devices on touch panels and other types

of user interfaces, and to mount the hardware on DIN rails inside panel boxes. There is an increasing need for such DIN rail mounting type controllers.

The UTAdvanced series controllers come in two sizes: 1/4 DIN and 1/8 DIN. While 1/4DIN controllers are more popular because they have large display panels and provide a wider range of I/O signal choices, there are certain applications where space is at a premium that require a smaller device. For just such applications, Yokogawa has added more 1/8DIN controllers to its product line-up.

The UTAdvanced controller comes standard with a sequence control function based on the ladder logic programming language, which is widely used by engineers.

Enquiries: Tel. 011 831 6300 or email Christie.cronje@za.yokogawa.com



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Smart Grid pilot in India

AlstomT&D India has been selected to lead the smart grid pilot project by Himachal Pradesh State Electricity Board Limited (HPSEBL). This pilot project will be located at the Kala Amb industrial area of Himachal Pradesh in Northern India and will serve over 1 500 consumers. This will be the second out of fourteen projects under the Indian Ministry of Power's flagship 'Smart Grid Pilot' programme. The Kala Amb smart grid pilot project will act as a proof of concept to further strengthen the Information Technology system in place, to make the distribution grid cost-effective, responsive and better engineered for reliability and self-healing operations. Alstom will design, develop and implement an integrated set of smart grid applications targeting power quality issues, managing peak demand, power outages and limiting violations at distribution network nodes. Alstom's solution will be based on its e-terradistribution 3.0 - a fully Integrated Distribution Management

System (IDMS). The e-terradistribution 3.0 is the industry's first completely integrated and most advanced suite of SCADA, Distribution Management System (DMS), and Outage Management System (OMS) applications. Alstom will lead this project along with Genus Power Infrastructure and a few other OEM equipment suppliers. The smart

grid solution aims to enhance the monitoring and automation of two distribution substations feeding Kala Amb. It will collect data from a new installed smart metering infrastructure and grid sensors, including power transformer condition monitoring.

Enquiries:
Email aline.besselievre@alstom.com



Safety for automation systems

Failure of automation systems, and the resulting drop in production capacities, can result in enormous costs for manufacturing companies. Therefore, high availability is critical for both measuring and control systems and power supply systems. However, these systems are highly vulnerable to lightning effects and surges. With its comprehensive portfolio, DEHN offers numerous solutions for protecting automation systems. The new DEHNguard dc surge protective device safely protects dc systems against lightning effects and surges. The powerful dc switching device of this type 2 surge arrester is designed in such a way that the protective device is safely disconnected in case of overload, thus preventing dc switching arcs and fire damage. Depending on the voltage level, DEHNguard dc can be used without additional back-up fuse in case of direct currents up to 300 A. It is ideally suited for use in safety lighting systems, emergency power supply systems, dc systems for direct supply of dc drives, control circuits and any kind of battery-operated supply systems. The DEHN equipotential bonding enclosure of type DPG LSA DPG is a lockable metal enclosure for the installation of wiring and protection components. Available in four different sizes, the lightning current carrying enclosure provides terminals that allow it to integrate surge arresters and shields in the equipotential bonding system.

Enquiries: Alexis Barwise. Email alexis.barwise@dehn-africa.com



Industry's fastest machine automation controller

OMRON has introduced its new NX7 and NJ1 machine controllers. This expands the line-up of OMRON machine automation controllers which are at the heart of the Sysmac automation platform – or 'Sysmac'. The release of NX7 and NJ1 enables a wide range of automation solutions from cutting-edge, advanced production systems to simple machines.

The new NX7 is the flagship model that offers speed without compromising reliability; it provides the industry's fastest processing speed thanks to the Intel Core i7 quad-core processor which has a 125 micro second cycle time. It has a large 80 MB memory capacity. Focusing on the future of sophisticated production sites using IoT, OMRON developed this integrated controller to provide users with scalability beyond the framework of previous controllers and PLCs.

The scalability is complemented by the new NJ1 that enables the Sysmac solution to fit in existing production equipment. The NJ1 is Sysmac's entry level Machine Automation Controller with a 2-servo axes motion control model and a purely PLC model with no Motion control. The NJ1 is fully compatible with the NJ5/NJ3 Machine Automation Controllers. Sharing a common concept, dimensions, general specifications, and functions, the NJ1 is ideal for machines with or without a low number of servo axes.

With architecture that can quickly incorporate the latest information communication technology (ICT), Sysmac offers a highly innovative manufacturing environment.

Enquiries: Michelle le Roux. Tel. 011 579 2600 or email michelle.le.roux@eu.omron.com

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Answers for industry.

Data exchange for piping systems

Data exchange is needed at many points during the design, fabrication, construction and operation of piping systems and Intergraph recognises that the PCF plays an important role. Isogen is the industry's most widely used software for automated piping isometric production. The PCF format was originally developed as an easy way to drive Isogen – the syntax is simple, English language style and is not order dependent, which means it is straightforward to create from most piping design software.

This simplicity and widespread support means the PCF format has encapsulated a multitude of industry requirements to serve the needs for practical piping data exchange. In addition to its use with many piping design software applications, SmartPlant Isometrics and SmartPlant Spoolgen are innovative products powered by Isogen that address the needs of owner operators and companies providing engineering, procurement, fabrication and construction services.

David Myall, managing director of **Intergraph's** Alias subsidiary, said, "This is an important step in the process of opening up the PCF format for everyone in the industry to use. We are pleased that our users are continually bringing ideas on how to better collaborate and have now established a definitive place for people to register and download the latest PCF documentation. We look forward to continuing to work with all parties to encourage the use of the PCF for piping data exchange."

Enquiries: Jerry Felts.
Email jerry.felts@intergraph.com

Efficient solution for vehicle manufacturing facility

Bosch Rexroth recently supplied a high-end German motor vehicle manufacturer with a more efficient handling and distribution solution for the conveyance of the vehicles' interior roof trims along the production line. The solution incorporates a customised VarioFlow plus chain conveyor system to provide simplified, automated handling capabilities while optimising the facility's use of space.

Instead of being laid upon the conveyor belt, the roof interior trims, each of which weigh around six kilograms, are hung vertically from the conveyor, suspended above the floor by about three metres. To achieve this, the VarioFlow plus chain conveyor system was fitted with a longer version of the hanger, to which the carried roof interiors are attached.

The workpiece is then floated directly to the robot at the machining station, which removes the item from the conveyor for machining at the laser cutting station. Once machined, the robot collects the item and returns it to the conveyor, from where it is transported to the removal point and placed in buffer storage. The facility processes around 20 different interior roof trim styles across three vehicle model lines.

The VarioFlow modular chain conveyor system offers a high-efficiency conveyance solution for indoors material handling operations in the food and beverage, automotive, packaging, assembly, electronics and material handling industries.

The Bosch Rexroth VarioFlow chain conveyor product range is distributed through southern Africa by **Tectra Automation**, a Hytec Group company.

Enquiries: Greg Calder. Tel. 011 974 9400 or email greg.calder@tectra.co.za



Data centre efficiencies boosted by 65 %

Steel company, ArcelorMittal South Africa has improved its data-centre power usage effectiveness (PuE) by more than 65 %, following the implementation of a new, modular datacentre solution by **Datacentrix**, a provider of high performing and secure ICT solutions. The PuE measurement was carried out by Datacentrix both prior and post implementation. These enhanced power, water and cooling efficiencies are also set to save the organisation more than 20 % on operational costs over a five-year period. ArcelorMittal South Africa is the largest steel producer on the African continent, with a production capacity of 6,5 million tonnes of liquid steel per annum. ArcelorMittal South Africa's global standing is further underpinned as part of the world's largest steel producer, the ArcelorMittal Group. The company is the world's number one steel company, with 232 000 employees worldwide. According to Brian Lendrum, commercial business development manager at Datacentrix, ArcelorMittal South Africa's new modular data centre was rolled out within a record 76 days, following a year of planning and discussions. "The original data centre was more than 30 years old and needed to be upgraded

for ArcelorMittal South Africa to improve energy consumption, space utilisation and environmental conditioning efficiencies. Not only were its CRAC (Computer Room Air Conditioning) units and water cooling plants reaching end of life, but the previous data centre needed to be better arranged and systemised in order to fit into a reduced space." Furthermore, the existing data centre set-up did not include fire suppression, critical for controlling a fire without disrupting the flow of business and without threatening personnel inside the data centre. Thus, Lendrum explains, the principle driving factors in the Datacentrix data centre design submitted to ArcelorMittal South Africa included the rollout of high-density and energy efficient power and cooling technologies, saving floor space and room height, and the inclusion of fire suppression. "For these reasons, we built our business case around technology that would be fast, flexible, modular and predictable, removing unnecessary implementation complexities, massively improving cooling and power efficiencies, and saving our client money in the long term."

Enquiries: Visit www.datacentrix.co.za

Expandable compact safety controller

RET Automation Controls has introduced an expandable programmable safety controller featuring small footprint and Boolean logic for high efficiency and flexibility developed by RET's Safety Partner Banner Engineering.

The new XS26-2 Controller monitors numerous input devices including e-stop buttons, rope pulls, enabling devices, protective safety stops, interlocked guards or gates, optical sensors, two-hand controls, and safety mats.

A wide variety of options and configurations allows users to purchase only the capabilities they need, with ability to add on in the future. The base controller already offers 26 inputs and two dual safety outputs, allowing users to connect safety devices to a single controller instead of multiple relay modules.

Eight of its 26 inputs can be configured as outputs for efficient terminal utilisation. The base controller can handle up to eight optional expansion modules to monitor up to 128 I/O devices. It is appropriate for medium and large assembly machines and lines, both manual and automated.

Free software included with the controller provides an intuitive,

graphical programming environment for easy implementation. Ease of use features include real-time live display feedback and intuitive functional diagram configuration. Its compact DIN rail housing, only 45 mm wide x 110 mm tall, conserves control panel space. The controller is certified to Safety Category 4, Performance Level e.

Enquiries: RET Automation Controls.
Email brandon.topham@retautomation.com



New I/O modules include safe input

The new SafetyBridge I/O modules from **Phoenix Contact** expand the network-independent SafetyBridge system in terms of flexibility, functionality, and application areas. The new modules include a safe input module with added inputs, as well as a new logic module with extensive functional upgrades.

The logic module can now communicate with up to 16 remote safe I/O modules. Together with the input modules featuring 16 safe inputs each, a SafetyBridge island can encompass up to 256 safe inputs. Up to 31 such islands can be operated from a standard control unit. These systems are able to exchange safety signals with each other. SafetyBridge technology is therefore fully suitable to being installed in large-scale and modularly structured machines and systems. The modules and the safety logic are very easy to set up using the Safeconf software.

There are 14 different safe function modules in total, ranging from a simple Emergency Stop through to various muting blocks.

The safety solution is independent from the network and the control units, which makes it highly flexible when it comes to integrating functional safety into machines and systems. The safe modules, mixed with non-safety Inline I/Os, can be distributed across the network below a range of different standard control units.

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Cost saving solution for remote access

The **Siemens** RuggedCom RX1400 is an intelligent hardened Ethernet device that combines Ethernet switching, routing and firewall capabilities with a LTE modem (with 3G and 2G fallback) for WAN connectivity. The device is IP40 rated, does not use fans for cooling and can operate continuously within a -40 °C to +85 °C temperature range. The unit also boasts a high level of immunity to EMI (Electro-magnetic interference), electrical surges and humidity and is fully IEC61850 compliant. An integrated GPS interface allows the unit to report its geographical location for asset tracking purposes in a large deployment.

The RX1400 supports LTE and leverages LTE's enhanced QoS (Quality of Service) ca-

pabilities, whilst being able to rollback to 3G or 2G connections if required for reliability. Additionally the unit is equipped with a dual SIM card slot, allowing automatic failover between different ISPs for even further reliability and uptime. The option for up to two SFP modules allows the unit to be able to cater for a variety of physical topologies.

The RX1400 is a cost saving solution for providing remote access or WAN connections in hard to reach and remote areas, while the in-built security features make it ideal for mission critical applications, where security and reliability are of paramount importance.

Enquiries: H3iSquared Trading. Tel. 011454 6025 or email info@h3isquared.com



Automated drill improves safety and efficiency



An entirely automated nickel briquette drilling solution has been successfully developed for a South African mining operation by internationally-recognised automation

and robotics expert IMP, which worked in close collaboration with specialist drive engineering company SEW-EURODRIVE.

The new automated drill ensures greater operational safety and efficiency by allowing around-the-clock labour-free drilling of nickel briquettes, and the subsequent collection of shavings for laboratory analysis, states IMP mechanical engineer Charles Glossop.

"Safety is a major priority in the local mining sector, and the client approached us to develop a solution that would minimise any threats and hazards posed to workers during the drilling process. Another major advantage of automation is that productivity rises too," he explains.

SEW-EURODRIVE assisted IMP with the movement of the drill by supplying a servo motor. IMP electrical coordinator, Christopher Muir, adds that the company also assisted IMP in utilising the drive to replace

the programmable logic controller (PLC) for this project.

