# connectivity 1.12

Excellence in Connectivity Solutions by **HUBER+SUHNER**

___**Fiber in the Home:** Future-oriented connectivity solutions beyond the last mile.
___High-voltage current for electric vehicles. Hydro-electric power thanks to fiber optics.
World Solar Challenge. Revolutionary assemblies.

# Fiber in my Home

Fiber in the Home is the future. High-speed Internet, HDTV and movies-on-demand require an enormous amount of bandwidth, in private households as well. The data volumes that we transmit to our living rooms are increasing steadily. Soon, conventional systems will no longer be able to cope. The future therefore belongs to fiber optics. A virtually unlimited volume of data can be transmitted via fiber optic cables. The market for these is enormous.

Even today, so-called Fiber to the Home networks are being installed and expanded in order to bring high-performance fiber optics into the home. The fiber optic cables enter the building via the so-called BEP or «Building Entry Point», which is usually located centrally in a utility room in the basement. However, in order to supply individual households with fiber optic cables, an additional distribution system is required inside the building, as a continuation so to speak. This is where Fiber in the Home or FITH comes in. The fiber optic cables are routed into the individual living rooms using revolutionary new products. FITH can also begin at the roof in the case of high-quality satellite TV cabling, with fiber optic cables running from the receiver antenna to a large number of television sets.

HUBER+SUHNER has not only recognised the potential of this market at an early stage, but also the needs of users. The users are not usually trained specialists in fiber optics and often have no prior knowledge of handling fiber optic cables. HUBER+SUHNER has developed an entire product range on this basis. Thus, Fiber in the Home is a term which was coined by HUBER+SUHNER and has now gained currency throughout the industry world-wide. Highest quality and simple installation characterise the complete pre-assembled solutions. As a Member of the Board of Directors and out of conviction, I rely on HUBER+SUHNER Fiber in the Home products. Read about how high-performance satellite TV cabling was installed at my home using CLIK! components in this edition of «Connectivity». Quite in keeping with the motto «Fiber in my Home» ■

Rolf Seiffert, Member of the HUBER+SUHNER AG Board of Directors


# Growth «Made in China»

**New production sites.** Competition on the Chinese market is intensifying. In order to remain on course for success in the Asian region, local production is increasingly important. This is consequently being further promoted at HUBER+SUHNER. A new fiber optic production site has been set up in Shanghai and a new cable plant is under construction. The expansion in China, is primarily aimed at meeting demand within the country itself.

In the industrial stakes, China has a huge amount of catching up to do. Consequently, massive investments are being made in infrastructure and industry. HUBER+SUHNER benefits from this boom. Owing to the high demand for good customer service, it is increasingly necessary to produce in close proximity to customers. HUBER+SUHNER is therefore intensively expanding its group company in China. The two production sites in the industrial belt around Shanghai are getting reinforcements. With «Fibasia», a new production site has been created for fiber optic products. The plant has been in operation since the spring of 2011. A further expansion project is Cable Asia in Changzhou. The ground-breaking ceremony was held in the autumn of 2011 and the building for manufacturing

Ground-breaking in 2011: Red carpet for Cable Asia

copper cable is scheduled to be completed by September 2012. In China, products from all three technologies, radio frequency, fiber optics and low frequency will then be produced.

## State-of-the-art at Fibasia

HUBER+SUHNER has rented a 3,000 $m^2$ building located at only half an hour's drive from the centre of Shanghai. Although this is only a temporary solution, the inside of the facility has been fully refurbished to meet all the technical requirements for housing all the fiber optic activities under one roof. The cable production and assembly shop are located immediately next to one another. The project was implemented in a very short time. It was launched at the start of 2010, the extrusion facilities were commissioned in the spring of 2011 and cable production has been in operation ever since. This rapid implementation was possible because virtually the same extrusion equipment was procured as that in Switzerland. It was therefore possible to comprehensively train the Chinese engineers on the existing facilities in advance.

160 by 218 metres: Production at the new plant will start in autumn 2012.

The building complies with the latest standards. For reasons of quality and environmental protection, a closed cooling water circuit with heat exchangers and compressed-air saving cable driers are used. The state-of-the-art facilities and the building service equipment are designed to be transportable. This is because Fibasia will move into the Cable Asia production building in Changzhou once it is completed.

For 2012, four shift operation with approximately 150 employees is planned in order to produce fiber optic and riser cables around the clock. Although fiber optic assemblies such as Masterline, standard connection cables and pigtails are produced, Fiber to the Antenna cables will be the most important product in future. Owing to expansion during recent years, fiber optic production in China is now the largest for HUBER+SUHNER, with a monthly capacity far exceeding 100,000 produced parts.

## Huge Cable Asia plant

The construction work for the planned copper cable plant in Changzhou, which is located 170 kilometres from Shanghai, began in early October 2011. It is expected to be ready to move into in September 2012 and the first test production runs are to start in November 2012. At 160 by 218 metres, it will be a huge building. «It has to be, because demand has almost doubled within the past year in the Asian region,» says Bruno Tschirky, Project Manager Equipment and Process Cable Asia. During the initial stage, the new plant will operate with just under 100 employees. However, the plans allow for several capacity expansions. Copper cables which have to date only been produced in Switzerland will then be produced in China in order to meet demand from the local Chinese market and the entire Asian region. The focus will be on single-core and multi-core cables for applications in railway vehicles, solar technology, electric and hybrid vehicles, as well as in industry. The highly specialised plastic compounds for the cable jackets will continue to be produced in Switzerland and delivered to China. The important expertise thus remains at headquarters, while the customer receives the same product quality as he does from Switzerland and production is in close proximity, which benefits both sides ■

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## New assembly plant in Tunisia

Since November 2011, HUBER+SUHNER has been operating a new assembly plant in Tunisia. Around 250 employees will carry out mainly manually intensive tasks for all three technologies. Products include RF connectors and assemblies, Smartline and Masterline systems, as well as fiber optic assemblies and low-frequency copper cable systems ■

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# Upgrading to 4G: Sprint

With «Project Leapfrog», Sprint, one of the largest US mobile telecommunications operators, is planning to upgrade 40,000 mobile communication sites to the new, faster 4G technology over the next four years. Approximately one third of the sites will be equipped by Ericsson – with cable assemblies from HUBER+SUHNER. A new production site dedicated specifically to these production activities was established in minimum time in Mexico.

The volume of data traffic in mobile communication networks has positively exploded since the arrival of smartphones on the market. New technologies and infrastructure upgrades are essential in order to handle the ever increasing data volumes coursing through the networks. Operators are therefore increasingly turning to Fiber to the Antenna (FTTA) solutions. Fiber optic cables, which are capable of carrying much higher data volumes than conventional RF cables, are routed from the base station to the antenna.

## Customised plug-and-play

HUBER+SUHNER offers a range of connectivity solutions for FTTA technology. To meet the needs of the customer, the experienced team provided a plug-and-play hybrid cable system solution for the supply of so-called remote radio heads at the top of the antenna. Fiber optic cables for the large data volumes and copper cables for the power supply are laid in parallel between the base station and the top of the antenna. Because, as a mobile communica-

# makes haste

tions provider, Sprint has to pay a monthly fee for each cable on the mast, a single-cable solution containing both the fiber optic and power supply lines was sought. HUBER+SUHNER succeeded in achieving this by combining the Masterline Extreme fiber optic cable system with existing Masterline Extreme power products. Five remote radio heads can now be powered from a single main cable. Compared with conventional hybrid cables, this product impresses through its simple plug-and-play installation.

