MAGAZINE FOR ELECTRICAL SAFETY

MONITOR

1
13

New from Bender: Power Quality and more!

The Bender system now complete with Power Quality devices and the Condition Monitor

Safely into Space

Bender Technology at the Alcântara Spaceport, Brazil

Integrated Industry

– big idea, but it covers a lot

The new portable insulation fault locator EDS195P

Further development for high availability electrical supply systems

BENDER Group

editorial

Dear Reader,

The world has kept on turning for another six months since our last Monitor. One major event for our company was the departure of Wolfgang Hofheinz as Technical Director. His leaving was marked officially by all employees and a number of honoured guests, including Prof. Klaus Wucherer, (President of IEC), Dr. Hans-Heinz Zimmer (Chairman of VDE), Dr. Bernhard Thies (President of IEC/Speaker) and Michael Teigeler (Executive Board of DKE). For his remaining two years of office as president of the DKE, Hofheinz will continue to ensure that the safety of electrical current continues to be a top priority in the world of norms and standards, thus affording people and equipment the best possible protection.

His successor, Mr. Möll, will now make sure that we continue not only to meet our customer requirements into the future with innovative products but we also get them excited. If you want to gain an insight into the protection and monitoring technology of the future, you can see now by visiting the Hanover Fair, hall 12, booth D 66. The "Power Scout" is looking forward to some interesting technical discussions. We will be showcasing a range of new products at the fair, e.g. new insulation monitoring devices for special applications from PV through railway engineering to smelting furnaces, a new device for network and system protection for PV systems which complies with the most important international standards, our new Power Quality product range, fixed and mobile equipment for insulation fault location and devices to monitor residual currents. But the really good bit is that these products are all now linked together to make visualising the systems easier than it has been.

Meet the Power Scout!

Yours,

Dirk Pieler
CEO

IMPRINT

Publisher:
Bender GmbH & Co. KG.
Londorfer Straße 65
35305 Gruenberg / Germany
Fon: +49 6401 807 - 0
Fax: +49 6401 807 - 259
E-Mail: info@bender-de.com
www.bender-de.com

Editorial staff:
Marita Schwarz-Bierbach
Anne Katrin Römer

Graphic & layout:
Natascha Schäfer, Dipl.-Komm.-Designerin (FH)
www.s-designment.net

Photos:
Bender archives, S!Designment archives, Fraport AG, DFKI, Harms & Wende, INAT, RDI Bender, Siemens Systems, Bentley Systems Inc., Institut für Normung (DIN), Ebbco Ltd.,
Fotolia.com: ag visuell, Sergey Nivens, Oleg F,
iStockphoto: Eimantas Buzas, josemoraes, Hocus Focus Studio, Peter Petto,
Thinkstock: Lind Bucklin-iStockphoto, Jochen Sands, Digital Vision

Print:
Druckhaus Bechstein, Wetzlar, Germany

content




Integrated Industry
– big idea, but it covers a lot

→ Page 04

Integration means not going back to 'everything under one roof', but opening the door to new forms of cooperation.

Integrated Industry – the Hanover Trade Fair has taken a seriously important main topic for the 2013 event. And the first reaction from industry – and it is all about this sector and above all the exhibitors from it – seems to confirm that it hits the mark exactly ...

Bender Technology at the Alcântara Spaceport, Brazil
Safely into Space

→ Page 26

A few kilometres north of Alcântara, in the Brazilian state of Maranhão, lies the spaceport Centro de Lançamento de Alcântara. The base lies at 2°18' south latitude, and is therefore the rocket launch site closest to the equator worldwide. Satellite missions and tests of the Veículo Lançador de Satélites (VLS) satellite launcher have been launched from here since 1989 ...

Innovation and quality for
resistance welding

→ Page 34

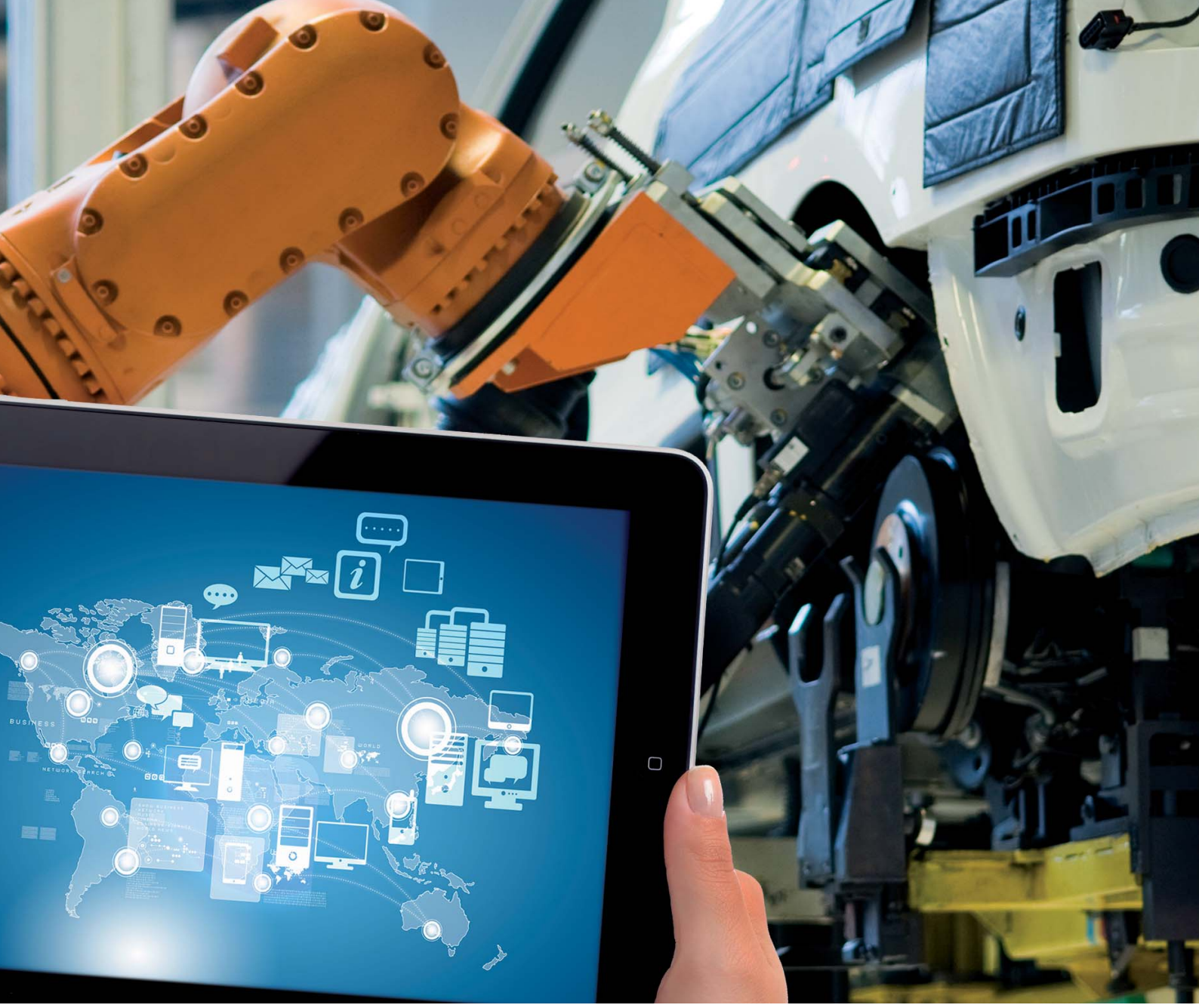
Harms & Wende GmbH & Co KG is specialized in the development of resistance- and friction welding systems. Very important to us as mid-size company is the close cooperation with our customers and suppliers ...

Integration means not going back to 'everything under one roof', but opening the door to new forms of cooperation.

Integrated Industry

– big idea, but it covers a lot

Integrated Industry – the Hanover Trade Fair has taken a seriously important main topic for the 2013 event. And the first reaction from industry – and it is all about this sector and above all the exhibitors from it – seems to confirm that it hits the mark exactly. Integration is the subject that industry, particularly German manufacturing, is concerned with above all else. It is therefore worthwhile taking a closer look at the subject and studying more closely what is actually to be integrated, why it has become such a general topic and why it is so urgent.



The organization of industrial companies has been changing more or less continuously in the last 200 years, from make-to-order through to serial manufacture in the millions. Now we are experiencing an amazing coexistence and intermingling of ultra-small job lots and individual variants that are still capable of being economically brought to market utilizing mass manufacturing methods. Two main paths have led to this success.

The first one consists of driving the distribution of labor and specialization to the point where high-quality components could be delivered in the shortest possible time. To do so, not only specialization within the company had to be driven to the extreme, the company even lost its original integrated form. One single company has not supplied everything for a long time and neither has development and manufacture taken place under a single roof. For a new range of products in the automobile industry – i.e. the kind of project that has

„**Processes distributed worldwide,**
also demand a suitable form of integration."

a specific and defined goal – thousands of companies have come together to form an extended company that no longer represents a company organization in the real sense. This giant "distributed" company operates across national boundaries and even worldwide, this being the only way in which products can today be produced in an economic manner in spite of the enormous diversity of customer wishes.

The second path that arrives at today's situation is closely linked to the first one. The only way to extend and virtualize the company as it is experienced today is through the use of computers for the digital development and manufacture of products and systems by means of – in comparison to earlier documents – fast and easy exchange of data. And the only way of creating a globally distributed "company" is by means of the Internet and the global networking possibilities offered by the World Wide Web.

Organization in industry now implies a virtual distributed organization with many thousands of participants. Here competitors work closely together on an as-needed basis while still engaged in bitter competition with one another in other fields, or in the same one after the project has ended. A good example here is engine development, for which automobile concerns nowadays enter partnerships.

Although this was so positive in its effect initially, it today calls for some kind of consolidation. The communication between the many participants, the clients, partners and suppliers – without even taking the end customer into consideration – can in no way be compared with the direct communication between staff in two neighboring departments. This is because the technical information systems that are used everywhere still date from the time when there were no smartphones or mobile terminals. They can only communicate indirectly since each has its own language, and the organization of a small company specialized in software is different than that of a constructor of large systems, thus making communication – to put it mildly – difficult.

Integrated Industry means in all cases a modern industrial organization. We have to find new ways that permit a distributed organization that comes together only for a short period to internally consult, formulate requirements and communicate and follow up on their implementation. The old specification sheets will soon look as outdated as the technical drawing done by hand on a draftsman's table has been for decades. The integration of the industrial organization can therefore not be thought of as a way back to "everything under one roof" but as finding new ways of cooperating. The future of the organization lies in its networking.

