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Excellence in Connectivity Solutions by HUBER+SUHNER

Fuel of the future. At top speed into the technological era of electrical mobility
High-tech compounding plant. Future-oriented antennas. Data highway in Peru. Current product highlights.

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Patrick Riederer

Green light for electric future

The era of electrical mobility has dawned – HUBER+SUHNER is at the cutting edge.

Rising fuel prices, greater environmental awareness, alternative drive technologies: We recognised the ongoing trend towards electric and hybrid vehicles at an early stage and proactively built up new structures. Our decision in 2008 to jointly create innovative connectivity solutions for the new technologies with established manufacturers was a mark of our confidence in the further development of the motor vehicle. The Low Frequency Division's focus on the automotive sector as a third pillar in addition to the rail and industrial sectors will continue to guarantee pioneering solutions in the future.

The main emphasis is on electric mobility and hybrid motors. The team that designs the relevant systems has deliberately been located away from the company headquarters in Switzerland and is based in close proximity to the major automotive manufacturers, in Germany. This is essential, because the new solutions have to be developed from the ground up. They are adapted to the requirements of electric mobility in close collaboration with the automotive manufacturers. HUBER+SUHNER's experience with customer-specific developments is a major advantage here. The same applies to the proven RADOX® technology, on which all the new developments are based.

Initial market successes confirm our strategy. Cable systems from HUBER+SUHNER can, for example, be found in the electric Tesla Roadster and Mercedes E-Vito production vehicles. We have numerous further projects in the pipeline, which go beyond the prototype stage and send a strong signal for the global spread of the new technologies.

But the journey has only just begun. HUBER+SUHNER consequently supports a variety of research and pilot projects in this field. A few of these are featured in the present edition of Connectivity. HUBER+SUHNER is convinced that these will speed up the drive into this new era of mobility ■

Patrick Riederer, COO Low Frequency Division

Compounding facility: The future is now

Over the past two years, a new state-of-the-art compounding plant has been constructed at HUBER+SUHNER's premises in Pfäffikon, Switzerland, thanks to an investment to the tune of CHF 30 million. This represents a milestone in the company's development and a clear commitment to Switzerland as a production location. The largest individual project in the company's history to date was officially commissioned in mid April 2011.

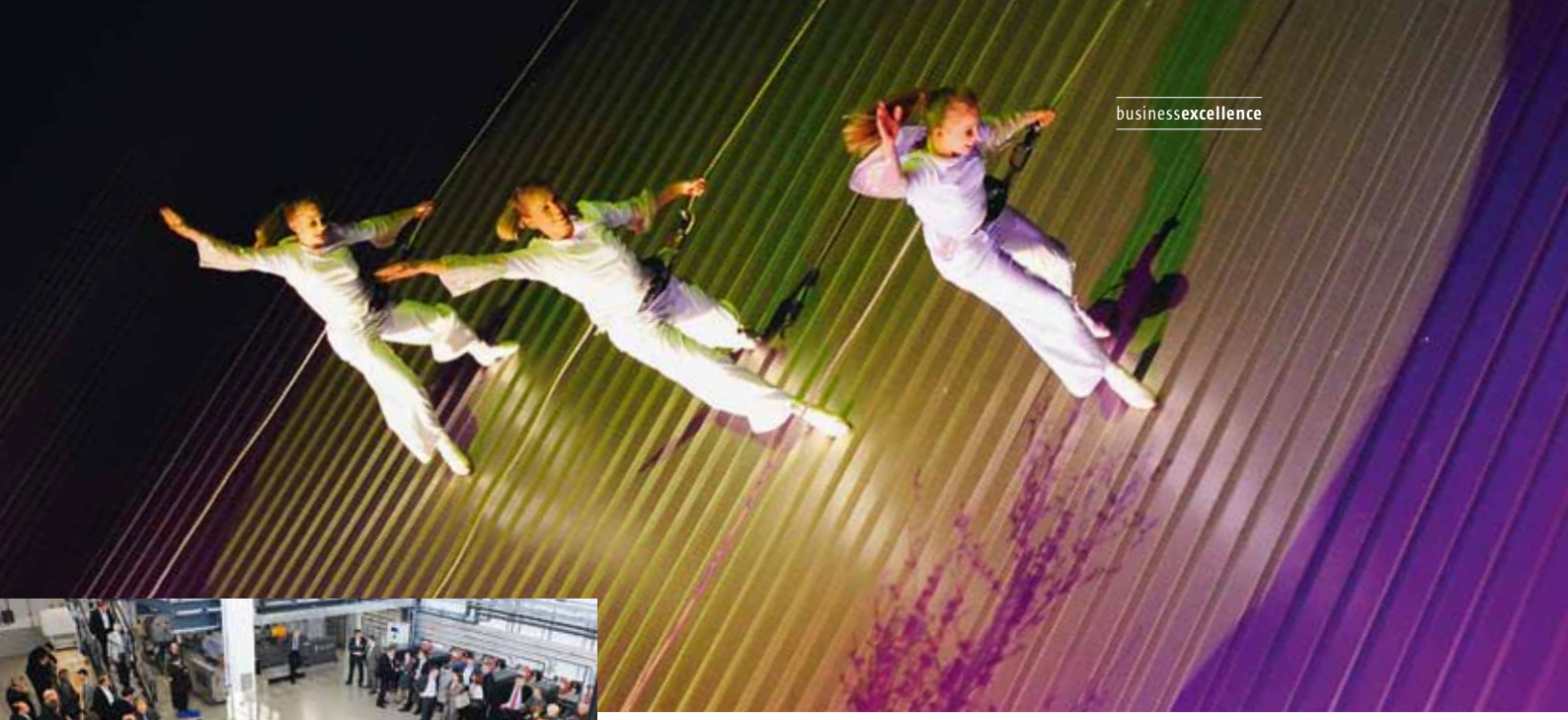
On 15 April 2011, HUBER+SUHNER welcomed numerous customers to a special event at the Pfäffikon plant. Under the motto «MischKunst» (CompoundArt), visitors were able to view the new HUBER+SUHNER compounding facility. At a number of stations, they were also awarded insights into the three technologies of radio frequency, fiber optics and low frequency, as well as the three markets of communication, transportation and industrial.

Festive inaugural evening

Many of the customers also stayed on in the evening for the festive inauguration of the new compounding facility. In front of some 300 invited guests from politics, public administration and business, David Syz, Chairman of the Board of Directors, referred to the new plant as an important milestone in the company's development. As a representative of the Canton of Zürich, Councillor Ernst Stocker honoured HUBER+SUHNER's commitment to a Swiss production site and Bruno Erni, Municipal president of Pfäffikon, declared himself immensely proud that, as a shareholder, his commune was able to partake in the company's success.

Breathtaking vertical ballet

«The technology at the new compounding facility really fascinates me as an engineer,» said CEO Urs Kaufmann during his inaugural address. He reminisced on the groundbreaking ceremony some two years ago and impressed the guests with the fact that the cables to be produced each year in Pfäffikon could be wrapped around the earth almost eight times. Together with the Chief Operating



Officer of the Low Frequency Division, Patrick Riederer, and the Director of the new compounding facility, Martin Kaspar, he then untied the giant red bow that had conspicuously decorated the facade of the compounding plant for the previous two weeks. As the ribbon fell, a special surprise was revealed: Suspended on wires, three artistes danced to dramatic music and scintillating lighting effects, conjuring an awe-inspiring vertical ballet on the facade.

Open day

The following day was dedicated to the local residents. Several thousand people took advantage of the opportunity to visit the new high-tech plant during an open day and learn all about the HUBER+SUHNER products and applications at first hand. A well-frequented fair, a children's concert, as well as a variety of market stands and culinary offerings made the event into a real public festival ■

YOUR CONNECTION__axel.rienitz@hubersuhner.com

The art of perfect compounding

HUBER+SUHNER has decades of experience in material development and the production of cables and cable systems. Thanks to its extensive expertise in development, engineering and production, HUBER+SUHNER offers custom-made solutions, including special compounds for cable insulation. HUBER+SUHNER produces these compounds based on formulations developed in-house. They lend the RADOX® cables their high-quality and robustness, which are valued around the world.

The new compounding facility in Pfäffikon represents an important step in maintaining the company's core competence with regard to compounds in the future. The high-tech production site, which has been in construction since April 2009, sets new standards in the cable industry. From 2011, HUBER+SUHNER will progressively migrate production of all its plastic compounds to the new plant. Urs Kaufmann, CEO of HUBER+SUHNER says, «The new facilities will enable us push back the boundaries of materials technology even more effectively, thereby strengthening our company's power of innovation.» ■

Video on the compounding facility
A 10-minute online video provides exciting insights into the operation of the new compounding plant:
www.hubersuhner.com > Products > Low Frequency

Powerwave Supplier of the Year

American company Powerwave Technologies has presented the «Supplier of the Year 2010» in the Quality category to HUBER+SUHNER. The presentation was held during a celebration worthy of the Oscars held in Singapore.

And the winner is: HUBER+SUHNER. During presentation of the «Supplier of the Year» award, Jürg Hatt, Head of Global Key Accounts Communication at HUBER+SUHNER, felt like a real star. «Powerwave really pulled out all the stops: red carpet, splendid award trophy, numerous interviews, and even an appearance in front of rolling cameras.»