"SEW-EURODRIVE supplied the servo motor and the drive, and added great value by teaching us how to use the drive to control all the pneumatics and vibratory feeders on the machine. This saves on costs, as the project does not require a PLC to function at full efficiency," he reveals.

Glossop indicates that SEW-EURODRIVE also assisted in the programming of the new system, in addition to training the IMP programmers.

"An advantage of working with SEW-EURODRIVE is that its representatives are always willing to help and find a solution, when others are hesitant. Another major benefit is unrivalled turnaround times for parts. As a result, SEW-EURODRIVE will remain a supplier of choice for IMP in future projects," he concludes.

Enquiries: Rene Rose. Email rose@sew.co.za

Highest B-BBEE rating for a German company operating in South Africa

Siemens is now one of just two companies in its peer group to achieve Level 2 BBEE. It has the highest rating for a German company operating in South Africa. The Level 2 ranking was calculated by Empowerdex in accordance with the Department of Trade and Industry's 2007 B-BBEE Codes of Good Practice. Siemens has steadily increased its B-BBEE points from 51 points in 2006, and the new ranking followed a 7,6 point (9 %) increase from the 2014 score of 78,31, to nearly 86 points in 2015. "Contributing to South Africa's sustainable economic and social development is a key part of Siemens' business strategy," said Siemens executive director Clifford Klaas, who joined the company in 1986 as its first black business administration trainee.

"We are extremely proud of our Level 2 B-BBEE achievement, which is reward for **Siemens'** commitment to South Africa's development goals. We saw a particularly large improvement in skills development and employment equity, which are two of the most challenging categories in a B-BBEE rating. Transformation and skills development are good for business," Klaas said. "Doing the right thing for South Africa has made us more competitive." B-BBEE scores are calculated on seven elements – ownership, management control, employment equity, skills development, preferential procurement, enterprise development and socio-economic development.

Enquiries: José Machado. Tel. 011 652 2160 or email josemachado@siemens.com

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Level measurement with float systems in sanitary applications

By M Jung and J Zieser, WIKA

There is hardly any sector of industry where floats cannot provide information on the current liquid level.

Chemical and petrochemical, pharmaceutical and food, fluid recycling, offshore, oil and gas, machine building and plant construction – there is hardly any sector of industry where floats cannot provide information on the current liquid level. But ever more often, there is the question whether level measurement using the float principle still has a place, and how this can also find applications in sterile process engineering.

Measuring principle

Despite more modern measuring techniques such as radar or ultrasonic, floats can still claim their place within the wide subject of liquid level detection. This also holds true for level measurement with float systems in sanitary applications, where generally two types of measuring principle are used: Point-based and continuous limit level detection.

For the point-based monitoring of levels, the use of magnetic float switches is still favoured, generally fitted at the top of the tank. It makes no difference whether only one or several level limits are monitored. Within the guide tube, the inert gas contacts (reed contacts) set to the pre-defined switching positions are activated magnetically and without contact. The potential-free contacts enable general-purpose signal processing via PLC inputs and isolating amplifiers. Depending on requirements, it is possible to define a minimum/maximum alarm value and also an emergency shutdown level. The distinct advantages of using magnetic float switches for point-based limit level detection are the ease of installation and also the low costs with respect to commissioning and maintenance of the instruments.

With the continuous measurement with floats as signal transmitters, there are two versions of sensor system used, depending on the nature of the application. These are reed sensors and magnetostrictive sensors.

With the reed-chain measuring principle, a float with built-in magnets actuates small reed contacts in the guide tube (separated by 5 – 20 mm depending on measuring length and required accuracy). These reed contacts are part of a measuring chain which generates a voltage proportional to the liquid level. With this measuring principle,

a measuring accuracy of 1 % can be achieved for a measuring length of 500 mm. Generally evaluation is done via a 2-wire head-mounted transmitter. The resistance signals are then made available in the form of a 4 – 20 mA signal, a HART signal or Fieldbus.

Magnetostrictive sensors, on the other hand, are suited to high-accuracy measurements, since they can achieve an accuracy of better than 0,1 mm. Here, a current pulse along a tensioned wire (made from a magnetostrictive material) within the sensor tube generates a circular magnetic field, which twists the wire. At the point being measured (liquid level) there is a float with permanent magnets acting as a position target. The superposition of these two magnetic fields triggers a mechanical wave in the wire, which is converted into an electrical signal by a piezoceramic transducer in the sensor housing at the end of the wire. Using this method of measurement, even the slightest changes in level can be detected. This capability enables the detection of leaks long before any damage occurs. Available output signals are 4 ... 20 mA or 2 – 10 V. The supply voltage is 24 Vdc.

The use of floats is particularly dependent upon the physical and chemical process conditions such as pressure, temperature, density and viscosity of the medium. A major advantage of float-based level measurement is that it is not influenced by moving surfaces, electrical conductivity, dielectric constants, foaming and boiling surfaces. What is important is that the material of the float (stainless steel, nickel alloys or plastics such as fluoropolymers) is matched individually to the medium (see *Figure 1*).



Figure 1: Specific materials and coatings for the float are matched for the different media.

CIP – Cleaning In Place
 PLC – Programmable Logic Controller
 SIP – Sterilisation In Place

Abbreviations/Acronyms

On this issue and also the selection of the correct measuring principle for sanitary applications, e.g. for use in fermenters (see *Figure 1*), various criteria need to be considered with which float-based measurement technology brings clear advantages. Generally, in the process of fermentation, agitators and their movement cause foaming on the surface of the medium, where the foam can be fine-pored or coarse-pored, depending on the process.

For many non float-based measuring principles, including radar, high-accuracy level measurement represents a major challenge. With the float-based principle, the float can be ballasted correspondingly so that, despite the foaming, a measurement can be made directly at the surface of the medium and thus a highly accurate measurement is ensured. This means that the float can be set up so that it floats at the interface of the medium and the foam layer and measures directly on the level limit (see *Figure 2*).



Figure 2: Float set-up.

Alongside the desire for a highly accurate level measurement, various other criteria are placed on measuring instruments in sanitary applications. It is fundamentally important that measuring instruments used

Level Measurement



On the level

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Despite more modern measuring techniques such as radar or ultrasonics, floats can still claim their place within the wide subject of liquid level detection.

exhibit good cleanability, to enable CIP (cleaning in place)/SIP (sterilisation in place) processes. It is crucial that the design of the measuring instrument meets the standards for food and pharmaceutical industries. Design requirements such as adherence to certain materials, fully-welding, elimination of dead space, specific radii and surface finish quality are consequently prerequisites for applications in sterile process engineering. Finally, it should be noted that the hygienic design sensors are certified in accordance with the 74 – 06 3 A sanitary standards (available as float switches, reed sensors and magnetostrictive sensors) (see Figure 3).

Figure 3: Hygienic design sensors are certified in accordance with the 74 – 06 3 A sanitary standards.

Conclusion

The experience from numerous applications offers the user a wide range of method and process-specific solutions – in the field of sanitary applications, too – all built around a range of standard products. Last but not least, also as a result of the unique design and the large variety of materials, in spite of the strong competition by other methods, float measurement technology still asserts itself in the market.

- Floats can provide information on current liquid levels in most sectors of industry.
- The use of floats is particularly dependent on the physical and chemical process conditions (pressure, temperature, density and viscosity of the medium).
- An advantage of float-based level measurement is that it is not influenced by moving surfaces, electrical conductivity, dielectric constants, foaming and boiling surfaces.



Mathias Jung is in product management and Johanna Zieser is in marketing and product management – both at KSR Kuebler Niveau-Messtechnik AG – a division of the WIKA Group. Enquiries: Tel. 011 621 0000 or email sales@wika.co.za

ROUND UP

Compact indicator with salt water resistance

Resistance to salt water and high humidity conditions is not only critical in the marine industry but in all industries with high temperatures and high humidity environments. With the new plastic housing used in the RIA15, Endress+Hauser rounds off its indicator portfolio ensuring further successes.

Plastic housing material

The RIA15 loop powered indicator already offered almost all the features that are required in the marine and related industries. These include the German Lloyd and Ex approvals, a very low voltage drop of ≤ 1V, small dimensions of the field housing, good readability of the display as well as an optional backlight.

However, there are very high requirements on the resistance to salt water in the marine industry. With the new plastic housing of the RIA15 Endress+Hauser is now able to fulfill this requirement at a cost-effective price.

Integrated metal fibres for conductivity

Often plastic device housings do not offer Ex approvals, due to conductivity reasons. The RIA15 with the brand-new plastic material with integrated metal fibres shows an excellent conductivity

and due to this dangerous electrostatic charging can be avoided. Thus, the device can be offered with international Ex approvals. Furthermore the metal fibres increase the robustness of the housing compared to other standard plastic materials.

Right approvals

The RIA15 in the plastic housing does not only possess Ex approvals like ATEX, CSA, FM and IECEx. The device can also offer the German Lloyd marine approval and shows an IP66 protection class. That's why the indicator is very flexible in application. Furthermore the indicator is SIL interference free and so it also can be used in safety relevant uses.

Complete indicator portfolio

With the new plastic housing for the loop powered indicator RIA15 Endress+Hauser completes the redesign of its indicator portfolio. Endress+Hauser is able to offer a complete portfolio of state-of-the-art indicators with various housing versions, international approvals and all important communication protocols.

Enquiries: Benjamin Mlangeni. Tel. 011 262 8000 or email info@za.endress.com



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Looking Forward **VEGA**

First of new generation of high-resolution digital manometer

Keller, manufacturer of measuring technology such as isolated pressure transducers and transmitters – represented in southern Africa by **Instrotech** – has introduced the first of a new generation of high-resolution digital manometers. The LEO 5 features precise sensor technology, fast, high-resolution signal processing, peak recording and data storage with a time stamp. Designed for deployment in hostile environments, the LEO 5 features a robust stainless steel housing, safety glass front, a 16 mm backlit display and capacitive touch controls.

Undetected pressure ‘spikes’ are one of the common causes of premature wear and untimely failures in pneumatic and hydraulic systems. In freshwater systems, this phenomenon is sometimes called ‘water hammer’. The LEO 5, with its pres-

sure peak analysis mode, will sample and record system pressure at a rate of 5 kHz and with 16 bit resolution, enabling the troubleshooter to positively characterize system behavior. With storage capacity for over 50 000 peak values, including temperature and time stamp, data from the LEO 5 is exportable for detailed analysis via the included USB interface.

Highly accurate pressure measurement

In the standard measurement mode, the LEO 5 operates at a sampling rate of 2 kHz and with an A-to-D resolution of 20 bits. The LEO 5 line-up includes seven standard full-scale pressure ranges between 3 and 1 000 bar. In the temperature range of 0...50 °C, the TEB (Total Error Band) for

pressure is $\pm 0,5$ % FS. When temperature conditions are stable, the LEO 5 is capable of achieving a TEB accuracy of $\pm 0,01$ % FS.

Enquiries: Tel. 010 595 1831 or email sales@instrotech.co.za



Binary and analogue volumetric flow sensors for liquids

ifm electronic's robust SBY332 mechatronic flow sensor operates to the principle of spring supported piston. The piston, located in the valve seat in the housing, is lifted by the flowing medium against the spring resistance.

With volumetric flow quantities ranging from 15 l/min, 25 l/min, 50 l/min, 100 l/min to 200 l/min, the sensor has a fast response time ≤ 10 ms. The switch points can be preset continuously for easy handling. The sensor is available with a variable R or G process connection and is suitable for pressure ranges up to 25 bar in medium temperatures up to 180 °C.



For binary signal output the piston position is detected by an inductive sensor. Analogue sensors however detect the position by means of a magnetic-field sensor.

The spring resistance forces the piston to return to its original position with decreasing flow. This ensures position-independent installation of the flow sensor preventing backflow. The switch points can be easily set and fixed via a setting screw.

The units are maintenance-free and the robust mechanical design ensures use in harsh environments.

Enquiries: Tel. 012 450 0370 or email info.za@ifm.com

New thermowell design prevents vibration

For applications in processes with high flow rates, **WIKA** is now offering thermowells in the new ScrutonWell design. This variant is damping the excitation that leads to vibrations, which in turn can cause failures.

The ScrutonWell design is applicable to all solid-machined, barstock thermowells from WIKA. The helical form of the stem is available in two versions: manufactured in a single piece or with helices welded onto it.

Installation and removal are just as easy as with a standard thermowell. ScrutonWell thermowells are recommended when a thermowell fails the strength calculation, according to ASME PTC 19.3 TW-2010, and where other optimisations (shorter or stronger stem or support collar) are not desirable. In comparison with the conventional stem form, the new design reduces the excitations causing vibration by more than 90 %.

Enquiries: WIKA Instruments. Tel. 011 621 0000 or email sales@wika.co.za



Smart camera with measuring function



The Leuze LSIS 462i smart camera brings additional functionality to detection applications with its ability to provide accurate measurements. The new measurement function is based on edge scanning and enables the reliable and reproducible detection and measurement of different objects

This innovative smart camera offers the option of measuring distances and geometric shapes such as circles, lines and edges with high detection reliability, all within a single user interface. It also facilitates Blob analysis and code reading. The Leuze LSIS 462i camera combines all the required components from image processing to illumination, data storage and interfaces as well as a display for operation and viewing results in one compact unit. A number of standard

measurements are available for various applications including contact gap measurement in the electronics industry, tolerance tests and quality assurance in the automotive industry, dimensional accuracy tests in the mechanical engineering sector and specification of label positions and alignment within the beverage industry.

