Special Issue

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WIN! SPECIAL

WEIDMÜLLER INFORMATION & NEWS

HANNOVER MESSE
19.–23. APRIL 2010

Hall 11
Stand B60

Weidmüller

Dear Readers,

To ensure that increased efficiencies are achieved in the long term for the process of installing an electrical cabinet it was necessary to subject the individual phases in the construction of the electrical cabinet and their process chain to a process of continuous examination to uncover their potential for optimisation. Weidmüller offers innovative and efficient solutions for all process steps and in so doing supports the user from the design phase through to production.

Simple mounting processes are made possible by detailed layout planning using the RailDesigner® software as well as clever product solutions with good handling qualities. PUSH IN connection technology stands for intuitive and rapid connections in conjunction with considerable time savings. These and other offers form the package of services with which Weidmüller aims to ensure increased efficiency and cost optimisation across the entire electrical cabinet construction process, today and in the future.

With the aid of three example applications we will be presenting our solutions for connecting, transmitting and conditioning power, signals and data at our stand at the Hanover Trade Fair. The applications being demonstrated cover the fields of fabrication and process automation as well as regenerative energy recovery; you will be able to see our products both in the electrical cabinets as well as in the field and the devices themselves.

This WIN! presents a special insight into selected Weidmüller trade fair themes in the run-up to the Hanover Trade Fair 2010. As well as hoping that you enjoy reading our magazine and discover a number of interesting ideas I look forward to you visiting our stand (Hall II – B60).

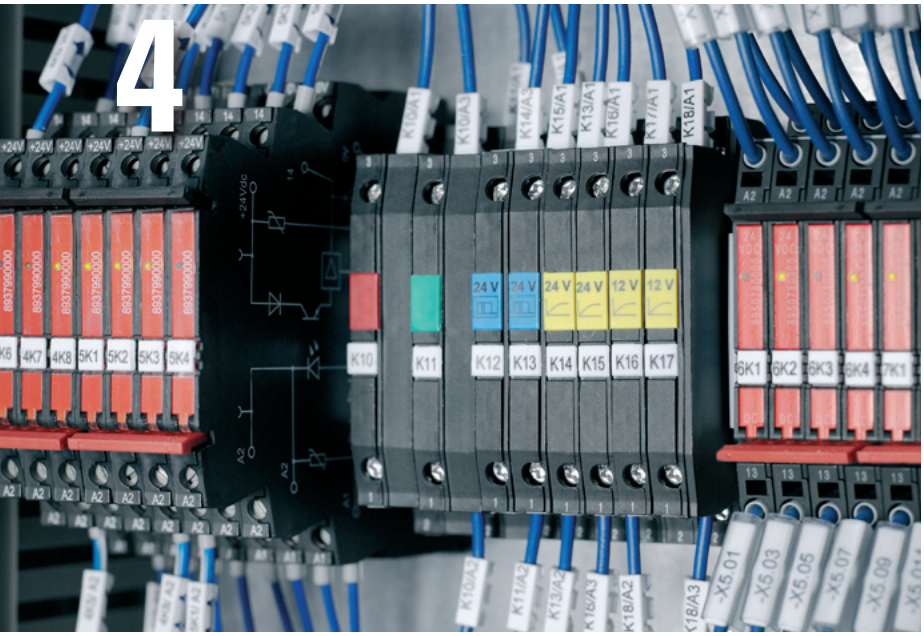
Yours sincerely

Volpert Briel
Chief Marketing & Sales Officer

New business unit “Application-specific Solutions”

Into each of Weidmüller’s applications-specific solutions, the know-how from several industry solutions and customer applications is being integrated. The best solutions are filtered out of diverse markets and form the base for the development of custom-fit solutions. In order to optimise this process, Weidmüller has founded the new business unit “Application-specific Solutions”.

The offer ranges from pure assembly work over consulting services to individual products at the highest technological stage. That way, the new business unit opens new possibilities to assist Weidmüller’s customers with their application challenges.



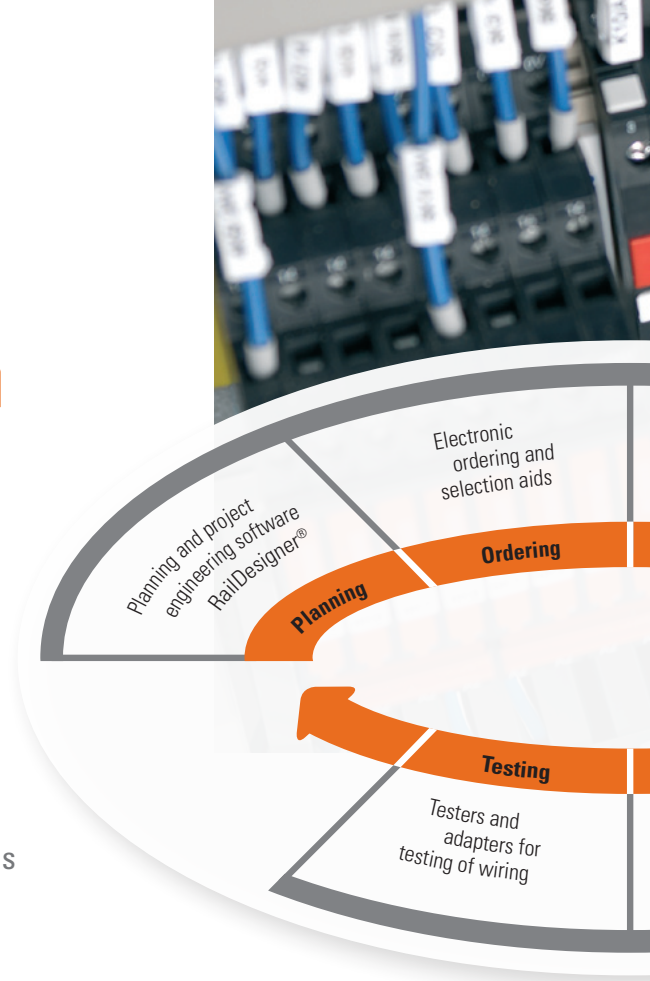
Innovation & Benefit

Technology & Application

Service & Competence

News & Current Topics

Increasing efficiency and cost optimisation in electrical cabinet construction



Based on an all-inclusive overview of the processes involved in the construction of electrical cabinets Weidmüller offers products and process-supporting solutions that lead to an increase in efficiency and optimise costs.

More than 60 years of experience make Weidmüller a provider with field-tested knowledge of application requirements, and one that offers an optimised range of products and service solutions for the construction of electrical cabinets. The work process of 'electrical cabinet construction' can be divided into seven phases. The first three phases in the process consist of designing the electrical cabinet, as well as ordering and storing suitable components. Assembly can begin once planning is complete and the material is available.

The electrical cabinet components are then marked, wired and tested. Subsequently the finished, fully installed electrical cabinet can be commissioned.

To ensure that increased efficiencies are achieved in the long term the individual phases and their process chain have to be subjected to continual examination to uncover their potential for optimisation. Weidmüller offers beneficial solutions for all process steps in the construction of electrical cabinets and in so doing supports the user from the design phase through to production.