Around 60 suppliers were invited to the presentation ceremony, which was held at the end of last year in Singapore. During the Executive Strategic Supplier Day, Powerwave, the global leader in wireless communications solutions presented an award in each of five different areas of competence. In the Quality category, for which HUBER+SUHNER won the award, six criteria were evaluated. Three companies reached the final round, which HUBER+SUHNER impressively won with the maximum score of 100 percent.

Ron Buschur, CEO of Powerwave, also praised this success. «HUBER+SUHNER supplies exceptional, high-quality products. Powerwave is seeking and intensifying cooperation with companies that are innovative and meet our high expectations.» ■

YOUR CONNECTION__juerg.hatt@hubersuhner.com

Huawei Award for top performance

Huawei Technologies is the global leader in the market for telecom equipment. To count as a major supplier here is in itself a great honour. This honour has now been given additional weight thanks to an exclusive award: At the Huawei Deutschland Supplier Day, HUBER+SUHNER was rewarded for its special services.

Huawei Technologies is a leading manufacturer of the next generation of telecommunications networks. Huawei uses solutions from HUBER+SUHNER for its innovative, customer-specific products. The cooperation, which has progressively intensified over recent years, involves the reliable delivery of coaxial and fiber-optic components, FTTA products and more. HUBER+SUHNER has also become an important contact with regard to technical issues.

Making the impossible possible

Whether with new technological approaches or the elaboration of tailor-made solutions: Huawei's pledge to its customers is to make the impossible possible. For HUBER+SUHNER, this often means product modifications at short notice, numerous technical discussions and the unplanned shortening of delivery cycles. The award for special achievements that HUBER+SUHNER received from Huawei Deutschland must therefore also be regarded as acknowledgement to a supplier that provides excellent support – as a sign of appreciation for good performance and good partnership ■

YOUR CONNECTION__peter.kuenzler@hubersuhner.com

Excellence in Connectivity Solutions:
Presentation of the award at Huawei's Supplier Day in Düsseldorf

«HUBER+SUHNER provides the best service»

Customer Focus. This is HUBER+SUHNER's annual motto. In order to find out all about Customer Focus in practice, Connectivity has interviewed a number of customers – with pleasing results, as two interviews from China and the US demonstrate.

Wang Jin Fu, Electrical Engineer, CNR Qingdao Sifang Rolling Stock Research Institute, China

CONNECTIVITY: **Since when have you been a customer of HUBER+SUHNER?**
WANG JIN FU: Since 2006.

What products do you purchase from HUBER+SUHNER?
Various RADOX® railway cables and wires, RF cables and connectors.

Where are these products used and what requirements must they meet?
They are used in control cabinets, for under-frame cabinets and in the driver's cabs of Chinese high-speed and underground trains. The products must meet very stringent requirements with regard to fire resistance, weight and volume, be of the highest quality and maintenance costs must be low.

Why did you choose HUBER+SUHNER as a partner?
The China High Speed Project places extremely high requirements on product quality and reliability. HUBER+SUHNER is the most competent supplier and always meets our expectations. We rely on its proven reputation and reliable quality.

Have your requirements been met?
Yes. Years of cooperation speak for themselves.

Are you impressed with HUBER+SUHNER? Why?
Certainly. For one thing, because HUBER+SUHNER continuously improves the quality of its products as well as costs and service.

What is the best thing about HUBER+SUHNER?
HUBER+SUHNER simply provides the best service.

Mr Jin Fu, many thanks for the interview ■

CNR Qingdao Sifang Rolling Stock Research Institute
The CNR Qingdao Sifang Rolling Stock Research Institute is a state-owned company specialising in the research, development and manufacture of electric and electronic equipment for railway vehicles. It is the major supplier of control cabinet and control networking systems within the China Northern Locomotive and Rolling Stock Industry (Group) Corporation. *Further Information: www.srsri.com* ■

«The best thing about HUBER+SUHNER are the employees»

_____Eric Clyse, Vice President of Operations, NeuWave Medical, USA

CONNECTIVITY: **Since when have you been a customer of HUBER+SUHNER?**
ERIK CLYSE: Since 2008.

What products do you purchase from HUBER+SUHNER?
Various passive RF components, for example specially-developed, assembled low-loss cables such as Sucoflex 106 or Sucoform 141 and smallest-size semi-rigid cabling and connectors.

Where are these products used and what special requirements must they meet?
They are integrated in Certus 140, a 2.45-GHz ablation system, which is used for liver and lung cancers treatments. The cables need to transmit very high levels of microwave energy from the device to the tip of a very small probe with minimum losses.

Why did you choose HUBER+SUHNER as a business partner?
We discussed the development of these probes with several suppliers. We selected HUBER+SUHNER due to their engineering capabilities to deliver precisely the required product as well as their level of commitment to correctly implement the highly demanding design requirements within the required time frame.

Have your requirements been met?
HUBER+SUHNER has delivered on all their commitments to us and have enabled a successful product launch, despite a late design change, which HUBER+SUHNER was able to deliver flawlessly.

Are you impressed with HUBER+SUHNER? Why?
HUBER+SUHNER has proved to be a terrific partner in both our development and production launch activities. The employees are truly an extension to our team and have enabled NeuWave Medical to deliver a world-class medical product to the market in a very efficient and cost-effective manner.

What is the best thing about HUBER+SUHNER?
The people. HUBER+SUHNER always goes that extra step to ensure their customers have exactly what they need and will go out of their way to ensure that solutions are found.

Mr Clyse, many thanks for the interview ■

NeuWave Medical, Inc.
NeuWave Medical arose as the result of an academic collaboration between engineers and physicians at the University of Wisconsin, with an aim of improving the treatment of cancer. The guiding principle is to make improved technology available to physicians and medical centres. *Further information: www.neuwave.com* ■

SENCITY®Rail: A step ahead with innovation

Increasing demand for communication in rail travel requires ever greater bandwidths. Passengers and railway operators alike depend on a high-performance infrastructure for mobile communication. This development is being accelerated by new applications – and promoted by HUBER+SUHNER with future-oriented antenna solutions.

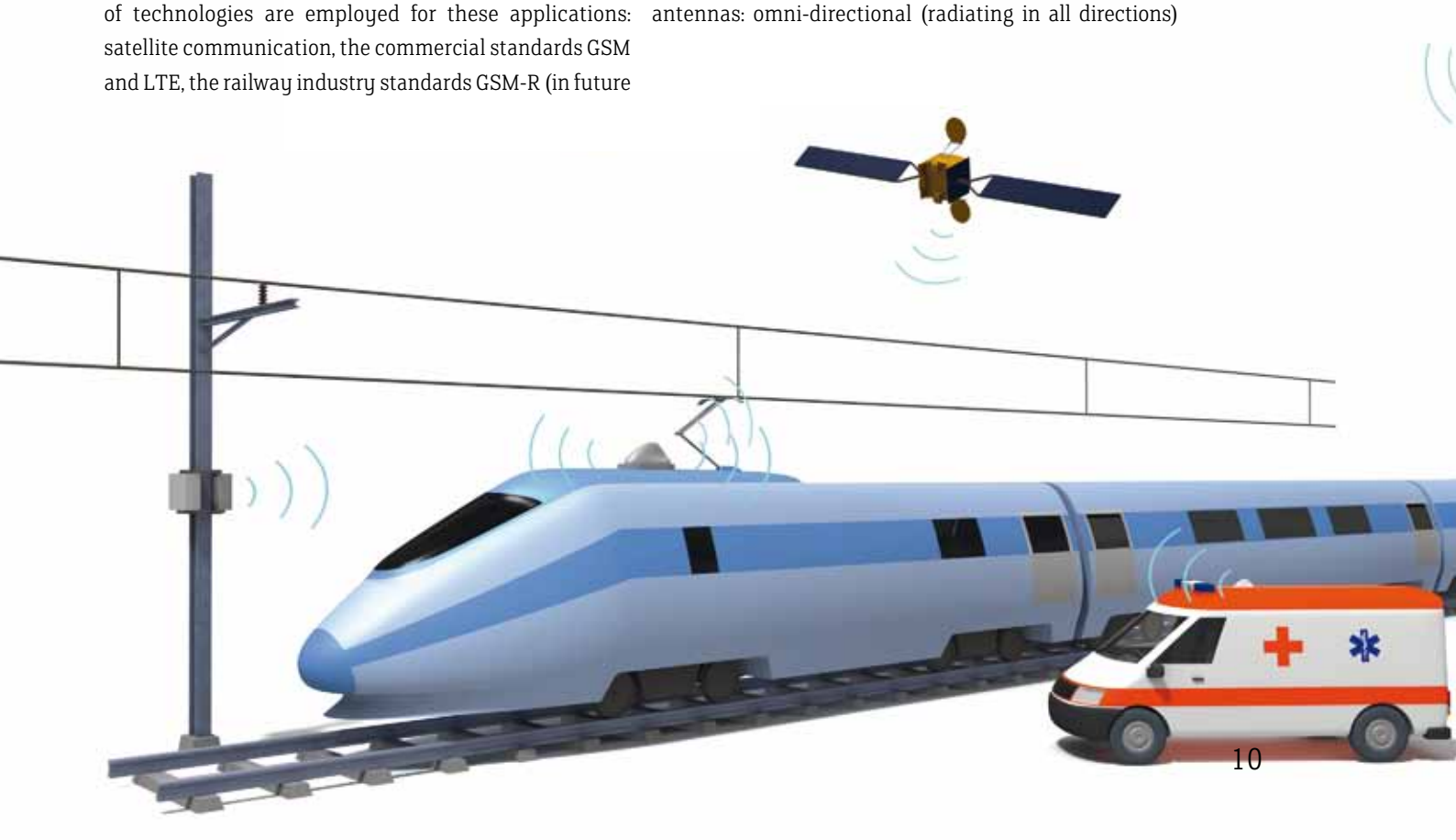
Modern communications present railway constructors and operators with new challenges in terms of both design and product life cycles. This is because rolling stock remains in service for 30 years, while communication electronics have an average service life of only a few years.

