Electrical, Power & Control Preview
Electra Mining Africa 2018

VLF cable diagnostics - Improve your cable reliability

10 - 14 September 2018, Expo Centre Nasrec, RSA
Gear units and motors from SEW-EURODRIVE have always set the trend and established new standards in drive technology. For this reason, the quality label “made by SEW” has become a hallmark of quality in the drive industry. Market-orientated products developed and manufactured in-house, as well as uncompromising quality, are the cornerstones of our success.

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Tel: +27 11 248 7000
Email: info@sew.co.za
Web: www.sew-eurodrive.co.za

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**Hall 6**

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Welcome note

Welcome to Electra Mining Africa

Expo Centre Nasrec, 10 – 14 September 2018

Specialised Exhibitions Montgomery welcomes you to this year’s Electra Mining Africa and the co-located Elenex Africa, Powerex and Transport Expos. With a heritage to be proud of and backed by 46 years of experience, Electra Mining Africa is a showcase of the latest innovations across the mining, manufacturing, electrical and power industries.

With over 900 exhibitors across the indoor and outdoor exhibit areas, you will see a broad range of machinery, equipment, products and business solutions on display. You are also encouraged to interact with the large number of technical experts who are present on the stands and view the many live demonstrations.

From electronics, electrical and electro-mechanical products and technologies to power generation, power transmission and distribution, power application and renewable energy services and equipment, as well as the latest innovative products for the mining, industrial, engineering and related industries, Electra Mining Africa has something for everyone.

Brand new at Electra Mining Africa this year are the different themed days throughout the week. The future of skills development is our focus for day one. A brand new artisans training area has been launched in Hall 10. Developed in partnership with the SAJ Competency Training Institute and the South African Equipment Export Council (SACEEC), this training centre will run over all five days of the show. Go along and test your artisanal skills – you could win yourself a prize! Disciplines include electrical, millwright/electromechanical, electrical and mechanical engineering, mechanical fitter and turner, welding and CNC milling and turning, among others.

New products are the focus for day two, our proudly South African day is featured on day three, safety is in the spotlight on day four, and day five is all about celebrating our diversity.

Back again this year are the highly popular free-to-attend seminars hosted by SAIMechE. The informative topics are delivered by industry experts and are aligned with our theme days. Also taking place alongside Electra Mining Africa are conferences hosted by the South African Institute of Mining and Metallurgy (SAIMM), Women in Mining South Africa (WIMSA) and the Lifting Equipment Engineering Association of South Africa (LEEASA).

In addition to SAIMechE, SAIMM, WIMSA and LEEASA, Electra Mining Africa enjoys the endorsement and support of SACEEC, the South African Fluid Power Association (SAFPA), the South African Institute of Occupational Safety and Health (SAIOSH) and the Southern African Protective Equipment Marketing Association (SAPEMA). We are delighted to partner with these influential and trusted industry associations and appreciate their support.

As a valued media partner, we thank EE Publishers for the continued collaboration and support. Our sincerest thanks go to all our exhibitors for their tremendous effort, hard work and co-operation in making this exhibition a success. We also thank our main sponsors, Dromex, BBF Safety Group and Multotec.

As a valued visitor, we also thank you. We hope that you enjoy a highly informative and beneficial few days with us. We look forward to seeing you again in 2020.

Warm regards,

Gary Corin, managing director, Specialised Exhibitions Montgomery
Charlene Hefer, portfolio director, Specialised Exhibitions Montgomery
new COMPANO 100

Our new COMPANO 100 is a unique, battery operated testing tool for all types of basic testing tasks in electrical energy systems. It’s lighter and easier to use than all of the comparable test sets on the market today.

Numerous applications such as quick wiring, polarity and CT/VT ratio checks, as well as single-phase protection relay testing, are possible with this cost-effective device.
VLF testing improves cable system reliability

BAUR diagnostic equipment has demonstrated its world-renowned strength in cable diagnostics by improving the reliability of medium-voltage cable systems.

Mining operators and utilities often face conflicts of interest when reducing costs while maintaining the required high-power reliability where dependable cable systems are essential.

Commissioning testing or maintenance testing to verify the integrity of the insulation and the quality of the installed cable systems is required by national and international standards.

**Count on condition-based maintenance**

BAUR’s very low frequency (VLF) cable diagnostic technology allows mining operators and utilities to keep accurate records of their cabling assets.

With the VLF-based partial discharge testing and dissipation factor measurement, two effective methods for evaluating the condition of MV cables and accessories are combined in two compact and portable devices, the PD-TaD62 portable PD diagnostics system and the Frida TD testing and diagnostics unit.

This results in measureable and comprehensive cable analysis with early detection and localisation of weak points, as well as simultaneous evaluation of cable ageing offered by the dissipation factor measurement tan delta.

Monitored withstand testing (MWT) combines the VLF voltage testing with cable diagnostics and allows reduced VLF testing time.

Testing cable systems with BAUR devices is therefore simple, efficient and precise. Mining operators and utilities are replacing simple DC testing with combined VLF cable testing and diagnostics. The benefits include:

- Cable failures during operation are prevented.
- Repair work on weak cable accessories can be planned.
- Cost is reduced as sections of cable are replaced and not entire cable systems.
- Service life of aged cable systems is extended.
- The overall quality of the cable system is increased while outage time and cost are reduced.
- Applicable for commission and maintenance tests.

Industry standards for cable testing include:

- IEC 60502-2014.
- IEEE 400-2012.
- IEEE 400.2-2013.