Most of the cable assemblies are produced in lengths between 40 and 80 metres (lengths up to 150 metres are also possible). They are used to connect the base station to the remote radio heads. Their weight is correspondingly heavy. Because long-distance transport was unfeasible for cost reasons and Ericsson insisted on a local supplier, it was clear from the outset that the cables had to be manufactured in North America. The existing HUBER+SUHNER location in Vermont, however, did not offer the necessary capacity for this major order. Particularly because the American mobile communications market is extremely dynamic and suppliers have to be extremely flexible in order to implement changes in an extremely short time. New solutions were needed.

## Mexico produces for USA

It was towards the end of 2010 that the idea of building a production site in Mexico was first put forward. Potential sites were visited in January 2011. Then, everything went very quickly. A 1,500 $m^2$ plus factory complex was rented in Empalme in north-western Mexico from June 2011. Proximity to the US border and the availability of a highly-skilled workforce were key factors in the decision to locate here. From July, the empty building was equipped, the production facilities set up and the workforce trained. Some sixty employees celebrated the opening of the new Mexican production site in early September 2011.

The following week already saw delivery of the first cable assemblies to Ericsson. Just two months later, production had been increased to 250 assemblies a week and a second production line had to be installed. A LISCA assembly line was also built. By early 2012, even larger deliveries were being made to Ericsson each week from a workforce that had already been doubled to 130 – and was still growing. Such rapid progress was necessary because Ericsson intends to upgrade the first 5,000 mobile telecommunication sites for Sprint during 2012, beginning with Texas, Georgia, Florida and Kansas.

## Prepared for further growth

With the rapid establishment of a production site in Mexico, HUBER+SUHNER has demonstrated flexibility and has impressively shown that custom-developed products are a company speciality. The Sprint Leapfrog project could lead to further orders for the North American mobile telecommunications market in the future, as most providers have no alternative other than upgrading to 4G with Fiber to the Antenna technology. Market potential exists and is real, just like the capacity and flexibility demonstrated by HUBER+SUHNER with its new production site in Mexico ■

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### New production in Brazil

A further production site is currently being set up in Brazil under the name Brazcab. Since February 2012, copper cable systems are being produced here for railway applications. In the summer, fiber optic cable production will also take place here. These products are primarily destined for the Latin American market ■

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# Enterprise Resource Planning: Even greater customer proximity

HUBER+SUHNER receives top marks for product quality from customers. This is extremely satisfying. The alignment of the products to their requirements is evidently excellent. In terms of speed, delivery reliability and transparency, HUBER+SUHNER has, however, recognised potential for improvement. The introduction of a globally-standardised ERP solution from May 2012 will now form the basis for improvements.

With the introduction of SAP, HUBER+SUHNER will integrate the corporate administrative and operative departments into a unified enterprise resource planning system (ERP) world-wide. Customer relations play an important role here. «The ERP will help us respond more quickly to customer requirements,» says Jean-Luc Gavelle, COO Radio Frequency. «We'll be able to inform our customers even more quickly and professionally in the future.»

Interfaces to the outside, however, are only one aspect. With the introduction of SAP, HUBER+SUHNER hopes to enhance efficiency thanks to simplified, harmonised processes. It is not only planning reliability and transparency that will improve, but also efficiency within the company. Patrick Riederer, COO Low Frequency, sees the benefits in simplification and standardisation of the processes: «Through integration of all the order processing activities into SAP, all orders will be entered into a single system world-wide in future. This will lead to a higher-quality data basis and lower transaction costs.»

## Faster, more flexible, more competitive

SAP will make HUBER+SUHNER faster, more flexible and even more competitive, as well as creating a solid foundation for healthy corporate development. The guiding principles of the project are increasing globalisation of the markets, the changing demands of globally-operating customers and suppliers, as well as the expanded possibilities offered by new IT systems. «With the new ERP solutions, we are very deliberately creating renewed scope for reacting quickly and flexibly to market demands,» says Urs Ryffel, COO Fiber Optics and sponsor of the SAP project. «We are also thinking about direct connections to our customer's IT solutions and portal solutions with which we can provide immediate information to our partners and involve our customers directly in the processes.» Initial solutions of this kind are already in planning. First on the agenda, however, is implementation of the system, on 2 May 2012 at HUBER+SUHNER in Switzerland and then progressively in the rest of the world ■

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# Measurement logs: Online rather than by mail

At a university radio-frequency lab, somewhere in the world. The new SUCOFLEX test assembly has arrived. Bags with assemblies and measurement logs are being unpacked. The test setup is started; questions can usually be answered based on the measurement log. But where is the log? It was here a moment ago, now it's disappeared without a trace. Work has to be interrupted until, after a great deal of effort, a new log has been obtained. HUBER+SUHNER puts an end to this problem by placing all measurement data on the web.

The above-described scenario occurs far too often. In the context of our internal «Customer Focus» programme, HUBER+SUHNER is simplifying this process.

As a globally-operating company, the central administration of electrical data is essential. Because HUBER+SUHNER produces test and measurement logs at various locations around the globe, standardised measuring methods are a prerequisite in order to assure uniform quality everywhere. For this reason, HUBER+SUHNER started the EDA (Electronic Data Acquisition) project. The objective in the future is to store all the electrical measurement data recorded during production centrally in a standardised format and provide it to customers online. This allows measuring components to be modelled mathematically and used, for example, for calibration purposes. This offers benefits to customers who purchase the products with serial numbers such as SUCOFLEX test assemblies or antennas.

## Available online from July 2012

In order to realise the project, systems and software solutions can be adapted to one another. Since last autumn, any network analyser is able to store the recorded electrical radio frequency data to a central database. By the spring, the interfaces for internal customers will be developed and then everything will be integrated into a new Internet platform. External access to the electronic measurement logs is expected to be available from July. Great added value for customers: Thanks to the world-wide electronic storage of the required measured data, it can be accessed quickly and simply online. HUBER+SUHNER achieves cost savings with regard to the printing and packaging of the logs. And the environment benefits as well ■

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Best performance, latest generation: SUCOFLEX 404:

# SUCOFLEX 400: Revolutionary attenuation

**SUCOFLEX 100 cable assemblies have been successful in a wide variety of applications on the market for 25 years. With SUCOFLEX 400, HUBER+SUHNER now offers an enhanced product, which meets new, even higher standards. The SUCOFLEX 404 cable assembly provides the lowest attenuation available on the market for its design and size.**

The new SUCOFLEX 400 microwave cable family has been specially designed for testing and measurement technology, the medical sector, defence technology and other industrial applications. These cables are used in particular for laboratory and testing applications in the pioneering field of high-speed digital testing and in the medical sector for minimally-invasive tumour removal using radio-frequency radiation. In the defence sector, the cables are used in radar equipment and in electronic warfare.

## Lowest attenuation, high performance

In all these fields of application, lowest attenuation, i.e. minimum electrical losses as well as a high level of phase stability in a broad temperature range are decisive. Following a period of intensive development, the SUCOFLEX 400 family meets these extremely high requirements. A new process technology significantly improves the electrical properties of the dielectric. Further highlights of the cable family include its excellent return loss properties and its good phase stability when bent.

## Continuously updated portfolio

Sophisticated radio-frequency applications in the above-mentioned ranges require permanent, advanced and technically proven solutions. All the components of the SUCOFLEX 400 family have undergone extensive testing for the sectors mentioned and meet their stringent requirements. The cable family sets new market standards – with the best performance in its class.

The first cables available in the new product family are the SUCOFLEX 404 and 404D. They can be equipped with the SMA, N, TNCA, and PC3.5 connectors. All assemblies are comprehensively tested and delivered with a testing log. The portfolio will be expanded on an ongoing basis; the SUCOFLEX 406 and 406D and A-armouring for SUCOFLEX 404 will be introduced shortly ■

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# Online RF calculator: Easy calculation of cable and assembly parameters

HUBER+SUHNER is providing a new service: The company has developed an online calculator for coaxial microwave cables in order to facilitate the work of engineers, technicians and students who are involved in the calculation of RF cables. Coaxial cables and entire assemblies with connectors can be calculated in no time using this tool.