As well as flexibility of installation and robustness of the product, the sustainability of investments in ever new applications such as carriage monitoring, passenger counting systems, train staff management systems, passenger information systems, operating state diagnostics or video streaming for critical routes is decisive. A variety of technologies are employed for these applications: satellite communication, the commercial standards GSM and LTE, the railway industry standards GSM-R (in future LTE-R), WiFi 2.4 GHz and WiFi 5 GHz, as well as WiMAX/LTE or Tetra. State-of-the-art systems combine mobile communications and WiFi-/WiMAX-based trackside communication.

SENCITY®Rail antennas for today and for the future

SENCITY®Rail antennas from HUBER+SUHNER have been developed to meet the requirements of the rapidly growing railway sector. Thanks to their wide frequency range, they are well-equipped for the broadband applications of the future. Further features include high quality and reliability, even under difficult conditions, as well as consistent high current protection. In order to ensure optimum transmission and reception characteristics, HUBER+SUHNER supplies the appropriate pre-assembled RF cables. All components are available from a single source, also in combination with RADOX® and fiber optic products.

HUBER+SUHNER offers various types of SENCITY®Rail antennas: omni-directional (radiating in all directions)



roof antennas with minimal installation height for extremely tight loading gauges, directional (radiating in one direction) and bidirectional (radiating in two directions) antennas with greater directivity. Omnidirectional antennas are available with integral GPS antenna and with integrated, low-noise preamplifier. All antennas are highly robust and permit flexible installation ■

YOUR CONNECTION__peter.nuechter@hubersuhner.com

SENCITY®Rail
This omni-directional roof antenna features a robust mechanical design (IP 66/68). This antenna does not require a baseplate, which means that it can be mounted on any surface such as a plastic roof, for example.

SENCITY®Rail TETRA
This antenna is ideal for use with a wide variety of bandwidths. Thanks to coverage of common mobile communication frequencies, the Tetra range of 380–470 MHz and DVB-T from 470–860 MHz, this antenna already meets future requirements.

SENCITY®Rail LowProfile
This antenna has a height of only 4 cm. Despite the compact design, it covers not only the most common mobile communication frequencies above the 790 MHz LTE band, but also the 2.4 GHz WiFi range. It is the ideal mobile communication antenna for double-decker trains and tight loading gauges.

SENCITY®Rail Excel (not shown)
Greater directivity allows long distances between the base stations along the track. The antenna supports WiMAX/LTE as well as WiFi 2.4 and 5 GHz ■

The «Three Musketeers» of rail antennas:
SENCITY®Rail LowProfile, SENCITY®Rail and SENCITY®Rail TETRA.

Connectivity at –30 °C: Antennas for the Finnish State Railways

Finland: Weatherproof rail antennas

New applications based on wireless networks are being used with ever greater frequency in Finland's transportation sector. As a supplier of HUBER+SUHNER antennas and cable solutions, Orbis Oy is involved in a variety of projects.

In public transportation, high demands are placed on the safety of technical components. The space available for the installation of new systems however is limited. In Finland, network components must also endure the harsh weather conditions of the North, with its extreme temperature and humidity fluctuations. For example, a train can leave from Helsinki with the temperature at 0 °C and arrive in Rovaniemi at -30 °C. The Finns expect the transportation system to operate under any weather conditions, including snow and ice. High product quality is consequently decisive for the success of HUBER+SUHNER in the Finnish transportation sector.

To date, Orbis Oy has supplied more than 5000 rail antennas for Finnish transportation projects. Moreover, RADOX® cables supplied by SKS Automaatio Oy have been delivered to Finnish customers. The market is growing at an impressive speed: In 2009, Helsinki City Transport (HKL) equipped all its underground trains with WLAN antennas. The Helsinki Metro is also developing rapidly. Lines are being automated and a new West line is planned for 2015. In 2010, the Finnish State Railways introduced WLAN and GSM/GSM-R services to its InterCity and Pendolino trains, with GSM-R installed in all locomotives. Mitron Oy also relies on weather-resistant HUBER+SUHNER SENCITY® antennas and RF cables for the information and safety systems used in trains, trams and underground trains ■

YOUR CONNECTION__matti.rautanen@orbis.eu

Distributed Antenna Systems: New passive system components

Today, up to 70% of mobile data traffic is generated within buildings via so-called DAS (Distributed Antenna Systems) networks. The distribution of mobile and trunked signals in buildings will continue to increase. HUBER+SUHNER is therefore expanding its passive radio frequency system component product portfolio with further filters, directional couplers, tappers and power splitters.

Data traffic from smartphones and portable terminal equipment is growing rapidly in all sectors. The migration to LTE mobile communication technology and additionally available frequencies are generating further growth. Furthermore, integration of wireless security services such as Tetra or Tetrapol in the mobile communications infrastructure in buildings will also be necessary in future.

Today, antenna networks for buildings are designed to span all network operators. In order to minimise the mutual interference between the various wireless systems, extremely high requirements have to be met by all the components in terms of quality and reliability. An antenna network is at its most cost-effective if maintenance and fault-free operation is guaranteed together with optimum mobile coverage. Moreover, the addition of a variety of network operators and frequency bands must be possible without causing problems.

All DAS components from a single source

HUBER+SUHNER offers network operators, system integrators and device manufacturers all the passive system components between the base station and antenna. The LTE standard and the trunk mobile systems Tetra/Tetrapol (Europe) and LMR/P25 (USA) are now also supported. The product portfolio includes directional couplers with a variety of decoupling values, hybrid couplers with 3-x and 4-x hybrid matrix combiners, tappers for simplified signal decoupling, power splitters (reactive splitters, Wilkinson splitters), diplexers, triplexers, antennas and attenuators, as well as halogen-free RF cables.

The products impress by virtue of their high bandwidth and reliability, compact design, simple installation and integration, excellent passive intermodulation resistance as well as low insertion losses. The portfolio is modular in nature and optimal component selection ensures consistently good mobile coverage. The addition of further frequency bands is possible at any time. HUBER+SUHNER has thus positioned itself as the leading partner for all network operators, system integrators and OEMs who install and operate distributed antenna systems in buildings ■

YOUR CONNECTION__martin.windlin@hubersuhner.com

Excellence meets efficiency: First-class products and a modular range for optimum DAS networks

GPS antennas: New generation

HUBER+SUHNER is replacing the previous generation of GPS antennas with a new, improved series characterised by its compactness, increased vertical beamwidth and various certifications.

The use of GPS antennas is not limited to the familiar satellite navigation and position-detection applications. Mobile communication base stations use the GPS signal for the purpose of time and frequency synchronisation between one another. Only in this way can mobile terminal equipment be transferred from station to station without loss of connection.

The GPS signal can also be used as a time reference for the position-detection of portable terminal equipment. For example, the «E-911 Homeland Security» programme in the US requires that the location of every device must be precisely known to within 125 metres. A critical application of this type cannot rely on GPS modules in the terminal equipment itself and is therefore achieved via GPS-synchronisation of the base stations.

Reduced size, maximised quality

HUBER+SUHNER has been supplying GPS and GLONASS antennas for many years. An outstanding feature in addition to the integrated low-noise preamplifier is the integrated lightning protection. This ensures a high level of availability of the GPS antenna, even in the case of indirect lightning strikes.

Smaller, lighter, better: The new GPS antennas

The electronic components have been packed more densely in the new product generation. This makes the antennas smaller and lighter as well as ensuring improved antenna characteristics. Reception has been improved, for example with regard to particularly critical satellite positions on the horizon. Thanks to a vertical beamwidth extended downwards, the gain (i.e. the antenna's ability to receive signals in a preferred direction, here vertical or horizontal) is higher by 2 dB in the horizontal plane. The antennas are available as standard in the 30 dB and 40 dB gain classes (preamplifier gain), both with or without bracket. The new generation is certified to IEC/UL 60950-1:2005 and CAN/CSA-C22.2 No. 60950-1-07/-22-07 (Safety of Information Technology Equipment).