A recent installation at Audi's A3 vehicle body construction plant in Germany highlighted the flexibility and accuracy of the camera. The camera was able to ensure that, in spite of the great measuring distances, it could recognise bolt holes in the vehicle bodies with absolute certainty, and could simultaneously check multiple holes to minimise the number of devices required. In addition to type detection, specification of position and location as well as monitoring for presence, completeness and dimension, the Leuze LSIS 462i smart camera is ideal for detecting and evaluating labels at high speed.

Enquiries: Gerry Bryant. Countapulse Controls. Tel. 011 615 7556 or email bryant@countapulse.co.za

Encapsulated digital OEM pressure transmitter no larger than a bee

Keller, represented in southern Africa by **Instro-tech** – has on offer the smallest fully functional digital combination transmitter for pressure and temperature currently available on the market, the Series 4 LD. Measuring a mere 11 mm in diameter (the same length as a worker bee), the housing contains the sensor technology, the (mathematical) compensation coefficients, the digital signal processing as well as the I2C interface for simple, loss-free integration into higher-level systems. Made of stainless steel, the housing not only acts as a Faraday cage but also offers appropriate protection against electromagnetic radiation and all potential environmental influences. All the electronic components are accommodated in a laser-welded stainless steel housing filled with silicone oil. Keller's Chip-in-Oil technology means extremely short signal paths with exceptionally high impact and vibration resistance. Nine standard measurement ranges extend from 1 to 1 000 bar abs with a compensated temperature range of -10 °C...+ 80 °C. Accuracy is rated as better than $\pm 0,15\%$ FS, and a total error band of less than $\pm 0,5\%$ FS is attained between 0...50 °C.

Enquiries: Tel. 010 595 1831 or email sales@instrotech.co.za



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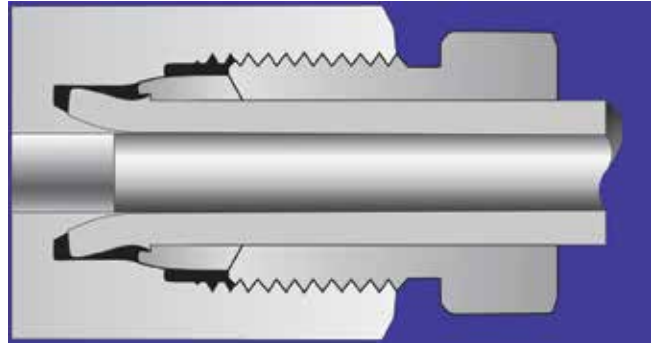
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Tube connection speeds assembly of instrumentation systems pressures up to 22 500 PSI

A breakthrough in high integrity tube connection technology offering instrumentation system designers and installers major performance and time-saving advantages is now available from Parker Hannifin – motion and control technologies. Designed for working pressures as high as 22 500 PSI (1,550 bar), the new 'flared cone' technology advances the performance of compression style tube connections. It provides users with a simple and reliable means of speeding the assembly of instrument tubing systems for use in higher pressures applications in the oil and gas industries. Developed by Parker Autoclave Engineers, the new flared cone connection (FCC) technology is a significant advance on the type of 'cone and thread' tube connections pioneered by the company. The new flared cone connections are much simpler to make up. Installers can typically complete the task in less than four minutes, after only minimal training. This time-saving can result in significant cost reductions on installations with a large number of tube connections. Flared cone connections are also especially cost-effective in applications where leaks caused by vibration are an issue. Ac-

cording to Michael O'Keane, product marketing manager for **Parker Autoclave Engineers**, "Our new FCC technology offers the best of both worlds. It combines the make-up and installation simplicity of compression style connections with the strength of cone and thread, and has more features and higher pressure capabilities than similar technologies."

Enquiries: Email charris@parker.com



Improved reliability and operability for reduced OPEX and enhanced plant safety

Yokogawa Electric Corporation recently announced the release of the TDLS8000 tunable diode laser spectrometer. This new product can quickly make in-situ measurements of gas concentrations in combustion and heating processes that are employed in the oil, petrochemical, electric power, iron and steel, and other industries. As the successor to the TDLS200 laser gas analyser, the TDLS8000 offers improved reliability and operability. With this new product, Yokogawa aims to capture a greater share of the gas analyser market by offering a solution that will make it possible to improve plant efficiency and safety. Companies are always looking for ways to optimise

processes by saving energy, reducing CO₂ emissions, and improving safety and one way to do this is by optimising the air-fuel ratio in the combustion process. To accomplish this, sensors are needed that can continuously monitor the concentration of O₂ and CO+CH₄ in the radiant section of fired heaters. The TDLS200 laser gas analyser is capable of quickly performing in-situ measurements of the concentration of near-infrared absorbing gases such as O₂, CO, CO₂, and NH₃. Since the TDLS200 was released in 2008, its high accuracy and precision have earned it a good reputation in the marketplace, and it has gone on to become one of the best-selling instruments

of its type in the global market (based on a Yokogawa market survey). The TDLS8000 is being introduced as the successor to the TDLS200 to satisfy the need for improved operability and to allow for greater adaptability in difficult applications.

Enquiries: Christie Cronje. Tel. 011 831 6300 or email Christie.cronje@za.yokogawa.com



Learning versus Training: Power of Know How

On 6 May **Endress+Hauser** hosted a breakfast including presentations on Learning vs Training, The power of Know How. Dr Holgar Knau, head of Application Training Centre Endress+Hauser in Switzerland, discussed 'Understanding the Power of Know How'. In his presentation he questioned the effectiveness of traditional classroom techniques in today's world. He looked at the average retention rates of knowledge with various methods of training and learning and explained how Endress+Hauser was applying different methods of training today. The challenge is to train staff to suit specific



requirements and keep staff up to date in a continually changing world. Chris Gimson, training manager Endress+Hauser, South Africa, explained how Endress+Hauser has risen to this challenge and launched a training concept in South Africa with the Universal

Training Rig (UTR) being an integral part of this training.

Enquiries: Email Marketing@za.endress.com

Holgar Knau, Hennie Blignaut, Chris Gimson and Rob MacKenzie (Endress+Hauser) at the 'Learning versus Training' Endress+Hauser breakfast.

WIKA and 3D Instruments

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We at 3D Instruments, LP, know how important it is that your designs and equipment succeed despite being in the most extreme pressure situations. We have provided early warning signs for the worst pressure applications since 1970 when we developed a groundbreaking Bourdon tube technology called 'direct drive' for the demanding needs of the aerospace industry.

Today, we provide rugged and reliable pressure measurement solutions that withstand extreme environments for SCBA, aerospace and industrial environments. Every element in a 3D Instruments pressure

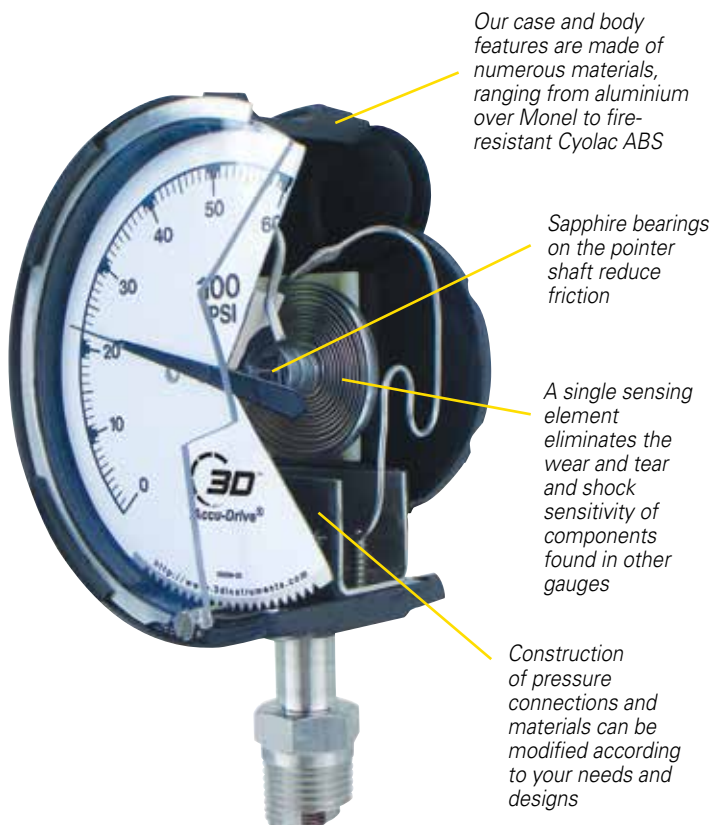
gauge has been optimised, from the Inconel tube and case materials to the manufacturing process and testing.

A direct drive pressure gauge has only one working part – a helically-wound Bourdon tube made of InconelX-750 or Copper Beryllium. With no additional mechanical components vulnerable to wear, the direct drive pressure gauge can last longer than other gauges, thus reducing time and total cost of ownership.

The military has used direct drive pressure gauges on aircraft, tanks, and submarines since the 1960s for one simple reason: They are extremely resistant to shock, vibration, and pulsation. During military testing, direct drive gauges placed within the hulls of battleships, have survived direct missile strikes.

What direct drive technology means for you

- **Over-pressure protection:** Because of a single sensing element, direct drive gauges retain accuracy even at 150 % over-pressure. The elastic helical Bourdon tube absorbs the over-pressure and automatically returns to its original setting
- **Burst protection:** Direct drive technology prevents early failure by incorporating a standard burst pressure of up to five times full scale
- **Wear protection:** Direct drive gauges work with a single moving part to maximise lifespan and accuracy
- **Design flexibility:** Bourdon tubes can be wound for a multitude of pressure ranges from full vacuum (30" Hg) to extremely high pressure (20 000 psi)
- **Reduced cost:** Direct drive gauges do not need to be replaced nearly as often as standard duty gauges and require less recalibration than standard gauges, reducing purchasing and maintenance expenses and overall total cost of ownership
- **Six year warranty:** Guarantees of up to six years (depending on products) will give you peace of mind



Enquiries: WIKA Instruments South Africa.
Tel. +27 (0)11 621 0000 or
email sales@wika.co.za or visit: www.wika.co.za



Surge protection concept for LED street lights

By B Leibig and D Dürr, DEHN + SÖHNE

An analysis of surge damage to LED street lights shows that in the majority of cases not individual, but several LED lights are affected by the causes discussed in this article.

Luminaire manufacturers and users such as municipal utilities or communities can often not find the cause of damage. Therefore, the consequences of damage become evident in partial or complete failure of the LED modules, destruction of the LED drivers, reduced brightness or failure of electronic control systems. Even if the LED light is still operational, surges normally negatively affect its lifetime. Consequently the predicted lifetime cannot be ensured in practice and the LED light must be replaced earlier. These unscheduled costs lead to additional expenses and usually have not been considered in the amortisation of the project. Now the question arises – to what extent the manufacturer assumes warranty for the LED light (LED drivers and LED modules)? Although the lighting industry has responded to this problem with a higher dielectric strength of the LED drivers of new LED lights, the impulse currents and surges occurring in practice often considerably exceed the typical dielectric strengths of 2 kA to 4 kV of the LED lights many times over. In this case, it must be observed that the types of surges between L to N (differential-mode interference) and L/N to PE (common-mode interference) significantly differ and particularly the cause of damage L/N to PE is often not taken into account by the designer owing to the ‘double or reinforced insulation’ (previously class II) of the LED light.

Basic design of street lights in practice and causes of damage

Figure 1 shows the basic design of a street light in practice. Supplied by a transformer station, the individual street light masts are powered by a cable distribution cabinet via a buried cable. A cable junction box with ‘double or reinforced insulation’ (previously class II) with integrated fuses, which supplies the LED light with voltage, is located in the base of the mast, which typically consists of metal.

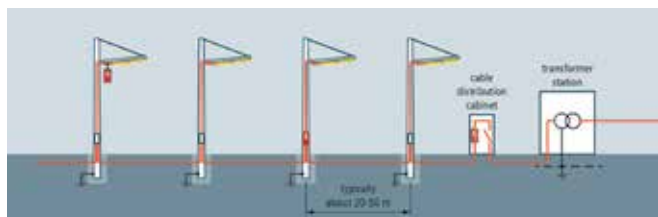


Figure 1: Basic design of a street light in practice.

The metal mast itself is either fixed in the soil by means of a concrete foundation and thus assumes the local potential of the soil. The LED light at the top mostly features ‘double or reinforced insulation’ (previously class II) and consequently does not allow the connection of a protective conductor. A TN-C system with a combined protective and neutral conductor (defined as PEN in the standard) is frequently used for the buried cables of the entire system up to the last luminaire. In the cable junction box, the TN-C system is expanded to a TN-S system and thus one phase and the neutral conductor are led separately to the LED light. In the majority of cases, the PEN or PE conductor is not connected to the metal mast. In this case, the protective conductor must not be connected in the LED light, which can frequently be considered to be an equipment with ‘double or reinforced insulation’ (previously class II).