Contact Barry Lombard, Lead HV, Tel 078 205-7460, info@leadhv.co.za
Battery electric vehicles are changing the face of mining

by Mike Rycroft, EE Publishers

Health and cost savings considerations are driving an increasing move towards electric battery-driven vehicles and machinery in underground and opencast mining operations.

Battery powered mining vehicles were introduced in the 1980s but are only now seeing large-scale adoption. The tipping point where everyone decides to use battery-driven zero emissions equipment underground has not yet been reached. It is anticipated that all major mining companies will only purchase zero-emission equipment for underground [4].

Battery technology is ideal for underground mining and adoption will depend on mines’ comfort level with the technology and OEMs’ ability to deliver products that will operate for full shifts [4].

The broad benefits driving this transition are:

- Elimination of exhaust gas components means that less ventilation is required.
- The efficiency of conversion from electric energy to wheel drives is much higher than the conversion efficiency from diesel to wheel drive, reducing heat and resulting in reduced ventilation (30 – 50% less).
- BEVs do not consume air as diesel engines do, again reducing ventilation.
- Diesel fuel costs are eliminated.
- Reduced maintenance costs (some 25% fewer parts on EV propulsion).
- Reduced noise, vibration and heat.

Most underground mining operations currently use diesel-powered trackless mobile machines. Battery-electric vehicles (BEVs) are more energy efficient and can increase efficiency through regenerative braking. Mining operations could save on their operational expenditure when using electric equipment [6]. Battery-powered machines have unlimited range of motion; the freedom to work in development areas without outlets, and have few exposed and fragile parts.

Cost issues

Switching from diesel equipment to an electric fleet requires significant capital investment and lowered commodity prices place pressure on new purchases. The long-term benefits of investing in electric underground equipment may outweigh the short-term cash outlay. Directly driven mine machinery (powered from AC feeds) has advantages, but there is a serious disadvantage in areas where mobility is required. This is where battery driven and hybrid units come to the fore [3].

The cost of converting to BEVs in underground mines is reducing with the cost of batteries and other storage systems being driven down by other sectors. The electric vehicle market is developing and producing batteries with increased energy density and of the size and shape suitable for low profile mining traction units. The cost of batteries specifically designed for transport is decreasing rapidly, and charging regimes have been developed which allow rapid recharge of batteries. Hybrid mining propulsion units can be adapted to a wide variety of underground operations.

BEV equipment range

Apart from being used for transport in underground mines, the BEV range is being expanded to other vehicles and machinery as well. An estimated 80% of the fuel burned in underground mines is burned by loaders or trucks [3]. BECs are commonly used in underground mining operations, and were the first choice for conversion to battery operation. BEVs are confined to personnel transport, load haul (LHDs) and trucks, but there are several companies intending to extend the battery-powered option over the full range of equipment powered by diesel engines [5].

Load haul dumpers

Battery-powered load haul dumpers (LHDs) are largely proven [4]. A few examples are:

- **Scooptram loader**: A front-end loader produced by Atlas Copco. The performance matches that of the company’s diesel-powered version. It is powered by a 165 kWh, 630 V DC LiFePO4 battery (see Fig. 1).
- **Artisan’s 3-mt 153**: This LHD offers a total power of 214 kW. It is powered by a 600 V DC 88 kWh lithium-ion phosphate battery and is claimed to outperform the equivalent-sized diesel powered unit.
- **The GE Fairchild**: It is powered by a 240 V, 930 Ah (214,8 kWh) battery.

Battery powered haul trucks

GE and others are offering battery powered underground haulage trucks which are similar to LHDs but are used for ore haulage only.

Battery powered shield haulers

These move heavy shields used in long-wall coal mining between sites. There are several suppliers.

Battery tramming

Tramming is the movement of machinery from one...
Technologies in use include:

- The battery can be recharged during drilling.
- The battery can boost the mine AC supply during drilling.
- The unit can recharge when tramming downhill.

**Personnel carriers (PCs)**

These are light vehicles to transport people and light equipment. All battery powered versions are designed for steep gradients and rough roads. The batteries were originally automotive or small industrial types, and required several hours to recharge. More modern designs use LiFePO4 batteries for safety reasons.

**Future battery powered ranges**

MacLean’s fleet electrification programme aims to offer a battery tramming/operating option on all units across the company’s product range. GE also aims to produce battery-powered options for all of its diesel-powered mining equipment in the future. It is expected that other mining equipment manufacturers will follow suit.

**Hybrid solutions**

Hybrid diesel/battery electric propulsion systems are common in mine vehicles, offering a reduction in fuel consumption and better controls over the vehicle’s operation. Most hybrid versions also use regenerative energy recovery.

**Regenerative energy recovery**

Regenerative braking converts kinetic energy into electricity. In an EV or train, the movement is slowed by reversing the motor to act as a generator. Regenerative braking is used extensively in mining BEVs, especially those operating on fixed routes with gradients. The regenerative energy could be calculated where the BEV operates over a fixed route. This would allow accurate sizing of the battery and recharge cycles.