A special GPS antenna solution is currently under development for the North American market. This will feature significantly higher signal filtering for the suppression of interference in the terrestrial Iridiumband of 1525 to 1559 MHz. GPS antennas from HUBER+SUHNER operate with all the common receivers ■

YOUR CONNECTION__martin.windlin@hubersuhner.com

Airlines: In-flight connectivity

Today, many airlines offer their passengers online services and mobile telephony during flights. HUBER+SUHNER solutions promote the growth of in-flight communication and in-flight entertainment.

«The increasing demand for Internet access during flights is the main driving force behind the aviation industry purchasing connectivity solutions for their aircraft fleets,» says Wendy Campanella of Row 44. Reachability via e-mail in particular is extremely important for business travellers. Row 44 offers a satellite-based in-flight WLAN system for commercial aircraft. These antenna solutions provide airline passengers with additional entertainment, shopping and productivity options thanks to extremely high data transmission rates. Specifically developed for aircraft, the solutions can be custom-adapted for each airline that uses the Row 44 in-flight broadband system. Gregg Fialcowitz, President of Row 44 explains: «We work continuously on enabling airlines from around the world to offer their passengers the finest entertainment via the Internet during flights.»

HUBER+SUHNER on board

HUBER+SUHNER is also involved in the Row 44 antenna solutions with indoor antennas and cables for data transmission between the airline passenger and the dedicated on-board server, but also with cable solutions for the exterior antenna.

With its SUCOFLEX family of cables, HUBER+SUHNER also participated in a further innovative application, KuStream™ 1000. This advanced antenna system also enables in-flight online services, for example broadband access to the Internet, e-mail, GSM usage and the simultaneous reception of TV channels. Data transmission is implemented via antennas, which are mounted on the fuselage of the aircraft and communicate with satellites. KuStream™ 1000 is a joint development between the Californian antenna manufacturer TECOM Industries and the German antenna specialist QEST Quantenelektronische Systeme.

A text message sent during a flight thus passes through several stations equipped by HUBER+SUHNER: From the mobile phone to the indoor and then to the exterior antenna, to the satellite and finally via the on-board antenna to the receiver. The term «airmail» takes on a completely new meaning ■

YOUR CONNECTION__daniel.ulmer@hubersuhner.com

Flying hotspots: in-flight live TV, online games, e-mail and mobile communication

Breaking news from the end of the world with the «EXPLORER» satellite terminal

Chilean miners: Rescue transmitted via satellite

The mobile «EXPLORER» satellite terminal made by Danish manufacturer Thrane & Thrane enables broadband communication via satellite from any location. It is therefore often used in remote areas, e.g. for task force communication or for media coverage of disasters. A typical case was the live transmission of the spectacular rescue of the trapped Chilean miners last year. Solutions from HUBER+SUHNER were also in use during this global media event.

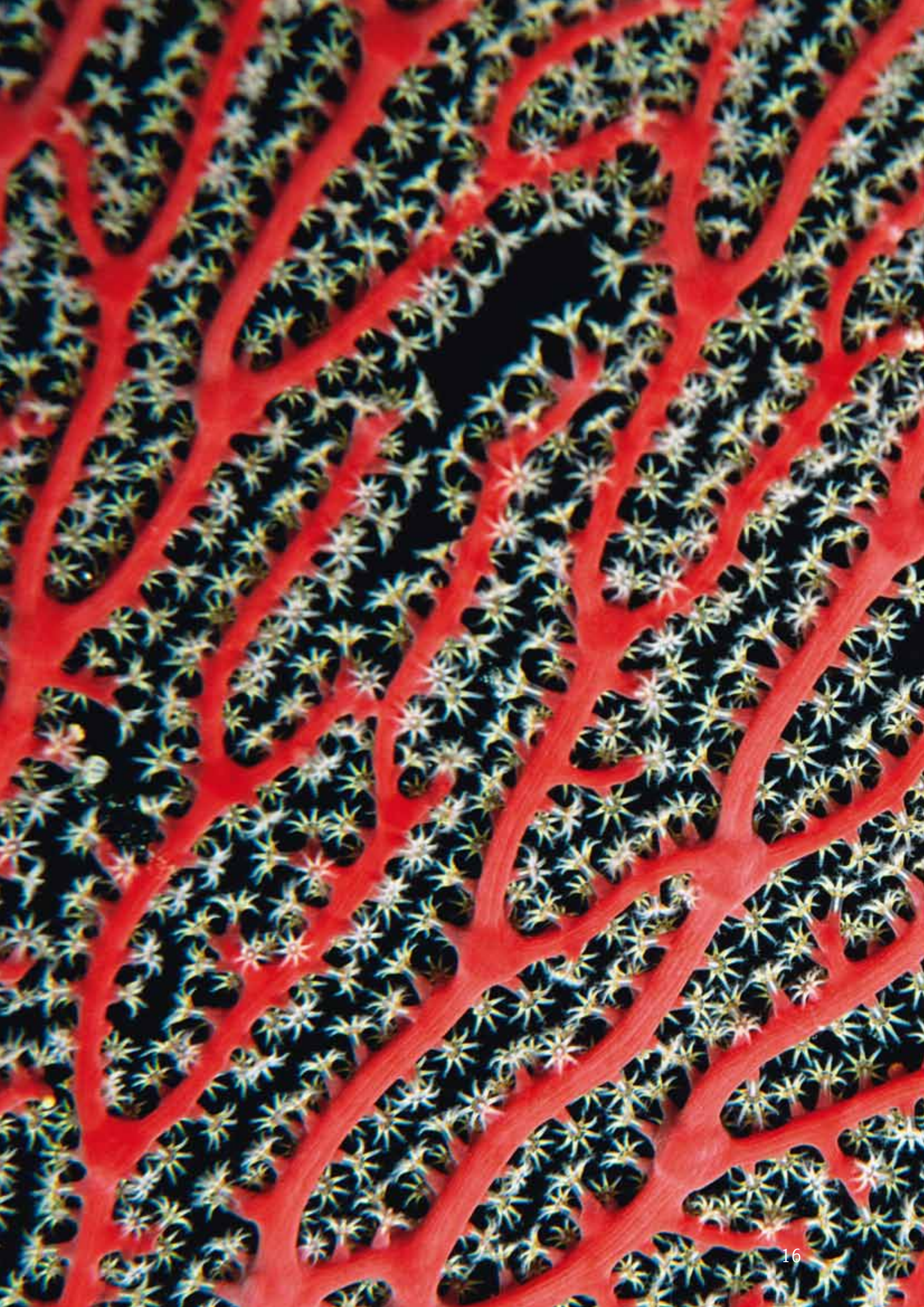
Around one billion TV spectators watched live as 33 Chilean miners were freed from their underground prison after a rescue mission lasting 69 days. They had been trapped following the collapse of a mine in the Atacama Desert on 5 August 2010. The rescue mission, which brought the miners back into the daylight on 13 October 2010, was one of the greatest media events of the year.

Several TV networks used the compact and mobile «EXPLORER» satellite terminal from Thrane & Thrane, to which a laptop and camera can be connected. They were thus able to deliver raw footage to the studio, but also went on air with live video and audio. The data was transmitted via satellite operator Inmarsat's BGAN (Broadband Global Area Network) service. As no other infrastructure is needed, BGAN is very frequently used for transmitting news from remote events.

«EXPLORER» relies on HUBER+SUHNER

Coaxial cables from HUBER+SUHNER are integrated both in the «EXPLORER» devices, as well as in the antenna and terminal. The cables are used for RF transmission, as well as for supplying the antenna with power. TNC connectors are used in the terminal and right-angle QN connectors are installed in the antenna. In order for the QN connector to achieve the required IP67 seal rating, the connector is encapsulated in a special injection-moulded component. The standard-length antenna cable normally measures only 50 centimetres. However, in close collaboration, Thrane & Thrane and HUBER+SUHNER have developed extra-long 10, 30, 60 and 100 metre cables, which meet the relevant electrical and mechanical requirements. An innovative solution, which played its part in the story that made the miners and their rescuers into heroes ■

YOUR CONNECTION__kim.overballe@hubersuhner.com



connected **world**

Excellence in Globalisation.

Although unfortunately endangered by the effects of civilisation, corals were among the first globalisation winners. Formed some 400 million years ago, they are at home in all the oceans, from the surface to depths exceeding 6,000 metres. They also have a lesson to teach us about the secret of global success: Connectivity. Interconnecting to form colonies, often in symbiosis with algae, secures them advantages when competing for habitat and nutrients. The species of coral shown, the gorgonian, has even gained global fame. A photo shot at 4,000 meters beneath sea level shows gorgonian corals growing on the wreck of the Titanic ■

Green petrol: Artificial photosynthesis

Compared to electric batteries, fuels such as petrol or diesel still have a significantly higher energy density. Consequently, scientists around the world are researching into «solar petrol», with plants serving as a model.

A number of major automotive manufacturers are bringing their first fully-electrified vehicles onto the market. For the first time, the dream of climate-friendly cars could become a reality – provided the power for the vehicles is generated by wind or solar power stations. But even then, there is a catch with electric motor vehicles: The power for the drive must be stored in batteries, which have a much lower energy density than liquid fuels. 50 litres of diesel are equivalent to a battery weighing a tonne. Scientists would therefore like to store the sun's energy in the form of a liquid fuel rather than in batteries.