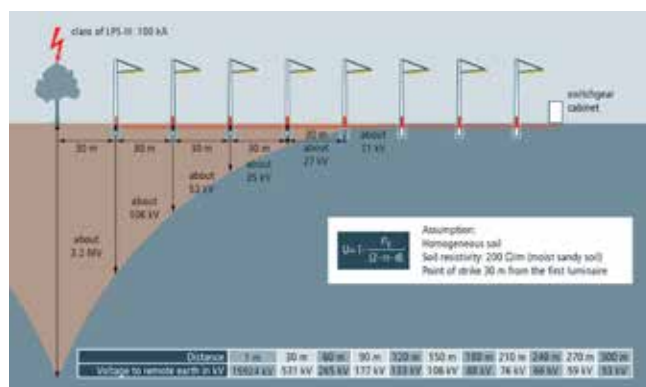


Figure 2: Lightning threat to street lights and potential rise in case of a nearby lightning strike to the street lighting system.

LED – Light Emitting Diode
SPD – Surge Protective Device

Abbreviations/Acronyms



Practical damage to LED street lights can have different causes. One possible cause is the sensitive LED technology, susceptibility of which is comparable to that of electronic components. Moreover, the spatial expansion of the street lighting systems with cables routed up to several hundred metres to the last LED light plays an important role. The cable length is restricted by the disconnection conditions for overcurrent protective devices which must be observed for every single luminaire. In this case, the luminaires do not have a common earth-termination system, but the individual steel masts are accidentally earthed (plastic masts may also be statically charged). However, this leads to different high electrical potentials at the relevant pad foundations depending on the soil resistivity in case of nearby lightning strikes (see *Figure 2*). Compared to the earth potential at the switchgear cabinet, these high potential differences can exceed the dielectric strength of the LED light integrated in the mast many times over. LED lights with 'double or reinforced insulation' (previously class II), which can lead to uncontrolled flashover since they must not be connected to the protective conductor, are commonly used as street lights. Even an existing surge arrester with L → N protection without earth connection in the LED light or cable junction box is not capable of protecting the luminaire from destruction or damage.

Impulse current and impulse voltage tests at LED mast lights

Up to this point, a variety of tests was carried out at LED mast lights from different manufacturers in the impulse current laboratory of DEHN + SÖHNE (see *Figure 3*).

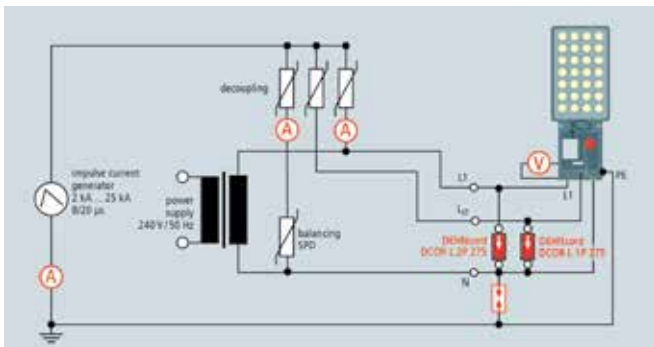


Figure 3: Test set-up of an LED light in the laboratory.

These tests revealed that the damage to the ac terminal compartment of the LED lights (control units) observed in practice can be simulated under laboratory conditions. The following tests were performed:

One possible cause of damage to street lights is the sensitive LED technology, susceptibility of which is comparable to that of electronic components.

- **Combined impulse voltage/ impulse current tests (injection to the ac connections of the luminaire)**

In this case, both common-mode interference (L/N → PE) and differential-mode interference (L → N) were injected into the connecting cables. This revealed that the luminaires have different dielectric strengths. The dielectric strength L → N is typically considerably smaller than the dielectric strength L/N → PE. This is also reflected in the test levels according to IEC 61000-4-5 [1] which must be used for testing the luminaires according to the product standard.

However, in case of the L/N → PE interferences, a considerably higher threat can be assumed since these interferences resulting from indirect lightning effects have a significantly higher energy. Common LED mast lights have a typical impulse withstand voltage of between 2 and 4 kV. However, this is not sufficient in many cases owing to the exposed outdoor location of LED lights and may lead to higher failure rates in the field.

- **Test with induced currents on the dc side and in the LED strings**

The following tests were performed to simulate the scenario 'injection of impulse currents on the dc side and in the LED strings'. In the laboratory, an impulse current with an amplitude of 100 kA and an extremely high steepness of about 10 kA/μs is passed by close to the lighting fixture. Even in this extreme test, no direct damage could be simulated apart from the flickering effects during the test. However, it must be assumed that the equipment subjected to the test is pre-damaged or has a reduced lifetime. These results reflect the field experiences reported by different LED manufacturers and system operators.

Protection concepts

Figure 4 shows typical places of installation of Surge Protective Devices (SPDs) in a LED mast light:

- Directly in the LED light
- In the cable junction box at the mast base
- In the cable distribution cabinets of the infeed

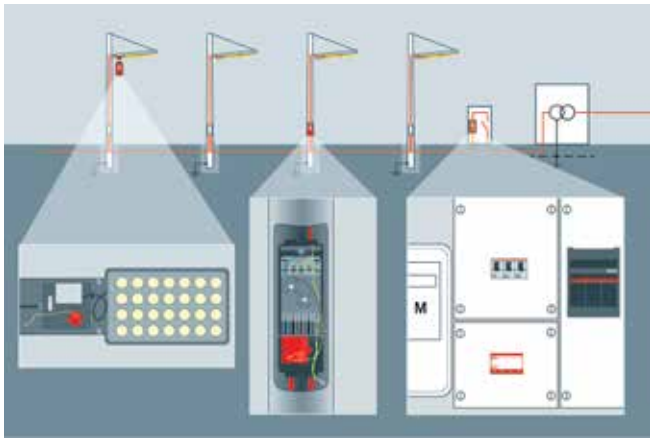


Figure 4: Possible places of installation of SPDs in street lighting systems.

(A) Directly in the LED light

The installation of a compact type 2 SPD (according to EN 61643-11 [2]) in the LED light considerably increases the dielectric strength of the luminaire to values in the range of 20 kV and thus significantly reduces damage. Thanks to their space-saving design, it is no problem to integrate devices of the DEHNcord product line in the terminal compartment of the LED light (see Figure 5).



Figure 5: Type 2 surge arrester with status indicator.



Figure 6: Application-oriented type 1 + type 2 spark-gap-based combined arrester.

At this point it should be mentioned once again that all protective paths, namely L-N, L-PE and N-PE, must be protected by SPDs to ensure efficient protection. To this end, a distinction must be made between the protection measures as per IEC 60364-4-41 [3]. This can be easily implemented for luminaires with 'automatic disconnection of supply' (previously class II).

For luminaires with 'double or reinforced insulation' (previously class II) currently applicable luminaire standards require that a SPD must not be connected to the protective conductor or the metal luminaire enclosure in the LED light. The latest product standard for luminaires – IEC 60598-1 [4] – includes the following information on SPDs:

- LED street lights are sensitive to voltage surges.
- Appropriate protection topologies must be selected based on the actual system configuration.
- All protection strategies must be confirmed with laboratory testing.



- In the case of stationary luminaires of class II, the surge protective devices must not be connected to earth
- In the case of stationary luminaires of class I, the SPDs can be removed for testing the dielectric strength
- SPDs must be tested according to [2].

In this case, either only the protective path L-N can be protected, which means a considerable reduction of the protective effect since particularly high-energy interference is to be expected to earth potential, or the SPD should be installed in the cable junction box according to case (b).

(B) In the cable junction box

The cable junction box is ideally suited for integrating SPDs. On the one hand, all protective paths (also to earth) can be protected by a SPD even if a lighting fixture with 'double or reinforced insulation' (previously class II) is used, thus ensuring maximum protection against transient overvoltages. On the other hand, this area is more easily accessible for retrofitting and maintenance purposes. Moreover, the earth potential of the steel mast can be connected to the cable junction box on the earth side to create a common reference potential.

Depending on the design, different type 2 SPDs (the compact DEHNcord arrester or DIN rail mounted devices (DEHNguard) can be installed. A type 1 + type 2 combined arrester (DEHNshield) which ensures protection against direct lightning currents, should be installed at this point to provide more efficient protection.

(C) In the cable distribution cabinets

To ensure protection against transient overvoltages resulting from indirect lightning effects or switching operations, which are relatively common in the vicinity of the transformer, and against direct lightning effects from the distribution network, it is advisable to install type 1 + type 2 combined arresters in the cable distribution cabinets. Depending on the requirements concerning the lightning current to be discharged, a DEHNventil or DEHNshield arrester (see Figure 6) can be used. In addition, the relevant SPDs described should be installed in the vicinity of the LED light they are supposed to protect either at the place of installation (a) (luminaire) or place of installation (b) (cable junction box).

Verification of the protective circuits in the test laboratory

A complete street lighting system was reproduced in the laboratory (see Figure 7) to be able to verify the results of the laboratory tests of the LED lights, practical experiences and the resulting practical protection solutions. The test consisted of the following components which can also be found in practice: A LED light typically used for street lighting systems, steel mast, cable junction box and cable distribution cabinet feeding the LED light. Therefore the simulation in the laboratory is a test under realistic conditions. Following the test, it was verified that the LED light did not fail in case of direct lightning effects if a cascaded surge protection concept with a coordinated arrester series and a well conceived earthing concept is used.



Figure 7: Test set-up for a complete LED street lighting system in the laboratory.

Conclusion

The laboratory tests in cooperation with LED light manufacturers and the practice-oriented system test of a complete LED system, consisting of a cable distribution cabinet, metal mast, cable junction box and LED light – in conjunction with practical experiences are important elements of an efficient protection concept for LED street lighting systems. A well-founded protection concept can only be implemented by means of a complete system consisting of cascaded SPDs (see Figure 5) which is specifically developed for this application, in the cable junction box or in the LED light and a coherent earthing concept where all metal masts must be connected to the protective conductor of the SPDs used. This allows safety control potential differences and ensures the availability of the LED street lighting system – also in the case of surges. This is the only way to ensure that an investment for retrofitting street lighting systems with the new LED technology achieves the predicted lifetime and uncalculated follow-up costs are prevented.

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- [1] IEC 61000-4-5. 2014. Surge immunity.
- [2] EN 61643-11. 2011. Low voltage surge protective devices. Part 11: Surge Protective Devices connected to low voltage power systems – requirements and test methods.
- [3] IEC 60364-4-41:2005. Low-voltage electrical installations - Part 4-41: Protection for safety - Protection against electric shock.
- [4] IEC EN 60598-1. 2008. Practical guide to testing and certification requirements for luminaires.



Bernd Leibig studied Electrical Engineering at the University of applied Science Georg-Simon-Ohm Nuremberg. Between 1993 and 2008 he held various positions in R&D, sales and project management at DIEHL Stiftung Nuremberg / Germany. Since 2008 he has been product manager, surge protection red / line at DEHN + SÖHNE GmbH + Co. Kg. in Neumarkt / Germany.



Dietmar Dürr studied Electrical Engineering at Grundig Academy in Nuernberg. In1998 he joined Dornier Medical Systems as a field Service Engineer. From 2000 to 2009 he was employed by DEHN + SÖHNE, in various positions. He worked as key account manager for SMA from 2009 to 2014. He is currently area sales manager with DEHN + SÖHNE.

Enquiries: Alexis Barwise. Email alexis.barwise@dehn-africa.com

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Periodic inspection of portable earthing and short-circuiting devices

Reduced cable cross-sections of portable Earthing and Short-circuiting devices (EaS devices) resulting from copper corrosion and breakage of conductor strands, or increased resistances in the connections, may have fatal consequences when earthing and short-circuiting devices are subjected to short-circuit currents.

Therefore, portable EaS devices must be tested prior to each use and at regular intervals. So far, only a visual inspection made economic sense. A new procedure is now available which provides reliable information on the condition of the portable EaS device based on static and dynamic measurements of the ohmic resistance. **DEHN AFRICA** offers this improved test

for portable EaS devices on the customers' premises. An earthing and short-circuiting device is tested in three steps and the resistance values are compared with theoretically and experimentally determined limit values. The first step is the visual inspection for visible signs of damage.

A static test is performed in the second step, in which the absolute resistance value is measured at the stationary earthing and short-circuiting device.

Step three includes the dynamic test, which notes the measurement of the relative change in resistance at the moving earthing and short-circuiting device. The measurement of the resistance change value R between the non-moving and the moving

EaS device is a new approach which allows for the detection of local damage, such as breakage of conductor strands in the conductor cable.

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'Services Audits' shed light on electrical installations

"We are seeing a steep rise in customers looking to maximise existing asset performance, moving from asset maintenance to full process optimisation across the life cycle, in particular as today's enterprises are expected to monitor, control and save energy," says Danie Badenhorst, field services vice-president for southern Africa at Schneider Electric. The result is that multi-national firms are seeking a specialised service partner with a global footprint and a single-point of accountability and standardised service. "Customers want offers to bring a full suite of services," adds Badenhorst. "Importantly though, before planning the future of your installation, customers need a comprehensive assessment and a clear analysis of the results. As such, **Schneider Electric** created Services Audits, which assess the performance of customers' electrical installation and propose improvements to meet their business energy needs."