Network processes for a networked industry

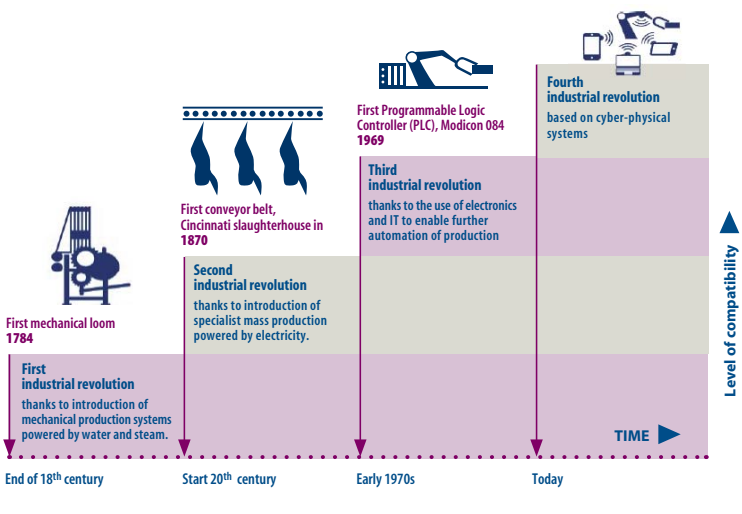
The second big topic in industry is in the processes that have, across many years, crystallized out for the specific product and method of production. These processes continue to be refined and optimized for planning, development, production, order administration and customer service. For a long time it has been said that the improvement of processes never ceases and that a good company is in particular characterized by the fact that its processes are constantly changing.

In the same way that the organization has fundamentally changed due to the influence of modern technologies, processes fundamentally change when they are no longer defined and followed through within a closed company, but are split among hundreds or even thousands of participants who are not subject to a common form of discipline.

These processes, distributed worldwide, now also demand a suitable form of integration. The interplay of the sub-processes must be simplified and improved. Whether the standardization of pro-

cedures, communication paths or the establishment of common terminologies with the aim of forming a meaningful whole out of a confusion of individual processes that are not matched to one another – industry needs modern information technologies that can handle the task of integration here. It must, however, be tailored to the specific purpose and the processes to be developed in the industries concerned. The subject of security has recently shown that IT security for the PC and the use of standard software fundamentally require other measures as the security of IT controllers in automation systems. In the one case it is protection against data theft and unauthorized use of data that is important, in the other, the protection of company-critical systems against deliberate or accidental control malfunctions or even sabotage. In the same way, the integration of industrial processes needs solutions different to those needed for the integration of citizen registration procedures or the statistical evaluation of school results. Here it is not about the best possible recording and assessment of data – in the end analysis, value must be added.

FROM INDUSTRY 1.0 TO INDUSTRY 4.0:



Source: DFKI (2011)

The third area that is more and more strongly calling for integration is to be found in the intelligent and increasingly networked systems that mean that almost every product is today accompanied by a complexity that is almost impossible to control. Embedded software is everywhere, from the electric toothbrush and the coffee machine to the automobile. In a preview of the 2013 Hanover Trade Fair, Professor Manfred Broy gave several figures: With up to 100 million lines of programming code, a top-of-the-range vehicle has around double the amount of software that the Space Shuttle has. And it has anything up to a hundred control units that communicate via five bus systems.

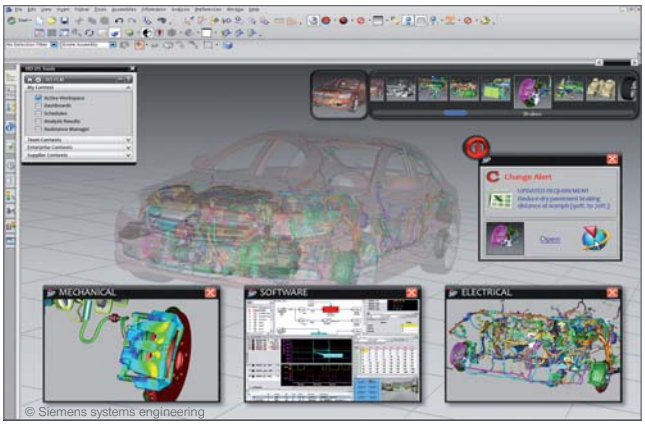
Software makes the products into something that has previously never existed – even if no external change can be seen. The cell phone is still a telephone but this particular function is now negligible compared to everything else that it can be used for. Software, GPS systems, sensors and actuators are all contained in one case. As a direct result, the quality, the security and not least the usability and usefulness for the human over the long term therefore requires an integration of those specialist disciplines involved in the development and production of today's products.

Integration of engineering disciplines for intelligent system development

The high degree of specialization that has in the first instance brought us so far has now become a shackle that prevents us from taking the next step. How can software developers and mechanical specialists be brought together with electronics, hydraulics and flow specialists? How can the extremely differing rates of development, from new versions of software that can be released at an hourly rate up to the weeks or months required for the mechanical disciplines, be synchronized? How do we arrive at a model of the digital product that can be represented and understood from all its very different perspectives or indeed at a model that above and beyond this permits the simulation of its multidisciplinary function in the conceptual phase?

„There are pilot projects in which the market is involved in innovation and product development via the Internet ..."

Data from product development and scanned production site is used for collision checking.



Representation of systems engineering by Siemens

This indeed is one of the most important goals – the ability to test on a digital model the product, the production system, the tooling and manufacturing facility those aspects that in the real production world simply cost too much time and money to carry out.

And as if all of these challenges were not more than enough, they are now joined by one that results from what industry can rightly regard as being its masterpiece – the integration of the value creation chain. What was regarded as being right for hundreds of years is now antiquated. Separation of the product lifecycle into individual blocks that run in a sequence but then have to wait for the results provided by the previous block is no longer regarded as being sufficient by the market – and not only because things must move faster, but also because technology today gives us possibilities that can already involve potential future customers in the concept and planning phases. This can only be realized when all of the data from A to Z, from the sketch through to the ordering of spare parts, are completely integrated. In other words when the customer can access data that up until now has been reserved for the constructor or when manufacturing can simulate in action a model of the next product series utilizing data from the future product production facility. There are already a great number of pilot projects in which the market is involved in innovation and product development via the Internet or is even treated as the main player.

CONCLUSION:

Integrated Industry is therefore a motto that succeeds very well in intent and scope for this year's Hanover Trade Fair. And we have not even mentioned the fact that this is the place where VDMA, ZVEI und BITKOM will jointly hold a platform discussion on the subject of Industry 4.0. The final version of the strategy recommendation for the Federal Government will be presented there. The core of the fourth industrial revolution which everyone is now talking about is indeed the integration of the organization, the processes, the specialist disciplines and the entire value creation chain. And all of this intelligence is intended to be used for the benefit of those industrial production possibilities that modern technology offers. ■

Ulrich Sendler
independent technology analyst and journalist

Dipl.-Ing. Wolfgang Hofheinz

As of 1 January 2013,
a personnel change was made to the management.

New technical director at Bender

After 37 years of sterling commitment to the company, Dipl.-Ing Wolfgang Hofheinz is stepping down from his active role as technical director. He will continue to work for Bender in the standardisation sector as he has been working for national and international standards agencies on a voluntary basis for many years. He received the IEC 1906 Award in 2006 and the DKE badge of honour in 2008 and has chaired the DKE since 2011.

A festive celebration with some 500 guests from politics, commerce, staff and family was held to bid farewell to Wolfgang Hofheinz after many years as technical director.

Symbolische Übergabe

Dipl.-Ing. Winfried Möll

Dr. Dirk Pieler, the Senior Manager at Bender, gave a speech thanking him for his fruitful and constructive cooperation and giving the guests an outline of the programme for the event. As well as Frank Ide, the Mayor of Grünberg, there were also speeches by his colleagues and fellow campaigners from his many years working with standards. Prof. Klaus Wucherer, President of the IEC (International Electrotechnical Commission), Dr Thies, Managing Director of the DKE and Mr Gebhardt, a long-standing fellow member of the IEC panel, all praised his decades of work on standards and, in particular, his role as the President of the DKE (German Electrotechnical Comission).

Representatives of the worldwide Bender subsidiaries, employees from the technical department and the head of commercial training thanked Mr Hofheinz for his real commitment and the friendly, positive cooperation which was always so important to him throughout his many years with the company.

Finally, it was down to Dipl.-Ing D. Christian Bender, the company's CEO, finally honoured Mr Hofheinz for all the years of good, close and successful cooperation and credited him as one of his most important colleagues who had played a significant role in the company's success and its international reputation.

As of 1 January 2013, Winfried Möll takes over as new technical director of the Bender group of companies, taking over from Mr Hofheinz with responsibility for all of development and production. Mr Möll has been with the company since 2010 and previously headed up the development of Monitoring Isolated Systems (MIS) division. He was named as Mr Hofheinz's deputy in December 2010. ■

Marita Schwarz-Bierbach
S-COM

SECOND MEDIUM-SIZED COMPANY CONFERENCE

Standardisation as success factor

The second medium-sized company conference on "Standardisation as success factor" took place on 6 and 7 November 2012 in Berlin-Schönefeld.

It was organised by the Federal Ministry for Economy and Technology (BMWi) and the German Institut für Normung e.V. (DIN). The conference offered decision-makers from trade, medium-sized industry, professionals and representatives from politics, commerce, associations and chambers of commerce a platform to exchange opinions and ideas.

The conference provided practical information on how small and medium-sized enterprises (SME) can gain simple access to standards and the standardisation process and the benefits they can derive from this. International standards offer a frame of reference for the global market and a shared technical language among trading partners. This means that standards can make trading abroad considerably easier. At the same time, standards can provide a catalyst for innovation and help anchor solutions sustainably in the market. So it is important to simplify access to standards for medium-sized companies and involve them in the standardisation process.

After presentations on standardisation policy at a national and European level, services and measures were presented, as initiated, among others, by the Medium-Sized Companies Commission (KOMMIT) in 2008 to make it easier for SME to access standards and the standardisation process. These include an SME helpdesk for questions relating to standardisation, internet portal to simplify involvement in the processes and industry-specific online services through which the relevant portfolio of standards can be purchased cost-effectively.

As part of this event, which included presentations of practical examples from medium-sized companies, Dipl.-Ing. Wolfgang Hofheinz, then technical director of Bender GmbH & Co. KG in Grünberg, spoke about his experiences in the field and what role standardisation played in Bender's success as a company.