Syngas from the solar reactor

Towards the end of 2010 a research group from the ETH Zurich and the California Institute of Technology presented a method for converting carbon dioxide (CO_2) from the air into so-called syngas with the aid of solar radiation and then into fuels such as petrol or kerosene by means of a subsequent chemical process. It sounds almost too good to be true: eliminating CO_2 from the atmosphere and converting it into fuels – theoretically, both the climate and the energy problem could be solved in one fell swoop.

This chemical transformation is being carried out in the reactor of a large solar simulator at the Institute for Energy Technology of the ETH Zurich. Professor Aldo Steinfeld operates this simulator, which, like a magnifying glass, focuses artificial light to a single point in the solar reactor using several parabolic mirrors. In this way, the reactor is simulated under similar radiation conditions as those existing in large thermal solar power stations in Southern Europe, where the reactor is to be employed in future. The concentrated beam generates temperatures of up to 1,600 degrees Centigrade in the reactor. This heat is required in order to convert the carbon dioxide and water into syngas, a mixture of hydrogen and carbon monoxide.

Artificial sunlight: Professor Aldo Steinfeld and researchers with special protective glasses against the radiation in the simulator.

Initially, the 2,000-watt reactor is being used to verify the concept. For a pre-industrial prototype, necessary measures would have to include optimisation of the design and of the heat and energy losses. This is because the efficiency achieved during conversion of the solar energy into fuel is still only 0.8 percent. Thermodynamic analyses, however, indicate that efficiencies of up to 19 percent would be possible with an improved reactor design.

Solar petrol for the whole of America

For some time now, it is no longer only scientists, who would like to replace fossil fuels with solar ones, but also politicians all over the world. US President Barack Obama recently revealed that since 2010, his government has been funding eight projects aimed at the high-volume production of solar petrol, to the tune of 122 million dollars. The associated activities of seven American Universities are combined in the «Joint Center for Artificial Photosynthesis» (JCAP) research hub. The researchers are seeking to develop an integrated system for the production of synthetic fuel along the lines of natural photosynthesis – in a similar way as plants also produce their «fuels» from sunlight, water and CO_2. In contrast to Steinfeld, the US scientists would like to convert the sunlight directly, without the intermediary of parabolic mirrors or heat.

«The idea of artificial photosynthesis is already 50 years old», says Heinz Frei, who heads a JCAP subproject. «To date, however, insufficient knowledge and technology has been available to achieve this. Breakthroughs in the field of nanomaterials over the past 20 years, however, have opened up completely new possibilities and we understand many of the processes involved in natural photosynthesis much better today.»

> «The idea of artificial photosynthesis is already 50 years old.»
>
> Heinz Frei, head of JCAP subproject

Beyond the scientific challenges, the JCAP researchers' task is also made more difficult because they intend to dispense with rare materials. Their systems are to be simple, inexpensive and without any negative impact on the environment. «In the longer term, we envisage an artificial form of photosynthesis with which the entire fuel requirements in America could be satisfied,» explains Frei. Although several terawatts of power are required for this purpose, JCAP intends to present a prototype next year: a photosynthetic cell the size of a laptop. In the future, Frei imagines a multilayered film with photosynthesis taking place between the layers. A film of this type would be deployed on infertile ground in sunny locations, with the solar fuel produced then being collected in large tanks. Initially, this would be methanol, later ethanol, which is easier to process. Frei is convinced that an efficiency of five to eight percent will be possible within ten years. «We are only at the beginning. It will be up to our children to finally liberate society from fossil fuels.» ■

TEXT__Samuel Schlaefli, scientific journalist

On the road with HUBER+SUHNER: ETH Zurich SunCar project

SunCar by ETH Zürich: Full performance, clean energy

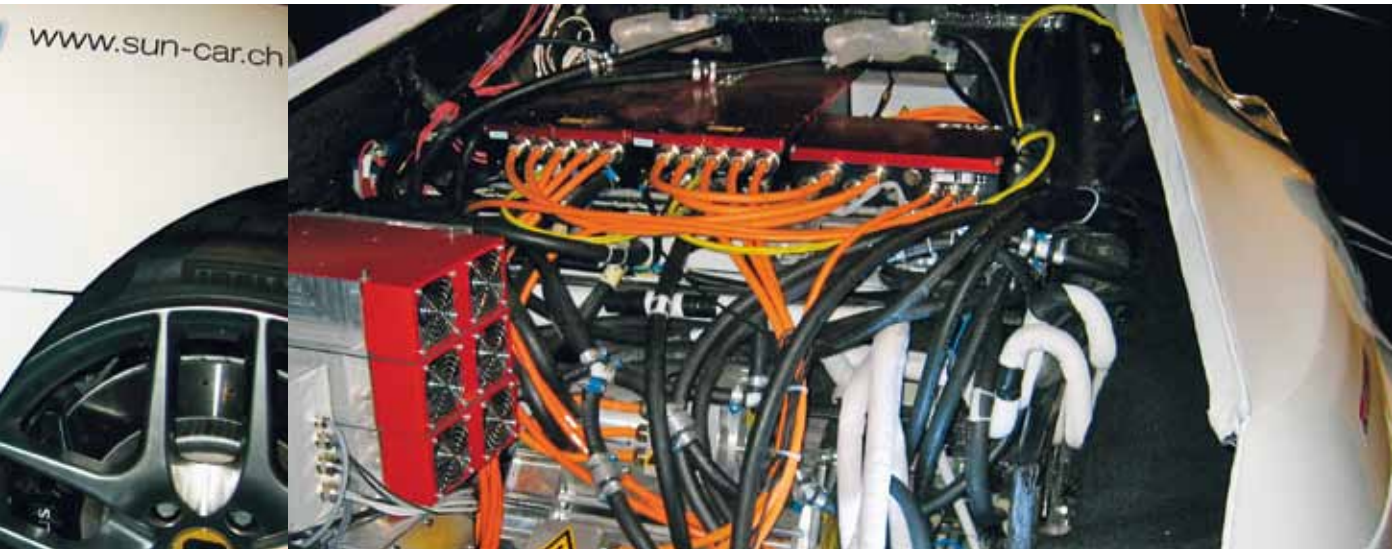
A car that is able to drive over long distances without burning fossil fuels, powered only be renewable energies: This is no vision of a distant future, but a current project being undertaken at ETH Zurich. The rollout of the «SunCar» was held on 31 May 2011. This was made possible by a hard-working team of students – and the support of HUBER+SUHNER.

The SunCar is based on a Lotus Evora with completely newly developed and converted inner workings. The drive is provided by two electric motors, powered by a high-performance battery. This is supported by a photovoltaic system on the vehicle's outer skin, a solar charging station and a range extender in the shape of a single-cylinder biofuel combustion engine. HUBER+SUHNER supplied all the cables for the vehicle and the solar charging station as well as providing the services of a trainee electrician for their installation and donating 25,000 Swiss francs.

Simon Pfister wiring the SunCar

The two 250 kW electric motors, the batteries and other heavy components were positioned in the vehicle such as to ensure an even weight distribution. By means of a skilful redesign of certain body parts, more space was obtained for the additional components like the batteries and range extender. The chargers, range extender, batteries and converters for the motors had to interact smoothly in order to exploit the full energy efficiency. Furthermore, a software was developed for the dashboard display, which provides the driver with key data such as the charge state of the batteries, current range and savings achieved through energy recovery.

Simon Pfister, a trainee electrician in his third year at HUBER+SUHNER in Herisau took part in the project. The idea of involving a practician in addition to the 50 students from the ETH and polytechnics stemmed from the ETH itself. Simon Pfister installed the orange RADOX cables donated by HUBER+SUHNER for the high



voltage vehicle electrical system with the greatest of care. SunCar Project Manager Professor David Dyntar praised his efforts, «Simon had to work very accurately. After all, these are 400-volt lines. Incorrect installation of the connections could result in dangerous sparks. With his practical experience and know-how, he proved a valuable help.»

RADOX cables for solar charging station

The power for the electric motors is obtained exclusively from solar energy. «After all, the sun provides us with 10,000 times more energy than we actually need – and it's free of charge!» said David Dyntar. Thanks to a thin, maximum-efficiency photovoltaic coating applied to the body, the vehicle itself also produces electricity. This coating, which supplies the energy for the battery cooling system when the vehicle is stationary, has to withstand the exterior influences that arise during everyday driving. The challenge was to optimally utilise the surface on the vehicle, without sacrificing functionality. Power needed for the vehicle is additionally provided by a photovoltaic system which was permanently installed on the roof of a house. This solar charging station is also equipped with RADOX cables and connectors donated by HUBER+SUHNER.

The limited range is one of the principle drawbacks of today's electric vehicles. For this reason, a range extender was used in the SunCar. This consists of a bio-ethanol combustion engine that generates electric power by means of a generator. This is used to charge the batteries during driving, or to power the electric motors directly. Here also, the fuel is obtained exclusively from renewable energies, for example wood. With a range of 250 km, the vehicle can be used fully electrically during short-range driving. Thanks to the range extender, distances up to 1,000 km are possible.