**Battery technology**

Battery-driven mine equipment has been around for almost 30 years. Earlier models used valve regulated lead acid batteries but the technology of choice today is lithium ion phosphate. Technologies in use include:

- **Lead acid**: These batteries are an established technology, mainly the VRLA or valve regulated variety. Advantages are lower cost, but power density is lower and rapid recharge is usually not possible. The technology is falling out of favour except for smaller applications where weight is not critical.
- **Lithium ion phosphate (LiFePO4)**: A well-developed technology offering a very rugged battery with a long service life and a reasonably short recharge time. LiFePO4 batteries have the least probability of bursting into flame of all the lithium-based batteries.
- **Lithium titanate**: A high-performance battery offering a very short recharge time (15 minutes) and long cycle life. The battery was primarily developed for the mobile battery market. The single-battery quick recharge system removes the need for backup batteries and a dedicated swap, service and recharging area.
- **Sodium metal halide (NaMx)**: An emerging technology with performance and longevity comparable to those of lithium ion (Li-ion) batteries, yet require less capital. NaMx technology has been considered for mass transit and industrial applications

The biggest concern with BEVs is the capacity of the battery and the ability to work a complete shift without a recharge. Capacities depend on the type of BEV and prospective usage cycle, and range from four to eight hours. With a battery swap-out during the shift break, the four-hour capacity unit could manage an eight-hour shift of continuous operation.

**Charging regimes**

To maintain most units in an operational state requires two sets of batteries: one in the vehicle and one on charge [2]. Units using lead acid (LA) batteries used three sets per BEV, two on the unit (one operational and one spare) and one on charge. This was because LA batteries took eight hours to recharge. More advanced units can recharge in less time than it takes the battery to discharge and only two batteries are required per unit.

**Onboard charging**

In this system, the charger is associated with the BEV, and charge is accomplished by connection to an AC source. The disadvantage of this method is that extra weight is placed on the BEV. This system is used in tramming vehicles where connection to an AC source during operation is available, and where battery swap out is not used.

**Offboard charging**

In this method, the charger is located at a special charging station and DC is fed to the BEV. The disadvantage is that the BEV is out of service during the charge process. This process only applies to BEVs that run a single shift or multiple shifts with breaks in between, and where swap-out is not anticipated.

**Offboard swap charging**

In this method, a spare battery is charged offboard and swapped out with a discharged battery at specific times or at the prompting of a charge monitoring system. The battery must have a discharge time longer than the charge time.

**Hybrid charging**

This system is a combination of onboard and offboard. The onboard charger is used for slow charging of the battery, and the offboard when a rapid or boost charge is required.

**Diesel-free mines**

The diesel-free mine option is being considered by several mining companies. Goldcorp, a gold producer based in Vancouver, Canada, recently announced plans to build the world’s first diesel-free hard rock mine near Chapleau, Ontario. Going diesel-free is an ambitious goal. A typical mine can have dozens of diesel engines across its heavy equipment fleet. Going electric means enormous upfront cost, and massive retraining. This means embracing the reality that, until recently, the technology to create a diesel-free mine was barely a realistic possibility, but has been made possible by developments in the battery storage sector [5].

The references to this article are available online at https://wp.me/p5dDng-TqN
Exhibitor profiles

ABB
Stand number: Hall 7, A02 | PROMENADE EXT P38
Contact: Tamara Chetty
Tel: 010 202-5000
tamara.chetty@za.abb.com
www.abb.com/africa

ABB is a pioneering technology leader in electrification products; robotics and motion; industrial automation, and power grids, serving customers in utilities; industry and transport, and infrastructure globally. Continuing a history of innovation spanning more than 130 years, ABB is writing the future of industrial digitalisation and driving the Energy and Fourth Industrial Revolutions. As title partner of Formula E, the fully electric international FIA motorsport class, ABB is pushing the boundaries of e-mobility to contribute to a sustainable future. ABB operates in more than 100 countries with about 147,000 employees. www.abb.com.

ACDC Dynamics
Stand number: Hall 7 & 8, A14 and B22
Contact: Marco Goncalves
Tel: 010 202-3300
marco@acdc.co.za
www.acdc.co.za

AC/DC Dynamics is a leading manufacturer, importer and distributor of quality products in the electrical, electronics, pumps and tools industries. AC/DC Dynamics has its head office in Edenvale, Johannesburg, with branches in Germiston, Cape Town, Pinetown and Riverhorse in KwaZulu-Natal.

ACTOM
Stand number: Hall 7, B6
Contact: Debby Riddle
Tel: 011 820-5111
debby.riddle@actom.co.za
www.actom.co.za

Actom is a level 1 B-BBEE contributor with 51,3% black ownership and 34,66% black women ownership. It is the largest manufacturer, solution provider, repairer, maintainer and distributor of electro-mechanical equipment in Africa, with 38 outlets throughout southern Africa. Actom is also a major local supplier of electrical equipment, services and balance of plant to renewable energy projects.

Adroit Technologies
Stand number: Hall 7, B19
Contact: Samantha Brink
Tel: 011 658-8100
samanthab@adroit.co.za
www.adroit.co.za

Adroit Technologies develops data acquisition and reporting software for the industrial automation markets. We are the authorised distributor for Mitsubishi Electric’s Factory Automation range of products in sub-Sahara Africa. We offer professional services in consulting, project management and execution, support and training in industrial control systems, manufacturing execution systems and management information systems. We deliver world-class, solutions-focused products and best-in-class support and services.

AJ Charnaud & Co
Stand number: Hall 5, D34
Contact: Sales
Tel: 011 794-6040
sales@charnaud.co.za
www.charnaud.net

AJ Charnaud and Company has over 40 years’ experience in specialised personal protective clothing. With a complete head-to-foot range of certified products, supported with advanced professional and technical assistance, Charnaud is regarded as a leading global supplier of personal protective clothing for protection against flames; fire; radiant heat; molten metal splash; acid and the thermal effects of electric arc flash.