Success through strategic standardisation

Active involvement in standardisation is written in Bender's company philosophy and it is something the company has been actively pursuing for years. Involvement in the standardisation panels provides knowledge on the markets and thus promotes company growth.

The activities focus on protection against electric shock, which is not only important from a company perspective, but also plays a major role in perception by the general public. Active standardisation work in industry, the electronics trade and other areas has led to significant reductions in electric accidents over the last few years.

Statistics from the Federal Ministry for Industrial Safety and Occupational Medicine, for example, prove this. Standardisation work in Germany is organised by the DKE German Commission for Electrical, Electronic and Information Technologies of DIN and VDE. The German Electrical and Electronic Manufacturers' Association, ZVEI, carries out fundamental work on exchange experiences and opinions and draws up shared positions.

The development and production of standard-compliant protective and monitoring devices for electrical systems translates into good prospects for success, especially for medium-sized companies. ■

Wolfgang Hofheinz, Director, Bender GmbH & Co. KG

Source: Text BMWi

VDE|DKE important partners to European Customs Union in the norms and standards sector

Russia is working intensively on creating the Eurasian Union, a counterpart to the European Union. At the same time, the EU is being used as a model for the new community.

The customs union with Belarus and Kazakhstan, which was founded in 2010, will form the nucleus of this new government alliance and, preliminarily, be expanded to form the Eurasian Union (EAU) when more countries join in 2015. This area represents a growth target market, especially in the areas of electricity, energy supply and transfer and modern communication and information technology. Against this backdrop, the VDE and its standardisation organisation DKE Deutsche Kommission Elektrotechnik Elektronik Informationstechnik im DIN und VDE (VDE|DKE) are intensifying efforts to prepare the way for new technologies by means of relevant standards and legislation.

As part of the Eurasian Economic Union, the aim is to create a consistent economic area in terms of the development of the transport, communication and power system. A consistent policy on standardisation and technical regulation is also required. The member states of the customs union have therefore foregone the definition of their own individual standards. In order to push ahead with the work already achieved, on 7 September 2012, a delegation from the Eurasian Economic Commission led by Prof. Valerij Koreschkov visited DKE, the VDE standards organisation.

The minister and his delegation hoped to meet representatives from leading companies, the VDE and partner associations and give new impetus to the cooperation between the Eurasian Union and Germany in terms of standardisation. The VDE is in favour of standards and standardisation with the customs union taking place directly at an international level, as is already the case for the international panels for electronic engineering IEC (International Electrical Engineering Commission) and CENELEC (European Committee for Electrical Engineering Standardisation).

DKE chairman Wolfgang Hofheinz hands Prof. Koreshkof a Russian translation of the VDE series on "Protection Engineering with Insulation Monitoring", called **Системы защиты с контролем изоляции**, at the meeting with the Eurasian delegation on 7 Sept 2012 at the Hessische Hof in Frankfurt.

Over 100 delegates took part in the event, mostly leading specialists and decision-makers from the fields of innovation, smart grid and standardisation. "One important outcome of this conference was the acknowledgement that it is necessary to set up an initiative or consolidated platform for standardisation for smart grid, because there is active research and development in this area," summarises Dr Thise, spokesman for the DKE executive board. Many of the participants at the conference agreed that coordination of these activities still needs to be improved. The VDE agreed to support all forthcoming work and projects. ■

Source: VDE press text

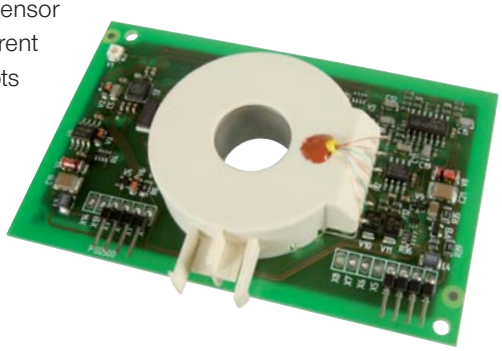
MONITORING FOR RESIDUAL CURRENTS ≥ DC 6 MA
USING RCMB103 OR RCMB420EC

Electrical safety on charging electric vehicles

On charging electric vehicles a differentiation is made between different charging modes. The charging modes 2 and 3 describe AC charging while charging mode 4 defines DC charging.

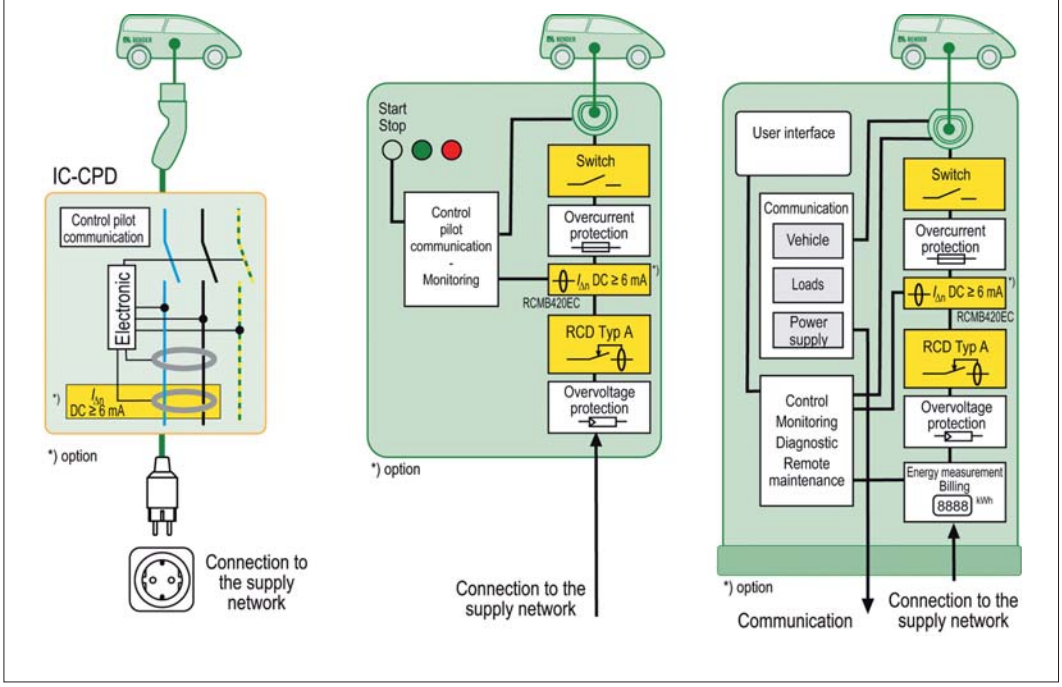
The difference between charging mode 2 and 3 is that in mode 2 a normal socket outlet is used for charging without control, while in mode 3 charging is controlled via a single-phase or three-phase charging station. For electrical safety, the protective measures in accordance with the DIN VDE 0100-722 or DIN VDE 61851-1 series of standards must be followed. In accordance with E DIN VDE 0100-722(VDE 0100-722):2013-01 it is therefore necessary to install a dedicated electrical circuit for each charging socket and provide protection using a residual current device (RCD) of type A as a minimum.

If an AC or pulsed DC fault current $I_{\Delta n}$ ≥ 30mA occurs, shut down is required. If DC fault currents ≥ DC 6 mA occur due to an insulation fault in the charging circuit, both the response time and the response value can be degraded on residual current devices (RCD) of type A. To prevent this situation arising, either residual current devices (RCD) of type B can be used, or suitable measures taken for DC fault currents ≥ DC 6 mA. Here it is recommendable to use a residual current device of type A and an additional sensor. This additional sensor detects the DC fault current ≥ DC 6mA and interrupts the charging process by means of the charging switch in the charging station. Bender has developed two new devices for this task.



AC/DC sensitive residual current monitoring module RCMB103

EXAMPLE APPLICATIONS:



Single-channel AC/DC sensitive residual current monitor RCMB420EC

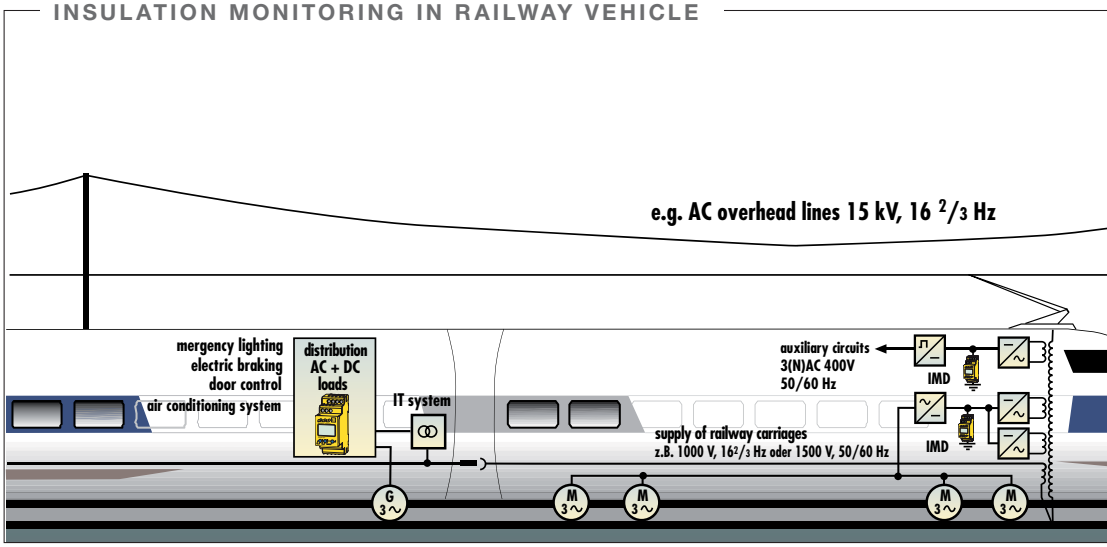
The residual current monitoring module **RCMB103** provides, on the one hand, the information on the 0...6 mA DC residual current via an analogue output and, on the other hand, also a switched output that signals if the measuring range has been exceeded. The module is designed for a maximum nominal current of 50 A.

The residual current monitor **RCMB420EC** with rail mounting for usage in charging stations will be available from autumn 2013. The current transformers are connected to the device using connectors. Single-channel or dual-channel monitoring is possible using one device, as the option for the connection of a second transformer is provided. The device is designed for single-phase and three-phase systems up to 32 A. For additional safety the connection to the transformers is continuously monitored.