Childhood dream comes true

«Even as a child, I dreamed of building a fully-fledged car that could be operated without burning petrol or diesel,» says David Dyntar with enthusiasm. «A complete system that operates solely with renewable energies. With the SunCar, we have reached a decisive milestone.» After the rollout of the SunCar at the ETH in Zurich, the vehicle will now go on view in a variety of exhibitions on the subject of electric mobility. HUBER+SUHNER is proud to have fulfilled his dreams through his involvement in this project and to have jointly made a decisive step into the new era of electric mobility with the ETH ■

YOUR CONNECTION__heinz.oesch@hubersuhner.com

Tesla Roadster: Silent driving pleasure

While in recent years, fully-electric vehicles have primarily been exotic one-offs and prototypes, the first fully-fledged production models are now appearing on the roads. As the Tesla Roadster demonstrates, these can be very attractive.

HUBER+SUHNER had the good fortune of being able to present three of these sleek electric sportscars at its customer event in mid April. The test drives proved highly popular and the drivers' response was enthusiastic. The almost silent acceleration – from 0 to 100 km/h in less than four seconds – is impressive and ensures plenty of driving pleasure.

One reason for the success of the Tesla Roadster are the HUBER+SUHNER products, which were largely designed specifically for the production models. Examples include the charging socket featuring a high-voltage cable that leads inside the vehicle – the electric counterpart to the petrol filler neck, so to speak. The company also supplied the high-voltage cable assemblies for the electric motor, converters and battery. All of the cables are based on the proven RADOX technology from HUBER+SUHNER – so that driving pleasure is guaranteed long-term ■

YOUR CONNECTION__karlo.striegel@hubersuhner.com

Powering into the future:
Tesla Roadster at the charging station

High-voltage electrical system showcased

The Swiss Museum of Transport in Lucerne is presenting a new exhibition created jointly with Bern University of Applied Science on the Swiss automotive supplier industry. An automotive product from HUBER+SUHNER has also been included in the showcase.

The volume of the automotive supplier industry in Switzerland is generally underestimated. Some 300 Swiss companies supply high-quality components to the motor vehicle industry – a figure comparable to the watchmaking sector in terms of volume. Since the spring of 2011, sixty-five of these companies have been exhibiting more than 200 automotive parts from the areas of drive, electrical system, chassis and maintenance in a storage/display unit at the Lucerne Museum of Transport. In a 6-metre high and 3-metre wide paternoster system, display of the parts is reminiscent of a type case. A touchscreen provides detailed information, displays a 360° view of the parts and shows the in-vehicle installation location of the components in a further diagram. The aim of the exhibition is to promote an interest in the automotive industry among the approximately 500,000 mainly young people visiting the museum every year.

In the showcase, HUBER+SUHNER is presenting a high-voltage electrical system for the drive of electric and hybrid vehicles. It comprises an aluminium distribution box to which the familiar conspicuous bright orange RADOX high-voltage cables are connected ■

YOUR CONNECTION__heinz.oesch@hubersuhner.com

High-voltage electrical system for electric and hybrid vehicles in the storage/display unit at the Lucerne Museum of Transport

«novena» by AMZ Racing: Electric racing car from Switzerland

In the absence of ear-splitting noise and the smell of petrol, the «novena» completes its laps on the race tracks of Silverstone, Hockenheim and Barcelona. The AMZ Racing Team drives the electric racing car in the Formula Student 2011 – with cables from HUBER+SUHNER.

The electric racing car is a joint-venture by students at various Swiss universities. Since 2007, the team has been participating in the Formula Student engineering competition under the name Academic Motorsports Club Zürich (AMZ) – with outstanding success. At this event, students from around the world compete with their self-developed vehicles against teams from other universities. Sponsors and patrons fund the development of the vehicles and participation in the international race. The «novena» certainly holds its own in comparison with racing cars featuring combustion engines. «After the previous year's model was by far the lightest of all the electric vehicles in the race series at 225 kilograms, the weight target for 2011 was 200 kilograms,» says Stefan Liechti, business manager of the AMZ. Through the installation of a recovery-capable powertrain with self-developed components, the vehicle's efficiency has been enhanced significantly. The drive system is equipped with RADOX high-voltage cables by HUBER+SUHNER, with further RADOX cables used in other parts of the vehicle. The decisive factor here are the small diameters and the associated weight savings. HUBER+SUHNER supplied all the cables free-of-charge.

Find out how «novena» performs in the Formula Electric class of the Formula Student season 2011 at www.amz.ethz.ch ■

YOUR CONNECTION__marc.moser@hubersuhner.com

SENCITY®Road antennas: Multifunctionality in vehicle construction

For many years, HUBER+SUHNER has been a supplier of high quality connectivity solutions for the automotive industry, as well as being a well-known supplier of antennas in the railway sector. The company's expertise in both fields has been combined to create the new SENCITY®Road antenna family, which expands the portfolio for vehicles.

The name SENCITY®Road stands for robust exterior-antennas on vehicles such as buses or trucks. During the development of this new antenna family, HUBER+SUHNER has relied on its expertise from the railway sector where the SENCITY® Rail exterior antennas are extremely well established. The proven materials and concepts have therefore largely been adopted for the SENCITY®Road antennas.

The SENCITY®Road antenna contains several radiating elements for the individual radio systems required in this vehicle category, such as mobile communication, WLAN/WiFi and GPS. A dedicated cable is available for each radio system in order to dispense with the expensive use of di- and triplexer components for splitting the signals. The antenna additionally features a mounting base on which various stick antennas can be attached as necessary. Thanks to this flexible solution, the product is equipped to cater for customer-specific requirements.

Easy mounting, further versions

SENCITY®Road is designed for easy mounting when retrofitting on the vehicle. A reducing ring enables enlargement of the hole diameter in the roof, facilitating passage of the cables. Moreover, in marked contrast to many competitor products, the product does not require a metallic ground plane for operation without a stick antenna. If, nevertheless, a stick antenna is required, HUBER+SUHNER offers an easy-to-affix, self-adhesive metallic film.

SENCITY®Road expands the existing vehicle antenna portfolio for the retrofit market. Thanks to the flexible concept (the mechanical design can be adapted to customer specifications), the antenna family is also interesting for vehicle manufacturers. Furthermore, through modification of the internal construction, additional versions of SENCITY®Road can be produced with the same external dimensions, for example to support LTE in the USA (690–860 MHz). By restricting the number of connections, for example to mobile communication and WiFi only, the cost of the product falls.

With SENCITY®Road, HUBER+SUHNER combines easy mounting with maximum flexibility for vehicles, based on proven products ■

YOUR CONNECTION__bernd.heidtmann@hubersuhner.com

Connectivity in road traffic: SENCITY®Road Type 1399.99.0039

- One connection for all applications: Mobile communications 0.8–2.2 GHz, WiFi 2.4/5 GHz, GPS/Galileo antenna with integrated amplifier, TETRA 380–430/450–470 MHz, FM Radio (optional stick antennas)
- No ground plane requirements for use without stick antenna
- Robust housing according to ISO 16750 and IP 69K
- E and CE certification

HUBER+SUHNER Automotive is certified to ISO/TS 16949.

Pioneering pilot project: SENCITY®Road in hybrid bus

Swiss coachbuilder HESS specialises in buses for public transportation and commercial vehicles with special bodies. For a pilot project with hybrid buses, a new vehicle was developed, which will undergo comprehensive testing this year. SENCITY®Road from HUBER+SUHNER is on board.

Six Swiss public transportation authorities are jointly examining the economic, operational and economic aspects of the new hybrid technology, as well as its everyday suitability. The articulated bus will be in operation for around 35 days at each transportation authority before moving on to the next one.

The data for the various communication systems in the bus, such as passenger information, localisation, ticket machine, passenger counting, video surveillance and signal control are transmitted via antennas. HUBER+SUHNER identified the appropriate antenna solution in co-operation with HESS. The necessary passive components such as RF cables, coaxial connectors and the corresponding stick antennas for the TETRA and FM radio frequencies were evaluated and supplied. The customer thus receives all the RF components from a single source.

Owing to the shortage of available space on the roof, one of the goals was to reduce the previous individual antennas for the various services to a single multiband antenna. SENCITY®Road from HUBER+SUHNER made this possible. Thanks to the reduced number of antennas, HESS can now use the space gained for placing the necessary assemblies.

The pilot project is set to continue until the end of 2011, the experiences so far have been positive, which bodes well for the future of hybrid buses – with SENCITY®Road antennas from HUBER+SUHNER ■

YOUR CONNECTION__massimo.fortunato@hubersuhner.com

Test and measurement: Excellent teamwork

Test and measurement technology from a single source: as leading suppliers in the field of frequency measuring technology, HUBER+SUHNER and SPINNER offer a combined product portfolio under this motto. A cross-selling agreement was signed in February 2011.

Maximum product performance requires high-precision measurements. In the radio frequency (RF) test and measurement market, precision and quality are inseparable terms with regard to mechanical components as well. Thanks to a newly aligned passive measurement component portfolio, HUBER+SUHNER has established itself as leading manufacturer in recent years.