Technical parameters can be calculated extremely simply and quickly with the new cable calculator. Simply enter the dielectric constant, frequency and cable length and the relevant results such as wavelength, signal delay and speed or phase position are displayed immediately. If the coefficients of the cables and connectors are known, attenuation can also be measured using the cable calculator. Moreover, the program can calculate the reflected power or convert the standing-wave ratio (VSWR) into return loss. This makes it an extremely simple and effective tool for day-to-day work involving RF assemblies. As an additional service, the SUCOFLEX cable information is prestored in the system and can be called up via a selection menu. Furthermore, all the necessary formulae have been listed in a PDF available for download ■

**Link to the handy cable calculator: rfcablecalc.hubersuhner.com**

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# Fast data for fast trains

Whether Internet on board, e-ticketing, video monitoring, passenger counting, digital train control and safety systems or passenger information such as real-time information on stops, train connections and timetable changes. In today's rail traffic, optimum customer service is taken for granted just as much as a safe and comfortable journey. The requirements in terms of connectivity solutions increase as a result, as do the data volumes that need to be transmitted inside the train for these services.

For all these applications, independent networks must be installed in the train to ensure maximum data volumes securely and reliably at all times. The decisive factor here is selection of the appropriate high-performance connectivity components.

## Future-proof product range

HUBER+SUHNER offers a broad product portfolio for network connections with high data transmission rates. With the proven RADOX® RAILCAT CAT5 cable, data can be distributed to the relevant systems and devices. As extremely high-performance products are required in the backbone of the train, HUBER+SUHNER has extended its portfolio with the new RADOX® RAILCAT CAT7 cable, which can transport 10 GBit of data per second.

Moreover, RADOX® fiber optic cables are able to transmit the large data volumes required by today's information and security systems with ease. Terminated with the corresponding HUBER+SUHNER connectors, they offer an optimal solution. One challenge are Ethernet networks across a number of carriages. HUBER+SUHNER's Railway Cable Systems unit develops customer-specific inter-vehicle jumper systems for this purpose.

Many railway operators already offer Internet on board. The necessary wireless network (WLAN) can be imple-

mented using HUBER+SUHNER radio frequency products such as omnidirectional and unidirectional antennas. The flexible and low-loss cables reliably transmit the data between the internal antennas and the wireless access points.

## Extensive expertise and experience

HUBER+SUHNER does not only supply the various components, but as a provider, offers complete connectivity solutions and many forms of technical support. At the local level, HUBER+SUHNER engineers provide consulting on selection and positioning of the products. Furthermore, customised solutions are also developed in Switzerland. «In addition to our excellent products, which are specially developed for the railway sector, it's primarily our direct collaboration with our customers, our technological expertise and our many years of experience that distinguish us from our competitors,» explains Market Unit Manager Alun Thomas. «With HUBER+SUHNER, customers are able to freely combine connectivity solutions for networks in trains, regardless of the technologies the systems are based on.» A fast service for fast data in fast trains ■

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## SENCITY® OMNI-S MIMO: High-performance data distribution

**On-board Internet via a wireless network for smartphones, tablet PCs or notebooks is becoming ever more commonplace. Proven WLAN technology that is supported by most device manufacturers is generally used for this purpose. The new SENCITY® OMNI-S MIMO interior antenna from HUBER+SUHNER distributes the WLAN signals in the train rapidly and to optimum effect.**

A special feature supported by this robust omnidirectional antenna is Multiple Input Multiple Output Technology (MIMO) according to IEEE 802.11n. Three separate antennas are contained in one housing. Thanks to simultaneous transmission via several of these individual antennas, MIMO technology achieves higher data transmission rates than previous solutions. The range and reliability of the system is improved. The antenna supports the 2.4 GHz and 5 GHz frequency bands.

As with most HUBER+SUHNER railway products, SENCITY® OMNI-S MIMO has been specially developed for this market. The antenna meets the environmental requirements for the rail industry as set out in EN 50155 and complies with the appropriate fire protection requirements according to DIN 5510-2/BS 6853/NF F16 101/102/CEN TS 45545 ■

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Variable: Blue box with integrated smart electronics

# Modular solar junction boxes: Quality at competitive prices

**HUBER+SUHNER offers complete connectivity solutions for solar plants, including junction boxes, RADOX solar cables and connectors. The company is setting a new standard with a further modular system in the junction box market.**

HUBER+SUHNER products meet the highest quality requirements, particularly in the case of solar technology applications exposed to the weather. The aim, however, is also to provide an appropriate balance between quality and price for the broad product range. «Together with our customers, we develop solutions that are ideally tailored to their needs and can, where appropriate, be produced in high volumes,» explains Max Göldi, Market Unit Manager Solar at HUBER+SUHNER. «We continuously observe, verify, and evaluate the market trends. Only in this way can we consistently present innovative new products.»

## Smart electronics included

«Intelligent» solar junction boxes with integrated smart electronics, are a current market trend. These are presently being launched onto the market by various companies.

HUBER+SUHNER, however, sees the future in customer-specific, individual solutions or modular systems. One such solution, consisting of a basic junction box, a blue box with integrated smart electronics and a connection system is expected to be available as of summer 2012.

Max Göldi sees the future of the solar market in modular connectivity systems.

More options are available to OEMs and installers with regard to the selection of suppliers and the complexity of the electronic functions. Moreover, the junction box is cost-saving as it can easily be retrofitted and enables simple maintenance. HUBER+SUHNER principally pursues two aims here: «We offer highest quality at competitive prices. The focus must remain on quality despite the price pressure,» explains Max Göldi. «Solar modules must operate for between 20 and 30 years. Today, the market often still fails to realise the consequences of seemingly less expensive offers over the following years. The negative effects of ageing are generally underestimated.»

Max Göldi is confident that HUBER+SUHNER will set new standards on the market in terms of durability, as it did around 20 years ago with the RADOX solar cables: «We'll manage the same thing again with the modular boxes» ■

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# World Solar Challenge: Across Australia with RADOX

Through 3,000 kilometres of Australian desert with solar energy alone – the World Solar Challenge. The solar-powered car race has been held every two or three years since 1987. Participating in 2011 was the «Aurora Evolution» vehicle, which is fully-equipped with RADOX cables donated by HUBER+SUHNER.

The World Solar Challenge 2011 was held from 16 to 23 October, starting from Darwin in northern Australia, along the Stuart Highway, to Adelaide in the South. The solar-powered cars of 37 teams from 21 countries lined up for the start. Each day, the cars travelled as far as possible under the harsh desert conditions. Bushfires and poor weather conditions impeded the race and the vehicles were tested to the limits. Most failed to survive the 3,000 kilometres.

The Aurora Vehicle Association team, an Australian non-profit organisation promoting sustainable transport participated for the tenth time in 2011. The team has taken part in all the World Solar Challenge events since 1987, mostly with great success.

## Light, reliable and fire-resistant

Their new «Aurora Evolution» solar-powered car features state-of-the-art technology. This is an absolute necessity, as only the most efficient electric vehicles have a chance for success. The car reaches a speed of 155 km/h and can cover 700 kilometres on a sunny day. Including batteries, it weighs just under 140 kilos and is wired with RADOX cables donated by HUBER+SUHNER. «RADOX cables are ideal as they are light and reliable, but also fire-resistant,» explains Andris Samsons, driver and Chairman of the Aurora Vehicle Association. «These are decisive criteria in the World Solar Challenge.» And success was on the agenda again in 2011: «Aurora Evolution» came 2nd in the production class and 7th in the overall rankings. Andris Samsons was delighted: «Thanks to great support from our sponsors and the hard work of our team members, we finished ahead of several top teams, including the Massachusetts Institute of Technology (MIT), Stanford University and the pre-race favourites from Group T University in Belgium. This is certainly a great result for the Aurora Vehicle Association.»