Shut down in case of a fault is undertaken via a separate alarm relay, here both the occurrence of a residual current $I\Delta n \geq$ AC 30 mA and also DC fault currents $I_{\Delta n} \geq$ DC 6 mA are signalled. It is necessary to use a residual current device of type A in accordance with the DIN VDE 0664 series of standards also on the usage of this variant. ■

Dipl.-Ing. Frank Mehling
T-MIS

INSULATION MONITORING IN RAILWAY VEHICLE



ISOMETER® isoRW425

Electrical safety in rail transport technology by means of insulation monitoring

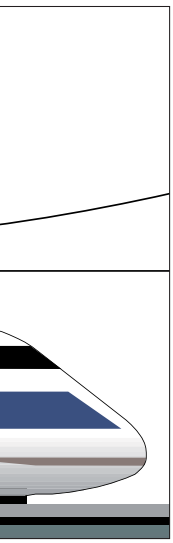
A key aspect for smooth traction operation is to safeguard electrical safety. This issue applies equally to railway control centres, signaling systems, service buildings, tunnels and bridges as well as to trains and carriages.

In locomotives, high-speed trains, dining cars and other railway vehicles it is therefore important to install a safe supply of power that also has high availability. Among other issues, this is also the reason why the IT system is used in this application as an insulated supply of electrical power with insulation monitoring.

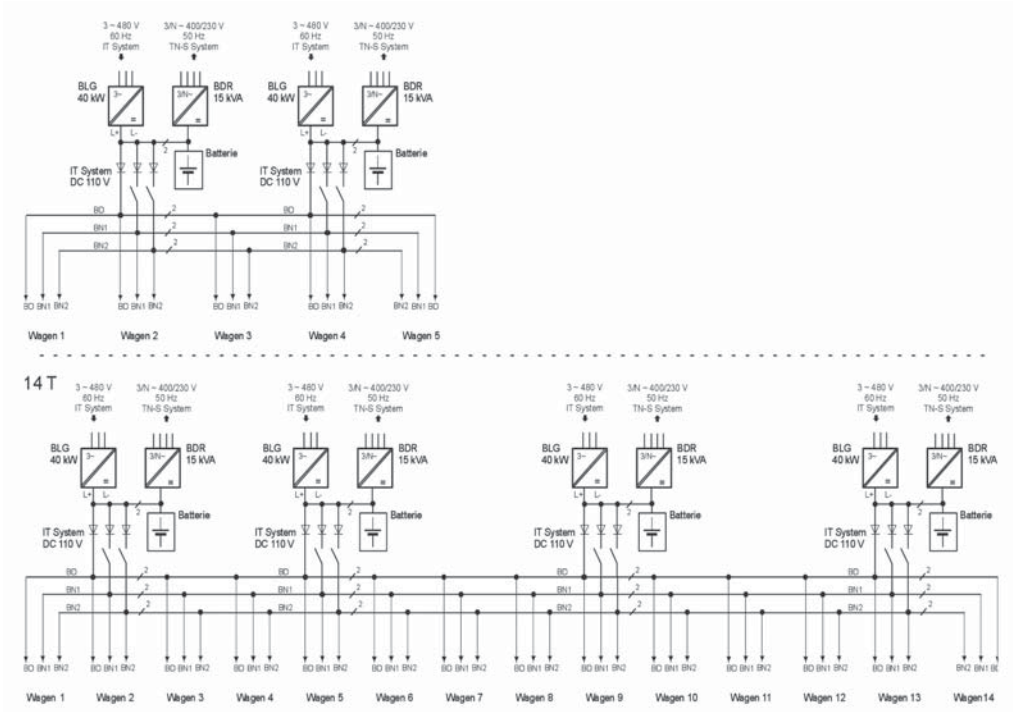
In the area of "rolling stock", as railway vehicles are also known, there are special requirements for safety-related equipment. If, for example, a train has a route across Europe, the related national regulations must be met on all items of rolling stock. Also different technologies are used depending on the country and the manufacturer of rolling stock.

The climatic and mechanical requirements are also different and can be extreme, depending on the countries in Europe through which the train passes, e.g., the temperatures between Scandinavia and southern Spain are very different.

Shock and vibration requirements are divided into different classes as a function of the installation location in the train. Here a differentiation is made as to whether an item of equipment is



BLOCK DIAGRAM



installed in the passenger area with more moderate requirements, in an underfloor switch box, or directly on running gear with very high shock loads. The requirements for these shock and vibration loads are defined in various standards, such as GOST or DIN EN 50155, among other documents.

In addition, very different voltages must also be monitored. The range here stretches from DC 24 V to 3AC 440 V . It is also necessary to measure the impedance and therefore determine the system leakage capacitance to PE in some applications.

The need to take into account all the many, to some extent country-specific, requirements in international enquiries and to meet these requirements "as far as possible with one item of equipment" is a real challenge that Bender addressed with the development of the insulation monitoring device ISOMETER® isoRW425.

The product name already indicates that the **ISO**METER® is a device that is intended for **R**ail**W**ays. The **425** stands for the IR425 series measuring technology with the proven AMP measuring principle, as well as the PCP measuring principle.

The result is a very compact insulation monitoring device that monitors the insulation resistance of unearthed 0...500 V AC/DC control circuits (IT systems). DC components present in AC/DC systems do not influence the operating characteristics. A separate power supply means de-energised systems can also be monitored.

DEVICE FEATURES:

- Insulation monitoring for IT control circuits AC/DC 0...400 V + 25 %
- Nominal frequency f_n: DC 15...460 Hz
- Supply voltage U_s: DC 24...240 V, AC 100...240 V
- LEDs for power on, alarm DC+, alarm DC- with related relay signal
- Response value R_{an}: 1...990 kΩ
- Response value for the impedance to PE Z_{an}: 1...990 kΩ
- RS-485 interface with BMS protocol
- Permissible system leakage capacitance C_e: ≤ 300 µF
- Operating temperature - 40...+ 70 °C
- Shock and vibration values in accordance with IEC 60721-3-3 class 3M7 for stationary use.

The isoRW425 meets the requirements of the device standards: DIN EN 61557-8 (VDE 0413-8), IEC 61557-8 and EN50155.

The figures show the great complexity of the supply of power, for example in an ICE. A failure can lead not only to a hazard for important systems and functions in the train, but also for the life of the passengers.

As such the latest member of the ISOMETER® family is a further contribution to even greater safety in rail transport. Let us hope the device will be able to travel on-board a wide variety of trains for millions of kilometres through Europe. ■

Helmut Becker
T-MIS

ISOMETER® IsoLR275:

High reliability when heating and melting metals

The electrical power supplies and the power electronics for plants for heating and melting metal are often designed as unearthed systems (IT systems) with insulation monitoring. This design offers the clear advantage that a first insulation fault does not lead to interruption of operation. Due to the manufacturing processes in the metalworking industry, the insulation resistance between live conductors and earth often is very low.

The new ISOMETER® isoLR275 insulation monitoring devices are matched precisely to this application. In conjunction with the AGH-LR-3 coupling device, the insulation resistance of unearthed systems in the range of AC 0...793 V and DC 0...1100 V can be monitored. Two variable response values can be set in the range from 0.2 to 100 kΩ. The ***AMP***plus measurement method allows automatic adaptation to existing system leakage capacitances. Besides the automatic adaptation, different measurement profiles can be selected for perfect adaptation to the specific application.

All the messages are indicated on a backlit display in plain text format and brightly illuminated alarm LEDs. Additional information, such as the system leakage capacitance, response value, etc. is available via the INFO button. A connection to higher-level systems can be established via the 0/4...20 mA interface or an RS-485 bus connection. The integrated history memory stores alarms with date and time and in this way effectively supports the necessary maintenance measures. The enclosures are suitable for DIN rail mounting or screw mounting onto mounting plates. ■

Helmut Becker, T-MIS

The ISOMETER® isoLR275 is primarily used in:

- AC, DC or AC / DC main circuits
- IT systems with directly connected inverters
- IT systems with high system leakage capacitances of up to 500 µF
- IT systems with high but slow voltage fluctuations
- Systems with switched-mode power supplies
- Coupled IT systems.

DEVICE FEATURES isoLR275

- ISOMETER® for IT AC systems with electrically connected rectifiers or converters and for IT DC systems
- Particularly suitable for monitoring electrical installations with a low level of insulation resistance
- The isoLR275 is always operated in conjunction with the AGH-LR coupling device
- Automatic adaptation to the existing system leakage capacitance
- ***AMP***plus measurement method (European patent: EP 0 654 673 B1)
- Choice of measurement profiles for different requirements
- Two separately adjustable response ranges of 0.2...100 kΩ each (Alarm 1, Alarm 2)
- Two-line LC display
- Automatic device self-test
- Memory with real-time clock to store alarm messages with date and time stamp
- BMS interface (Bender Measuring Device Interface) for communication with other Bender devices (RS-485 electrically isolated)
- Internal disconnection of the ISOMETER® from the IT system to be monitored (via control signal; terminals F1/F2), e.g. if several ISOMETER®s are connected
- Current output 0(4)...20 mA (electrically isolated) in relation to the insulation value measured in the system.

NEW FROM BENDER

Power Quality and more!

THE BENDER SYSTEM NOW COMPLETE
WITH POWER QUALITY DEVICES AND THE CONDITION MONITOR

Modern power supply systems are becoming increasingly complex, while at the same time the problems and causes of faults are becoming more varied and their analysis more and more complicated. Having access to the huge range of measured values from all the system components is essential if safe operation is to be ensured. This applies primarily to the electrical variables, though it is also applicable to environmental influences such as temperature and relative humidity.

The Bender portfolio has been expanded to include the new Power Quality devices (PQ devices) and the COMTRAXX® CP700 Condition Monitor. This means that all the measurement variables relevant to Power Quality are available in the Bender system.

Up till now communication among the Bender devices themselves has taken place exclusively via the BMS fieldbus. Globally, however, there is a trend in all applications towards IP-based communication which brings benefits to both the operator and the user of the electrical system, such as:

- Use of existing IT infrastructure
- Free choice of installation location, since no longer dependent on fieldbus wiring
- Elimination of bottlenecks caused by high data volume
- Availability of open communication standards for various applications, e.g. SNMP in the IT environment.

The new PQ devices and the CP700 Condition Monitor support both forward-looking IP-based communication and fieldbus communication, which has been expanded to include Modbus/RTU. The user therefore has the choice of continuing to use fieldbuses or switching to modern IP communication.

The CP700 therefore brings everything together in a single system component: products from other manufacturers can even also be integrated. All the devices are jointly visualised, managed and adjusted – completely independently of the communication interface used.

Development started on the basis of the proven software of the COM460IP to which additional communication interfaces, analysis tools, user prompts and a touch-based user interface were added.