The Services Audits methodology is based on four steps:

The **maintenance** plan aids in the development of a tailored maintenance schedule to ensure the right type of maintenance is applied for each piece of equipment and to minimise equipment downtime. The plan also identifies which maintenance operations the customer can complete and which require a service specialist. "A tailored

maintenance plan also helps to keep maintenance costs optimal," says Badenhorst. The **modernisation** plan indicates which equipment needs to be modernised, and when. It includes guidance for managing equipment end-of-service life and obsolescence (through replacement or retrofit) as well as suggestions for improving installation performance (by altering the electrical architecture). The **monitoring** plan recommends a strategy to implement a monitoring system, taking into account the customer's specific requirements. It includes an assessment of existing monitoring capabilities and clear recommendations on where, how and why to improve monitoring. Lastly, is the **management** plan, which focuses on organisational aspects of operating and maintenance activities. It also reinforces the technical recommendations provided by the other three plans, providing economic control over the recommendations. The management plan also addresses obsolete equipment and end-of-life steps, spare parts policy and procedures, operating conditions and maintenance contracts, organisation and training of technicians, and a follow-up of the action plan.

Enquiries: Ntombi Mhangwani.
Email ntombi.mhangwani@schneider-electric.com

Coated power supply units for Ex applications

Three power supplies and three dc/dc converters in the Quint Power series from **Phoenix Contact** are now approved for use in potentially explosive areas.

The power supply units with coated PCB are designed for extreme requirements. They conform to standard EN 60079-15 and may be used in hazardous areas. IECEx approval has already been granted: here the devices are suitable for use in Class I, Division 2, Groups A to D or A to H. Due to the coating, all modules provide optimum protection in extreme ambient conditions such as dust, corrosive gases or 100 % hu-

midity. In addition, they satisfy the requirements of railway standard EN 50155. The single-phase power supplies are designed for 24 Vdc output voltage and currents of 5, 10, and 20 A. The dc/dc converters provide a constant voltage of 18 to 32 Vdc with output currents of 5, 10, and 20 A, even at the end of very long cables.

For maximum availability of the connected loads, SFB (selective fuse breaking) technology ensures reliable tripping of circuit breakers. Faulty current paths are thereby switched off selectively, the fault is located immediately, and important system

parts remain in operation. For magnetic tripping of circuit breakers, the 20 A modules supply a peak current of 120 A for 12 ms, for example.

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Major contract secured at Maseve Platinum Mine

The **Zest WEG Group's** Enl Electrical, one of Africa's largest electrical construction companies, has secured a major contract at the WBJV Project 1 (Maseve) mine for client DRA, the main EPCM contractor on the project. This follows Enl Electrical successfully opening its Rustenburg branch in 2014 to service the platinum mining sector in the region. Trevor Naudé, managing director of Enl Electrical, says the contract represents a major coup for the Zest WEG Group as Maseve is South Africa's first Greenfield platinum mine in over a decade. "We secured the Maseve contract towards the end of 2014, in the wake of numerous small Brownfield projects whereby we established our base in the region." Naudé adds that the greater Zest WEG Group will be involved in this flagship project, from supplying the mill motors to the electrical and instrumentation infrastructure and the associated electrical panels. "We will be carrying out all the associated electrical cabling and racking, in addition to installation of all the instrumentation." Enl Electrical mobilised on-site in March this year, with contract completion anticipated by July. "This is a significant contract, and it is also fast-track."

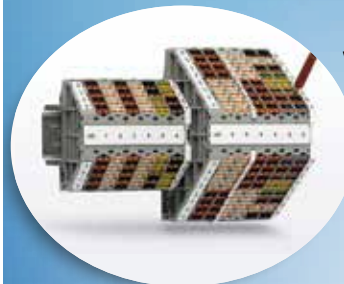
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Trevor Naudé, managing director, Enl Electrical.



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Pure process design

By S Silvestre, Siemens

A uniform engineering platform provides advantages in the construction of vacuum distillation plants.

Distillation plants separate substances from one another at a molecular level in order to be able to use them as high-purity products. Recently, the first distillation plant for fine chemicals was constructed according to a new programme structure. A platform was used which allows holistic programming, parameter assignment, visualisation and safety technology. The responsible parties see this as an important step for the future of distillation plants.

Known for the development and construction of thin film evaporators and short path distillation systems, UIC GmbH in Alzenau in the Aschaffenburg district has been supplying laboratory plants, pilot plants and industrial plants for over 25 years. A production plant according to the short path distillation process was supplied to a customer in the fine chemicals industry for manufacture in Germany. For this order, the entire engineering process was carried out using the new TIA Portal engineering framework from Siemens.

This holistic software platform is characterised by the fact that programming, parameter assignment, visualisation and safety technology can be performed on a single system. The company wanted to take advantage of this feature and migrate at an early stage. With APE Engineering, a service provider for automation technology in neighbouring Niedernberg, this migration was performed.

The benefits in the TIA Portal that will make their work easier include primarily the shared database within the engineering framework which is accessed by programming and visualisation. This means that, for example, time-consuming assignment of tags is no longer necessary. Conversion processes and syntax adaptations with the resulting errors are a thing of the past. These processes are considerably more convenient now.

Fail-safe monitoring of rinsing process

The TIA Portal engineering framework was used in the construction of a two-level vacuum distillation plant for the first time. In this plant, a thin film evaporator and a short path distillation system ensure that a high-quality product is derived from a liquid base medium. This product and the separated residue are liquid, which is typical for this type of production plant. The plant works with a vacuum of approximately 10^{-3} mbar and achieves a throughput of 500 kg/h. It is designed for round-the-clock operation and works largely unsupervised.

Control is handled by a Simatic S7 315F from Siemens in combination with a PC on which recipe management is performed. A fail-safe controller was used for the first time because the plant includes processes which must be monitored securely for explosion protection reasons. The process in question is the cleaning process, during which a container is rinsed out using a nozzle. Because discharge voltages can occur during spraying, it must be ensured that the container is flooded with nitrogen. In addition, a number of other conditions must be met reliably to make sure that no risk arises.

The level of integration of the TIA Portal is also evident. This is because the entire safety technology can also be programmed in the engineering framework. Ready-to-use function blocks that can be

With the TIA Portal, programming, parameter assignment, visualisation and safety technology can be implemented on a common platform.

moved to the desired location using drag-and-drop are available for this purpose. For use at UIC, the experts at APE Engineering wrote their own additional procedures for control of the complex distillation processes.

Simple visualisation on two operator stations

A total electrical power of 216 kW is installed in the distillation plant. This is distributed over heaters, motors and a vacuum pump set, consisting of a liquid ring pump, gas ejector, and three root pumps. The drives are moved using branches with a contactor and circuit breaker as well as frequency convertors. On request from the customer, discrete pre-wiring was given precedence over bus systems for communication with the controller in the described two-level vacuum distillation plant.

Generally, the company uses plant concepts with distributed I/O in connection with Profinet in designs. This depends on the plant concept and the key tasks agreed upon with the customer. The plant described contains at least the industrial Ethernet connection between the controller, the recipe PC and the two operator stations. The operator stations are two 577 Touch Panel PCs from Siemens. Visualisation using the TIA Portal proved its worth. The company was faced with the decision between upgrading the previously used program, WinCC flexible, or skipping this step in favour of TIA Portal. This was worthwhile because the conversion from Simatic WinCC flexible to Simatic WinCC Professional (TIA Portal) facilitated the visualisation of the two operator stations including recipe management. Even the synchronisation of the two operator stations would have been complicated otherwise. Because of the possibility of a server/client structure, this was no longer a problem.

Easy migration to the system of the future

Migration from the Step 7 Classic programming software to the TIA Portal for controlling the Simatic Manager was straightforward. The UIC experts learned how to work with the modern software solution without the need for external training. In many aspects, the programs are very similar, so users can become familiar with the handling without a few hours or days. Particularly in programming, he sees drag-and-drop mechanisms as a significant simplification. As a practical user, he is aware of the advantages that will be offered in the future by a common program platform and are already offered today by the TIA Portal engineering framework. He expects the development trend, according to which design and program tools work together, to continue. This vacuum distillation plant is the first one to be constructed according to the new program structure. With partner, APE Engineering an active part in shaping the future of the TIA Portal engineering framework.

Conclusion

For application in the fine chemicals industry, UIC GmbH in Alzenau in the Aschaffenburg district used the TIA Portal engineering framework for the first time and had a positive experience. In cooperation with

APE Engineering GmbH, the control technology was implemented for the two-level vacuum distillation plant. The advantages that convinced all involved that they had made the right decision are clear: With the TIA Portal, programming, parameter assignment, visualisation and safety technology can be implemented on a common platform. Programming via drag-and-drop plays its part in simplifying the engineering process further in order to take advantage of additional potential for improvement in the future.



- The TIA Portal engineering framework was used in the construction of a two-level vacuum distillation plant for the first time.
- This holistic software platform is characterised by the fact that many functions can be performed on a single system.
- Most importantly, the entire safety technology can be programmed into the engineering framework.

take note

Selma Silvestre is the marketing promotion manager (HMI) in the Siemens Digital Factory, Nuremberg, Germany.
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What is a DMM?

Multimeters. They have been described as a modern-day tape measure. But what exactly is a Digital Multimeter (DMM) and what can you do with it? How do you make measurements safely? What features do you need? What is the easiest way to get the most out of your meter? Which meter is best suited to the environment you're working in?

Technology is rapidly changing our world. Electrical and electronic circuitry seems to permeate everything, and continues to get more complex and smaller in size. The communication industry booms with cell phones and pagers, and Internet connections have put more pressure on the

electronics technician. Servicing, repairing, and installing this complex equipment in these environments requires diagnostic tools that provide accurate information.

So what exactly is a DMM? A DMM is simply an electronic tape measure for making electrical measurements. It may have any number of special features, but mainly a DMM measures volts, ohms, and amperes. DMMs measure faster, more efficiently and with greater accuracy, almost any job in any industry.

The three watch words when selecting your DMM are safety, quality and performance. **Fluke** models include handheld troubleshooters to ultra smart instruments

packed with features, including the ability to log and graph data, as well as high-precision bench units.

Enquiries: Val Verwer. Tel. 010 595 1821 or email info@comtest.co.za



Constant temperature monitoring of electro-mechanical enclosures

Infrared imaging does a great job of detecting thermal anomalies caused by conditions such as a loose connections, overhead circuits and unbalanced loads. It does, however, only provide a snapshot of



the faults on the day of inspection, leaving the subject components unmonitored for the balance of the year. To meet this need IRISS has introduced a new addition to its range of electrical maintenance safety devices (EMSD). It is Delta T Alert, a self-contained, wireless temperature monitoring system that attaches to an

electrical enclosure cover. It bridges the gap between infrared inspections by regularly recording and reporting critical temperatures within electro/mechanical enclosures.

The patented DeltaT Alert unit is simple to install and comprises two temperature sensors. One monitors the interior temperature within the enclosure and the other, the ambient room temperature. Both are configured to collect data on a daily basis, at specific time intervals.

The data is wirelessly transmitted for analysis and trending and warns the operator if the internal temperature rises above pre-set thresholds. Remedial action can then be taken before the problem becomes serious and warrants unscheduled system shutdown, incurring costly downtime.

Enquiries: Tel. 032 946 2805 or email stevee@randci.co.za

Planned maintenance is essential in ensuring reliability and uptime

Challenging economic conditions and unreliable power supply are not the only factors to blame when profits are below forecast. Operations themselves must accept responsibility for their shortcomings, especially if planned maintenance measures are not in place – writes Raymond Obermeyer, general manager for operations at **SEW-EURODRIVE**.

There are two types of operations in the African market, namely those who operate the equipment until it needs replacing, and those who make use of conditioning monitoring equipment and the benefits that it provides. There are several arguments in favour of condition monitoring equipment.

There is a lack of skills in Africa, and maintenance team is sometimes not equipped to look after the units. Although the cost of adding on the additional monitoring equipment may seem expensive at first, the pay-off is unrivalled when compared to the cost of replacing an entire unit.

Today customers have the option of adding many conditioning monitoring options, such as; vibration, temperature and oil monitoring, which assist in identifying when the unit is in need of maintenance. In this way, the customer can plan for the maintenance

and avoid productivity losses. Another local market trend is the increasing popularity of site surveys, whereby a field service team and engineering department visit the customer site to conduct a full survey of all the units. The team then recommends a course of action in terms of maintenance, repair or replacement. This is of tremendous assistance to the maintenance manager in terms of planning forward.

SEW-EURODRIVE, through its Drive Academy, offers customers courses which assist them in understanding and maintaining the unit more efficiently. Furthermore, the company has fully equipped field service vehicles that can assist customers with onsite with commissioning, fault finding and basic repairs and maintenance.

There is constant demand for accessories and spares, with some customers ordering critical spares ahead of time in order to have them available when they are needed. SEW-EURODRIVE boasts a stockholding of 80 % of the stock items that the company sells at any given time, including; cooling systems, condition monitoring equipment, maintenance operating manuals, and selection and design software.