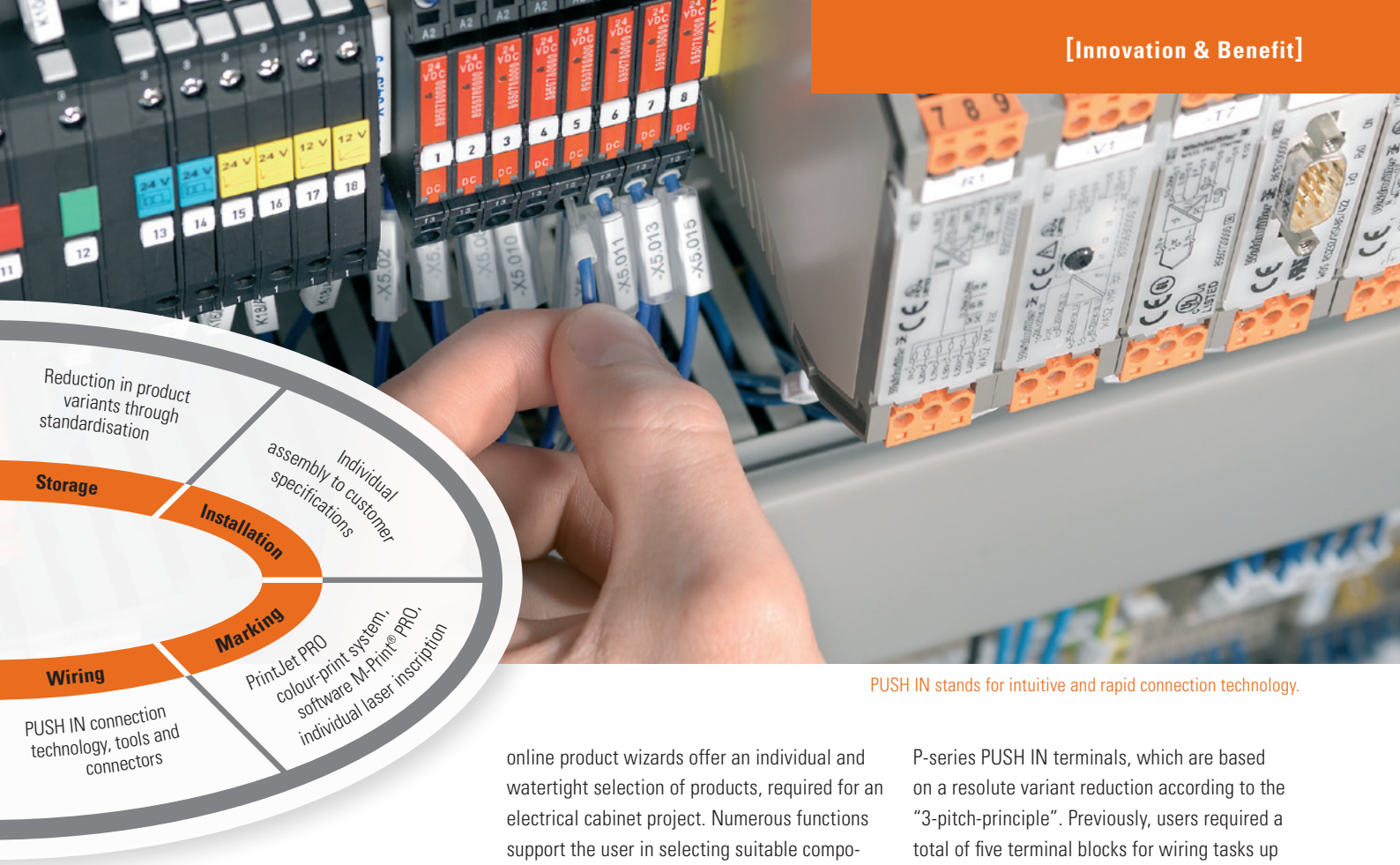
Software aided design of electrical cabinets

Planning and designing an electrical cabinet form the basis for all of the steps that follow in the process chain. The aim is to create a systematic foundation, upon which it is possible to continue to build efficiently. With this in mind Weidmüller offers electrical cabinet design engineers the configuration and ordering RailDesigner® software; this makes it extremely simple to make precise selections, plan projects in 2 and 3D and order assembled mounting rails.

From the first plastic insulated terminal blocks to solutions for electrical connectivity, transmission and conditioning of power, signals and data.

In 1948 Weidmüller produced the first plastic insulated terminal blocks and in so doing revolutionised the construction of electrical cabinets. Until then users had to make do with porcelain device that were susceptible to breaking. Four years later the "terminal block for switchgear installations" (SAK) that made use of thermosetting plastics for insulation material and the patented clamping yoke (screw) connection was developed; this is to date one of the world's most successful family of terminal blocks on the market.

In the more than six decades following the development of the SAK Weidmüller has continually taken up the growing demands of practical applications and utilised innovative technologies to turn these into suitable products. Starting from its core business of terminal blocks, tools and markers Weidmüller increasingly rounds off its assortment with electronics products that convert, protect and supply the electrical connections. Moreover, Weidmüller offers engineering services and develops application-specific solutions through an international network of application specialists. For the user, that translates into a range of components for electrical connectivity, transmission and conditioning of power, signals and data in industrial environments.



PUSH IN stands for intuitive and rapid connection technology.

"Our customers are able to conveniently plan their projects on the basis of product data provided by us using their familiar CAE software, for example EPLAN Electric P8, ZUKEN E³.series or AUCOTEC ELCAD and Engineering Base. All interfaces are made available to this end. Following a direct data export the RailDesigner® then carries out the remaining configuration," explains Klaus-Peter Hornetz, head of eBusiness at Weidmüller. Transferring the data from the CAE system is fast and effortless thanks to the integrated interface. As soon as the user has completed his detailed construction planning in RailDesigner® he receives a full set of manufacturing documentation including visual support that serves as a basis for the simple and time-saving installation of components in the electrical cabinet. It is possible to embed 3D data from RailDesigner® into a CAD system to facilitate an advanced simulation of the electrical cabinet construction and make early checks to see if compatible components were envisaged during the planning phase.

Individual and watertight product selection

As well as the planning and project engineering RailDesigner® software, Weidmüller's online product wizards offer an individual and watertight selection of products, required for an electrical cabinet project. Numerous functions support the user in selecting suitable components from Weidmüller's assortment of products. Wizards are available for products such as surge protection modules, heavy-duty connectors and Industrial Ethernet cables; these lead the user to a suitable selection in line with his requirements in a matter of just three steps:

In the first step the user enters the desired technical specifications, such as inserts or contacts. In response the product wizard suggests a list of components that match the customer's search criteria. In the second step it is possible to further define the product selection or view technical data in the online catalogue, which can be launched with a single click. Finally, in the third step suitable components are selected. The product wizard automatically suggests appropriate accessories in a selection window. An order request can now be generated for the products and corresponding accessories that have been placed in the basket.