A new, innovative navigation system simplifies analyses and troubleshooting for the user or, in complex cases, even makes them possible at all. Compared with classic Bender devices, such as the ISOMETER®, the PQ devices provide a wealth of information. This has to be processed and meaningfully presented, always in connection, of course, with the measured values of the already installed Bender devices.

Depending on the user's requirements, the easy-to-use touch screen on the CP700 itself can be used or the PC user interface familiar from the COM460IP which offers full access to all information. All this required information can be accessed everywhere and at all times, i.e. the CP700 can be operated from a tablet or a smartphone or via a PC. ■

Dipl.-Ing. Joachim Wagner T-SCT
Dipl.-Ing. Friedhelm Dalitz, T-SCT

IN SUMMARY, the COMTRAXX® CP700 Condition Monitor offers:

- Overview of the entire electrical system
- Simple, direct access to all details relating to the devices in use
- Guided support in fault analysis
- Quality analysis and reporting
- Access to information everywhere and at all times (smartphone, tablet, PC)
- User-definable visualisation
- Active alarm generation
- Integration of third-party devices.

LOOKING AHEAD

The CP700's software base is the foundation for further analysis and monitoring tools in future, whether locally or as a cloud-based application.

Other devices are also in preparation, e.g. the COMTRAXX® COM130 displayless server with the same functions as the COMTRAXX® CP700. This will enable very simple implementation of additional protocols such as SNMP V3 or IEC 61850.

User-friendly touchscreen of CP700

FURTHER DEVELOPMENT
FOR HIGH AVAILABILITY ELECTRICAL SUPPLY SYSTEMS

The new portable insulation fault locator EDS195P

In large, complex electrical supply systems, as are to be found in all large production plants and photovoltaic installations, a flexible solution for monitoring tasks is required.

To be able to quickly and reliably locate insulation faults in these systems, systems for insulation fault location are often used. These include the device series EDS460/461 and EDS490/491. However, to locate insulation faults all the way down to a load or a PV module, portable systems for insulation fault location, such as the EDS3090, are used. With the variant EDS3090PG, insulation fault location independent of fixed installed EDS systems is also possible.

The insulation fault locator EDS190P in the device series EDS3090 has been further developed and is now available as the **EDS195P**. Its new functions significantly simplify insulation fault location and mobile residual current measurement.

The portable EDS195P locates insulation faults in a wide range of IT systems. These include, e.g. control circuits AC/DC 24 V to 230 V as well as main circuits AC/DC 24 V to 960 V. It is used for example on ships, in industrial plants, power stations, on oil and gas rigs and in photovoltaic installations.

EDS3090 with insulation fault locator EDS195P

TECHNICAL FEATURES OF THE EDS195P:

General:

- Ergonomic, user-friendly housing
- Mechanical protection thanks to rubber jacket
- Illuminated 3-line LC display
- Possible to switch between English/French/German
- Battery capacity approx. 60 hours
- NiMH rechargeable battery that can be recharged via USB charging socket
- Data logger with 99 data sets and time stamp, can be read via USB port
- Automatic adaptation to different measuring clamps.

During insulation fault location in IT systems

- Indication of the locating current for insulation fault location from 0.2...50 mA
- Response values can be adjusted from 0.2...10 mA.

During residual current measurement in TN-S and TT systems

- Residual current measuring range from 5 mA...20 A
- Harmonics analysis for residual current measurement up to the 8th harmonic component
- Expanded 42...1000 Hz frequency range for residual current measurement
- Usage of flexible measuring current transformers for the residual current measurement.

The new portable insulation fault locator EDS195P

The location of insulation faults in PV installations

The EDS3090 is particularly suitable for usage in extensive PV installations that are designed as IT systems in the context of DIN VDE 0100-410 (VDE 0100-410). The insulation monitoring device ISOMETER® isoPV detects all insulation faults in the DC and AC area of the system and continuously indicates the level of insulation in the PV installation. Insulation fault location in a large installation with several hundred thousand modules and many kilometres of cable can be very time consuming. With the conventional method of insulation measurement the PV installation must be partially or entirely shut down. The defective circuit can only be found by shutting down the strings step-by-step and simultaneously monitoring the insulation value displayed on the insulation monitoring device.

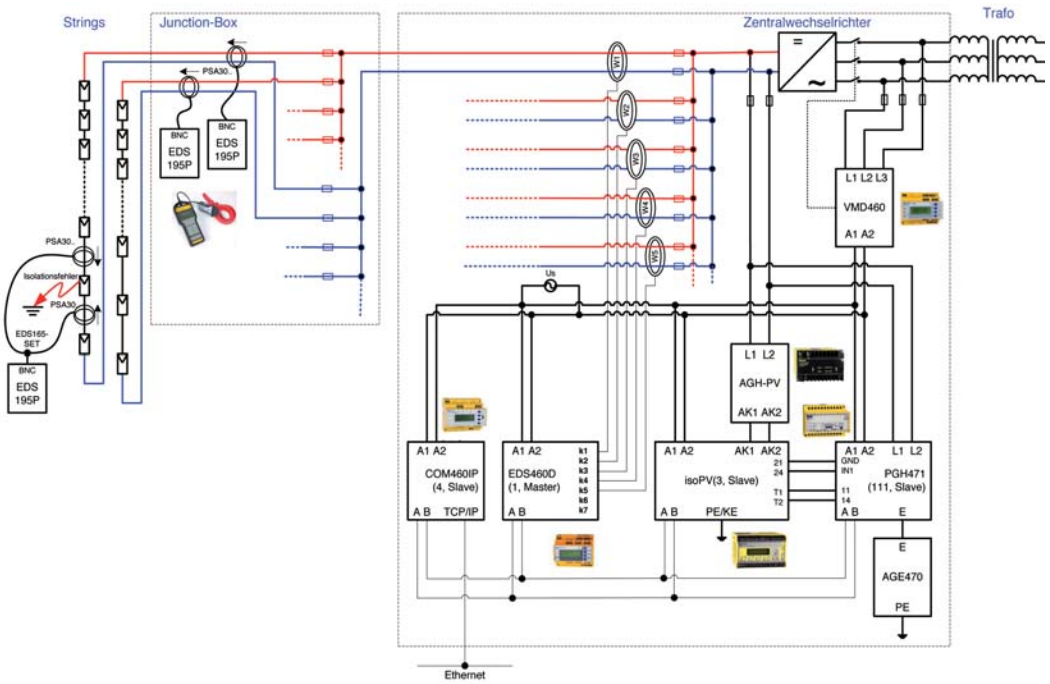
With the EDS3090PG comprising an insulation fault locator EDS195P, two measuring clamps of type PSA3052 and a locating current injector PGH185, the PV module causing the fault is located without the need to shut down the installation. Using the two measuring clamps PSA3052 operated in parallel it is possible to mask the operating current of the PV modules and to detect the locating current generated by the locating current injector.

KEY:

- Voltage and frequency monitoring using VMD460
- Insulation measurement using isoPV and AGH-PV
- Automatic insulation fault location using PGH471, AGE470, EDS460D (BMS master) and measuring current transformers W...*
- Communication via Ethernet and web browser with COM460IP*
- Manual insulation fault location using EDS3090 (includes EDS195P and measuring clamps PSA30..) and EDS-SET*
- For insulation fault location in the junction box, the positive/negative cables for a string must be laid such that a measuring clamp PSA30.. can be placed around the cables.
- Insulation faults in the strings can be located using two measuring clamps connected in parallel and the EDS-SET, here the measuring clamps are to be attached to the module cables on both sides in each case while paying due attention to the direction of the arrow.

* Optional devices

APPLICATION PV PLANTS UP TO DC 1000 V



The usage of the EDS3090PG therefore offers time and cost-saving insulation fault location that is also reliable. The availability of the PV installation is significantly increased and the operator does not suffer any feed losses. ■

Helmut Becker
T-MIS

ADVANTAGES
of the location of insulation faults in PV installations using EDS3090 at a glance:

- Can be used in PV installations up to DC 960 V
- Insulation fault location while system is in operation
- No interruption in operation, as a result no feed losses
- Insulation fault location down to the defective module using two measuring clamps operated in parallel
- Battery-powered so can be used in the field without further supply of power.

GORO NICKEL S.A., NEW CALEDONIA


Plant overview during construction

Electrical safety in a modern nickel smelting plant

Goro Nickel is a world-class mining project and a key part of Vale Inco's growth strategy. It is located on the South Pacific island of New Caledonia, an overseas territorial community of France. Goro is among the largest undeveloped laterite orebodies in the world, with excellent average grades, 55 million tonnes of estimated measured and indicated mineral reserves, and a very large resource base. The expected annual capacity of the Goro Nickel project is 60,000 metric tonnes of nickel and 4,300 to 5,000 metric tonnes of cobalt.

GORO NICKEL S.A., NEW CALEDONIA

TECHNICAL APPLICATION

The Goro Nickel project brings positive socio-economic benefits to the people of New Caledonia. The project has generated approximately 800 jobs directly and many more during the construction phase, a significant number in a territory that has an overall population of about 230,000. It will also provide major long-term opportunities for local businesses and a stronger economic base for New Caledonia.

A hydrometallurgical process is used to extract the nickel and cobalt from the ore. This is the only technology which is suitable for profitably processing laterites with low nickel content. Up until now, such laterites have not been mined from the Goro plateau. Goro Nickel will therefore produce nickel at a low cost and contribute significantly to increasing exploitable resources in New Caledonia.

The project comprises the following:

- An open-cast nickel and cobalt laterite mine
- An ore processing unit
- A processing plant which will use a hydrometallurgical process which has been developed by Inco
- Equipment for processing liquid and solid residues
- A safe system for the storage of neutralised solid residue
- An innovative and safe system for the disposal of effluent at sea, when neutralised
- Accommodation facilities for workers
- A training centre at the pilot plant
- A port on the east coast of Prony Bay
- A coal-fired power station
- A plant nursery responsible for the replanting programme.

From the beginning the Bender representative Ebbco Ltd. has been involved in designing and implementing multiple insulation monitoring and insulation fault location systems. Specifications were vague and not favoured towards a Bender system. Hard work and perseverance prevailed. Finally the Bender insulation fault locator EDS470 was accepted as the preferred option.

The electrical needs of the plant is supplied by a purpose built 65 MW coal-fired power station while it also has its own 2 x 20 MW oil-fed generators. It needs about 65 MW of power of which 45 MW is delivered by the power station whereas the other 20 MW will be generated via co-generation from the washing plant. The oil-fired boiler plant onsite is used for heating up water and sulfuric acid needed for the

Two of three monitors in operation

washing process. After this process the steam is used for co-generation producing about 20 MW of power. The main voltage for running the plant is a 690 V 3 phase unearthed (IT) system. The control system voltage is an earthed 230 V single phase system.