Allbro
Stand number: Hall 7, C13
Contact: Chris Galloway
Tel: 011 894-8341
new@allbro.com
www.allbro.com

Allbro is a South African manufacturer with more than 800 employees and 20 000 m² of production facility. Allbro supplies key components used in almost every locally made transformer. Allbro is a leading supplier of non-metallic enclosures to the industrial, commercial and residential contracting trades. Brands like York, Okari, Enlec, Utillec, Pso1 and Pso2 are well known in the South African market and are all solely manufactured by Allbro in this country. Local manufacture to international standards means that products are suited to the rigors of an extremely tough local environment. Over the last five years, Allbro has invested heavily into modern non-metallic enclosure systems for international markets. This has been on a level unprecedented in South African history.
### Amphenol

**Stand number:** Hall 7, B7  
**Contact:** Danie van der Merwe  
**Tel:** 082 326-8251  
**Email:** danie@amphenolafrica.com  
**Website:** www.amphenol.com

Manufacturing connectors since 1932, we take pride in the fact that Amphenol is the undisputed leader in interconnect systems for harsh-environment applications. Such applications require a high degree of engineering sophistication and precision manufacturing capability. Innovations like our RADSOK contact technology can provide roughly 50% more current through the same size pin. Amphenol: Enabling the electronics revolution.

### Astore Keymak

**Stand number:** Hall 6, B31  
**Contact:** Wayne Masters  
**Tel:** 077 922-5580  
**Email:** waynem@astorekeymak.co.za  
**Website:** www.astorekeymak.co.za

Electra Mining 2018 will once again see Astore Keymak, a member of the Hudaco Group and a leading supplier of the most comprehensive range of thermoplastic pipe fittings, valves and pipeline accessories in all recognised materials, as well as plastic welding equipment. Astore Keymak will showcase its range of high quality products suited for a variety of industries using pressured pipe systems.

### ATI Systems

**Stand number:** Hall 6, K09  
**Contact:** Ferdie Kuilder  
**Tel:** 011 383-8300  
**Email:** ferdie@atisystems.co.za  
**Website:** www.atisystems.co.za

ATI Systems is a leading supplier of Industry 4 rotary motion and linear displacement sensors. The company has a specialist electrical assembly division involved with the design of low voltage power distribution and motor control assemblies. ATI Systems is the sole importer and distributor of the Eldon range of enclosures: wall-mounted and floor-standing enclosures and consoles in stainless steel and mild steel.

### Automation Products

**Stand number:** Hall 7, A11  
**Contact:** Arno Bernard  
**Tel:** 082 651-8155  
**Email:** arno@autoproducts.co.za  
**Website:** www.autoproducts.co.za

Automation Products is a manufacturer and distributor of electrical control panels, variable speed drives, starters, transformers and related electrical goods.

### ARB Electrical Wholesalers

**Stand number:** Hall 7, A04  
**Contact:** Scott Morrison  
**Tel:** 082 827-0124  
**Email:** scottm@arb.co.za  
**Website:** www.arb.co.za

ARB is one of southern Africa’s largest electrical wholesalers, playing a pivotal role in providing the essential materials required for the electrification of large-scale industrial and parastatal projects. Employing over 650 staff members, ARB provides a wide range of internationally recognised and SABS approved products across four main categories: power and instrumentation cable; overhead line equipment and conductors; general low voltage products and lighting.

### AZ-Armaturen South Africa

**Stand number:** Hall 6, C34  
**Contact:** Lilian Thompson  
**Tel:** 011-397-3665  
**Email:** lilian.thompson@az-armaturen.co.za  
**Website:** www.az-armaturen.co.za

AZ-Armaturen manufactures sleeved, self-lubricating plug valves, special valves and allied products. Its products are used in industries including chemical; petrochemical; oil and gas; mining; processing; automotive, and food and beverage. Valves for use under high operating pressures and aggressive, toxic or abrasive media are designed and developed together with our customers. AZ South Africa continuously meets the requirements of customers in sub-Saharan Africa.
Exhibitor profiles

Banding & ID Solutions Africa

Stand number: Hall 9, H14
Contact: Rosa Dos Remendos
Tel: 011 974-0424
rosa.remendos@banding.co.za
www.banding.co.za

Banding & Identification Solutions Africa will display its Band-It stainless steel band-and-buckle systems; preformed clamps; cable ties and identification solutions at Electra Mining Africa 2018. The company manufactures Band-It strapping and buckles under licence from Band-It-Idex in the USA. Mines looking for a solution to cable theft need look no further than the tamper-proof Ultra-Lok clamping system.

Bata Industrials

Stand number: Hall 6, D25
Contact: Adam Purgh
Tel: 031 701-4951
adam.pugh@bata.com
www.bataindustrials.co.za

Our number one priority is providing quality safety footwear.

BEKA Schréder

Stand number: Hall 7, A9
Contact: Phillip Vermeulen
Tel: 011 238-0016
ind@beka-schreder.co.za
www.beka-schreder.co.za

BEKA Schréder is Africa's leading manufacturer of luminaires and GRP poles. We offer quality lighting solutions in various categories, including industry. The company aims to satisfy the needs of its customers with high performance products made to high quality standards, delivered on time and supported with technical advice.