Reducing the number of variants for efficient logistics and procurement management

To make procurement and storage of the ordered products easier Weidmüller works continuously to reduce the number of product variants by way of standardisation. One example of this is the P-series PUSH IN terminals, which are based on a resolute variant reduction according to the "3-pitch-principle". Previously, users required a total of five terminal blocks for wiring tasks up to 16 mm². With Weidmüller's PUSH IN terminals such wiring tasks can now be mastered with just three terminal blocks – PDU 2.5/4, PDU 6/10 and the PDU 16.

Another current example is the new family of WMF (Weidmüller Multi Functional) terminals for applications in the field of process control engineering. These combine the functionality of feed-through, fuse and disconnect terminals in a single module. This trend towards a reduction in variants stands for an efficient logistics and procurement management with the associated reduction in costs.

Smooth processes during installation and marking

Once the planning for the electrical cabinet has been completed and suitable components are selected the most time-saving opportunity exists in simply sending the RailDesigner® project to Weidmüller via the software. The assembled mounting rails are then delivered – mounted, wired and tested – together with all of the additional services required for the respective project. It is also possible, however, for the customer to assemble his own components and save time by taking advantage of Weidmüller's process support services.

Simple mounting processes are facilitated by detailed layout planning using the RailDesigner® as well as a clever product design with good handling qualities. The interface from RailDesigner® to M-Print® PRO, Weidmüller's software for marking and ordering labels and markers, supports smooth marking operations. Just one click is sufficient, and RailDesigner® automatically transfers the marking data to the M-Print® PRO. This solution makes time-consuming manual data entry and the resulting possibility for errors a thing of the past. M-Print® PRO users are able to design, print and order their marking material effortlessly and efficiently. They are able to make full use of texts, borders, lines, graphics, barcodes, serial numbers and photos.

With this software it is possible to integrate Weidmüller's ink-jet printer PrintJet PRO in the electrical cabinet construction process. The device is designed for extended use; in conjunction with the integrated loader it can be utilised in multiple shift operations. The ink-jet printing technology employed by the PrintJet PRO facilitates crystal clear printing quality, the highest-possible wipe and scratch resistance as well as, what is to date, an exceptional colour print.

Fast and safe wiring

The wiring follows once the electrical cabinet components have been installed and marked. This is where Weidmüller tools contribute towards increasing productivity. For example, their technologies allow several steps to be carried out in a single operation. For instance the sheath-stripping tool IE-CST can remove the sheath from a cable in two stages in a single operation, whilst at the same time achieving high-levels of repeat accuracy of the sheath stripping result. Furthermore, the thought-through ergonomic design of the tools facilitates fast and precise working. The new generation of the stripping tool stripax® has a removable handle shell to ensure that even smaller hands are able to grip the tool comfortably and work with ease.

The connection technology PUSH IN is a further contribution that Weidmüller offers to increase wiring efficiency. More and more components are being equipped with this technology, which stands for intuitive and fast connections, high levels of safety and versatile application possibilities. "The prepared conductor is simply inserted into the terminal point, and a reliable, vibration-proof and gas-tight connection is guaranteed," explains Oliver Seiger, head of business unit Electrical Connectivity. "Compared with connection technologies that utilise a screw or tension clamp PUSH IN enables the user to save up to 80 percent wiring time."

The right tool for all applications – from mounting terminal blocks to installing sensitive electronics.

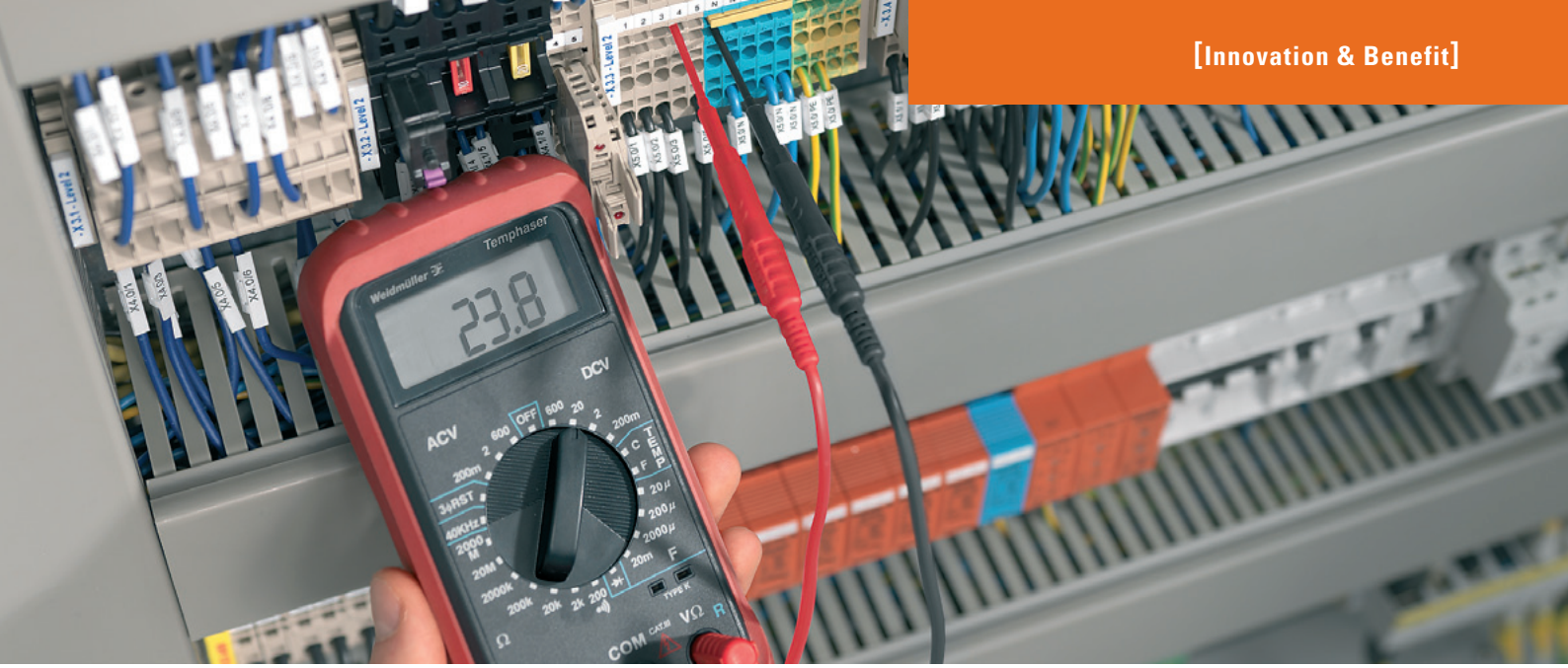
Intuitive and error-proof testing

In addition to mounting, marking and wiring the components the testing of isolation and wiring is another fundamental operation that is required when installing electrical cabinets. Final testing often proves awkward and time consuming, because widely different product variants and designs require a multitude of test plugs, adapters and measuring accessories. With products such as the self-attaching test probe PS ZQV Weidmüller contributes to a simplification of the test process. The test probe is compatible with all cross-connection channels in Weidmüller terminal blocks and, in addition, can be utilised for relays and optocouplers as well as Industrial Ethernet components from the Plug, Wave and Micro series of products. Moreover, the test leads provided enable the test probe to be connected to all standard measuring instruments.