The complete 690 V 3 phase system is powering up more than 1300 motors, about 450 VSDs and the rest as DOL starting motors. A total number of 32 insulation monitoring devices IRDH575B2-435, 122 insulation fault locators EDS470, 1309 core balance CTs with a variety in dimensions are used and spread over 27 individual switchboards. All information from the EDS470 systems is sent via 40 FTC470XMB units to a DSC. A portable EDS3065 unit is also used for pinpointing faulty loads if more than one motor circuit is connected to the outgoing circuit.

The biggest switchboard has 7 interconnected bus sections and is fed from 3 individual 1.5 MW transformers (11 kV/690 V). It is monitored by a total number of 3 IRDH575B2-435, 4 FTC470XMB, 23 EDS470-12 units and 196 connected CTs.

The switchboard can also be configurated, during an emergency situation, to feed two other large switchboards with multiple bus configurations to which essentially needed loads are connected to.

Ongoing training has been given to 45 electrical plant operators and maintenance personnel. A training program specially written for this purpose has been implemented both in English as well in French.

By using permanent insulation monitoring and insulation fault location systems the cost of maintaining such a large plant will be considerably reduced, the availability and safety of both plant and personnel increased significantly and conditions for compliance with accident prevention, regulations and guidelines applicable in the location of use have been met – all of which are typical advantages of Bender safety solutions. ■

Eb Wijkstra,
Ebbco Ltd

Area 350 switchboard room

Inside Area 350 switchboard room

Practical training

Theoretical training

BENDER TECHNOLOGY
AT THE ALCÂNTARA SPACEPORT, BRAZIL

TECHNICAL APPLICATION

SAFELY into SPACE

A few kilometres north of Alcântara, in the Brazilian state of Maranhão, lies the spaceport Centro de Lançamento de Alcântara. The base lies at 2°18' south latitude, and is therefore the rocket launch site closest to the equator worldwide. Satellite missions and tests of the Veículo Lançador de Satélites (VLS) satellite launcher have been launched from here since 1989. The power supply at the spaceport was protected with electrical safety technology by Bender.

The spaceport covers an area of 620 km² and comprises two launch pads – one for suborbital missions with a take-off mass of up to 10 t and one for the VLS-1 launch vehicle. A third launch pad was built for the planned launches of the Ukrainian Tsiklon 4 rockets. In addition to these, a weather station and a satellite ground station are also located on the grounds.

A SETBACK ...

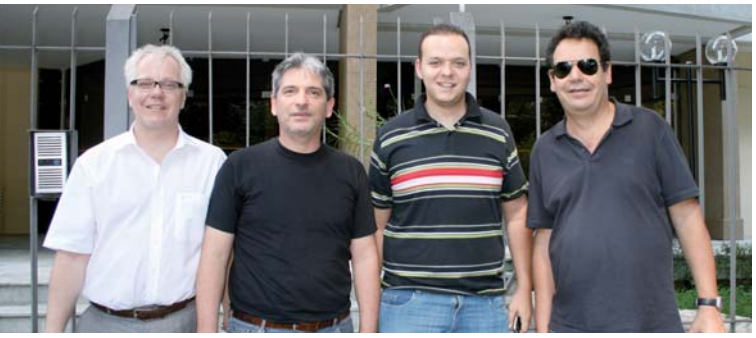
On 22 August 2003 at about 1:30 p.m. (local time) a serious accident occurred. A VSL-1 rocket, which was already on the launch pad and was to carry two satellites into space three days later, exploded when the solid-fuel engines ignited prematurely. 21 people were killed and a large bush fire was caused. This accident was a major setback for Brazil's national space program.

... AND THE LESSONS LEARNED FROM IT

In mid-August 2004 the employees of the Brazilian Bender representative RDI Bender were then contacted by the engineers of the Brazilian aerospace institute IAE (Instituto

Aeronautica e Espaço) and of the technical aerospace centre CTA (Centro Tecnico Aerospacial), as they are known as competent contacts on the topic of electrical safety and insulation fault localisation. Then technical studies and application tests with Bender devices were immediately carried out for unearthed power supply systems (IT systems). As this type of power supply system was completely unknown to the engineers of the CTA until then, the experts at RDI Bender explained the effectiveness of IT systems with regard to electrical safety, operating continuity and condition-oriented maintenance and demonstrated a fast localisation of earth faults.

The power supply systems of the rocket launch pad were planned as unearthed 380 V and 220 V systems. In November 2004 the first tests were then conducted on IT systems with model IRDH575 ISOMETER® insulation monitoring devices and EDS470 insulation fault locators. TCP/IP data transmission was realised with the FTC470XET gateway. A modified portable model IR1575 ISOMETER® insulation monitoring device was also used for tests.



(left to right): Eng Matthias Schwabe (Bender), Eng Carlos Bizarria (DCTA-IAE), Eng Sergio Castellari (RDI Bender) and Sr. Ricardo Bender (RDI Bender).

COMPARISON WITH COMPETITIVE PRODUCT ...

In addition to RDI Bender, a competitor was also invited to the tests in order to compare the technical solutions of the two companies with each other. The tests were conducted within the CTA-IAE spaceport in São Jose dos Campos (130 km from São Paulo). However, the competitive make was unable to fulfil the required measuring tasks in the course of the test series and was therefore eliminated.

... CONFIDENTLY WON

After just one day of testing, the Bender systems already functioned reliably and precisely in the manner requested by the engineers of the CTA-IAE. Countless insulation faults with an extremely broad range of leakage capacitances were generated. The Bender systems fulfiled their tasks confidently and were therefore very convincing. In addition to the good test results, the expertise of the RDI Bender engineers (Theodoro R. Bender and Sérgio Castellari), with their far-reaching knowledge in the field of the application of IT systems, ensured that the CTA-IAE planned in the Bender products for the project.

THE MOST IMPORTANT THING ABOUT ELECTRICAL SAFETY: KNOW-HOW AND EXPERIENCE

In the course of the years that followed, employees from RDI Bender held talks at the CTA-IAE space centre, conducted local studies together with the experts and selected all required specifications for the "Alcântara Spaceport" project. Close contact to the project participants was also very important for the entire project process. Here the book by Dipl.-Ing. W. Hofheinz entitled “Protective Measures with Insulation Monitoring” proved to be a valuable reference for the project.

In 2009, after the initial contacts with the winners of the tender for the construction of the new base in Alcântara, the engineers of the CTA-IAE decided on the Bender solution while taking the defined specifications into account.

Thanks to the know-how and commitment of the engineers at RDI Bender, it was ultimately possible to successfully realise the "Alcântara Spaceport" project with Bender devices in 2010. Various Bender ISOMETER® series and measuring current transformers in various sizes were used for insulation monitoring. Stationary Bender insulation fault locators as well as portable insulation fault location systems were used to locate insulation faults. Data transmission and visualisation tasks were assumed by Bender gateways.

In November 2012 Messrs. Sérgio Castellari and Felipe Marin Gomes from RDI Bender visited the spaceport in Alcântara to test the systems and to commission them locally. Following the immediate elimination of several leaks, the insulation monitoring and the localisation of insulation faults with Bender devices guarantees maximum electrical safety in the entire power supply system of the rocket launch pads.

Although the commissioning process has not been completed yet, it is already clear that Bender technology will also be used in a further project. ■

Engineer Sérgio Castellari of RDI Bender, Brazil

BTZ – BENDER TEST CENTRE
AN INVESTMENT IN THE FUTURE

The new QM test lab

A new QM test lab has been set up at the Bender Test Center (BTZ) covering an area of 200 sq. m. With this investment in the future, the proven quality standard of Bender products can be continuously maintained and extended. The laboratory's range of services ranges from environment simulation tests via type tests (qualification) and long-term tests to integration and function tests.

Temperature shock cabinet

The QM test laboratory or BTZ was built based on the latest standards of building and laboratory engineering, with real focus on ecological aspects and therefore on environmental sustainability in the long term, especially when it came to energy consumption. For example, the lighting uses LED technology and the cooling system for the test equipment has been converted from air to water cooling. The heat output by the test systems is fed back into the heating system via a heat exchanger. An ESD[1)] protection concept, calibrated measurement equipment and trained specialist personnel are also standard in the laboratory.

Whether it is automotive, aviation, shipping or mining applications: Bender devices are subject to enormous mechanical and thermal strain. This can have a negative impact on the functionality and longevity of the devices. In order to simulate these environmental conditions, a new combined test system is now available

1) Electrostatic discharge

EMC test room

Continous testing cabinet

ATICS® during testing
temperature test -25°C

EMC test chamber in combination
with vibration

„THE MODULAR TEST SETUP ALLOWS COMPLEX CUSTOMER-SPECIFIC APPLICATIONS TO BE ARRANGED IN SERIES."

which can simulate dynamic processes under specific climatic conditions.

These simulation tests serve to provoke early failure and highlight weak points in the design or material of the device. The tests are carried out under realistic environmental conditions in order to guarantee the functionality of the devices and systems in everyday use.

In order to assess device reliability, merely testing at low and high temperature is often not enough. This is why a temperature shock cabinet is also used in order to simulate extremely rapid changes in temperature. The rapid thermal cycles quickly highlight errors in the material tested.

In the system technology lab, device compatibility is guaranteed by means of continuous integration tests. The modular test setup allows complex customer-specific applications to be arranged in series.

All the test systems in the laboratory are networked together and can be controlled centrally from a computer. The current test status can be viewed remotely from any PC and in some cases optical systems are used for remote monitoring of tests. At the same time, long-term tests are carried out in a continuous testing cabinet developed specially by Bender where the devices continue operating for at least one year. The test cabinet is buffered against voltage interruptions by means of UPS systems. This guarantees uninterrupted continuous operation.

The simulation of extreme weather conditions, continuous operation and integration tests will help us to maintain the high quality standards of Bender products in the future. Next time you visit Bender, have a look at the test centre and see for yourself. ■

Jens Schäfer
T-QMT

INAT GROUP IS MAINLY INVOLVED IN TRADING, INSPECTION, TESTING AND ALSO ENGAGED IN SOME CONSTRUCTION ACTIVITIES.

International Agent Establishment (INAT)

is almost 5 years a sole representative of Bender in Kingdom of Saudi Arabia

Our company was formed with the name of Al Bajjash Group of Companies which was established in 1974 in Al Khobar City, situated in Eastern province of Kingdom of Saudi Arabia formed by renowned Saudi family Al-Hajri with large experience in material trading and heavy equipment supplies.