Becker Mining South Africa

Stand number: Hall 6, C18
Contact: Tania Henderson
Tel: 011 617-6300
tania.henderson@za.becker-mining.com
www.za.becker-mining.com

Becker Mining Systems is the worldwide leader in the design, manufacture and supply of energy distribution; automation; communication; transportation and roof support for underground mining infrastructure systems.

Beckhoff Automation

Stand number: Hall 7, A18
Contact: Michelle Murphy
Tel: 011 795-2898
michellem@beckhoff.co.za
www.beckhoff.co.za

Beckhoff Automation implements open automation systems based on PC Control technology. The product range covers industrial PCs, I/O and fieldbus components, drive technology and automation software. Products that can be used as separate components or integrated into a complete and seamless control system are available for all industries. The Beckhoff New Automation Technology philosophy represents universal and open control and automation solutions that are used worldwide in a wide variety of different applications, ranging from CNC-controlled machine tools to intelligent building automation.

Brady

Stand number: Hall 9, F20
Contact: Morne Louw
Tel: 011 704-3295
cs_africa@bradycorp.com
www.bradyeurope.com

Brady is a leading manufacturer of ID and safety solutions with its complete range of high performance labels; industrial label printers; software; safety and facility identification; spill control; lockout-tagout solutions and more.
Exhibitor profiles

**Fluke by Comtest**

**Stand number:** Hall 7, B09  
**Contact:** Helen Preston  
**Tel:** 010 595-1821  
sales@comtest.co.za  
www.comtest.co.za

Comtest Distribution focuses on the test and measurement industry with its partnership with Fluke Corporation, the world leader in the manufacture, distribution and service of electronic test tools and software. Fluke provides troubleshooting capabilities that enable the end-user to manage and control maintenance time and expenditure.

**Concilium Technologies**

**Stand number:** Hall, 9 B23  
**Contact:** Desiree Hefer  
**Tel:** 084 618-3580  
desiree.hefer@concilium.co.za  
www.concilium.co.za

Concilium is a well-established, trusted provider of equipment, applications and solutions within four primary markets. Our focus is on professional broadcast, test & measurement and enterprise network performance management and test. We are ISO9001 certified and work with leading international partners like Keysight Technologies and VIAVI Solutions to facilitate complete solutions backed by full local support.

**Electro Systems**

**Stand number:** Hall 7, C04  
**Contact:** Ludi Erasmus  
**Tel:** 063 691-1754  
ludi@electromodular.co.za  
www.electrosystems.co.za

The Electro Group of companies comprises Electro Systems, a panel builder and systems integrator; Electro Generators, a supplier of generators; Electro Enclosures, a supplier of enclosures, and Electro Modular, a distributor for Logstrup type-tested enclosures.

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Exhibitor profiles

Engen Petroleum

Stand number: Hall 6, F28
Contact: Simon Prevett
Tel: 011 480-6111
simon.prevett@engenoil.com
www.engen.co.za

Engen is an Africa-based company focused on the refining and marketing of petroleum and petroleum-based products. Our product range includes top performance lubricants under the brands of Engen and Petronas. We also provide technical services and innovative on-site lubrication solutions. Engen ensures reliable operations with committed teams on the ground and a range of guaranteed quality lubricants and fuels.

Eplan Software and Services

Stand number: Hall 7, E17
Contact: Marietjie Daubert
Tel: 060 539-8762
daubert.m@eplan.co.za
www.eplan.co.za

Eplan Software & Service develops CAE solutions and advises companies on how to optimise their engineering processes. Customers profit from increased efficiency in the product development process through standardised procedures, automated sequences and consistent workflows. The service portfolio also covers customising, consulting and training.

Gemü Valves Africa

Stand number: Hall 5, A16
Contact: Viki Besselaar
Tel: 011 462-7795
viki.besselaar@gemue.co.za
www.gemue.co.za

Gemü Valves Africa provides German-engineered solutions in valve and automation technology throughout Africa. Products include diaphragm, butterfly, ball, globe and angle seat valves, as well as flow meters and various actuators and positioners for mining, chemical, water and pharmaceutical industries. Gemü manufactures valve, measurement and control systems. The company is a market leader for sterile applications in the pharmaceutical and biotechnology industries.

Flender

Stand number: Pavilion, R04
Contact: Donald Richardson
Tel: 071 603-3112
donald.richardson@siemens.com
www.flender.com

Flender provides components for mechanical drive technology, producing at eight locations with more than 6000 employees around the world. Its products include gear units and couplings; drive applications and associated services; integrated drive systems; spare parts; repaired gear units and field services. The range of sectors it serves includes mining; wind power; cement production; water and waste water as well as conveyor and lifting technology.