Driver Derrick Rodgers and engineer Nick Jones with the «Aurora Evolution»

## Ambassador for sustainable mobility

Aurora is the most active solar-powered vehicle in the world, communicating its message to more than 500,000 people every year. The Aurora Vehicle Association regularly participates in important automotive events with an aim to promoting sustainable mobility and bringing new technologies to series production maturity. Vehicles from past races can be admired at various exhibitions ■

**For more information about the project: www.aurorasolarcar.com**

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# Smart grids: Efficiency through fiber optics

More intelligent and better networked: In future, existing power grids will optimise power generation and power consumption thanks to accurate real-time data. HUBER+SUHNER is supplying the fiber optic solutions for monitoring and controlling these smart grids.

Fiber optic cables are extremely well-suited for measurements in power plants. They are insensitive to electromagnetic interference and ideal for transmitting data across large distances. HUBER+SUHNER supplies a number of products for monitoring and controlling power plants, high-voltage transmission facilities, substations and transformer stations. For environmentally-sound, regenerative power generation in wind, hydro-electric and solar plants, the company also offers high-quality, installation-friendly and durable fiber optic solutions.

Intelligent networking: Fiber optics for smart grids

## Making measured currents visible

In power grids, important parameters are measured using optical sensors. In order to measure voltage, for example, light is guided through an electro-optical crystal via an optical fiber. The voltage influences the light in different ways, depending on its magnitude. In order to measure the current intensity, a sensing fiber is used, in which the phase difference of the light increases proportionally with the current intensity. These light changes are evaluated electronically in order to determine the voltage or current values.

The sensors employed must enable highly-precise and stable measurements and be resistant to mechanical influences such as shock or vibration.

## Customised fiber optic cables

In consultation with the customer, HUBER+SUHNER proposed fiber optic cables meeting the specific requirements for these optical sensors, such as high mechanical robustness or good insulation properties. The optimised products were then subjected to extensive testing under practical conditions at the plants.

Today, these cables are used for the volume production of new sensors. The existing sensors are also to be optimised by means of new solutions. With its adapted fiber optic cables, HUBER+SUHNER supports reliable operation of the optical sensors and consequently the future efficiency of smart grids ■

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# Malaysia: Broadband for millions

The company RESB (Realm Energy/JSR Sdn Bhd) has big plans: The company is planning to supply more than two million homes in Malaysia with broadband Internet. This is to be achieved using BPL (Broadband Over Powerlines) technology, in which the signal is transmitted over the final kilometres via existing power lines. HUBER+SUHNER is supplying state-of-the-art fiber optic solutions for the project.

HUBER+SUHNER will equip 5,000 sites over the next three and a half years, including the design, supply, installation and testing, through to commissioning. The end-to-end fiber optic solutions connect the existing power plants with the substations. This enables the grid capacity to be optimised and ensures reliable and permanently high-quality data transmission. The BPL technology can be used according to requirements, from a simple control function through to data networking and the distribution of real-time streaming. Internet service providers can offer broadband Internet access as well as telephony, HDTV and intelligent home applications via BPL, and this at an affordable price and speeds of up to 16 Mbps. With an order value of around CHF 60 million, the project is among the largest of its kind world-wide.

## Successful partnership

«The project is a great success for our Fiber Optic Division», says a satisfied Urs Kaufmann, CEO of HUBER+SUHNER. «We are able to demonstrate our technological market leadership and competency for system solutions as well as contributing to providing access to high-speed Internet for millions of Malasian households.» Zulkernian Abdul Talib, CEO of RESB, is also delighted with the partnership: «We've succeeded in meeting the technical challenges and defining the final concept for the rollout.» The many years of co-operation between the two companies has contributed significantly in his view: «HUBER+SUHNER has proven to be not only a supplier but a real partner during this project.» ■

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Broadband Powerline:
Fast data transmission for Malaysia

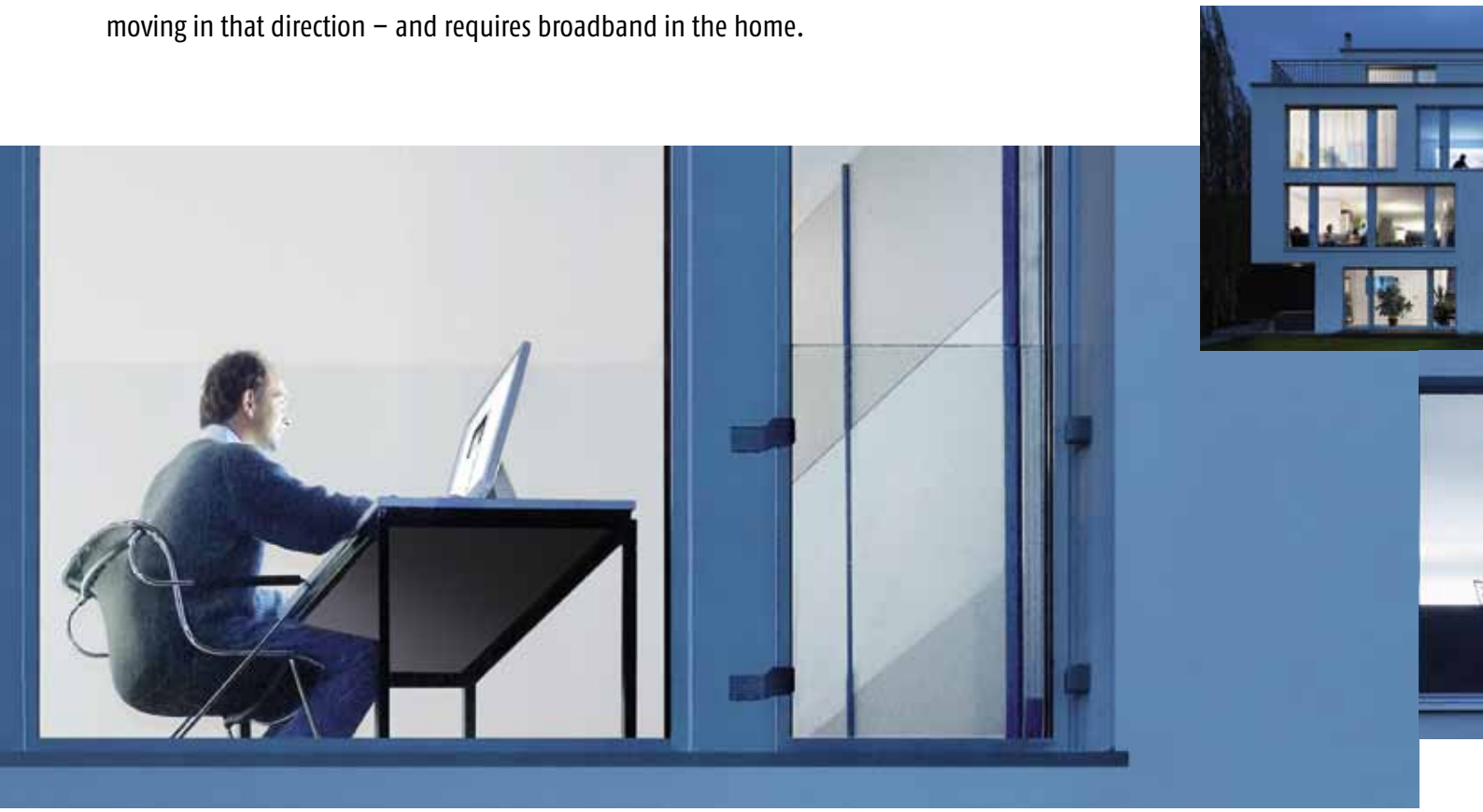
# connected **world**

## Tomorrow, connected.

Building best connections into the future: with three relevant technologies for three innovation-driven markets and in the three main regions of the global economy. This is the objective of HUBER+SUHNER, which is reflected in the brand promise of «Excellence in Connectivity Solutions». With our newly-devised pictorial concept, we lend this promise a clear face. Or rather, three faces: As global ambassadors of our brand, the children that we present to you for the first time on this page will appear in many of our communication materials. So look out for them... ■

# Fiber in the home: Everything networked

The fridge automatically orders missing food items from the online store, we pre-heat the oven via smartphone while drinking our after-work beer and disable the alarm system via the laptop. Will we live in homes where everything is fully networked in ten years time? The trend is clearly moving in that direction – and requires broadband in the home.