With a combination of terminal blocks and plug-in connectors it is possible to loop in computers via test adapters with which it is possible to test the wiring, locate wiring errors and even identify incorrectly mounted components. With such a test computer it is possible to subsequently document all test and commissioning results for the customer. By utilising test methods like these the fully fitted electrical cabinet can be safely put into operation.

High density functionality in the most compact of designs

In cooperation with the Electrical Connectivity business unit Weidmüller's Electronics business unit makes a decisive contribution towards achieving a simple and space-saving electrical cabinet construction. Many relays, optocouplers, analogue signal converters and surge protection modules already have the same stable mechanical characteristics as the terminals. "The terminal level performs both connection and cable organisation functions as well as providing an interface for the electrical cabinet installer. Generally speaking, marking, cross-connections and signal sorting takes place on this level," explains Michael Höing, head of the Electronics business unit at Weidmüller. "And because our electronics components combine their electronics functions with characteristics



The self-attaching test probe PS ZQV facilitates safe and hands-free testing of the wiring.

such as cross-connection functionality, marking suitability and high connection density they can replace individual terminal block areas inside the electrical cabinet. That is how our solutions contribute towards lowering the mechanical load acting on the terminal block level and creating more space in the electrical cabinet."

Examples of the latest products are the optocouplers MICROOPTO and TERMOPTO, as well as the VARITECTOR SSC surge protection module, all of which have a 6 mm wide housing in terminal block format. In future, communication-enabled signal converters will also take their place in the electronics components portfolio. Weidmüller will be showing prototypes of the first signal converter that can be directly embedded in existing Industrial Ethernet structures by means of an Ethernet interface at the Hanover Trade Fair 2010.

"The electronics functions of the new generation of signal converters will be integrated in Weidmüller's new CH20 housing family," declares Michael Höing. "Our customers will benefit from the fact that we are developing both the packaging and the content of our products. The electronics housings from Weidmüller form a perfect symbiosis of design, connection techniques and functionality."

Electrical cabinet solutions for today and tomorrow

Throughout the development of all new components Weidmüller bears in mind the construction process of the electrical cabinet, and plans with the goal of achieving user friendly and far sighted solutions. Individual products are resolutely put under the microscope in conjunction with their envisaged task at the customer's location. "It is only possible for us to adapt our products to the actual demands of the on-site application when we have seen them as a part of the overall process," Oliver Seiger explains. "For the user the result is components with high density functionality that offer efficiency and a space saving footprint in the electrical cabinet."

The simple handling attributes of Weidmüller's snap-on components for the electrical cabinet successfully avoid errors during installation. Together with process supporting solutions such as RailDesigner®, a software that accompanies an electrical cabinet project from the planning phase through to manufacture, Weidmüller offers a package of solutions that stands for increased efficiency and cost optimisation in electrical cabinet construction, now and in the future.

At this year's Hanover Trade Fair Weidmüller will be presenting to its visitors three example applications from the field of factory automation, process automation and power. Three electrical cabinets form the heart of these applications: a control cabinet for a robot application, a customer-specific, stainless steel signal converter cabinet, as well as a storage cabinet that is home to surge protection modules that have been specifically designed for the photovoltaic sector. In addition, a design study into wiring in the electrical cabinet will be presented under the motto 'future. made by Weidmüller'. Against the background of more than 60 years of experience Weidmüller is once again driving forward innovation with this concept for powerful product solutions and more efficiency in the field of electrical cabinet construction.

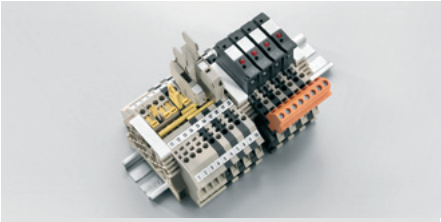
future.
made by Weidmüller

Concepts for the electrical cabinet of the future

Based on the results of extensive studies Weidmüller develops concepts for the electrical cabinet of the future. Prototypes of a new generation of PUSH IN terminals were presented at the Hanover Trade Fair 2009, which demonstrate the idea of automated mounting rail assembly, by means of a robot. Now Weidmüller is taking the next logical step and is examining the topic of "automated wiring". A design study will be shown at the Hanover Trade Fair 2010 that envisages a completely new structure for electrical cabinets with a rear side mounting plate. Together with seamless data consistency, as well as the complete and unequivocal standardisation of components and connection types, the concept can lead to more lasting efficiency in the field of electrical cabinet construction.

Trade Fair Highlights for the electrical cabinet

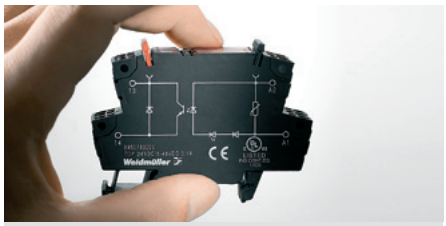
Weidmüller will be showcasing numerous products at the Hanover Trade Fair 2010 to support the efficient construction of electrical cabinets. These range from space-saving terminal blocks for process control engineering to electronics components with a terminal format through to a 6-mm slice version of the electronics housing CH20M.



Maximum space saving with the new terminal blocks

Originally developed for process applications in the North American market the WMF (Weidmüller Multi Functional) family of terminals facilitate a highly-flexible pluggable distribution solution in the most confined of spaces. "Combining the functionalities of feed-through, fuse and disconnect terminals with a 5-mm design width makes it possible for the WMF to save the maximum amount of installation space," explains Lars Hüsemann, product manager at Weidmüller. "Thanks to the integrated PE and shield connection they replace an additional PE terminal and make a separate device for the shield connection superfluous to requirements." The newly developed fuse holder with hinged lever ensures the process of changing a fuse is faster and more reliable.

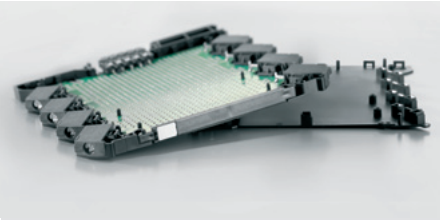
Weidmüller is presently working on a terminal block solution that will respond to the trend for greater signal density. The result will be a compact connection system with high levels of user convenience.



Integrating functionality in a 6-mm design width

Nowadays, a great deal more than simple connection functionality can be integrated into a 6-mm terminal: terminal blocks are predestined to combine established connection technology with efficient electronics.