Helukabel

Stand number: Hall 7, C20
Contact: Hardus van Dyk
Tel: 011 462-8752
sales@helukabel.co.za
www.helukabel.co.za

Helukabel a leading manufacturer and distributor of an extensive range of cables and wires. The range caters for many applications and nearly every purpose – available directly from the warehouse. Helukabel supplies cables and wires for all industry sectors, applications and every purpose. Our comprehensive stock assortment with over 33 000 products lets us cover your needs with short delivery times.
IAC – Industrial Automation and Control

**Stand number:** Hall 5, A14  
**Contact:** Damian van der Walt  
**Tel:** 012 657-3600  
sales@iacontrol.co.za  
www.iacontrol.co.za

With more than 19 years’ experience and a carefully selected portfolio of industrial solutions, IAC specialises in taking a niche international product offering and adapting it into solutions for the unique requirements of the African market. Our products include industrial Ethernet and fibre; network switches; ruggedised connectors; HMI; converters; wireless networks; decentralised IP and thermal surveillance.

ifm electronic

**Stand number:** Hall 7, C01  
**Contact:** Customer Support  
**Tel:** 012 450-0400  
info.za@ifm.com  
www.ifm.com

ifm electronic is a service-oriented sensor specialists represented by more than 6700 employees in over 70 countries worldwide. Now a large company, it maintains the flexibility and individuality of a small enterprise and the quality and professionalism of a group. Its processes are focused on customer service and product quality. The company uses its customers’ feedback to improve the quality of its products. Ifm electronic’s test procedures push its sensors beyond their limits and each product is submitted to a final inspection before it leaves the premises. The company grants a five-year warranty on each catalogue product. Its product portfolio covers all relevant standard solutions and the special requirements of individual industries. The ifm product portfolio includes position and process sensors, sensors for motion control and safety technology. Ifm electronic offers products for industrial imaging and communication, identification systems and systems for mobile machines. Visit them in Hall 7 for live demonstrations on their updated product range.

Jaycor International

**Stand number:** Hall 7, G20  
**Contact:** Greg Pokroy  
**Tel:** 021 447-4247  
greg@jaycor.co.za  
www.jaycor.co.za

Distributors and service providers of specialised connectivity solutions for industrial IoT applications including physical infrastructure and software services.

Konecranes

**Stand number:** Hall OS, P52  
**Contact:** Annamarie Venter  
**Tel:** 082 301-2359  
annamarie.venter@konecranes.com  
www.konecranes.co.za

Konecranes, established in Finland over 100 years ago, is a world-leading group that manufactures cranes and hoists for various industries including mines, shipyards, ports and terminals. Konecranes services cranes and hoists of all makes. The group has 12 100 employees at 626 locations in 48 countries, including ten branches in South Africa.

Lapp Southern Africa

**Stand number:** Hall 7, E18  
**Contact:** Alan Liebenberg  
**Tel:** 011 201-3200  
alan.liebenberg@lappgroup.co.za  
www.lappgroup.co.za

Lapp Group is a leading supplier of integrated solutions and branded products in the field of cable and connection technology. The portfolio includes standard and highly flexible cables; industrial connectors; screw technology, and automation and robotics. Lapp’s core market sector are industrial machinery and plant engineering. Other key markets include the food industry and the energy and mobility sectors.
**Exhibitor profiles**

**Mimic Components**

**Stand number:** Hall 7, F25  
**Contact:** Carric Shepherd  
**Tel:** 011 689-5728  
**caric@mimic.co.za**  
**www.mimic.co.za**

We are passionate about the electrical and electronics sectors and have developed great skill in design, development and production of PC boards; automation solutions; control panels; control desks and data logging. Our lights and sounders are put through rigorous testing before being offered to market. We offer airport lighting solutions; food monitoring logistics, logging and monitoring; temperature control and monitoring, and power distribution control and monitoring.

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**Metso**

**Stand number:** Hall 6, G26  
**Contact:** Steve Clark  
**Tel:** 011 961-4000  
steve.clark@metso.com  
**www.metso.com**

Metso is the world’s leading industrial company in the mining and aggregates industries and in the flow control business. Our knowledge, people and solutions help to drive sustainable improvements in performance and profitability in our customers’ businesses. Metso has an uncompromising attitude towards safety. Our products range from mining and construction equipment and systems to industrial valves and controls.

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**Nordland Lighting**

**Stand number:** Hall 9, C12  
**Contact:** Johann Lamprecht  
**Tel:** 011 662-4300  
sales@nordland.co.za  
**www.nordland-lighting.com**

Nordland Lighting have been manufacturers of industrial, mining and hazardous lighting luminaires since 1967. Hazardous areas include Zone 1, 2, 21 and 22. All luminaires are locally manufactured and are available in conventional and/or LED light sources.

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**Major Tech**

**Stand number:** Hall 7, B12  
**Contact:** Werner Grobbelaar  
**Tel:** 011 872-5500  
werner@major-tech.com  
**www.major-tech.com**

Major Tech is a well-known and respected brand in the electrical industry and a leader in professional test and measurement instrumentation, supplying hand-held test instruments for every application to measure, record or analyse. Its success is pioneered by the passion, commitment and efficiency of its people; the company believes that great people make a great business.

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**Megger**

**Stand number:** Hall 7, A7  
**Contact:** Nathaniel Folscher  
**Tel:** 082 607-1509  
nathaniel.folscher@megger.com  
**www.megger.com**

Megger is a leading worldwide manufacturer and provider of test and measurement equipment to the electrical industry, helping companies to operate more reliable, safe and efficient electrical supply networks. Megger has a reputation for rugged and reliable test instruments that are easy to use and cost effective to own.