In 2006 with a new name International Agent was established especially for Trading, Inspection and Testing Services. Our main office is situated in Al Khobar with its branches in Riyadh and Jeddah. We are almost covering the entire area of Kingdom of Saudi Arabia which includes eastern, western and cental provinces where main population of Saudi Arabia exists and where developing is mainly going on. We also have presence in other GCC countries having branches in Dubai (U.A.E.), Doha (Qatar), Kuwait and Bahrain. INAT has also international representations in Yokohama (Japan), Bangkok (Thailand), Mangalore (India), Lahore (Pakistan) and Manila (Philippines).

As Bender representative we are operating all over Kingdom of Saudi Arabia with main operations in Al Khobar and representatives in Riyadh and Jeddah.

„WE HAVE A STRONG TEAM THAT IS DIRECTLY WORKING WITH BENDER. THE SUPPORT FROM TOP MANAGEMENT IS CONSIDERED PRIORITY WHEN IT COMES TO BENDER PROMOTION AND SUCCESSFUL PRODUCT IMPLEMENTATION."

Engr. Harun Abbas
Technical Consultant
Team Leader for Hospital Application

Engr. Norberto M. Llave Jr.
Electrical Consultant
Team Leader for Industrial Application

Mr. Shahzad Khan
Technical Support
Lead Commissioning Technician

Engr. Irfan Khan
Electrical Consultant
Team Leader for Special Application

Currently we have more than 100 employees working with us which mostly are engineers and technicians. We had formed a group of engineers who are dedicated only to Bender promotion for hospital, industrial and special applications.

We have a strong team that is directly working with Bender. The support from top management is considered priority when it comes to Bender promotion and successful product implementation.

Mohammad Al-Hajri
Chairman

Senior Mr. Mohammad Niazi
Vice Chairman

Mohammad Zaigham Niazi
Operations Manager

Khan Umer Khan Niazi
Business Director

We are dealing directly with government institutions like Ministry of Health, Ministry of Interior, Ministry of Finance, Ministry of Higher Education, National Guard Health Affairs, Saudi Railways, Royal Commissions, Saudi Aramco, Saudi Electric Company, SATORP, SWCC and SABIC. We are also working with contractors, consultants and electrical engineers. We spend time to sit with them to give them more awareness and understanding of Bender product concept and application based on their project requirement. We sometimes are being considered as consultant of Bender products for electrical safety in Saudi Arabia.

Our business for Bender mainly covers healthcare and industrial applications. From the beginning we found that there's a lot of investment by government on

Our initial focus was to promote medical applications and we initiated the first project with the Ministry of Health directly for Maternity and Children's Hospital in Dammam where we installed and completed commissioning of 11 Bender Surgical Control Panels (SCP) including:

- 10 kVA transformer flush-mounted
- Insulation monitoring device ISOMETER® 107TD47
- Clock/timer- Xray Viewer
- Remote alarm Indicator MK2430-11 in operation room.

We started to promote Bender by arranging seminars at different locations in Saudi Arabia and giving direct presentations to main proponents like Saudi Aramco, SEC, Royal Commission, Ministry of Health, Ministry of Interior, Ministry of Higher Education, Saudi Railways, National Guards and other major contractors. One of our main focus is to deal with consultants directly and start promoting Bender products from the design stage on.

We push consultants & designers to include Bender products in initial drawing for both industrial and hospital application. We mostly assist them during design stage since they are not too familiar about the application. We collect their requirements or even the original drawing for us to integrate the products according to their specifications. We circulate product catalogues with awareness and knowledge of application of the product.

health care projects in Saudi Arabia that give us more attention to focus on this field. We have done several hospital projects and this gives Bender the popularity in hospital fields.

In industrial fields we are penetrating in petrochemical industries and manufacturing facilities that require advance safety. We work with power generation facilities where Bender EDS3090PG is used as a portable insulation fault location system. We started to get involved in electrical protection for data centers, homes, buildings and other areas.

Our cooperation with Bender commenced in July 2008 when we had a meeting with Mr. Andreas Moeschl in Riyadh.

We distribute product introduction by email as an alternative method. We also produce some promotional booths acquiring space at Electrical Engineering Institutes to promote and spread Bender catalogue and presentation. We also visit trade fairs, exhibitions and related seminars to meet potential customers and spread Bender information.

Our strategy for long range marketing business includes:

- Visiting consultants
- Visiting construction sites
- Visiting main clients frequently
- Conducting frequent presentations and seminars
- Developing qualified workforce for product knowledge
- Commissioning services
- Maintenance and after sales services.

Bender has always provided us with full support, especially showing their presence at our seminars and presentations, by giving their time to go personally with us to our potential customers resulting in promoting Bender products in Saudi Arabia. Also by giving opportunity for our engineers to visit their facility in Germany for training to gain more knowledge of Bender products in detail. We expect that the Bender continuous cooperation would make our target more achievable and will result in continual growth for both of us. – We are looking to accomplish success together with Bender Group. ■

Khan Umer Khan Niazi
Business Director, INAT

SOME OF OUR PROJECTS FOR BENDER SOLUTIONS:

- We had initial success in the health sector with the projects Maternity Hospital in Dammam and King Fahd Teaching Hospital in Al Khobar, where we installed Bender Surgical Control Panels (SCP) and Isolated Power Panels (IPS).
- In 2010 we introduced Bender Control Panels with S-IPS-F/EDS for Security Forces Hospital in Riyadh.
- Industrial SATORP commissioning and testing with Mr. Uwe Richter from service department of Bender.
- In 2011 we introduced Touch Control Panels with S-IPS-F/EDS for Security Forces Hospital in Makkah and Riyadh.
- We also supply industrial application with Bender Protection Relays, ISOMETER® (IRDH275), EDS3090PG in Saudi Electric Company and RCMS for manufacturing facilities.
- In 2010 INAT was appointed for Bender NFPA sales resulting in sale of more than 100 Isolated Power Panels and Surgical Control Panels throughout the Kingdom.

HWH HARMS+WENDE

COSTUMER PORTRAIT

The Harms & Wende GmbH & Co KG (HWH)
is specialized in the development of resistance- and friction welding systems.

Innovation and quality **for resistance welding**

Very important to us as mid-size company is the close cooperation with our customers and suppliers. Our latest award "Kundenchampions 2012" (Customers Champion 2012) is incentive for us as well as affirmation. We have reached this award in a sequence the recent years.

„In all processes **we focus on resource-saving production**."

Our core competence are weld timer modules, its related software as well as the regulation and adaptation of the weld process. The goal is to achieve a constant good quality. Additionally, we are since 1998 in high-speed friction weld systems as well as friction spot welding units. Continuous expansion and systematic development of our company with respect of competence and innovation made us to a leading company in our global business. Continuously new systems and functions have been launched from specialized medium frequency systems (MFDC), high frequency systems (HF equals 10 000 Hz) as well as high power systems for heavy duty welding up to 300 kilo amperes and more. Our adaptive welding package IQR* is well established in the automotive and industrial sectors for spot welding to equalize process fluctuations.

In all our processes we strive to low resource consumption like energy, waste and more. Our engagement resulted in the award of the "Umweltpreis" (Environment award) of the city of Hamburg in 2007.

Main applications of our systems are automotive as well as industrial solutions reaching from automated line over manual production

*Intelligent Quality Regulation

HWH HARMS+WENDE

COSTUMER PORTRAIT

„**Our flexible systems fit to almost any requirement in a robot line** with a large number of spot weld systems to stand alone projection welders ..."

lines to prototype systems. Our flexible systems fit to almost any requirement in a robot line with a large number of spot weld systems to stand-alone projection welders. In another important application field are customers working in white ware industry, construction business up to very special chain welding. Besides these solutions for spot-, projection-, seam- and butt welding on steel and aluminum, we offer special systems for resistance welding in all procedures of non-ferrous materials (micro welding).

In the meantime, our company has grown to 100 employees where 20 are working in the development. New systems are made ready for the market and have to undergo harsh testing conditions before being released to the market. Existing systems are upgraded as well for the benefit of our customers. This follows the wish of our customers to keep existing product lines but having state-of-the-art systems installed.

Our service and sales network has grown over the years and spans many markets around the globe. Various services have been established from sales to training services up to repair units. Our customers recognize this and by installing new systems abroad in their factories. ■

Dipl.-Ing. Ralf Bothfeld
Managing Director, Harms & Wende GmbH & Co. KG

Dipl.-Ing. Jörg Eggers
Export Management, Harms & Wende GmbH & Co. KG

www.harms-wende.de

EXHIBITIONS INTERNATIONAL

KazAtomExpo
Kazakhstan International Exhibition and Conference
Nuclear Energy and Nuclear Industry
09.04. – 11.04.2013 Location: Astana – Kazakhstan

RAILTEX 2013
30.04. – 02.05.2013 Location: London – UK
Booth F57 www.railtex.co.uk

Solarexpo 2013
08.05. – 10.05.2013 Location: Fiera Milano
Hall 6 / Booth K24 www.solarexpo.com

AAMI 2013 Annual Conference & Expo
01.06. – 03.06.2013 Location: Long Beach – USA
Booth 654 www.aami.org

NFPA® Conference & Expo
10.06. – 13.06.2013 Location: Chicago – USA
Booth 264 www.nfpa.org

Elektro 2013
17.06. – 20.06.2013 Location: Moscow – Russia
www.elektro-expo.ru

ASHE 50th Annual Conference & Exhibition
21.07. – 24.07.2013 Location: Atlanta - USA
www.ashe.org/annual

Offshore Europe 2013
Oil and Gas Conference and Exhibtion
03.09. – 06.09.2013 Location: Aberdeen, Scotland – UK
Booth 4B12 www.offshore-europe.co.uk

The Bluefield Coal Show 2013
11.09. – 13.09.2013 Location: Bluefield – USA
Booth 1508 www.bluefieldchamber.com

CHES National Confrence – 33rd Annual Conference
of the Canadian Healthcare Engineering Society
22.09. – 24.09.2013 Location: Niagara Falls – Canada
www.ches.org/en/conferences-events

AUTOMATION 2013
23.09. – 26.09.2013 Location: Mumbai – India
www.biztradeshows.com

53rd Annual RSSI C&S Exhibition
29.09. – 01.10.2013 Location: Indianapolis – USA
www.rssi.org/2013-exhibition

IHEEM Oct. 2013 – Healthcare Estates Exhibition & Conference
08.10. – 09.10.2013 Location: Manchester– UK
BoothG36 www.iheem.org.uk/-Conference