With TERMOPTO Weidmüller offers a 6-mm format optocoupler that provides direct electrical isolation of the sensor or actuator level from the I/O ports of the controls. Thanks to the huge variety of variants voltage or current adaptations are also possible. The VARITECTOR SSC stands for a further integration of functionality – this product family comprises a wide variety of surge protection modules for instrumentation and control technology. The 6-mm wide optocoupler MICROOPTO Solenoid serves to control actuators with high currents. With extensive protective circuits at the input and output circuits it can be utilised as a fully functional standard relay. A point to remember is that the optocoupler has a much longer service life than relays when switching inductive loads such as solenoids.



New 6-mm electronics housing with optional mounting-rail bus

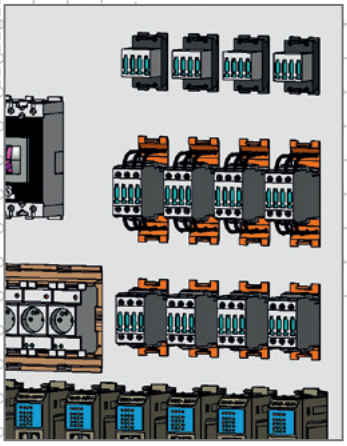
"The CH20M 6 SMD offers breathing space for the design of electronics, because its 6-mm housing means it is characterised by the highest possible efficient use of space to date," states Heinz Scharlibbe, product manager at Weidmüller. "The user benefits from a maximum of layout and marking space." In addition, SMT capable connection elements facilitate fully automated manufacture of component groups. The electronics housing can be processed seamlessly by cost-efficient "Reflow" soldering technology, and there is no need for manual reworking.

The new 5-channel mounting rail bus offers a solution for cross-connecting and networking all modules belonging to the CH20M family of housings – from the 6-mm slice version to the 22.5 mm and through to the 67 mm large capacity enclosure. As is the case with the connection technology the bus contact block is designed for the SMT "Reflow" process and is supplied ready for automatic placement.

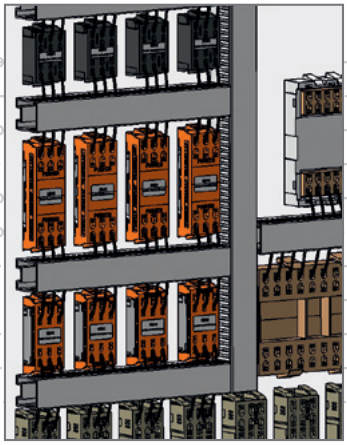
Visit us at the **Hanover Trade Fair 2010 from the 19th to 23rd April** and learn more about these and other products. We are in **Hall 11, stand B60**.

Innovative wiring methods for the electrical cabinet of the future

Based on a design study into more efficient wiring for electrical cabinets Weidmüller has developed a concept for the electrical cabinet of the future. The aim is to achieve improved cost efficiency and increase quality at the same time.



On the front, the components are inserted in the cut-outs produced in the rear mounting plate. The front side functions as "operation, display, and maintenance level".



The back of the rear mounting plate provides the "wiring level" which can be realised either in an orderly wiring manner (picture) or with a fully automatic X wiring.

With prototypes of a new generation of PUSH IN terminals Weidmüller has already presented one idea on achieving automatic mounting-rail assembly in time for the Hanover Trade Fair in 2009. A fully automatic pick-and-place robot selected, identified and fitted components onto a DIN mounting rail; the robot received the positioning information from the Weidmüller software RailDesigner® – which includes an interface to the higher-level CAE system. Now Weidmüller is taking the next logical step and is examining the topic of wiring.

New electrical cabinet architecture

"Today, electrical cabinets are home to components with different designs, types of connections and angles of connection. As long as there is no widely accepted standardisation new developments in this field can only achieve limited improvements," says René Meier, manager at Weidmüller Switzerland. "Achieving a permanent increase in efficiency in electrical cabinet construction requires a completely new and uniform structure. If we were to standardise all components and connection types without exception we would be able to achieve a significant increase in efficiency. That in turn would mean savings in time and costs for the user."

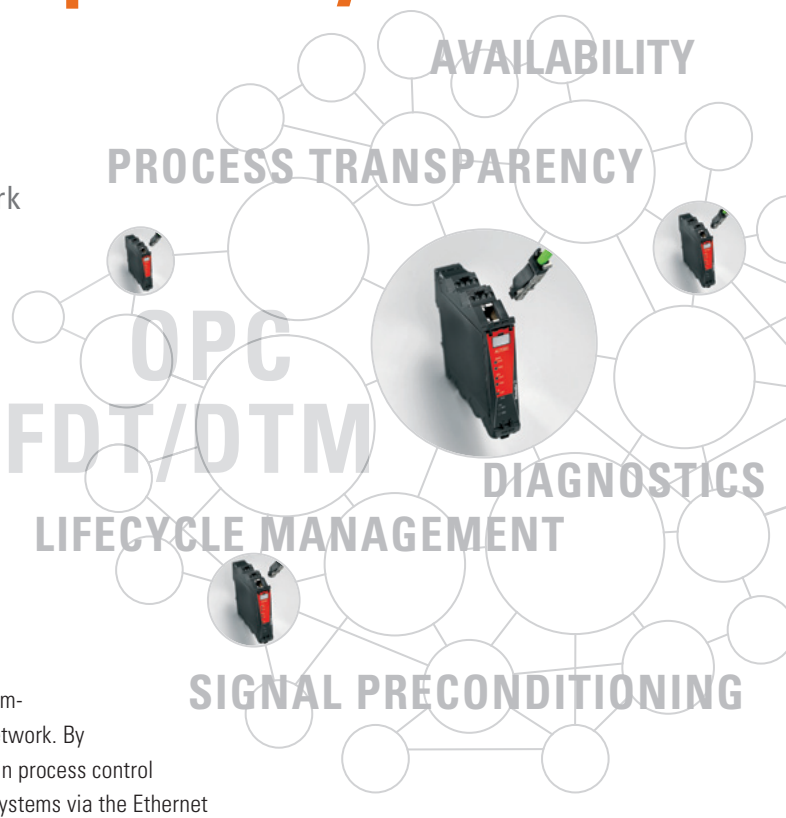
Together with the Swiss electrical cabinet manufacturer and automation specialists Althaus Weidmüller developed the idea of implementing control circuits and the entire wiring for cross-sections up to approx. 4 mm² in the form of a mounting plate on the rear of the electrical cabinet. This concept sees the electrical cabinet being appropriately modified in that there is no DIN mounting rail frame and no assembly of control and switching devices onto the mounting rails. Practically all electrical control, switching and connection elements are integrated directly in prefabricated cut-outs produced in the rear mounting plate by means of CNC processes.

Fully automatic wiring by a robot

To implement a concept of this nature it is necessary to make appropriate adaptations to the design of the electrical cabinet components to be mounted. "We see PUSH IN connection technology as a basis for the electrical cabinet of the future, because it stands for intuitive and fast connectivity, high levels of safety as well as flexible application options," explains René Meier. "Components with PUSH IN contacts that are always in a constant and clear-cut position can do more than substantially simplify manual and semi-automatic wiring processes. They would even make possible fully automatic wiring by a robot." A robot is able to reach high and wide positions. However, it is very difficult to access depths inside an electrical cabinet with a robot arm. The cut-outs in the mounting plate provide unhindered access to the connections as these are located on the rear of the components and eliminate the depth dimension. Robot positioning is simply required to be oriented on an x-y coordinate system. You are welcome to experience the wiring concept for the electrical cabinet of the future at the future zone of our fair stand at the Hanover Trade Fair 2010.