Enquiries: Rene Rose. Email rose@sew.co.za

New generation hazardous area remote terminals

Power management company **Eaton** has launched a new MTL GECMA RT remote operating terminal, which enables plant managers to reduce operation costs, optimise productivity and increase plant safety. The new MTL GECMA RT has a unique modular design and is a next generation remote terminal which features state-of-the-art technology to offer unparalleled levels of safety, making it ideal for use in hazardous EX zone areas in chemical, pharmaceutical, refinery and oil and gas industries worldwide. The MTL GECMA RT consists of five electronic modules; the display unit, power supply, communications modules, keyboard and mouse. The terminal's modularity means upgrades to existing installations are quick and easy, which can save time, and minimise costly maintenance and downtime.

Traditionally, the whole unit would have to be dismantled off site, but now with MTL GECMA RT, individual parts can be replaced simply on site, increasing plant availability. Of vital importance, the modules are individually approved to global hazardous certification for Zone 1 environments. Eaton is leading the way in safety and the MTL GECMA RT features a couple of unique functions. First is a unique intrinsically safe cable for secure data transmission. Users can specify an Ethernet or fibre optic cable between the control room and remote terminal, with no need for additional external cable protection. Secondly, the terminal features a unique visual alarm to immediately warn users in the event of a process failure.

Enquiries: Tel. 011 791 6000 or email sales@extech.co.za

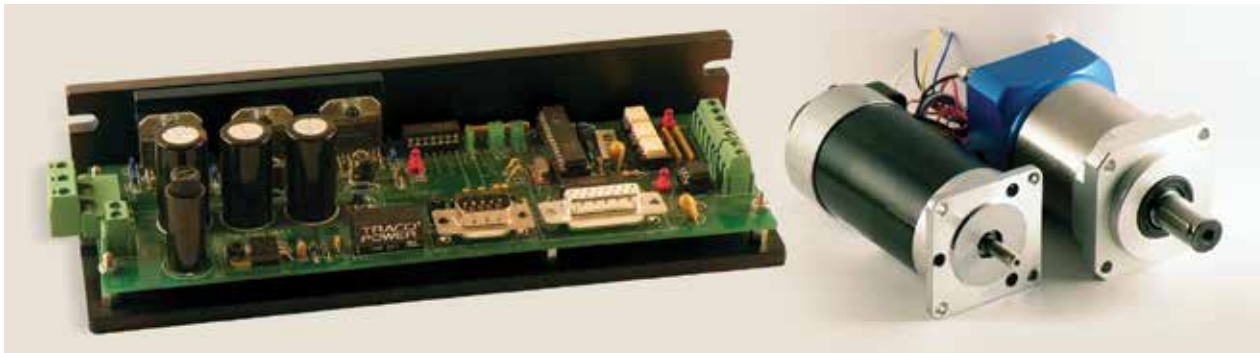
Soft starter for electric motors

TELE has introduced the new 3 ph soft starter with true 3 ph control and integrated current control for a nominal motor power 2,2 kW up to 22 kW. Tele offers you the new MS3 soft starter for a continuous starting procedure of asynchronous 3 ph motors. The unit is thyristor based and integrates current measurement and current limiting without external components and wiring. This function controls and limits exactly the maximum motor current that is used to start the whole system without overloading the motor and drive mechanics. Additional power peaks and flickers in the mains are reduced to a minimum, so the stability of the supply is much higher compared to star/delta or direct motor starters. The overall size of the new MS3 is compact and saves space in the cabinet. The fan-less design improves time between maintenance. The full 3 ph control paired with current control makes the MS3 the ideal device for heavy starting drives and machines. Power dissipation in start and standby mode is extremely low, due to the use of modern and state of the art control and power devices.

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Simplifying 'Green' cabling installations

By D Gunnewegh, Helukabel

Electrical installations have become easier and faster while – allowing installers to maximise time spent in the field – thanks to the new products that have been introduced to the African market.

The newcomer products are designed especially for photovoltaic installations, wind energy and cabinet wiring applications and combine quality assured functionality with innovations that make the products easier and faster to use.



Wind cables are built to meet wind turbine plant and transmission requirements.

Wind energy cables

The Heluwind WK Powerline Aluminium, for example, is a new generation power cable built to reduce the overall cost of installation due to its light weight which paves the way for less supporting infrastructure overhead as well as reducing the initial purchase price. In addition, the super-lightweight aluminium cable is highly flexible which makes it easier to run especially in confined or tricky spaces. It also makes it easier to transport than traditional copper alternatives and it does not have an aftermarket value in scrap which reduces the chances of theft in the typically remote areas where wind plants are situated.

A new range of Green Line cables was launched at the recent Power and Electricity World Africa 2015.

Rugged attributes

With a fixed installation temp range of -40 °C to +105 °C and able to handle voltages of 0,6 – 3 kV and test voltage of 50 Hz 2 500 V or 9 kV,

the cables are able to be used in wide ranging power transmission applications. They are treated to be UV, heat and oil resistant and can be buried directly in the soil if required, while also being fully recyclable at the end of their lifespan.

Perhaps the most important feature of the cable is its flexibility and light weight which makes it easy to work with on site. With flexibility that allows it to take sharp turns the cable can be run in compact environments and its resistance to chemicals, flames and other environmental factors, means that it can be used trouble-free in harsh outdoor environments. It is also available in Halogen free versions (LSZH).

Temperature range

- Flexing -20 °C to +105 °C
- Fixed installation -40 °C to +105 °C

Nominal voltage

- In accordance with VDE U0/U 0,6/1 kV and 1,8/3 kV
- Ac test voltage
- 50 Hz 2 500 V or 9 kV

Minimum bending radius

- Flexing 10 x cable diameter
- Fixed installation 4 x cable diameter

Flame resistant

- IEC 60332-1 [1]

Cable structure

- Finely stranded specially aluminium conductor
- Specially formulated, heat-resistant insulation
- Core colour - natural
- Specially formulated, heat-resistant sheath compound
- Sheath colour - black

Properties

- UV-resistant
- Oil-resistant
- Recyclable
- Provides ease of assembly
- Halogen-free (LSZH)
- Direct burial
- 6 kV



The Solarflex cable range is available for all areas of solar generation plant from the photovoltaic cell to the grid, as well as cables for controlling, monitoring and securing the plant.

Solar energy cables

Similarly, the range of Green Line Solarflex cables are purpose designed for photovoltaic applications from the photo cell to the grid. A broad range of cabling is available in heat, chemical and environmental resistant applications for power transmission, plant cabling and even data monitoring of the plant. Aluminium or copper transmission cables are available depending on project requirements. These cables are in line with the company's long lasting commitment to renewable energies. It has TÜV and VDE certifications along with the highest quality standards typical of all our products. It is manufactured at the company's cable factory in Germany and can be tailored to market requirements or customised for specialised applications. Cross-sections from 1 x 2,5 mm² up to 1 x 95 mm² are available and up to 1 x 240 mm². The wire is used globally in standalone and networked systems as a module or branch wire. Both insulation layers are set-off coloured from each other for improved handling: black sheathing on natural colour conductor insulation in the standard version, or optionally, red or blue sheathing to simplify local installation. Twin wires in cross-sections from 2 x 2,5 mm² up to 2 x 16 mm² are available. Pre-assembled cables, connectors and tools for professional assembly of photovoltaic installations are available.

Temperature range

- -40 °C to +90 °C
- Maximum temperature at conductor +120 °C

Nominal voltage

- Acc to VDE U0/U 600/1 000 Vac
- 1 800 Vdc conductor/ conductor

Ac test voltage

- 10 000 V

Minimum bending radius

- Fixed installation approximately 4 x outer Ø
- Flexing (occasional) approximately 10 x cable Ø

Properties

- Ozone resistant
- Weather and UV-resistant
- Halogen-free
- Resistant to acid and bases
- Flame-resistant
- Very robust and abrasion-resistant sheath
- Resistant to short-circuits up to 200 °C thanks to their double insulation; short-circuits Temperature 200°C/ 5 seconds
- Anticipated service life - 25 years
- Hydrolysis and ammoniac resistant

Compression glands

For wiring panels and other applications using compression glands a new range of tool-free glands has been introduced that do not make use of the conventional fastening techniques like threaded holes and locknuts. A unique, patented spring/snap system allows for quick and easy installation in hard-to-reach areas and in no-access spaces where locknuts can not be used. The compression glands can also be installed close together as no tool access is required. It is interesting to note that fastening the gland by hand achieves the same tight fit as traditional glands held in place with locknuts. There are no disadvantages only substantial savings in man-hours and the ability to minimise space needed for shoot-through of multiple cable.

Material

- Body, lower body and cap: PA 6
- Seal and washer: CR
- Flammability: V2 (according to UL 94)
- Protection class: IP66 / IP68 - 5 Bar
- Operating temperature: -20 °C up to +100 °C (intermittent -30 °C up to +150 °C)

Conclusion

The company carries cables for any purpose whether it be for renewable or for standard cabling needs. Where special requirements exist technical teams, locally or in one of the development centres globally, are at hand to develop bespoke cables for individual requirements. With demand growing and involvement in a myriad of projects across the continent the author's company holds a large stock of cable accessories to simplify and improve the quality of installations at renewable energy sites.

Reference

- [1] IEC 60332-1. 2008. Test of the fire behaviour on a single core or a single cable (flame retardancy).

- Products designed especially for photovoltaic installations, wind energy and cabinet wiring applications have been introduced to the African market.
- The new cables are suitable for use in wide ranging power transmission applications.
- A combination of quality assured functionality and innovation make the products easier and faster to use.



Doug Gunnewegh is the managing director of Helukabel South Africa and has a 16 year track record in the industry. The South African operation has access to global cablings and accessory products for the electrical, electronics and diversified industries including renewable energy markets. Enquiries: Tel: 011 462 8752 or email doug.gunnewegh@helukabel.co.za

Indicator – panel meter

This indicator or panel meter (96 x 48 mm, 1/8 DIN, with integrated trend and bargraph functions) is equipped with universal analogue input (RTD/TC/standard linear inputs) for the acquisition of process signals with fast transient (conversion frequency up to 242 Hz /4,2 ms). As the largest part of Pixsys instrumentation, STR550 integrates in a single ordering code all the most requested hardware solutions: 2-relays programmable

for different alarm modes, two analogue outputs (0...10V and 0/4...20 mA) for fast and accurate retransmission of process/set-point values, one Modbus RTU Slave serial port for interface with PLC/HMI/PC, 2 configurable digital inputs, useful built-in power supply 24 Vdc/30 mA for loop-powered external sensors. Software features includes storing of max. peak/min peak/peak-to-peak values, 'Totaliser' function typical for flow control

and 'Sum' function for weighing systems. For configuration and parameters setting, in addition to standard Pixsys tools (Memory Card and Labsoftview software), a wireless Rfid (NFC) channel is provided and can be used with the new Pixsys RF-Programmer device for fast and straight-forward programming.

Enquiries: Timecount. Tel. 011 882 3105 or email sales@timecount.co.za

Multi-channel device circuit breaker boards

The new multi-channel device circuit breaker boards from **Phoenix Contact** are available with 4, 8, and 12 channels. The boards are very

versatile as they can be fitted individually with thermomagnetic or electronic circuit breakers. They are particularly suitable for machine building and control and process technology.



Due to the central potential distribution, up to four loads can be protected per channel. This reduces installation time to a minimum, while simultaneously saving space compared to conventional installations. In addition to individual load protection, the boards give you the option to loop in safety-related relay contacts.

As such, the affected circuits are integrated into the safety concept with minimal wiring. In doing so, the switch contacts of the enabling current paths are protected according to regulations. A supply of up to 60 A can be achieved thanks to the high current carrying capacity.

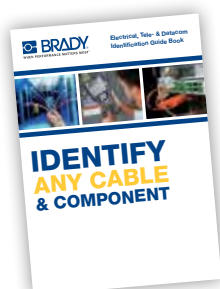
Enquiries: Tony Rayner. Email tonyr@phoenixcontact.co.za



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Cables group makes good recovery

JSE listed **Allied Electronics Corporation Limited (Altron)** has published its annual results for the year ended 28 February 2015. Revenue decreased by 1 % to R 27,6 billion and earnings before interest, tax, depreciation and amortisation (EBITDA) by 23 % to R1,4 billion. Headline earnings per share (HEPS) declined by 50 % to 94 cents.

"We have a mix of macro-economic and operational issues that impacted our results this year," said Altron chief executive, Robert Venter.

Profitability in the Altron Power division was adversely affected by a marked decline in orders from Eskom and strike action impacted the manufacturing businesses.

In Altron Power, the Cables group made a good recovery after gaining traction in new markets but this was unfortunately countered by a significant decline in the Transformers group which experienced some operational issues, very low demand for its large power transformers and incurred once-off costs to close its Booyens plant in Johannesburg. Powertech Batteries performed satisfactorily given margins were under pressure due to an increasing lead price as well as on-going competition from imports while the System Integrators business struggled with delays in the start of various previously awarded projects coupled with weak order inflow. However, Powertech Quadpro, the turn-key substation business, made good inroads into Africa and in particular Zambia.

"In Altron TMT, Altech Autopage experienced a tough market and ongoing mobile termination rate reductions which compelled us to make the decision in principal to dispose of the GSM subscriber base," said Venter. "Discussions are at an advanced stage to sell these subscribers and the non-GSM part of the business will be retained and housed within other operations."