In day-to-day life, the media, entertainment industry and telecommunications are rapidly merging with the Internet to form a global world of information and communication. As was once the case with mains water, electricity and the telephone, broadband in the home will impact the lives of generations to come. The driving force here is a desire for video conferencing, HDTV, telemedicine, data storage services, high-resolution video-on-demand, etc. The need for speed remains unabated – 30 Mbps has now virtually become standard. Full use of these services will require comprehensive broadband coverage in the future. High-performance networks and the appropriate building cabling systems are a prerequisite in this regard. Studies even suggest that, in the long term, expansion here will be decisive for countries in order to remain competitive.

## «Home, smart home»

What the precise developments will be in the home cannot yet be predicted with certainty, but the so-called «smart home» will become a reality over the next ten to fifteen years according to several studies. Many things are con-

trolled remotely in the smart home: the lights, sun blinds, bathwater, oven, stove, dishwasher, alarm system etc. This will not only contribute to greater comfort and time savings – energy consumption will be reduced by up to 30 percent as well. But above all, the smart home requires one thing: Broadband networking in the home.

## High demands for Fiber in the Home

The answer to this challenge is Fiber in the Home, also known as FITH. This term was coined by HUBER+SUHNER and has now gained currency throughout the industry world-wide.

FITH is the final section of FTTH (Fiber to the Home), which brings high-performance fiber optic connectivity to the home. In order to supply individual households with fiber optic cables, particularly in the case of multiple dwellings, an additional distribution system is required inside the building – FITH.

Smart home: Fiber optic application for the masses

The requirements placed upon system solutions of this kind vary widely. Installers need a simple, fast and reliable plug-and-play solution. Building owners prefer a flexible cabling system to account for a variety of conditions. Service providers require both to prevent them from having to supply entire buildings and allow them to only equip their actual customers with the infrastructure. Home owners value durable and high-quality products. Ultimately, the consumer simply wants a high-performance network that transmits data reliably and fast. A variety of products is required in order to meet these high and differing demands.

At the heart of the HUBER+SUHNER Fiber-in-the-Home portfolio is the BLINK (Broadband Link) triple-play connector, which is adapted to the demands of the home environment. A further product is the Home Fibering System (HoFiS), which is extremely quick to install thanks to a junction box which is pre-assembled onto the fiber optic cable. The CLIK! products also enable simple, but high-quality satellite TV cabling.

With this broad portfolio, HUBER+SUHNER meets the numerous requirements with regard to FITH so that in future, maximum broadband coverage can facilitate every-day activities in the living room and ensure that the fridge will actually place online orders one day ■

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**www.fiberinthehome.com**

Fiber in your mind? The new HUBER+SUHNER fiberinthehome.com microsite provides extensive information on Fiber in the Home. In addition to industry news, videos, pictures, texts and detailed documentation explain in detail what needs to be considered with regard to FITH and what solutions HUBER+SUHNER offers for the various requirements. For the concrete installation, all the product information is available here, classified according to application area – from FTTH network connection through to satellite cabling. Here, you will also find the appropriate contact persons ■

**www.CLIKulator.com**

You'd like to know what you specifically need for your satellite MATV installation? CLIKulator.com provides the answer. The CLIKulator calculates your installation in seconds. Simply enter the number of floors and flats per floor as well as the type of distribution. One click later, all the necessary products, including a satellite dish and converter, together with the data sheets and attenuation values are displayed. Save or print the PDF and you're ready to perform your installation ■

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# Rolf Seiffert: Board member and FITH customer

A lovely single-family house in the middle of a 4000-person village in Switzerland. This is the home of Rolf Seiffert, Member of the Board of Directors (and private customer) of HUBER+SUHNER AG. In November 2011, he had Fiber in the Home installed for a high-performance satellite TV system. Connectivity asked him why he did so and how the installation went.

There had been a satellite dish with two so-called LNBs, receivers for local and international TV stations, in Rolf Seiffert's garden for a while. The system had previously been set up for one television set and Seiffert wanted to extend it for several TVs. In a first step, modern LNBs with fiber optic connections were installed and the cables routed into the basement. The house itself still contained the conventional cabling for the TV signals, which were however no longer suitable for a satellite system. The aim was therefore to install high-performance cables in the existing narrow installation ducts over several floors and rooms throughout the house. One fiber optic cable for each LNB now leads from the basement to the ground floor. Here, they are each divided into two cables via a CLIK! splitter. One remains on the ground floor and the other is routed to the upper floor. Both cables end in converters in which the optical signals are converted before being routed to the TV sets via coaxial cables. This final section must be bridged with conventional cables as TV sets are as yet unable to process fiber optic signals. Following the FITH installation, two TVs are now connected on the ground floor, and one on the upper floor.

Trouble-free installation: Fiber in the Home

CONNECTIVITY: **Mr Seiffert, you had Fiber in the Home installed in your house. Why?**

ROLF SEIFFERT: I moved into the house in the spring of 2011. It's 25 years old and didn't have a cable connection. But I still wanted good image and sound quality on my TV. So I looked for solutions for installing modern cables into the existing ducts without having to rip open all the walls. A Fiber in the Home installation proved ideal. Anyway, I'm fundamentally very interested in innovative technology, particularly electronics. After all, that's why I became an engineer.

Rolf Seiffert, Dipl. Ing. ETH Zürich, Member of the Board of Directors of HUBER+SUHNER since 2010

**How often do you watch TV – and what do you watch?**
During the week, I usually watch the late news and at the weekend I like to watch a soccer match, a live ski race, or a blockbuster with the family now and again. So I'm a pretty average TV consumer. But when I do watch something, I value good quality. That's important to me.

**As a Member of the Board of Directors, did you feel obliged to select the CLIK! products from HUBER+SUHNER?**
No. When I decided to install a modern cabling solution I didn't immediately think specifically of HUBER+SUHNER. But then, during a strategy presentation in the summer, new products with potential were being shown. That's when I became aware of CLIK! The products impress thanks to their functionality and have distinct advantages compared to the competitors' solutions. I also experienced this for myself during installation at my home. The products are precisely tailored to the market requirements. This bears witness to the expertise and innovative strength of the HUBER+SUHNER employees – and makes me proud of them.

**Are you satisfied with how the installation went?**
Extremely! Everything went smoothly, everything was installed within two hours. I lent a hand myself. The ingenious features of the CLIK! products made it all really simple. One useful detail, for example, is an eyelet on the connectors for attaching the pull-through wire. Thanks to their small cross-sections, the connectors and fiber optic cables can easily be pulled through the narrow ducts. With copper, this wouldn't have been possible as the cables would simply have been too thick. Moreover, no skills beyond those of an electrician are required in order to install the CLIK! products. Neither a fiber-optic specialist, nor any special prior knowledge or tools are required. CLIK! is a really innovative product which brings me great pleasure as a technology-lover.

**How have your experiences with the new TV installation been to date?**
Excellent! The image and sound quality are perfect, as expected, completely interference free. The only downside is that you have to switch to copper for connection of the TVs because today's sets are still unable to process any other signals. These additional converters and their wiring also take up a bit of space and have to be hidden in a sideboard in my case. For the future, I'd therefore like to see set-top boxes with a direct fiber optic connection.