No RF laboratory can operate without a vector network analyser, as increasingly large frequency ranges have to be measured. New communication technologies, such as the LTE (Long Term Evolution) mobile communication standard or the trend towards higher frequencies also make compact and high-performance measurement technology indispensible. HUBER+SUHNER meets the growing requirements with regard to passive coaxial measuring equipment by means of ongoing product expansion and enhancement.

Two partners, one product portfolio

This also includes the cross-selling agreement signed with SPINNER GmbH Munich in February 2011. In addition to its own measurement products, HUBER+SUHNER now also sells the established calibration components from SPINNER for calibrating radio frequency measurements. In return, SPINNER has added the proven HUBER+SUHNER SUCOFLEX and SUCOTEST test cables to its range. Thanks to RF solutions from a single source, both partners can now supply their customers more comprehensively, as well as winning new customers.

Initially, HUBER+SUHNER will sell the additional components via its own sales channels with an emphasis on Germany, Austria and Switzerland. Specific sales channels are being evaluated for expansion into Europe, the Middle East and Africa. In future, ordering online will also be possible via the www.ecom.huber-suhner.com platform. To find out more about the co-operation and for white papers containing up-to-date market information, please visit www.rfmeasuring.com ■

YOUR CONNECTION__romeo.premerlani@hubersuhner.com

Combined competence in test and measurement technology (left to right):
Stephanie Spinner-König, General Manager, SPINNER;
Jean-Luc Gavelle, COO Radio Frequency, HUBER+SUHNER;
Romeo Premerlani, Market Manager T+M, HUBER+SUHNER;
Katharina König, General Manager, SPINNER;
Dirk Stöpke, Head of Industry & Science Division, SPINNER

Underarm perspiration: Technological K.O.

Armpit perspiration stains are an unpleasant, but widespread phenomenon. Solutions for combating excessive perspiration, known under the medical term of hyperhidrosis, include deodorants, Botox, surgery – or cables from HUBER+SUHNER.

Perspiration is a natural process, which is important for regulating body temperature. Under the skin, there are up to four million sweat glands, which are responsible for us producing up to half a litre of sweat an hour and up to twenty times that figure during heavy physical work. If, however, the sweat glands in the armpit area work excessively and without pause, physicians speak of hyperhidrosis. For millions of people, this represents a serious psychological burden.

Three conventional treatments for hyperhidrosis

To date, three treatments have been available for hyperhidrosis. For mild cases, an antiperspirant can be used, which is applied to the skin like a deodorant and blocks the sweat ducts. In more severe cases, Botox injections may be employed in order to paralyse the nerves that activate the sweat glands. Botox acts rapidly, but the procedure has to be repeated at six-monthly intervals. If the first two therapies fail, the third solution is the scalpel: The sweat glands, which are located more than two millimetres below the skin, are surgically removed. This procedure is lasting, but, like any operation, involves risks.

Microwaves against perspiration marks

California-based company Miramar Labs has now introduced a further option onto the market. Here, an applicator radiates electromagnetic energy externally into the sweat glands under the skin. The energy destroys the glands in a very gentle manner, the definitive K.O. for undesirable underarm perspiration.

HUBER+SUHNER participated in the development of the device from the outset. All the microwave wiring for this application was adapted to the stringent electrical requirements at 5.8 GHz. The generator includes an almost 20-metre long SUCOFORM assembly as a resistor, which reduces the output power with high precision in accordance with the specific treatment. The combination of generator and applicator comprises three SUCOFLEX 103 assemblies equipped with BMA series connectors. Through the selection of special materials and predefined service intervals, the required high number of 5,000 mating cycles was achieved, increasing the service life by ten times.

High-tech to counter hyperhidrosis:
HUBER+SUHNER technology in use against excessive perspiration

High flexibility, low signal losses and minimum dimensions at a cost-effective price: the SUCOFLEX cables provide clear benefits for Miramar Labs – and will surely send competitors into a cold sweat ■

YOUR CONNECTION__reto.germann@hubersuhner.com

Peruvian Switzerland: The Ancash region at 6,000 m ASL.

Data highway: Connectivity at 6,000 m ASL

For remote areas and their inhabitants, the Internet is an important instrument to keep pace with the standard of knowledge in large cities. Here in particular, however, the necessary infrastructure is often lacking. The digital divide between urban and rural areas could be prevented by means of comprehensive broadband provision. Peru has therefore launched a state-run project with the aim of connecting the poorest regions of the country to broadband technology. Fiber optics from HUBER+SUHNER now ensure access to the data highway in the province of Ancash, located at 6,000 metres above sea level.

Thanks to the Internet, media, the entertainment industry and telecommunications are increasingly merging into a global world of information and communication. This increases the demand for broadband access, the so-called data highways, world-wide. In cities, sufficient infrastructure is available for this purpose in most cases. However, fast Internet access is also important in the usually poorer rural areas. A lack of access to information and communication has an negative impact on the educational level and quality of life of the local inhabitants. Moreover, places of residence and work without broadband Internet access are fairly unattractive. Here, tourism and industry also lose much of their appeal.

Comprehensive broadband coverage in remote regions can contribute towards remedying this economic disad-

Direct connection to the global data village: Connectivity solutions from HUBER+SUHNER enable advancement

vantage. Worldwide, an increasing number of government projects are therefore being initiated in a bid to prevent a two-tier digital society. In order to build these new data highways, extremely robust fiber optic connections are necessary, which permit very high data transmission rates.

Fiber optics for remote regions in Peru

In the context of a state-funded project by the Ministério de comunicación y transporte de Perú, HUBER+SUHNER supplied fiber optic cables and connectors to the Peruvian province of Ancash, which is also known as the «Peruvian Switzerland» due to its snow-covered mountains that rise to above 6,000 meters. In Ancash, Internet access is scarce, electricity cannot always be taken for granted and only few inhabitants have received higher education. The objective of the state-run project is to provide access to broadband technology in this poorest region of the country. All schools, police stations, and regional government buildings are being equipped with fiber optic connections to enable Internet access using the fastest technology available today.

For this project, a wide-ranging invitation to tender was issued at the beginning of 2010 in which HUBER+SUHNER participated successfully. Jointly with local telecom service provider DKR Vision, fiber optic cables and type LX.5 distributors were laid over a distance of more than 60 kilometres. Local representative Mercedes Mercado inspected the installations on site and was able to confirm the quality of the project during the pilot phase.

From pilot project to regional advancement

Following the successful completion of the pilot phase, the official inauguration will take place shortly following a short delay due to a change in government. For one day, the Deputy Minister of the Ministry of Transport and Communication, the Director of the telecommunications company FITEL, which participated in the project, and the Mayor of the Municipalities of Caraz, Yunguay and Carhuaz will visit the schools, community centres and institutions which have gained access to broadband communication thanks to the project. In addition to television, the communities, as well private institutions such as hotels, can now also offer up-to-date Internet and Intranet services.

The regional economy in particular is benefiting from the new data highway, which represents a major advancement for the region. The exemplary and unique project has now also garnered a number of awards. Similar projects will hopefully follow. HUBER+SUHNER América Latina Ltda will be certain to support these and is proud to have connected people in isolated regions of the world– thanks to «Excellence in Connectivity Solutions» ■

YOUR CONNECTION__damian.looser@hubersuhner.com

LX.5 connectors and connection cables from HUBER+SUHNER.

Photovoltaics: Elegance in the High Alps

High above St. Moritz, at 2,400 m ASL on the Muottas Muragl, the sun shines on 300 days of the year. this makes this high-alpine mountain landscape into the perfect location for generating solar power.

The conditions here are not only ideal for sun lovers, but also for the 300-metre long photovoltaic plant which has been installed along the funicular embankment on the Muottas Muragl since December 2010. The plant is well known far beyond the region as a beautiful example of an elegantly integrated solar plant.

The precise southerly orientation of the plant and its inclination angle of 45° permit optimum absorption of the solar energy. For this purpose, the rail track was widened by a solid steel construction on which the subframe for the solar module was mounted. The plant, which belongs to Current AG, was installed by SolarMarkt GmbH in icy temperatures last winter.

278 modules in six sectors now produce power, which is delivered to the inverters via RADOX cables with a length of between 150 and 350 metres. A total of 8,000 metres of cable are routed under the modules in a cable conduit, from the individual sectors to the power control centre in the summit station. RADOX solar cables from HUBER+SUHNER are predestined for this application in the harsh mountain environment. Thanks to their electron-beam cross-linked insulation, they are resistant to extremely high temperature variations, wear, ozone and weathering.

Each of the six zones in the plant are connected to an inverter with a nominal capacity of 10 or 12.5 kVA. The 64-kWp solar plant delivers around 100 MWh annually to the grid, which corresponds to the energy requirements of about 20 households ■

Online video on installation of the plant

www.hubersuhner.com > Markets > Industry > Energy > Solar energy

YOUR CONNECTION__peter.mueller@hubersuhner.com

For good causes around the globe

In the context of the «Corporate Social Responsibility and Ethical Behaviour» project, the Global Distribution Management of HUBER+SUHNER, together with independent panel of judges, selected three distribution partners and the charitable organisations nominated by them as worthy recipients of donations. Cheques, each to the sum of CHF 2,000 have now been presented in South Africa, Russia and Italy.