Other businesses within the telecommunications division of Altron TMT i.e. Altech Netstar have performed well and have developed exciting new telematics and fleet products, Bytes Systems Integration expanded its biometrics offering, and Altech Radio Holding performed well off the back of the Gauteng Broadband Network contract.

"Although we acknowledge it is a start-up business which still has the potential gain traction, initial sales of the Altech Node to the retail market were below expectation. Altron TMT is well advanced in exploring alternative opportunities and routes to market for this product," said Venter. Besides the effect of the NUMSA strike, the multi-media businesses in Altron TMT were also affected by lower international orders as a result of a delay in African Digital Terrestrial Television Migration (DTT).

The business' order book however strengthened significantly after year-end and the South African DTT rollout made progress. The group's IT assets (which consist mainly of the previous Bytes businesses) continued to perform well, exceeding expectations. In particular Bytes UK, a Microsoft licensing and online security business, Bytes Universal Systems, a software business, and Bytes SecureTransaction Solutions stood out. The Xerox business in Bytes Document Solutions made a good recovery and Bytes Managed Solutions produced solid results despite some foreign exchange losses. Going forward Venter admitted that tough decisions need to be made to improve Altron's performance, "We need to focus and streamline our group which will mean selling off some non-core assets and adapting our offering to our customers. We are certain that these steps, which will be taken in the near future, will benefit our stakeholders."

Enquiries: Robert Venter.
Tel. 011 645 3663



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Managing the UAV data explosion

By W Warren, Raima Inc

A recent report on Unmanned Aerial Vehicles (UAVs) forecasts that the global market could be expected to grow to over \$114 bn by 2023, driven by a combination of technical advances and burgeoning demand. Between flight control, data acquisition and in-flight functions, managing large amounts of data is key to their successful use.

Military UAVs are becoming more and more common in combat and peace-keeping roles for aerial reconnaissance, target acquisition, battlefield management, search and rescue, communications, munitions and payload delivery, impact and disaster management, infrastructure monitoring and more. The US military UAV market is forecast to grow at a CAGR of 12 % and the market in the Asia-Pacific region is expected to grow at around 8 %, while spend in Europe on military UAVs is expected to reach over \$24 billion. There is growth, too, in civil UAV markets in areas such as land surveys, disaster forecast, infrastructure surveys and other commercial applications. Indeed, EasyJet recently reported that it is developing maintenance drones in conjunction with experts from the University of Bristol to aid in inspection of its fleet of Airbus aircraft. The drones, fitted with video cameras and laser scanning systems will map the surface of the aircraft and report damage back to engineers.

Whether operating autonomously or under the control of a ground-based operator, the functions involved in flight control, data acquisition, flight handling, strapdown and communication are highly complex, and that complexity is increasing rapidly as UAVs are developed for ever more demanding tasks. What all of that means is an explosion of data, with regard to both the on-board systems and data

transmitted back to ground stations (perhaps from multiple UAVs in many different areas).

A UAV will incorporate multiple sensors for on-board monitoring, feeding data to and from the flight control and flight management systems. The principle task of the flight management system is to determine the aircraft's position and to verify the accuracy of that position. A modern flight management system might use numerous sensors (including GPS, radio aids and inertial reference systems), and continually cross check these sensor values to verify absolute position and any deviation from a reference flight control plan. At the same time, the flight control system is continually monitoring attitude and altitude (perhaps with vision technology), inertial data, fuel data and more. All of this data has been stored and managed from within the UAV's own embedded operating system, which will necessarily be resource-limited. Then there is the mass of data transmitted back to the ground station – particularly in military environments where hundreds, if not thousands, of UAVs might be deployed at any one time. As well as flight systems and ordinance data, the transmissions might include photographs and video.

In 2009 it was said that the USA's UAVs alone generated 24 years' worth of video if watched continuously, and the latest UAV models

are expected to produce 30 times as much information as those from 2011. Alongside this, the ground station will maintain data logs, flight logs and parameters, mission plans and other data that will be needed for the UAV in flight.

The database requirements for UAV applications are, therefore, complex. A reliable and scalable database solution is required. This needs to be portable from platform to platform, and to have a flexible design architecture that can be modularised for later certification, if required. It is important to have a database system that is flexible enough so that it can be easily modified to be compliant with specific airborne capability standards or integrated into non-standard development platforms. Within the UAV operating system itself, the on-board database has to provide protection for global variables to prevent read-write conflict and race conditions. It may need to act as a data logger for a 'smart sensor payload', and synchronise that data with flight control information. The UAV system must also be able to manage and share information between the in-air vehicle and the ground control station, with seamless communications - perhaps through an encrypted data link.

Further, the database solutions employed must, on the one hand, have a small enough footprint to run with resource-limited on-board systems yet be powerful enough to manage large streams of live real-time and mission critical data. Equally it has to be sophisticated enough within ground station applications to aggregate, sort and analyse data from many different UAVs, enabling improved confidence in mission decisions, improved performance in adverse conditions, and - in military applications particularly - improved performance against countermeasures. And these systems must be able to run and manage data 24/7 with no downtime.

Embedded database technology, such as the data management system described, provides a solution in challenging Unmanned Aerial Vehicle (UAV) applications.

Embedded database technology, such as Raima's RDM data management system, provides a solution in challenging UAV applications. Relied upon in numerous military and commercial applications, Raima's RDM embedded database technology products are cross-platform, small footprint, fast and reliable persistent, in-memory and hybrid database solutions which are optimized for workgroup, live real-time, embedded and mobile operating systems. They are designed for distributed architectures in resource-constrained environments, and developed to fully utilise multi-core processors. Importantly, they are suitable for running on a wide variety of platforms, and support multiple APIs and configurations which provide developers with numerous powerful programming options and functionality.

RDM Embedded provides a rugged, scalable and local solution for the handling of large amounts of data at any time, locally. Platform independent, it can run on everything from popular OS options such as MS Windows, Linux and iOS to real time systems such as

Wind Rivers's VxWorks, QNX Neutrino and Green Hills INTEGRITY, as well as many others. As well as supporting multiple processor and multi-core architectures, the RDM data storage engine provides a set of data organisational features that you can use to control in-memory, disk-based or remote storage to provide the best possible performance in an embedded systems application.

With its small footprint, low CPU requirements, reduced memory and features designed for use in mobile and in-memory applications, RDM Embedded delivers vastly improved stability on resource-constrained systems compared with conventional database solutions. Hybrid and in-memory operating modes enable the database to be configured to run completely on disk, completely in-memory, or a hybrid of the two, combining the speed of an in-memory database with the stability of on-disk in a single system. RDM improves on conventional embedded database products that store data in a flat file. As more and more products and applications generate data, there are too many log files for a flat file system to cope with efficiently. RDM not only collects the data in a more structured and meaningful way, but also allows pre-processing of the data actually on the embedded device itself before sending the most relevant data to other systems for further analysis or long-term historical data storage. Importantly, RDM makes data available wherever it is needed. RDM can replicate data between computers on a network and via the Internet to systems outside the embedded network environment. This can be used to improve the speed of processing, data backup security and system-wide data availability.

Conclusion

There is no doubt that the UAV market will continue to grow rapidly, with military commanders requesting more and more to be deployed for intelligence, surveillance, reconnaissance and even payload delivery, while the commercial market too comes to realise the benefits of UAVs in civil applications. The resulting data explosion poses many challenges, but embedded database technology such as Raima's RDM offers a capable solution.

- Military Unmanned Aerial Vehicles (UAVs) are becoming common and vital in various roles in the 21st Century.
- The functions are becoming increasingly complex as UAVs are being developed for more demanding tasks.
- In South Africa, regulations will come into force in July 2015 regarding the use of remotely piloted aircraft systems or drones.



Wayne Warren, CTO Raima Inc, holds a MS in Computer Science which he earned at Colorado State University in 1978. Wayne, with Randy Merilatt, left Boeing in 1982 to start the organisation that became Raima Inc. In 1984, Raima released its first commercial product, db_VISTA, predecessor to the Raima Database Manager (RDM). Wayne continues to lead the effort to modernise the RDM product so that it runs well in multi-core and networked configurations.

Enquiries: Email Wayne.warren@raima.com

South Africa's regulations for drones

Regulations will come into force in July 2015 regarding the use of remotely piloted aircraft systems or drones. The regulations have been signed by the Minister of Transport, Dipuo Peters. Among the regulations are the following:

- You will need a licence to fly a drone
- Minimum age will be 18 years
- A class four medical certificate for beyond visual line of sight operations or operations involving drones classified as class 3 or higher
- Alternatively, a restricted certificate of proficiency in aeronautical radiotelephony
- Drone pilots will need to provide proof that they speak English at a proficiency level of four or higher
- If a pilot has the correct licence, an issued letter of approval, valid for 12 months, will be required
- A drone will not be sold unless the seller notifies the buyer of the operational requirements imposed by the Sacaa
- A drone cannot tow another aircraft, perform aerial or aerobatic displays or be flown in a formation or swarm
- Drones will not be flown next to or above a nuclear power plant, prison, police station, crime scene, court of law, national key point or installation
- No drone will be operated 121,92 m above the surface or within a radius of 10 km from an aerodrome, be flown overhead any person or group, or within a lateral distance of 50 m from any person, or within a lateral distance of 50 m from a structure or a building
- Public roads for landing and take-off of a drone will be prohibited

Enquiries: Visit www.caa.co.za

Solar installation reduces its reliance on the grid by 40 %

Having installed a 353 kWp solar photovoltaic cell grid-tied installation at its Isando (Johannesburg) manufacturing plant, voestalpine has offset its reliance on the national grid by 40 %. The resulting savings to the plant's operational costs will repay the R 7,3 M installation within nine years. The project was contracted to *SUNCybernetics*, the local partner of *SUNFarming*.

voestalpine's Isando facility manufactures railroad turnouts mounted on sleepers where trains are guided across changing tracks. "Our design of an optimum solar-powered solution for voestalpine was based upon an analysis of the plant's energy load profile prior to the installation; the availability of elevated north-facing roofs (which, further, had the strength to support the panels); as well as an electronic solution that would minimise or prohibit the flow of power back to the grid," explains voestalpine's energy consultant Warwick Stark, director, *Rawlyn Consulting*.

As per voestalpine's board's requirement of needing three comparative quotes, Rawlyn assisted in a RFP by invitation to quote on the required 353 kWp solar photovoltaic plant. The required 353 kWp was determined by analysing voestalpine's past annual average

load profile. Rawlyn assisted voestalpine in the evaluation of the proposals on a technical basis in order to determine the final winning bid. Designed to yield a usable 483 412 kWh/year, the photovoltaic installation will effect annual savings of over R 600 000 against an annual electricity bill of R 1 374 000 prior to the installation.

Enquiries: *Warwick Stark*. Email warwick@rawlyn.co.za



Seismic safety of nuclear power plants will improve

Since the Fukushima accident, Nordic nuclear power plant areas have given greater priority to understanding the safety implications of seismic events. VTT and various Nordic players are co-developing new methods of making seismic hazard estimates of anticipated earthquakes in Fennoscandia. Little source modelling-based measurement data is available on earthquakes in stable continental areas. On 8 May 2015, *VTT Technical Research Centre* of Finland organised a workshop aimed at identifying and sharing the relevant Nordic data. An upcoming four-year project will also involve updating existing earthquake source modelling techniques and developing new ground motion simulation models for stable continental regions, particularly the Fennoscandian Shield. A thorough empirical analysis has been conducted. However, a lack of empirical observations of ground motion close to actual, high-magnitude earthquakes in Fennoscandia has impeded our understanding of the seismic load caused by a potential earthquake close to a nuclear power plant. Recent developments in calculation methods are enabling the

formation of calculation models that generate realistic estimates of earthquake loads. The project's network of experts will focus on areas at low risk of seismic activity in the Nordic countries and further strengthen cooperation between VTT and Uppsala University in seismic source modelling. In this project, the partners of VTT will be Aalto University, the University of Helsinki, Uppsala University, GEUS Geological Survey of Denmark and the Nordic leader in technical consulting, ÅF. The project will be funded by NKS Nordic Nuclear Safety Research. The project's long-term goal will be to expand cooperation of this kind to cover the Baltic countries. The project results will not only provide the background information required for the safety assessment of nuclear power plants, but will also be important with regard to final disposal repositories for nuclear waste. In addition, the results will be useful for the National Nuclear Power Plant Safety Research (SAFIR2018) programme's NEST project.

Enquiries: *Ludovic Fülöp*. Email ludovic.fulop@vtt.fi

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Premium distribution partnership deal

Power management company **Eaton** has signed a premium distribution partnership deal with Diesel Electric Services which is a company specialised in the design, manufacturing, delivery, installation, commissioning and maintenance of generator sets, distribution boards and associated products to suit the needs of any organisation. The deal will see Diesel Electric Services providing Eaton's entire range of comprehensive products and solutions across sub-Saharan Africa.

The deal will bring Eaton's world leading products to clients based across sub-Saharan Africa. Eaton in Africa offers all

sizes of businesses and industries safe, reliable and globally accredited materials that can be customised to meet specific business requirements.