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**Lead HV**

**Stand number:** Hall 7, D05  
**Contact:** Barry Lombaard  
**Tel:** 078 205-7460  
info@leadhv.co.za  
**www.leadhv.co.za**

Lead HV provides electrical test instrumentation for the power utility, HV industry and electrical contractors market. Our products and solutions provide cost effective and quality instrumentation for the entire industry and are backed by a rock-solid warranty and quality guarantee. We supply full technical backup, training and support for our entire product range. Our philosophy towards the industry is based on close client relationships and on being solution providers for our clients at various levels of the electrical industry. We have extensive knowledge and experience in the industry and are therefore able to assist our clients at a technical needs level. We pride ourselves in our ability to be solution providers and not just product suppliers.
Exhibitor profiles

RS Components

Stand number: Hall 5, A9
Contact: Mellisa Govender
Tel: 011 691-9300
mellisa.govender@rs-components.com
www.rsonline.co.za
RS Components is a global e-commerce distributor of industrial products and electronic components. We offer over 500 000 products across more than 2500 leading brands in the following categories: automation and control; electronics; mechanical; electrical; test and measurement; personal protection and safety equipment, and tools and consumables. We deliver within four work days to your door. We distribute over 50 000 parcels daily to over 1-million engineers, buyers and maintenance professionals in over 80 countries. We are a multi-channel distributor supporting customers across the product life cycle. This can be via innovation and technical support at the design phase, improved productivity in the build phase or reducing purchase-to-pay costs and optimising inventory in the maintenance phase. Our business supports customers across industries from manufacturing to business services, utilities and infrastructure. Visit our new Africa site at www.rsonline.africa for fast, delivery direct into Africa.

Rugged Interconnect Technologies

Stand number: Hall 9, C03
Contact: Bossie Coetzer
Tel: 076 801-3880
bossie@ri-tech.co.za
www.ri-tech.co.za
Rugged Interconnect Technologies focuses on offering rugged computing solutions to the local industry. Working closely with our valued customers, we propose solutions based on a wide range of commercial off-the-shelf computing modules and systems. With 30 years’ experience in embedded technology, we pride ourselves in offering our customers local sales and support.

RWW Engineering

Stand number: Hall 7, A15
Contact: Jeremy Wood
Tel: 011 433-8003
sales@rww.co.za
www.rww.co.za
RWW Engineering provides switchgear and motor control; reactive power compensation; harmonic filter equipment and others. Manufactured products include low and medium voltage motor starting panels; variable speed drives; liquid resistance motor starters; LV power factor correction; LV power factor correction trailers; assembly of Nokian LV capacitors; 11 and 24 kV MV switchgear and circuit breakers, and Merlin Gerin NEX metal-clad switchgear.

Electrical, Power & Control Preview – Electra Mining Africa 2018

PEPPERL+FUCHS

Stand number: Hall 6 & 7, B30 & B02
Tel: 087 985-0797
info@za.pepperl-fuchs.com
www.pepperl-fuchs.co.za
Automation is our world. Perfect application solutions are our goal. In 1945, Walter Pepperl and Ludwig Fuchs founded a small radio workshop in Mannheim, Germany, based on the principles of inventiveness, entrepreneurial foresight and self-reliance. The experience they acquired was transformed into new ideas, and they continued to enjoy developing products for customers. The eventual result was the invention of the proximity switch. This innovation represented the starting point of the company’s success story. Today, Pepperl+Fuchs is known by customers around the world as a pioneer and an innovator in electrical explosion protection and sensor technology. Our main focus is always on your individual requirements: with a passion for automation and ground breaking technology, we are committed to working in partnership with you now and in the future. We understand the demands of your markets, developing specific solutions and integrating them into your processes.

Phoenix Contact

Stand number: Hall 7, D12
Contact: Carl Coetzer
Tel: 083 650-7121
carl@phoenixcontact.co.za
www.phoenixcontact.co.za
The Phoenix Contact Group includes 14 companies and over 50 sales subsidiaries. Its products comprise components and system solutions for energy supply. Phoenix Contact offers modular terminal blocks and terminals; printed circuit terminal blocks and plug connectors; cable connection technology, marking and installation accessories; electronic interfaces and power supplies; automation systems; safety solutions; surge protection systems, and software programs and tools for system operators and manufacturers.

RJ Connect

Stand number: Hall 7, D11
Contact: Robyn Kelly
Tel: 011 781-0777
robyn@rjconnect.co.za
www.rjconnect.co.za
RJ Connect, founded in 1997, is a leading industrial automation company based in Johannesburg, South Africa. RJ Connect is an accredited Moxa supplier in Africa, and strives not only to supply high quality products, but excellent customer service as it strives to become the number one industrial communications company in South Africa.
Schneider Electric

Stand number: Hall 7, B15
Contact: Koos du Toit or Jenny van Rooyen
Tel: 011 254-6400
koos.du-toit@schneider-electric.com
www.se.com/za

Schneider Electric, the global specialist in energy management and automation, announces EcoStruxure for mining, minerals and metals, a new system architecture that leverages innovative digital technologies and the IIoT to allow companies to seamlessly connect, collect, analyse and act on data in real time to improve safety, efficiency, reliability and sustainability.

Siemens

Stand number: Hall 7, D8
Contact: Jennifer Naidoo
Tel: 011 652-2795
jennifer.naidoo@siemens.com
www.siemens.com/mining

Diminishing productivity, harsh climates, remote sites, rising energy costs and water scarcity are challenges the mining industry faces every day. Ever-growing market demands require a solution enabling the perfect interaction of all assets during extraction, transportation and beneficiation. As a trusted mining partner, Siemens helps our customers to meet their challenges and thereby enables them to set new benchmarks within their fields. Find out more at www.siemens.com/mining

Silicon Engineering

Stand number: Hall 6, J34
Contact: Pieter or Wilfred
Tel: 011 474-3423
sales@silicon-online.co.za
www.silicon-online.co.za

Manufacturers of battery tripping chargers, portable chargers, mobile battery tripping units and aircraft ground power units, aircraft battery chargers and dischargers. Importers of highest quality German-made BAE lead acid batteries for solar and protective stationary applications, as well as EverExceed vented, valve-regulated and recombination nickel cadmium cells. Importers of high quality Alphasys battery racks for all batteries.