More process transparency with Ethernet

Effective communication between different network stations and seamless communications from the field level through to the corporate control level utilising just one network technology – Weidmüller reacts to these trends in industrial automation by introducing its communication-enabled signal converters.



Weidmüller presents the interaction of its communication-enabled signal converters within an example process application at the Hanover Trade Fair.

Weidmüller will be presenting the first prototypes of a new generation of signal converters equipped with an Ethernet interface at the Hanover Trade Fair 2010. „Based on an example process application we will be demonstrating how the devices can ensure integration in an existing Industrial Ethernet network and component interaction in a practical application," explains Michael Höing, head of the electronics business unit at Weidmüller. „What is particularly special about this solution is that in addition to the typical functions such as signal acquisition, conditioning, standardisation and output our Ethernet enabled signal converters will also provide extensive diagnostic functions for more process transparency."

Office and automation worlds are growing together

Industrial Ethernet technology achieves the goal of seamless communications from the field level through to the corporate control level utilising just one network technology. Office and automation worlds are growing together

However, due to the fact that they place greater demands on availability, reaction time and installation processes industrial applications differ a great deal from office applications. Above all, a great deal of importance is attached to monitoring automation processes, automation components as well as the network. By being directly integrated in process control and central engineering systems via the Ethernet network the communication-enabled signal converters will provide optimum support to meet the demands being placed on industrial applications.

Extensive and transparent process information

In particular, signal-converter functionality of event-controlled transmission of diagnostic information is in line with user requirements for extensive and transparent process information. Thanks to Ethernet based communications all diagnostic data will be transmitted from a signal converter to the master terminal or the engineering system. The diagnostic data made available generates a significantly more exact image of the device, the sensor and the process than would be possible with conventional converters.

„Our prototypes are able to monitor measurement values continuously," explains Michael Höing. „For example, they can generate an alarm independent of process statuses; for instance, if measured values exceed or fall short of user definable limit values." Consequently, measurements and conditioning of process values are moving significantly closer to the engineering and control systems. Diagnostic options that otherwise would be the reserve of complex process devices can now be extended to all measurements in an application.

Fast and simple integration

In addition to the increase in process transparency low installation costs are a further remarkable benefit of utilising Ethernet based signal converters. As companies usually already have an Ethernet network installed to link their office PCs in the production environment it is possible to quickly and simply integrate the communication-enabled devices required to control and monitor production processes. To facilitate integration in engineering and control systems two industry standards are available in the form of FDT/DTM and OPC; these are compatible with all process control systems.

Reliable packaging for electronics

Elcoma GmbH has developed a solution for applications in the field of safety technology in the form of its safety module SUB V1, with which it is possible to temporarily suppress a safety function on machine safeguards. The avant-garde CH20M electronics housing from Weidmüller offers a suitable packaging to house the innovative content.

During work processes on production lines or manual workstations it often becomes necessary to temporarily remove a machine safeguard to enable settings, servicing or maintenance work to be carried out on an open laser beam or active machine components. In response to this application requirement Elcoma GmbH has developed a new type of safety device that contains several force guided relays. „These relays are connected to one another in a manner that prevents the contacts from sticking," explains Andreas Hilß, Manager of Elcoma. „A function test is automatically carried out on the relays at each switching cycle. Moreover, the connection logic has been designed to ensure that the complete switching unit is zero-voltage safe." The Elcoma module ensures by way of this designed-in feature that it is no longer possible to maintain the bypass mechanism as soon as the machine safeguard is returned to its original position.

Innovative design and high-quality appearance

This development required a housing that encapsulated the electronics module in line with functional requirements. Elcoma turned to Weidmüller for a solution to its requirements: „For us it was important to integrate our development in a housing that offered both an innovative design and a high-quality appearance," relates Andreas Hilß, „and that is exactly what we found in Weidmüller's electronics housing CH20M." One compelling benefit the CH20M housing system has to offer is the thought-through connection technology, which was specifically adapted to the housing and equipped with integrated coding.

„A further decisive factor as far as Elcoma is concerned is the large housing front that can be configured to meet individual requirements," explains Heinz Scharlibbe, product manager at Weidmüller. „All indicator functions available with the safety module can be placed, clearly structured, on the front of the CH20M. The black-transparent, hinged lid is designed to ensure safe protection of the front plate and allow the indicator LEDs to shine through."

Short product time to market through prompt sample production

Weidmüller provided support during the design-in phase with prototype production based on STL technology, which allows a sample part to be generated from the corresponding CAD data. With this input it was quickly possible to develop the first electrical prototypes at Elcoma. „With Weidmüller's support a first prototype with off-tool parts were produced for the pre-production series soon after the project started, which enabled us to run through the first tests and approvals," Elcoma's Andreas Hilß recalls. „This approach enabled us to keep our product time to market short."

The high levels of operational reliability offered by the electronics housing CH20M round off this advantageous package. Safe from finger touch on both sides, a leading pin contact and the integrated, captive coding system featuring „autoset" functionality provide a suitable framework for the new safety module from Elcoma.

IN FOCUS

Electronics housing system CH20M

Task

Elcoma required a functionally suitable electronics housing for its novel safety module SUB V1.

Solution

Weidmüller's CH20M housing was specially developed to facilitate the implementation of individual electronics applications.

Something special

Featuring an innovative design, high-value appearance and high levels of operational reliability the CH20M provides the perfect packaging for the Elcoma development.

The 45-mm wide housing received individual laser marking for the Elcoma product. The indicator LEDs are also clearly visible through the tinted, hinged lid.

Ralf Güthoff from Weidmüller explains the advantages of pluggable surge protection to Michael Itzek of the Haseldorfer Marsch waterworks.

Thanks to Weidmüller solutions the control room in the central pump house is kept up-to-date with the status of the plant.

Water no matter what the weather

Waterworks ensure there is a reliable supply of water the whole year round – and that under all possible local conditions. The waterworks at Haseldorfer Marsch near Hamburg utilise lightning and surge protection from Weidmüller to guarantee fault-free operation of its pump and control systems, even during heavy thunderstorms.

The ground waterworks Haseldorfer Marsch in Wedel near Hamburg began operating in 1960 and extracts its raw water from three horizontal filter wells, two flat and eight deep wells, which are located at depths between 17 and 107 meters. Two thirds of the ground water obtained is treated in a flocculation system and the rest in a spray tower. Following subsequent filtration drinking water is delivered via four pure water pumps that guarantee a continual daily supply of 15 000 m³. Ensuring that this process runs smoothly requires reliable protection and monitoring measures.