**Would you install FITH again?**
Yes, definitely, any time!

**Mr Seiffert, thank you very much for talking to us** ■

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## Fiber in the Home for 60 homes

FITH installations are not only popular for satellite systems, but for FTTH applications as well. In Pfäffikon, a new building with some 60 flats has been equipped with FITH products from HUBER+SUHNER. 7 OptiBox32, 4 OptiBox4 and 62 OptiSocket2 were installed for an ultrafast broadband connection. This will provide the future inhabitants with interference-free HD or 3D TV, online gaming or home office capability ■

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# Electric mobility: High-voltage energy

The future belongs to innovative electric and hybrid vehicles. However, they also engender new problems because of the high, potentially fatal currents required. In order to prevent electric shocks during accidents, fires and short circuits, the electrical energy must be safely distributed. This places particularly high demands on the wiring and its screening. HUBER+SUHNER offers customer-specific, high-voltage distribution solutions for vehicles of this kind.

Distributing the electrical energy safely between the storage devices and the drive assemblies is only one of the challenges that electric and hybrid vehicles pose. Further constraints such as restricted space, light weight and positioning in the vehicle increase the demands. Customised solutions are generally required. This is where HUBER+SUHNER comes into its own. The customised, high-voltage distribution systems are designed in Weikersheim in Germany in close proximity to the automotive industry. The team supports customers from the planning and prototype stage right through to series production.

## High-voltage distribution systems and adapter plates

The specially-developed High Voltage Distribution Units (HVDU) distribute energy between the battery, generator, charger and other secondary assemblies in electric vehicles. They are designed to customer specifications and delivered with assembled wiring. A special feature here is the cable routing in the distribution station. The cables are fed directly into the box in an extremely compact manner through a connection plate.

HUBER+SUHNER also develops adapter plates for hybrid vehicles. The optimum transfer of energy is a decisive factor for the efficiency of hybrid vehicles. The customised add-on components for power electronics provide for space-saving and safe distribution of energy between the vehicle battery and motor or generator.

## Connection system catalogue

While the adapter plates and HVDUs require customised solutions, the innovative, shielded RADOX® Automotive Connection System (RACS) can be purchased directly from the catalogue. It connects the HVDU and high-voltage assemblies safely and efficiently by means of an innovative direct connection in extremely confined spaces. RACS is also supplied as a customer-specific assembly with RADOX cables and a connection plate in a one, two or three-pin versions.

As HUBER+SUHNER specialises in customised solutions, the experienced team is often confronted with tricky special cases. In Weikersheim, the appropriate solutions are found, whether for on-road or off-road vehicles ■

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# Pilatus PC-12: Flying high in Switzerland

**Pilatus PC-12 aircraft are in action from the North Pole to the deserts of Africa and Australia: not only as a passenger carrier for corporate or private use, but often as a helper in distress. These planes are real all-rounders, flexible and reliable thanks to Swiss quality. Just like the HUBER+SUHNER cables they are equipped with.**

The maiden flight of the PC-12 dates back to the summer of 1991. Since then, more than 1,100 of these planes have been sold world-wide. Their range of use is extremely versatile. The aircraft is used for transport flights to mines in Canada and for patient transports in Australia, it is flown by private individuals as well as being used by many companies as a shuttle aircraft.

Accordingly, a wide range of equipment options are available for the PC-12: from the people transporter with a maximum of nine passengers, through to the VIP version with six rotating leather seats and the utility transporter with maximum cargo capacity. There is also a combined version with four seats plus cargo capacity and a rescue aircraft for two lying passengers.

The multi-purpose aircraft is equipped with a so-called «jump door» located within the cargo door, which can be opened during flight. This mainly serves for dropping parachutists, supplies or aid packages. It therefore comes as no surprise that special versions of this versatile aircraft are also built for the police, governments and the military.

## HUBER+SUHNER on board

HUBER+SUHNER has long been a supplier of Pilatus Flugzeugwerke AG in Stans, Switzerland, providing more than 760 kilometres of cable per year. The specially-assembled electron-beam cross-linked aircraft cables from the Low Frequency Division are not only installed on-board the PC-12, but also in the PC-7 MkII, PC-9 M and PC-21 aircraft. Between six and ten kilometres of wiring are installed in each plane. Gottfried Schirmer, Technical Sales, Switzerland, began working on the MIL-W and MIL-C cable types even before the maiden flight of the PC-12. «I've been facilitating the collaboration between HUBER+SUHNER and the Engineering department at Pilatus since 1989 and we've been their main aircraft cable supplier since 1994. In typical Swiss fashion, both companies prioritise utmost quality. And together, they've made aviation history» ■

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# Hydro-electric power: Vital source for Brazilian economy

**Brazil has been an emerging economy for some years now. The country is investing massively in its main economic drivers, energy and infrastructure. This includes numerous hydro-electric plants, which have been built or are planned along the Amazon Basin. One of these, the UHE Santo Antônio hydro-electric plant, is currently under construction and is being equipped with fiber optic cables from HUBER+SUHNER for energy monitoring purposes.**

Still economically underdeveloped in the late 90s, Brazil counts as an attractive future market today. Under the previous President Lula da Silva, the middle class grew and social programmes brought increased earning power to the poorest. This has been achieved through the exploitation of new oil fields and the associated strong economic growth of Brazil. The government has supported the population, which has resulted in improved living conditions for many. Around half of Brazilians now belong to the middle class. The government is also boosting the economy with an infrastructure programme to the tune of billions. Airports, roads, ports, railways and telecommunications net-

Eco-friendly thanks to 44 bulb turbines:
UHE Santo Antônio – the largest hydroelectric plant of its kind

HUBER+SUHNER on site:
200 customised fiber optic systems by 2015

works are being modernised and the power grid is being continuously expanded. The 2014 Football World Cup and the 2016 Summer Olympics represent a huge investment potential for the country.

## Electricity for 11 million people

Brazil, however, is not only famous for its raw materials and rich oil reserves, but also as a producer of alternative energy. Today, the country is the third-largest producer of hydro-electric power after China and Canada. Seventy additional hydro-electric plants are currently planned in the Amazon basin, 2,500 new turbines are to be in operation by 2030.

The UHE Santo Antônio hydro-electric plant is currently under construction and is scheduled to be completed by 2015. It will be the sixth-largest energy producing plant in Brazil.

The project is being built in the northwest of the country, some ten kilometres from the city of Porto Velho, along a stretch of the Madeira River. During the peak construction phase in 2011, more than 10,000 workers were employed at the site. Since the start of 2012, the power plant has been operating with two of a total of 44 turbines. Maximum capacity, with an output of 3,150.4 megawatts, is to be achieved in three years' time at the latest. At full output, the power plant will produce more than 19.5 million megawatt hours of electricity per year. Based on average consumption, the requirements of 11 million Brazilians will thus be covered, which corresponds to the population of São Paulo.

## No water retention basins required

For six years, measurements were performed in order determine how the hydro-electric potential could be best exploited without excessively impacting the environment or the regional population. The Santo Antônio hydro-electric plant is therefore regarded as exemplary for the construction of sustainable hydro-electric plants and features the latest-generation, environmentally friendly technology. It is equipped with bulb turbines that enable the hydraulic power of the Madeira River to be harnessed for energy generation, without the need for high water retention basins to drive the turbines. The flooded area is significantly reduced thereby and the impact on the rain forest and river banks is reduced.