SEW-Eurodrive

Stand number: Hall 6, J20
Contact: Jana Klut
Tel: 011 248-7000
jklut@sew.co.za
www.sew-eurodrive.co.za

SEW-Eurodrive offers innovative drive solutions for all mining applications. The main focus is to best utilise the space available to ensure flexibility and reliability. Minimum maintenance and simple operation translate into maximum productivity and cost-effectiveness. Due to the modular design and combinations available, all drive engineering components can be replaced quickly. From the aggregates sector to gold, platinum, coal, and diamond mining, SEW has complete solutions for all commodities.

SMC Corporation

Stand number: Hall 6, E05
Contact: Joanne Zimmerman
Tel: 083 416-1002
jzimmerman@smcpneumatics.co.za
www.smcpneumatics.co.za

SMC are the world leaders in pneumatics and are experts in industrial automation. Their pneumatic and electric components are used extensively throughout the automotive, electronics, life science, mining and food processing and packaging sectors. The company opened its Johannesburg facility in 2016 and this modern office, factory and extensively stocked warehouse were designed to meet the needs of South African customers.
Three-D Agencies

Stand number: Hall 8, A11-15
Contact: Mark Jenkins
Tel: 082 829-9812
markj@three-d.co.za
www.three-d.co.za

The cable accessory company. Suppliers of copper lugs; cable glands; cable ties; heat-shrink; tools; instruments; thermal imaging cameras; pre-insulated terminals; terminal kits; Betaflex and convoluted tubing; hydraulic crimping equipment, and Dewalt, Stanley and Black & Decker tools. We have everything you need in cable accessories.

Traceability Solutions

Stand number: Hall 6, J25
Contact: Kelby Parker
Tel: 010 020-7220
sales@tracesol.co.za
www.tracesol.co.za

Traceability Solutions is the leader in the field of marking, identification and traceability. Our solutions give our clients brand protection, accountability, authentication, traceability and many more vital business requirements. From basic handheld marking tools to the most sophisticated pin, laser and inkjet solutions for every manufacturer and application, we are the only company worldwide to offer all these solutions.

Verder Pumps SA

Stand number: Hall 6, G23
Contact: Kirstin Adam
Tel: 066 329-1701
info@verder.co.za
www.verder.com/za/en

Verder Pumps is a leading pump supplier throughout South and sub-Saharan Africa, with a reputation for providing reliable pumping solutions. Verder Pumps’ range of industrial pumps will be on display at this year’s Electra Mining Africa show. The range includes Verderflex and dura peristaltic hose pumps; Verdermag magnetic drive pumps; Verderair air-operated double diaphragm pumps; Verderhus screw channel pumps and PACKO stainless steel centrifugal pumps.

Verotest Holdings

Stand number: Hall 7, D18
Contact: Johan Pryra
johan@verotest.co.za
www.verotest.co.za

We are market leaders in the supply and maintenance of test and metering equipment for the power industry. Our brands include Megger, Vivax and Sofamel. We also provide training and related supporting services.

Vision Automation

Stand number: Hall 7, E12
Contact: Wally Britz
Tel: 011 826-7365
info@visionautomation.co.za
www.unitronics.co.za

Responsible for all Unitronics activities in southern Africa. Unitronics, based in Israel, is an innovative designer and manufacturer of programmable logistical controllers (PLCs). The products are unique in that they incorporate PLC, HMI and database functionalities in one compact package. The software is a free issue and can be downloaded from the website of the manufacturer, Unitronics, at www.unitronicsplc.com

Bidvest Electrical/Voltex

Stand number: Hall 6, C32
Contact: Jessica Hitchcock
Tel: 011 879-2000
jhitchcock@voltex.co.za
www.voltex.co.za

We supply the widest range of electrical and related products through our 21 supply division and 58 distribution outlets situated across southern Africa. We are a proudly Bidvest company and a leading stockist and distributor of a vast and comprehensive array of electrical and related materials.

Zest WEG Group

Stand number: Outside, P01
Contact: Janet Holfeld
Tel: 011 723-6000
info@zestweg.com
www.zestweg.com

The Zest WEG Group, a subsidiary of Brazilian motor and controls manufacturer WEG, has been servicing the continent for more than 35 years. Products include low, medium and high voltage electric motors; vibrator motors; VSDs; softstarters; switchgear; power and distribution transformers; MCCs; containerised and mobile substations; mini-substations; diesel generator sets and co-generation and energy solutions, as well as electrical and instrumentation engineering construction and project management services in Africa.
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Regulations, standards, technology and business opportunities in:
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The South African Institute of Electrical Engineers (SAIEE) and EE Publishers are pleased to announce a joint collaboration for co-hosting:

SA Energy Storage, SSEG & Smart Grid 2018 conference and exhibition

which has been expanded to include a dedicated concurrent SSEG Seminar on the regulations, standards, technology and business opportunities in Small-Scale Embedded Generation in Africa.

The concurrent SSEG Seminar will take place from 08h30 to 17h00 at Emperors Palace on Tuesday 23 October 2018, as an integral part of SA Energy Storage, SSEG & Smart Grid 2018.

www.energystorage.co.za
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