Diesel Electric Services has business relationships with various consulting groups as well as end users garnered over 23 years of the company's existence. Their products and services are sold throughout Africa in countries including Zambia, Angola, Nigeria, Cameroon, Zimbabwe, Mozambique, Ghana, Congo, Swaziland, Lesotho, Namibia, Botswana, Ivory Coast, Malawi, Rwanda, Burundi, Madagascar, Tanzania, Mauritius and South Africa.

Eaton and Diesel Electric Services will help customers achieve performance-optimised data centres with unmatched reliability, increased efficiency without sacrificing uptime and a more flexible data centre design with a faster time to market.

"Eaton is the only company providing cross-business solutions in key industry segments, collaborating with Diesel Electric Services will allow us to showcase our local expertise in meeting customer needs across Africa", said Shane Kilfoil, managing director, Eaton Africa.

Enquiries: Visit www.eaton.co.za

New ultrasonic flowmeter for superheated steam

With the OPTISONIC 8300, **KROHNE** has introduced a dedicated ultrasonic flowmeter for the measurement of superheated steam. The 2-beam flowmeter stands out with a measuring accuracy of 1 %, high repeatability, and a large dynamic measuring range.

Typical applications include boiler and plant efficiency monitoring in (power) plants, energy balancing or inter-company steam billing. As downtime of steam pipes is very costly and must be

avoided, OPTISONIC 8300 was built for long term use: it features a full bore flow sensor without moving parts or obstructions, and an overall sturdy and robust construction with no cables or sensitive parts exposed.

Therefore, it can uphold its measuring accuracy without maintenance or subsequent calibration for up to 20 years, while keeping operating costs at a minimum. If verification of the measuring

accuracy should become necessary, it can be provided by using the flowmeter diagnostics, without removing the flowmeter. With nominal sizes ranging from DN 100...1000 / 4...40", OPTISONIC 8300 is particularly suited to high flow rates. Pressure rating up to 200 bar / 3625 psi and temperature rating up to 540 °C / 1004 °F are available, higher requirements on request. With temperature and pressure sensors connected to the device, the integrated flow computer can calculate steam mass flow. OPTISONIC 8300 adds to KROHNE's portfolio of ultrasonic process and custody transfer meters for liquids and gases, ranging from compressed air to liquid natural gas (LNG).

Enquiries: John Alexander. Tel. 011 314 1391 or email salesza@krohne.com



Boost to company's marine control business

Yokogawa Electric Corporation's affiliate, Yokogawa Kontrol (Malaysia), has received an order from a consortium comprising JGC Corporation (Japan) and Samsung Heavy Industries (South Korea) that will supply control systems and safety instrumented systems for PETRONAS's second floating liquefied natural gas (FLNG) facility, PFLNG2.

Under the terms of the contract, Yokogawa Kontrol (Malaysia) will deliver an integrated control & safety system (ICSS) for the monitoring and control of the liquefaction facilities and storage tanks on PFLNG2.

The ICSS will consist of a Yokogawa CENTUM VP integrated production control system, a ProSafe-RS safety instrumented system, a Plant Resource Manager (PRM) package, a plant information management system, and other components. Yokogawa Kontrol will be responsible for engineering, and the support of installation, commissioning, and training.

The PFLNG2 facility will be moored offshore of Sabah, Malaysia, and is designed to produce 1.5 million tons of LNG a year, with production scheduled to start in early 2018.

An FLNG facility is a new type of LNG plant that performs all operations at sea, starting with the routing of natural gas from offshore gas fields and including the refining, liquefaction, storage, and transfer of this resource onto LNG carriers. FLNG is attractive because the technology does not require the acquisition of land or laying of pipelines, making it suitable for small to medium-sized offshore gas fields that are deemed economically unfeasible to develop.

Enquiries: Tel. 011 831 6300 or email Christie.cronje@za.yokogawa.com

Industry Personality of the Year 2015

Yokogawa is delighted that Vinesh Maharaj, sales and marketing director for **Yokogawa South Africa**, Angola and African Anglophone Region, has been awarded Industry Personality of the Year for 2015. The Award ceremony took place recently at the Dome in Johannesburg as the culminating event of the Africa Automation Fair 2015.

Vinesh was one of five deserving candidates for the award including Dave Wibberley, managing director of Adroit Technologies, Robert Wright, managing director of RJ Connect, Pregis Naidoo, technical sales director for Afrilek Automation and Chris Yelland, managing director of EE Publishers.

Vinesh studied BSc Electronic Engineering at the University of Natal and later went on to complete an MBA in Strategic Financial Management. He joined the SAIMC in June 2006 as a member of the Durban Branch and was requested to join the Committee later that same year. He was elected vice-chairman of Durban Branch Committee in 2007 and assisted the branch in ensuring regular technology evenings took place. In 2008 he was elected chairman of Durban and championed the re-opening of the Richards Bay Branch later in 2008. Under his leadership the Durban Branch won the Branch of the Year Award 2008 from the SAIMC, the first time in over 20 years.

Vinesh was elected to the SAIMC National Council in 2010. He was elected Vice-President in 2012 and took over responsibility of the Innovations Committee, whose objective was to focus on the future of the SAIMC. In 2013 he was elected as President of SAIMC and spearheaded the re-branding and re-positioning of the organisation.

Vinesh has thus far accomplished many initiatives in growing the industry.

Outside of the industry, Vinesh is the chairperson of the Midrand Branch for Food For Life, a food relief charity feeding orphans and disabled children in Tembisa.

Enquiries: Email Christie.cronje@za.yokogawa.com



Organiser of the Africa Automation Fair 2015, Hanli Kritzinger, with the Industry Personality of the Year 2015, Vinesh Maharaj.

Bizz Buzz

Club SElect

Schneider Electric has introduced an exclusive programme to southern African registered electricians and contractors: Club SElect. The programme is designed to drive benefits for its members by linking Schneider Electric's business partners, communicating valuable opportunities, and sharing industry best practices, so as to drive a standard of excellence in the region. Club SElect members are given access to a tailor-made, private website that offers information on products, technology and solutions, as well as customised training, configurations and support. The portal also includes a partner locator to generate business opportunities. Says Eric Leger, country president for southern Africa at Schneider Electric: "In addition, Schneider Electric has created and developed digital tools, available through the portal, which will allow electricians and contractors to conduct their business easier when they are either on site quoting projects or managing their daily work".

Enquiries: Email ntombi.mhangwani@schneider-electric.com

Global heat tracing systems company comes to South Africa

Global heat tracing systems company Eltherm has confirmed its commitment to the South African and African marketplaces with the establishment of a local subsidiary, **Eltherm South Africa**. The company has in the last nine years been represented by its official distribution channel. Headquartered in Sandton, Johannesburg, Eltherm SA features a national footprint and includes a highly qualified and experienced team that services many specialist industries such as EPC (Engineering Procurement Construction), Mining, Food and Beverage, Power Generation and Renewable Energy, including Concentrated Solar Power, Automotive, Oil, Gas and Petrochemical.

Enquiries: Tel. 011 326 6475 or email pstone@eltherm.co.za

Solar energy and energy storage

SolarEdge Technologies, Inc is in collaboration with **Tesla Motors (Tesla)** to provide an inverter solution that will allow for grid and photovoltaic integration with Tesla's home battery solution, the Powerwall. The joint development by SolarEdge and Tesla builds on SolarEdge's dc optimised inverter solution and Tesla's automotive-grade energy storage technology to enable more cost-effective residential solar generation, storage, and consumption for the global market. "Tesla's collaboration with SolarEdge unites leading organisations in two rapidly-growing industries, solar energy and energy storage, to bring homeowners a more cost-effective and integrated energy generation, storage, and consumption solution," said Tesla's JB Straubel.

Enquiries: Email Hadas.rozen@solaredge.com



Process Expo becomes Africa Automation Fair 2015

Africa Automation Fair took place at the Dome in Johannesburg from 5 to 7 May 2015. At the forefront of technology, Africa Automation Fair 2015 presented the creativity of the engineering mind, making it seemingly possible to do almost anything in 2015. The massive Dome was packed to capacity with people eager to find solutions to industrial automation challenges and many others from all over the world, ready to share their knowledge and showcase their products. Moving away from the tradition of the Process Expo, Africa Automation Fair 2015 reflected 'Newness' – New name, New venue, New technology, New energy, New focus.



Wayne James, Tarien Dercksen and Alan Mulder (Lapp Group).



Allister McMorran (Mecosa), Heike Mann (Berthold Technologies) and Henning Springer (Mecosa).



Frikkie Streicher, Tyron Azevedo and John Groom (Vega).



Michelle Murphy, Adam Carless, Kenneth Mc Pherson and Rodney Grobler (Beckhoff Automation).



Chris le Roux, Scott Baldwin and Craige Clarke (Innomatic).



Derrick Mulligan, Steve Lea, Peter McDonald and Wesley Reddy (Phambili Interface).

SOCIAL ENGINEERS



Magda Cronje, Cornel Swart, Ralph White, Johan van Niekerk, Alfred Meyer, Celia de Beer, Alwyn Skelton (ifm electronic).



Hannah Dlamini, Petrus Kloppers, Albert Einstein, Pregs Naidoo, Su-Anne Willemsse (Afrilek).



Farrel Sher and Patrick Pitts (ACDC Dynamics).



Scott Hunter, Peter Hugo and Sharon Jordaan (Instrotech).



Martin Scheider (Siemens) and Doron Kowensky (H3iSquared).



Karl Dreyer and Mike Weidemann (Wika Instruments).



Doug Gunnewegh (Helukabel).

Endress+Hauser Pyrotemp



Ben White



Chris Gimson

Endress+Hauser Pyrotemp has appointed Ben White as the new general manager. This follows the decision by his predecessor Chris Gimson, to go on semi-retirement and take up the challenging role as training manager at the Endress+Hauser sales centre.

Tectra Automation



Malan Bosman,
product manager,
Pneumatics

Vert Energy



Johnny Canada,
technical services
manager, electric
power generation



Steven Ward,
service technician,
electric power
generation



Charles Mthiyane,
service technician,
electric power
generation

Brady34	Impact Energy.....OBC	Techlyn31	WIKA Instruments and 3D Instruments OFC
Countapulse Controls.....19	NewElec.....25	Timecount.....11	Wilec39
Endress+Hauser IBC	Phoenix Contact27	VEGA17	ZEST WEG Group2
Engen.....7	RET Automation Controls.....IFC	Voltex13	
Helukabel35	Siemens.....9	WIKA Instruments.....15	

The 3rd POWER-GEN Africa and DistribuTECH Africa

15 – 17 July 2015
Cape Town International Convention Centre
Cape Town
Enquiries: Email ferrial@tradeprojects.co.za

ICUE-2015 Conference (Industrial and Commercial Use of Energy)

17 – 19 August 2015
Cape University of Technology
Enquiries: Email icue@cput.ac.za

4th Annual Infrastructure Africa

1 – 2 September 2015
Sandton Conference Centre
Johannesburg
Enquiries: Email liz@infrastructure-africa.com

25th AMEU Technical Convention 2015

4 – 7 October 2015
Sandton Convention Centre
Johannesburg.
Enquiries: Jean Venter. Tel. 011 061 5000

10th Southern African Energy Efficiency Convention (2015SAEEC)

11 – 12 November 2015, Emperors Palace
The Southern African Association for Energy Efficiency (SAEE) aims to become the Association in Southern Africa that brings all energy stakeholders in the region together. In order to achieve this synergy, the SAEE is hosting the 10th Southern African Energy Efficiency Convention (2015SAEEC), as an event serving the energy management-, environmental-, facilities building upgrades-, energy engineering-, cogeneration-, power generation-, and efficiency improvement industries.
Enquiries: Erika Kruger. Tel. 018 290 5130 or email convention@sae.org.za

Energy Training Foundation (EnTF) courses 2015

Enquiries: Tel. 041 582 2043 or email info@entf.co.za • thieda@entf.co.za
Visit www.energytrainingfoundation.co.za



Accurate Temperature Measurement



Course dates

- 23/24 July 2015
- 17/18 September 2015
- 19/20 November 2015

Certificate of competence with 2 CPD points upon successful completion of the course

Venue details

Endress+Hauser Pyrotemp,
Cnr. Rotterdam Rd and
Milan Place, Apex ext. 3,
Benoni

For more information on pricing, availability and registration

Contact: Cezanne Gonsior
E-mail: events@za.endress.com
Tel: +27 11 262 8097

Understanding temperature measurement principles and sensor selection

Endress+Hauser's local centre of Competence for Engineered Temperature Solutions in Benoni, with extensive manufacturing and testing facilities, gives you this unique chance to attend a 2-day course to broaden your knowledge on temperature measurement and devices. Below are some of the topics to be covered:

- Application suitability and the basic operating principles of RTDs and thermocouples will be covered
- Sensor construction, including selecting correct lengths and dimensions for inserts and thermowells, diameters or sensors, process connections, housings, terminations and many other attributes of a temperature sensor
- How the signal is transformed into an analogue or digital signal for retransmission
- "Build your own sensor" gives you the opportunity to put theory into practice, and take your finished product home with you!

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info@za.endress.com
www.za.endress.com

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