## Energy monitoring with HUBER+SUHNER

Investments have also been made in energy monitoring for this gigantic structure. HUBER+SUHNER supplied the fiber optic master line system for connection of all the subsystems, switches and relays. By the end of the project, more than 200 customised fiber-optic cable systems will have been installed. The plug-and-play system can be used on-site without any further installation work. Especially in this region, which is isolated from civilization, simple handling and the associated reduction in installation costs were a convincing argument.

So all that is left is to hope that hydro-electric power remains not only a vital source for Brazil's economy, but for HUBER+SUHNER as well ■

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# Sberbank: LiSA in the mega data centre

Especially for financial institutions such as banks, investment firms or insurance companies, the secure and reliable processing, storage and management of data is part of everyday business. For this reason, the Russian Sberbank is consequently building a huge mega data centre in Moscow – once again relying on LiSA products from HUBER+SUHNER.

To date, the communication infrastructure was divided between various data centres. Today, Sberbank wishes to centralise its entire infrastructure at a single large centre in order to standardise its IT and to optimise resources. This mega data centre in Moscow will be one of the largest private data centres in Europe, with over 90,000 cabled connections.

A key element of this data centre is the Storage Area Network (SAN) for data. Numerous fast and reliable data channels are required for this purpose, which represents a significant technological challenge. Only by means of considerably increased cabling density can the relevant switches be physically connected.

A fiber optic cabling structure is ideal for such networks, as the bandwidth is large enough to transmit the huge data volumes without bottlenecks. Fiber optic technology enables an efficient flow of data within the company and makes data that is required by a large number of users in a network securely accessible.

## LiSA as a core element

The complex fiber optic structures of Sberbank's IT network, required an end-to-end solution with a high packing density. In 2009, HUBER+SUHNER had already won a contract from Sberbank and proven itself as a competent supplier for complete, customised SAN solutions. Consequently, Sberbank again opted for the LiSA products of HUBER+SUHNER. Thanks to the company's extensive experience and expertise, a solution with an extremely high packing density was developed for Sberbank's mega data centre. The LiSA racks form the core element of the entire SAN cabling system. HUBER+SUHNER thus provided a solution, which not only meets the customer's current demands, but will also fulfil all future requirements as a platform for the ongoing IT consolidation with even higher data rates ■

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**www.solutionsfordatacenter.com**
The ingenious HUBER+SUHNER fiber management systems and product solutions with maximum packing density enable high-quality infrastructures in data centres. For a comprehensive overview and the interesting partner program: www.solutionsfordatacenter.com ■

Sören Westerberg, 3 Sweden, and Hempa Jääskeläinen from installer Installateur Node Access, setting up the LiSA system.

# LiSA for 3 Sweden

According to test reports, mobile communications provider 3 Sweden has offered the best broadband network in Sweden over the past five years. To ensure that things stay that way, the company has deliberately opted for a completely new type of cabling in the LiSA Fiber Management System from HUBER+SUHNER.

To date, the cables were drawn from point to point during installation in the data centres, which was time consuming and often culminated in a confusion of cables. In order to solve the problem, 3 Sweden opted for LiSA (Leading Interconnection Systems Approach) from HUBER+SUHNER. The data centre products can be expanded flexibly and easily following installation. Here, 12 or 24 fibers are installed in each jumper cable, which are the size of a standard two-fiber cable. MTP connectors enable cost-effective installation of the systems without splicing.

The pre-assembled, ready-for-use cabling solution enables efficient end-to-end fiber management. The system is modular and scalable and offers the highest packing density on the market with 4,000 fibers on a 60 x 60 cm floor tile. Only 20 percent of the previously required cables are needed and installation times are halved ■

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# Special LiSA system at Swiss Post

10 GB/s connections are standard in backbone systems today, 40 GB/s and 100 GB/s will not be long in the waiting. With the enhancement of network performance, the number of devices and cables in the IT infrastructure also increases. In order to prevent a tangled mess of cables, space-saving and clever solutions are required. This of course also applies to the Swiss Post.

The largest postal company in Switzerland links some 58,000 employees with one another internally via its network. It is absolutely essential that the systems operate reliably. HUBER+SUHNER was commissioned by Swiss Post to develop a backbone system that is compatible with the existing infrastructure. The challenge was met with great efficiency, without having to reinvent the wheel: «Through minor creative modifications and adaptations of our existing LiSA cabinet, LiSA Spezial was created. This solution which is modular and space-saving in design, tidies up the cables and saves a great deal of time during installation,» explains Hausi Grossenbacher, Sales Manager Communications Switzerland. The responsible IT personnel at Swiss Post were delighted with the customised system ■

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The Swiss Post sorting facility at the parcel centre in Härkingen.

# Formula 1: Fiber optics in pole position

**During live TV coverage, there is no second chance. According to this adage, Presteigne Charter, a leading equipment supplier for televised broadcasts always offers its customers state-of-the-art technology. During the transmission of Formula 1 races, fiber optic cables from HUBER+SUHNER are on the grid.**

In 2010, SIS LIVE, the largest European company for outdoor TV broadcasting, commissioned Presteigne Charter to provide the equipment for eight Formula 1 races to be shown on the BBC. The races in Australia, Malaysia, China, Bahrain, Singapore, Japan, Brazil and Abu Dhabi presented a number of broadcasting challenges. Moreover, the equipment had to be transported quickly from one location to the next.

HUBER+SUHNER joined the fray in the spring of 2010, when Presteigne Charter had to replace an RF connector at short notice. HUBER+SUHNER Singapore was able to convince the Presteigne Charter engineers that fiber optics are indispensible in order to transmit high-quality, full-bandwidth HD. The company was immediately impressed by the flexibility, reliability, durability, mobility and performance of the FO Masterline Mobile System from HUBER+SUHNER. In 2011, the Formula 1 transmissions for the spectators and crews at the race track were already being screened in HD quality using fiber optic products from HUBER+SUHNER – including the night race in Singapore ■

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# Breakout: Small, but impressive

**The new 1.4 mm breakout cable from HUBER+SUHNER impresses by virtue of its particularly small diameter. It achieves a space saving of more than 40 percent compared with the standard 2.0 mm breakout cable.**

The new 24-fiber breakout cable features an external diameter of just 10.6 millimetres, based on the simplex cables with a diameter of 1.4 millimetres. Despite its small dimensions, it has excellent mechanical and thermal properties. It is lightweight, easy to install and flexible in use. Each fiber features independent strain relief, enabling the direct assembly of SFF connectors. The cable finds application wherever data has to be transmitted in high-quality and in restricted spaces, with assembled connectors or spliced into a terminal junction box. For example, in distribution networks or data centres, as a LAN backbone in conjunction with SMARTLINE or as a connection between main and floor distributors. The new breakout cable is optionally available with 4, 8, 12, 16, 18 or 24 fibers. All versions are characterised by their small external diameter ■

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Insert, twist, done: Simply insert and turn until the catch engages

# Q-XCO: Incorrect installation impossible

**A fiber optic connector that can be installed in so-called SFP modules on antenna masts «blind», using only one hand and within seconds, with a guaranteed reliable connection? Yes, it does exist – thanks to Q-XCO from HUBER+SUHNER, an extremely innovative fiber optic interface for outdoor applications.**

SFP modules are small, standardised modules for network connections, which convert a fiber-optic signal into a radio frequency signal. With the latest generation of mobile communications equipment, simple and fast access to these modules is required. HUBER+SUHNER's new Q-XCO fiber optic connector ensures this access without the need to open the so-called remote radio head. The Q-XCO is suitable for outdoor applications in harsh environments as well as for installation at great heights, for example on antenna masts or radio towers, even under adverse weather conditions.

**Maximum installation reliability**

The special feature of the Q-XCO connector is its ease and reliability of installation. This is ensured by its innovative bayonet catch, which can be installed in seconds with only one hand: simply insert and turn until the catch engages – done. Plastic tabs on the connector protect the ceramic ferrule during installation as well as serving as guides. Incorrect installation is impossible and no splicing is necessary. Mechanical positioning tolerances of the SFP module are fully compensated along all axes and the optical connection is automatically extremely precise. A snap-in lug prevents inadvertent removal.