SPI 2013 Solar Power International
21.10. – 24.10.2013 Location: Chicago – USA
Booth 4319 www.solarpowerinternational.com

Power Kazakhstan 2013 – International Exhibition
and Conference Power Engineering and Lighting
29.10. - -31.10.2013 Location: Almaty, Kazakhstan
www.powerexpo.kz

DATES

EXHIBITIONS 2013

EXHIBITIONS NATIONAL

Hannover Messe
08.04. – 12.04.2013
Location: Hannover
Hall 12 / Booth D66

Intersolar
The world's largest Exhibition for the Solar Industry
19. 06. – 21.06.2013
Location: Munich

elektrotechnik
Trade Fair for the Electrical
and Electronics Industry
11.09. – 14.09.2013
Location: Dortmund

eCarTec
International Fair for Electric Mobility
15.10.2013 – 17.10.2013
Location: Munich

MEDICA
World Forum for Medicin
20.11.2013 – 23.11.2013
Location: Düsseldorf

SPS/IPC/DRIVES
Electric Automation – Systems & Components
26.11.2013 – 28.11.2013
Location: Nuremberg

INTERVIEW

Frank Baier

Head of Marketing Bender

PROFESSIONAL EXPERIENCE

1992	General university entrance qualification
1992 – 1996	Studying electrical engineering focussing on automation engineering at FH Gießen-Friedberg (now TH Mittelhessen)
1997 – 2000	Project engineer at focus Industrieautomation focussing on visualisation software and bus systems
2001 – 2012	Technical Director and Central Germany Sales at emation, focussing on energy management and visualisation software
Since 2012	Responsible for the marketing division at Bender

Mr. Baier, you have been responsible for the marketing division at Bender since 2012. What do you like about marketing in general and at Bender in particular?
I find it is the interdisciplinary approach which makes marketing so interesting. I have the opportunity to support projects from strategy through to implementation, both with respect to market-related activities aimed at the customer and within the company. Bender provides technically demanding products and solutions in the electrical safety sector. My degree in electrical engineering helps me understand these technical aspects and link them into marketing. And, last but not least, Bender is one of the showpiece companies in the region and I enjoy taking an active role in dealing with the issues.

Bender is an established traditional company which grew from a family-run company to become the leader in terms of technology in the electrical safety sector. Do you look back on this tradition from a marketing perspective?
Bender has already been true to its roots in electrical safety for over 60 years. For a a company which now has nearly 600 employees and representatives if over 60 countries, this is no mean feat. Bender will serve and expand on this core expertise into the future. The marketing needs to match the portfolio, which means we cannot be as "wildly creative" as you can with consumer goods, for example. At the same time, modern aspects such as internet technologies will increasingly be used, both in advertising and in the products themselves. Over 60 years, Bender has learned to think ahead in terms of strategy and to be ahead of the crowd by worrying today about the things the customer will need tomorrow. And we will continue to use this recipe for success in the future.

The Hanover Fair is taking place between 8 and 12 April 2013, Bender has been an exhibitor for many years. The key topic for this year's fair is "Integrated Industry". What will be the main focuses for Bender as an exhibitor?
This year, the key topic for the Hanover Fair is "Integrated Industry", focussing on the increasing networking of all areas of industry. It is easy for us to pick up on this key topic as devices are more and more often being networked into systems - both within the range of Bender devices and with external systems. Both products from the existing product ranges such as insulation and residual current monitoring and the new "Power Quality" product range now often have a communication interface. Networking allows all information relating to safety, availability and energy efficiency to be bundled, evaluated centrally and displayed on any PCs. The "Condition Monitor" (CP700) represents a new generation gateway which provides clear information about device and system statuses on a touch-screen and integrated web server technology, among other things.

„A lot of **applications** have been developed in recent years relating **to renewable energy.**"

The Hanover Fair is made up of a number of smaller fairs, Bender is exhibiting in "Energy" which, according to the fair company, is the world's most important energy fair. What fields do Bender products cover now and into the future?
"Energy" covers energy and environmental technologies. Bender products are represented from energy generation through transfer and distribution to conversion and storage. Or, in short: Every field! A lot of applications have been developed in recent years relating to renewable energy. Bender is presenting several new products at the fair for the photovoltaics sector alone, which is an indication of just how important this market sector is to us.

The field of energy is closely linked to energy saving, i.e. saving costs. Do Bender products help save energy?
As well as the aspects of safety and availability, the "Power Quality and Energy Management" product range adds a new dimension based on the recording of energy consumption and highlighting potential energy savings. What makes it special is that consumption measurement is not considered separately, it is recorded together with all other electrical parameters.

Times are changing not only for the energy markets, with technical advances forcing new innovations within increasingly short cycles. Both the complexity of individual electrical loads (buzz word: micro-electrification) and the complexity of energy-supply structures in hospitals, production plants and data centres are constantly on the rise. How is Bender gearing up for this?
One of our strengths lies in providing tailored solutions for complex applications. At the same time, the fast pace of market development also demands flexibility. In technical terms, Bender has kitted itself out with modern development and production technologies to meet this challenge. But it will take more than the best technology and constant innovation: expert know-how in direct contact with customers, especially in sales and customer service, is also a key element.

You mention the company's strong customer focus. Bender is known for its tailored solutions, even under exotic conditions. The aforementioned increase in complexity is definitely one of the reasons why customers are demanding individually planned and produced solutions. Could you give a couple of examples?
Tailored solutions are primarily found where there are particular requirements in terms of climate conditions, fail-safety, electrical parameters or measurement accuracy. Typical examples could be:

- the process industry with applications in oil/gas/chemicals, a failure or fire in the electrical supply could have extreme consequences.
- In railway technology, from the locomotive to the points, our products face really tough requirements in terms of climatic conditions, vibration and electromagnetic compatibility.
- In data centres, availability is key, as an unplanned down-time could lead to not only time but also data being lost.
- In medical areas, our technology is used to guarantee that the power never fails at crucial moments, such as during an operation.

Industry and country-specific standards and guidelines also need to be complied with, e.g. GOST for applications in Russia or Lloyds for shipbuilding.

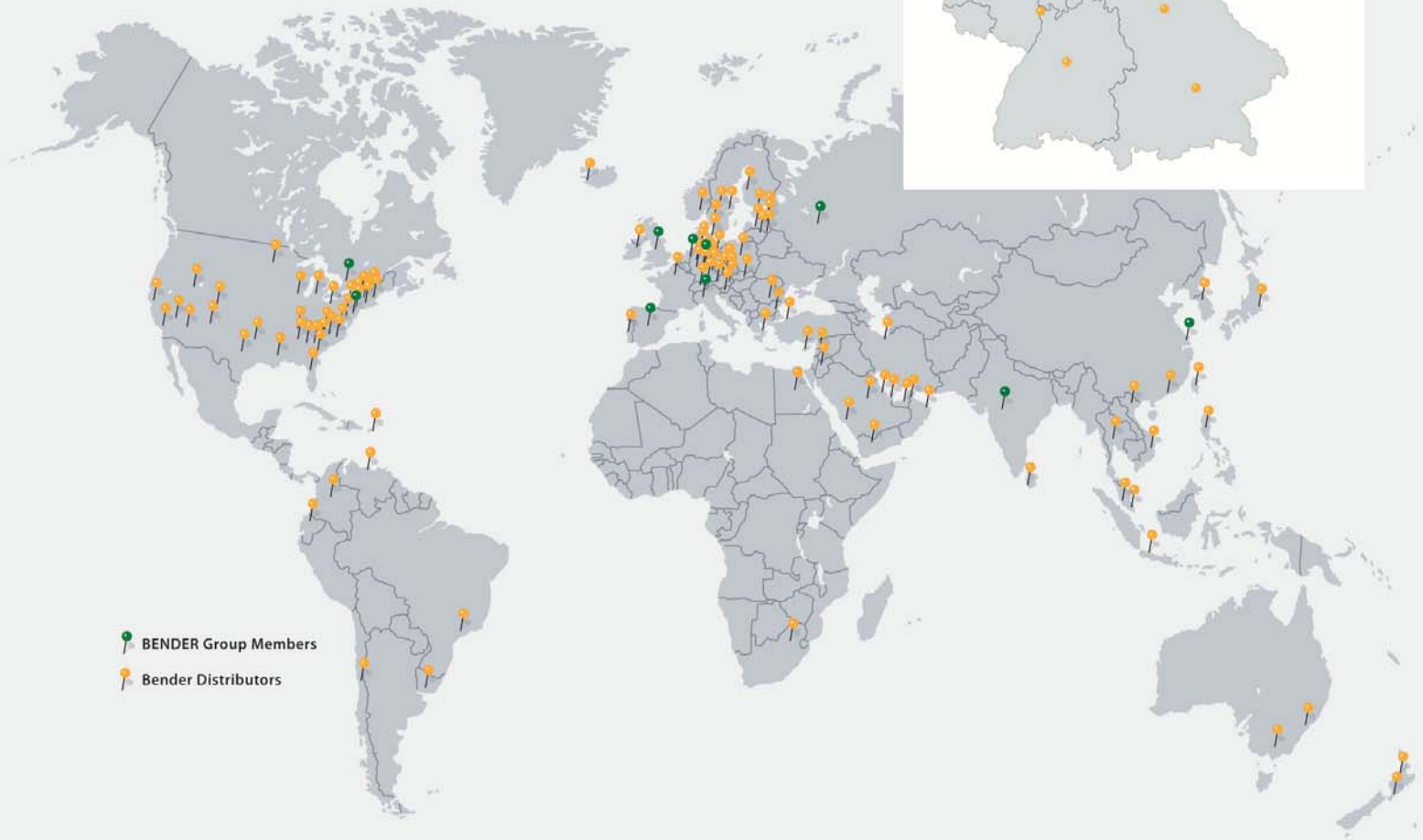
New technological innovations also require new safety standards. Bender is known to be a significant source of know-how, which is why it is very much in demand and active in the DIN panels. Many standards are based on Bender expertise. To what extent can this be utilised in marketing?
Bender plays an active role on national and international standards committees. Our experts contribute know-how to the panels, but also bring ideas, applications and requirements to provide an important element of strategic marketing.

Mr. Baier, thank you for the interview! ■

Timothy Hörl

BENDER Group

The Bender Group with its main office in Gruenberg/Hesse has 60 agencies with nearly 600 employees worldwide.



Bender GmbH & Co. KG
Londorfer Str. 65 • D-35305 Gruenberg / Germany

Fon: +49 6401 807-0 • Fax: +49 6401 807-259
E-Mail: info@bender-de.com • www.bender-de.com

Power in Electrical Safety