Completely new safety aspects

"Our plant was originally built without any form of lightning or surge protection," reports Hauke Beier, a member of the waterworks maintenance team. "However, we discovered that uncontrolled incidents occurred repeatedly when thunderstorms arose; incidents such as invalid error messages, electronics failing or electrical equipment being destroyed. For that reason we decided to install surge protection in all of our electrical lines."

Due to the extensive surface areas of large processing plants they are easily susceptible to lightning strikes, which, for example, can then lead to the coupling of overvoltages. As a result the operators required a seamless lightning and surge protection concept that offers protection against both possible scenarios – direct and indirect lightning strikes. "In the past protection meant mostly external lightning protection; and if internal lightning protection was taken into consideration then simply in the form of power protection," explains Ralf Güthoff, product manager at the Electronics business unit at Weidmüller. "However, since 2006 a new supportive application standard has come into force that specifies guidelines for both selecting the right lightning protection zone concept as well as the risk analysis." As the waterworks is a public plant charged with guaranteeing a continual supply of water to countless numbers of people it is required in accordance with IEC 62305-1 – 4 that an external lightning protection must be integrated and, in addition, all ingoing and outgoing cables must be fitted with an internal lightning protection. In addition, the product standard IEC 61643-21 defines protection for measurement and control signals since 2009. That means that today a completely new safety aspect must be taken into consideration.

Overvoltage protection and remote signalling

"When building our new well system we wished to integrate significantly more monitoring functions, because the system is located several kilometres from the control room," relates Hauke Beier. "It was important for us that the central control room is kept up to date with regard to the status of the system." As an electromagnetic interference coupling is highly probable due to the

long distance involved it was considered necessary to safeguard the connection to the control room with a reliable surge protection.

A spur line runs from the pump house of the new well system to the well shaft. The controls that regulate the valves, carry out water level measurements and are responsible for technically protecting the plant against outside hazards are located in this shaft. A Weidmüller primary, single-phase switch-mode power supply unit of the type ConnectPower provides power to the controls as well as to the other electrical equipment in the well shaft.

To ensure it is possible to continuously monitor the processes in the well shaft in all weather conditions it was decided to install surge protection including remote signalling functionality in all installed power and signal lines. To protect their power lines the Haseldorfer Marsch waterworks utilises lightning and surge protection components of the types PU I – III that offer compelling product characteristics such as high discharge currents and a compact design. With regard to signal protection Weidmüller's new product series VARITECTOR SPC (VSPC) offers optimum attributes.

Permanent monitoring and simple testing

The pluggable surge protection module for measurement and control signals provides the defined protection classes D1, C2 and C1 as specified in IEC 61643-22 and contains an internal monitoring function that regulates error detection and error message processes. If a short-circuit occurs on the signal line or a connection is wired incorrectly the arrester enters an overload failure mode as required in the latest version of IEC 61643-21. At the same time a message is transmitted automatically via the VSPC Control Unit to the control room, whereupon a red LED lights up on the device and on the defective VSPC Control Unit instead of a green LED. That ensures that not only is the operator kept up to date through permanent monitoring of the status of his protection concept, but that the on-site technician is also informed by means of error indication. As a result the defective module can be very quickly found and replaced.

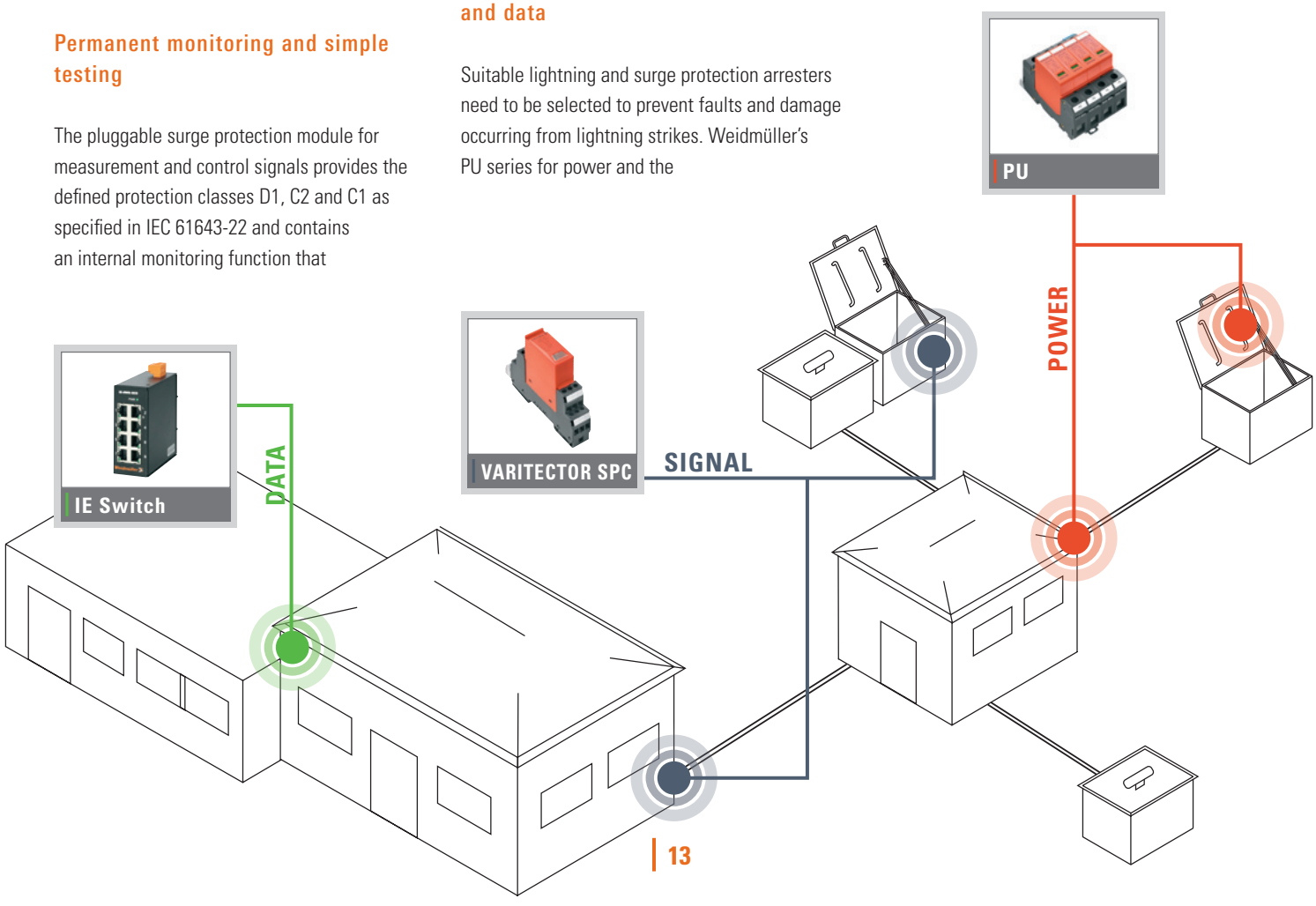
The test unit V-TEST Basic makes it possible to adhere to maintenance intervals as specified in accordance with IEC 62305-3. Bearing in mind that no adapter is required, the arresters are simply plugged into the compact and portable test unit. All that is required to analyse the status of the arrester is a couple of simple actions to ensure early prevention of failure caused by the effects of lightning and surge events.