All this makes Q-XCO the fiber optic interface with the greatest installation reliability on the market. It is compatible with the current fiber optic SFP modules and enables direct connection in the module without exerting force. Access to and replacement of the SFP module is possible at all times. The Q-XCO connector is extremely resilient, sealed to IP 67 and therefore ideally suited for outdoor applications.

**For remote radio heads and point-to-point connections**

In addition to use in mobile communications, the Q-XCO connector is also suitable for industrial purposes in challenging environments. A further field of application are SFP modules for wireless point-to-point connections as here too, fiber-optic signals are converted into radio frequency signals ■

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# Tunnel lighting: New junction boxes

**_____Over many years, pre-assembled plug-and-play cabling systems for tunnel lighting systems have proven themselves on the market, as tunnel closure times for installation are significantly shorter than when using conventional cabling. Now, HUBER+SUHNER has enhanced these junction boxes and reduced their size.**

In order to reduce the space requirements in narrow cable conduits, the new junction box is significantly slimmer. Hermetic overmoulding provides sealing to IP67 as well as resistance to moisture and exhaust gases. The fire protection requirements according to DIN 4102-12 E30 and the EN standard also have to be complied with. The results of initial fire tests have been positive. With Cu welding, a new connection technology has been employed, which results in a seamless overall system. At each box, a three- or five-conductor stub cable branches out from a five- or seven-wire trunk cable. This stub cable can be equipped with a standard miniature fuse to prevent short circuits from bringing down the entire system. Thanks to industrial preassembly, all the systems delivered are subjected to comprehensive electrical testing. The new tunnel cabling system is expected to be available from April 2010 ■

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Old and new: The dimensions of the junction box have been significantly reduced

# Dubai: Track-breaking world record

**The Dubai Metro has earned an entry in the Guinness Book of Records. It is the longest driverless and fully-automated underground train system in the world. And HUBER+SUHNER products are on board.**

In the autumn of 2011, Sheikh Mohammed bin Rashid Al Maktoum, the monarch of the Emirate of Dubai and Vice President and Prime Minister of the United Arab Emirates presented the international certificate for the official entry into the Guinness Book of Records for the longest driverless and fully-automated underground train system in the world. The complete network of the Dubai Metro covers 75 kilometres, and transports some 60,000 commuters a day. HUBER+SUHNER supplied more than 700 indoor and outdoor antennas, various RF cables and connectors, as well as entire cable harnesses for the Dubai Metro, the first phase of which was completed in 2009. In the coming years, the city's Metro will be continuously expanded, including the installation of HUBER+SUHNER products ■

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## wireless-infrastructure.com: Microsite for mobile com operators

**With its new wireless-infrastructure.com microsite, HUBER+SUHNER offers a unique service for mobile communications operators, OEMs and installers involved in the expansion of wireless infrastructure. Here, system solutions for both FTTA installations and conventional mobile communications locations can be found.**

The first solutions-oriented website in the wireless market allows network operators and installers to configure cost-effective and future-proof installations. The tool provides comprehensive product information, fast download of data sheets and catalogues, as well as examples of already implemented applications. The website, which is already extensive, is constantly updated and is to become a leading platform in the wireless market. To date, wireless-infrastructure.com has already been extremely well-received among the mobile communications community ■

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## Financial year 2011: Organic sales growth

**Following the exceptionally high growth of the previous year, net sales in Swiss francs fell by approximately 5% to around CHF 758 million in 2011, representing single-digit organic growth. With an order intake of approximately CHF 735 million, the cumulative book-to-bill rate in the fourth quarter dropped to under 1 in value.**

A similar development was also apparent in terms of the EBIT margin. Having already been subjected to pressure in the first half-year as the result of the currency situation, it was placed under further strain towards the end of the year due to lower business volumes and market-related devaluations with regard to copper stocks. It is therefore to be assumed that the operative EBIT margin (before one-off income) will not achieve the 8% mark in the financial year 2011 HUBER+SUHNER will publish details of its results on 22 March 2012 ■

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# Fairs and Events

**At HUBER+SUHNER, we place great value on speaking with you in person. The following fairs and events will provide an opportunity for you to learn more about our solutions at first hand.**

| | | | |
|---|---|---|---|
| **Eurasia Rail** | Istanbul | 8 – 10 March | www.eurasiarail.eu |
| **Ferroviaria** | Turin | 27 – 29 March | www.expoferroviaria.com |
| **Defexpo** | Dehli | 29 March – 1 April | www.defexpoindia.in |
| **EWEA** | Copenhagen | 16 – 19 April | events.ewea.org/annual2012 |
| **CTIA** | New Orleans | 7 – 10 May | www.ctiawireless.com |
| **Mecom** | Abu Dhabi | 23 – 25 May | mecomexpo.com |
| **Wireless Congress** | Baden-Baden | 13 – 14 June | |
| **Intersolar** | Munich | 13 – 15 June | www.intersolar.de |
| **Communic Asia** | Singapore | 19 – 22 June | www.communicasia.com |
| **CWIEME** | Berlin | 26 – 28 June | www.coilwindingexpo.com/berlin |

**Further HUBER+SUHNER fairs and events can be found on www.hubersuhner.com/exhibitions**


## connected **media**

New publications

- **MMPX Schnappverbinder,** catalogue, No. 84132637, German
- **MMPX Snap-on connectors,** catalogue, No. 84132636, English
- **LiSA Centered around you,** catalogue, No. 84138854, English
- **LISA Data Center Management Software,** catalogue, No. 84138353, English
- **RF and Microwave Components, Short Form,** catalogue, No. 84068668, Rev. A, English
- **RADOX Solar,** catalogue, No. 84017606, Rev. A, English
- **RADOX Solar,** catalogue, No. 84017604, Rev. A, German
- **RADOX Solar,** catalogue, No. 84133436, Rev. A, Spanish, from Redislogar, Spain
- **Innovativ in die Zukunft, Verbindungen im Fahrzeug,** brochure, No. 84135426, German
- **Innovation for the Future, Vehicle cabling solutions,** brochure, No. 84016005 Rev. A, English
- **Automotive Products,** catalogue, No. 84060241, Rev. A, English
- **Automobil-Produkte,** catalogue, No. 84133956, German, from H+S Deutschland
- **Test+Measurement,** catalogue, No. 84068138 Rev. A, English
- **Fiber Optic Cables,** catalogue, No. 84019826, Rev. A, English
- **Fiber Optik Kabel,** catalogue, No. 84019827, Rev. A, German
- **Wagenübergangs-Systeme,** white paper, No. 84071427, Rev. A, German
- **Inter-vehicle systems,** white paper, No. 84171428, Rev. A, English

Further publications: **www.hubersuhner.com/publications**

All of our brochures and catalogues are available to browse through on our iPaper platform.

Please send orders for print media to your local HUBER+SUHNER partner.

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**PUBLISHER**__HUBER+SUHNER AG, Corporate Communications

**CHIEF EDITOR**__kathrin.scherer@hubersuhner.com

**EDITORS**__Jacqueline Beutler, Beatrice Eggmann, Othmar Fuchs, Eveline Jäger, Ulrike Nicht, Jürg Nussbaumer, Axel Rienitz, Thomas Schmalzigaug, Beatrice Troxler

**LANGUAGES**__Chinese, Danish, German, English, French, Portuguese, Russian, Spanish

**DESIGN**__Festland AG, St.Gallen/Zurich

**PRINTED BY**__Appenzeller Medienhaus AG, Herisau

**PAPER**__Printed on FSC-certified paper (Heaven 42)

**CIRCULATION**__26,000 copies



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