Safety concept for power, signals and data

Suitable lightning and surge protection arresters need to be selected to prevent faults and damage occurring from lightning strikes. Weidmüller's PU series for power and the new VSPC series for signals guarantee protection as specified in the relevant standards. Industrial Ethernet is utilised to visualise all processes in the waterworks. AdvancedLine unmanaged switches from Weidmüller act as the central network components to prevent data collisions, enable fast packet switching and increase data throughput. With these solutions the Haseldorfer Marsch waterworks has received a safety concept that offers a high-level of supply security for the transmission of power, signals and data.

Further application examples are available here:
www.power-signal-data.com

Power
Signal
Data



Increase efficiency through standardised distributor housings

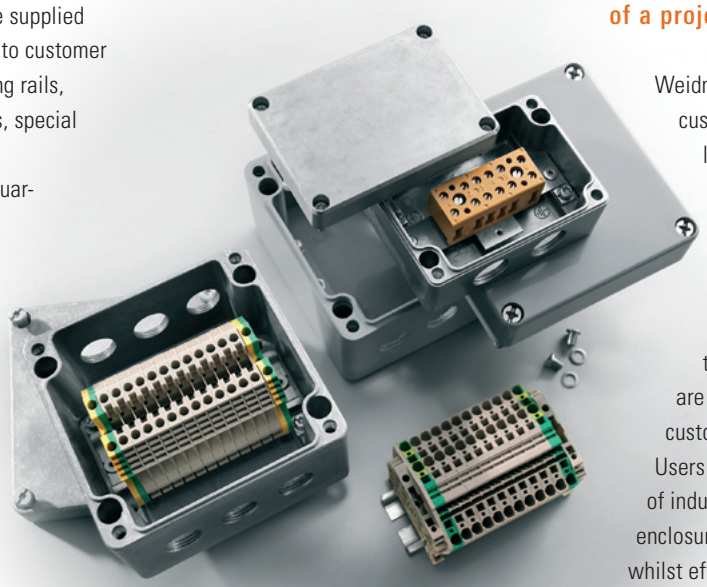
When users require a special enclosure they can turn to Weidmüller for a solution that is tailored exactly to their application requirements. To make this process even more efficient in the future Weidmüller will, with immediate effect, offer a modular system comprising pre-drilled enclosures and fitted with assembled mounting rails.

No matter what application the user is planning – Weidmüller offers a suitable enclosure design for all industrial applications including for hazardous areas. This offer is also combined with existing individual service solutions available to the customer. The enclosures are supplied ready-for-connection and equipped to customer specifications such as with mounting rails, drilled holes, cable glands, cut-outs, special coatings and much more.

"With this offer we are able to guarantee that the customer receives a solution that meets his requirements exactly," explains Günter Lucht, applications manager at Weidmüller. "However, as different customers of ours often implement similar applications the requirements are also repeated. For that reason it appeared logical to us to provide certain enclosure variations as standard."

A perfect solution in the shortest of time

Based on many years of experience in developing customer-specific enclosure solutions Weidmüller defined certain assemblies and product combinations as standard, which can be ordered forthwith from a catalogue. This offer includes nineteen design sizes of the Klippon® K-series (aluminium enclosures) as well as seventeen design sizes of the Klippon® POK-series (polyester enclosures). 21 different terminal rails – the majority of which are equipped with screw or tension clamp connectivity solutions – as well as mounting plates in three different sizes are available for installing in the enclosures.



"The user is able to combine these standardised assemblies with one another to create countless variations so that he receives a perfect solution for his particular application in the shortest of time," Günter Lucht explains. "Many requirements are covered by our all-round solutions in the form of standardised, pre-drilled empty enclosures fitted with terminal rails or assembled mounting plates. We offer these enclosure variants both as industrial design solutions as well as with ATEX certification."

Time and cost savings over the course of a project

Weidmüller continues to offer individual customer-specific solutions. Nevertheless, many users will be able to find the perfection solution to their requirements quickly and simply in a catalogue. That not only saves time and costs during the project planning phase: as the standardised enclosure variants are kept in stock delivery times to the customer are significantly reduced as well. Users operating in widely different sectors of industry will be able to receive a suitable enclosure to reliably protect their application whilst efficiently saving time and costs into the bargain.

With immediate effect Weidmüller now produces certain assemblies and product combinations as standard.

Clever yield optimisation

Each photovoltaic system is distinctive. To make full use of the yield opportunities it is necessary to install the individual photovoltaic modules to their best advantage. For this purpose Weidmüller offers what is to date a unique analysis tool in the form of CLINICS SOLAR.

Photovoltaic technology is a technology with a future, and one whose global significance is growing constantly. Installation technicians and operators of photovoltaic systems seek well thought-through components with which they can increase the yield from their system as much as possible. Michael Herfen, photovoltaic project manager at Weidmüller knows that „Solar parks contain numerous photovoltaic modules with different performance characteristics." He continues „As well as the different performance levels partial shading or even damage to individual modules can lead to a reduction in yield. In order to achieve an optimum yield from both medium-sized and smaller systems it is necessary to arrange the different panels appropriately, and this is what our novel analysis module supports."

Simple analysis, diagnosis and optimisation

With its family of products CLINICS SOLAR offers what is to date a unique tool to analyse, diagnose and optimise photovoltaic systems. In order to do more than just determine the overall performance of a module CLINICS SOLAR provides the option of logging and evaluating current and voltage parameters of an operational photovoltaic panel or photovoltaic string. „Initial status information is indicated immediately by means of LEDs on the device" Mr Herfen explains. „The analysis software SOFTCLINIC then offers the option of a detailed graphic evaluation on a PC to facilitate a more rigorous analysis so that weak points can be eliminated."

In addition to interim analyses CLINICS SOLAR can also be utilised to observe a photovoltaic system more extensively. Based on the values determined it is possible to take quick and effective measures at any time to improve the yield. That ensures the system is operated permanently at optimum performance levels.

Users can take advantage of CLINICS SOLAR in new and existing systems. Thanks to the use of common connector types integration is simple, fast and safe; in addition, it is also suitable for use in monocrystalline, polycrystalline and thin-film module systems. Consequently, by determining individual performance figures it is possible to improve the wiring and cabling of existing modules of every type of photovoltaic system. The result: a clever optimisation of yield.

With its family of products CLINICS SOLAR offers what is to date a unique tool to analyse, diagnose and optimise photovoltaic systems.

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Weidmüller positions itself worldwide successfully on a sustained basis as the leading provider of solutions for electrical connectivity, transmission and conditioning of power, signal and data in industrial environments.

The company develops, produces and sells products in the field of electrical connectivity and electronics all over the world. Via a global network of application specialists Weidmüller offers engineering services and develops application specific solutions.

The complete product and service portfolio consistently assures both Weidmüller and its customers of competitive advantages and an increase in value.

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