For the fight against poverty in South Africa

The «Vastfontein Project» is a charitable foundation in South Africa's rural community of Vastfontein. Its purpose is to combat poverty and promote the wellbeing and education of children. During a visit to the school and other institutions, Stefano Bortoletto and Manuel Armenteros from HUBER+SUHNER Global Distribution Management presented a cheque to the local distribution partner Dartcom Pty. Ltd. and Johan Grobelaar, the founder of the «Vastfontein Project». The children were delighted with the sweets that were handed out and Hannelie de Bruyn from Dartcom inaugurated the Dartcom House of Care.

For children suffering from cancer in Moscow

In Russia, Bettina Hoersch-Marx, Head of HUBER+SUHNER's representation office, handed over a cheque to Alexej Gawrilow, Sales Manager of distribution partner NKT, and to Alina and Grigory Mazmaniants from the «Podari Zhizn» (Gift of Life) foundation. The money will be used to purchase medication for children suffering from cancer. The organisation cares for some 600 of these children annually. In December 2011, the first clinic for paediatric haematology, cancer and immunology will be opened in Moscow. The equipment of this clinic with the necessary medical devices represents one of the greatest projects realised by the foundation to date.

For deaf and blind people in Italy

A further cheque was awarded to the Italian foundation «Lega del Filo d'Oro». This organisation supports deaf and blind people with practical assistance as well as integration and educational programmes. Antonio Rodeghiero from the Italian distribution partner Miotti S.R.L presented a cheque to the General Secretary of the foundation, Dr. Rossano Bartoli, at their head office in the hospital of Osimo. Further branch offices of the foundation in Lesmo, Rome, Naples, Molfetta and Modena have also become important contact points for the deafblind and their families.

HUBER+SUHNER would like to warmly thank its distribution partners and their friends for their personal commitment to the «Corporate Social Responsibility and Ethical Behaviour» project, which performs valuable and impressive work for these charitable organisations ■

YOUR CONNECTION__beatrice.troxler@hubersuhner.com

South Africa

Russia

Italy

Railway sector: Fire protection to CEN/TS 45545

The fire safety standard EN 45 545 is set to be introduced in the railway sector. Owing to high demand, however, it is already a reality as a technical specification today.

Fires are prevented through reduced flammability on the one hand, and their spread is contained on the other. The exposure of passengers to toxic gases is reduced and emergency evacuation is facilitated due to a lower smoke density in the event of a fire. In order to comply with the latest fire protection standard, HUBER+SUHNER has subjected the key RF products for the railway sector to stringent testing. The greatest challenge here is the fire test for cable bundles, with the insulation between centre conductor and coaxial cable shielding proving to be the most difficult technical problem to resolve. Materials exhibiting low RF signal attenuation, low toxicity and low smoke formation tend to be more flammable. The solution is an ingenious design, combined with the outstanding RADOX® and LSFH jacket materials. The following RF cables already comply with the CEN/TS 45 545 specification today: SX_04172_B-60 as a flexible RF connecting cable, S_10162_B-11 as a low-loss power supply cable and SPUMA_400-FR with optimised characteristics for numerous applications. Other products tested according to CEN/TS 45 545 include the SENCITY®Rail and in-carriage antennas ■

YOUR CONNECTION__peter.nuechter@hubersuhner.com

US market: Fiber optic cables with UL approval

UL is the most important standard in the US market. For protection against hazards relating to electricity, cables in buildings and factories must be UL approved.

HUBER+SUHNER supplies new glass-armoured riser and breakout cables with UL approval and the relevant labelling. The glass-armoured, two-core riser cables are mostly used as assemblies with robust industrial connectors such as ODC for FTTA in mobile communications technology. They are tested for installation in vertical shafts and bear the UL designation OFNR. The glass-armoured breakout cables with two or four cores are suitable for industrial applications such as Industrial Ethernet. These are tested for general use and bear the UL designation OFN/OFNG. They are also approved in Canada. Commercially-available connectors, including SFF, LC and LX.5 types can be attached directly to the individual cores. Cable types of the same design are also available without UL approval. These are tested according to international standards and guarantee continuous data transmission under harsh environmental conditions in permanently installed indoor and outdoor applications ■

YOUR CONNECTION__thomas.schmalzigaug@hubersuhner.com

Distribution: Sales & Recognition Awards 2010

HUBER+SUHNER once again presented a number of Sales & Recognition Awards in recognition for exceptional sales growth. Global Distribution Management and Paul Harris, COO Global Sales, honoured the following distribution partners:

- ASTE Sp.z.o.o., Poland
- Behestan Mehr Tehran, Iran
- E4 Kft, Hungary
- OY T. Stenbacka AB, Finland
- RedMax Technologies Ltd, Cyprus
- SAMM, Turkey
- Scandinavian House, Russia
- Zeeshan Electronics, Pakistan

Stefano Bortoletto, Head of Global Distribution Management, thanked all the distribution partners, whose outstanding efforts contributed towards improving the market position and increasing the market share of HUBER+SUHNER. It is also to their credit that the brand promise «Excellence in Connectivity Solutions» is being delivered world-wide ■

YOUR CONNECTION__stefano.bortoletto@hubersuhner.com

Brilliant financial year 2010 and glowing thank you

With net sales of CHF 799.5 million and an operating profit of CHF 101.8 million, 2010 was one of the best financial years in HUBER+SUHNER's corporate history.

In the spring of 2011, the company thanked all its employees worldwide in a special way for their valuable services in the exceptionally successful year: As a token of the company's gratitude, each and every one of them received a gold coin in a special presentation case. Because for HUBER+SUHNER, its employees are worth their weight in gold.

The half-year results for 2011 were published on 23 August and can be viewed at www.hubersuhner.com ■

YOUR CONNECTION__axel.rienitz@hubersuhner.com

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.

26th European Photovoltaic	Hamburg	5 – 8 September	www.photovoltaic-conference.com
Suissetraffic	Bern	6 – 9 September	www.suissetraffic.ch
Ineltec	Basel	13 – 16 September	www.ineltec.ch
DSEI	London	13 – 16 September	www.dsei.co.uk
RSSI C&S Exhibition	Minneapolis	18 – 20 September	www.rssi.org
Data Center Dynamics	Amsterdam	27 September	www.datacenterdynamics.com/conferences/2011/amsterdam
Gitex	Dubai	9 – 13 October	www.gitex.com
EUMWW	Manchester	9 – 14 October	www.eumweek.com
Solar Power International	Dallas	17 – 20 October	www.solarpowerinternational.com
Clean Energy Expo	Singapore	1 – 3 November	www.cleanenergyexpoasia.com
Compamed	Düsseldorf	16 – 18 November	www.compamed.de
SPS Nuremberg	Nuremberg	22 – 24 November	www.mesago.de/de/SPS/Fuer_Besucher
Swiss Plastics	Lucerne	17 – 19 January	www.messeluzern.ch/swissplastics
DesignCon	Santa Clara	31 January	www.designcon.techinsightsevents.com
DEFEXPO INDIA	New Delhi	15 February	www.defexpoindia.in
FTTH Council	Munich	15 – 18 February	www.ftthcouncil.eu

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

connected **media**

New publications

- **Remote Radio Installationen,** white paper, No. 84118112, German
- **Remote Radio Installations,** white paper, No. 84118113, English
- **Wireless Infrastructure,** catalogue, No. 84126953, English
- **Fiber In The Home,** catalogue, No. 84128278, German
- **Fiber In The Home,** catalogue, No. 84113520, English
- **Fiberoptik – Passive Komponenten,** catalogue, No. 84020475, German
- **Fiber Optics – Passive Components,** catalogue, No. 84019859, English
- **High Speed Digital Testing Solutions,** catalogue, No. 84121228, English
- **Lightning Protection, catalogue,** No. 23002023, English
- **Bridging our Technologies, brochure,** No. 84082817, German
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HUBER+SUHNER worldwide

EMEA

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HUBER+SUHNER A/S
Kirke Værløsevej 14DK-3500 Værløse
Telephone +45 48 100 500
Fax +45 48 100 555
info.dk@hubersuhner.com

England

HUBER+SUHNER (UK) Limited
Telford Road,
GB-Bicester, Oxfordshire, OX26 4LA
Telephone +44 (0)1 869 364 100
Fax +44 (0)1 869 249 046
info.uk@hubersuhner.com

France

HUBER+SUHNER France SAS
21 E, rue Jacques-Cartier
FR-78960 Voisins-le-Bretonneux
Telephone +33 (0)1 61 37 25 55
Fax +33 (0)1 30 64 73 68
info.fr@hubersuhner.com

Germany

HUBER+SUHNER GmbH
Mehlbeerenstrasse 6
DE-82024 Taufkirchen
Telephone +49 (0)89 612 01 0
Fax +49 (0)89 612 01 162
info.de@hubersuhner.com

Poland

HUBER+SUHNER Sp. z o.o.
ul. Baldowska 26
PL-83-110 Tczew
Telephone +48 58 560 2100
Fax +48 58 560 2172
info.pl@hubersuhner.com

Sweden

HUBER+SUHNER AB
Knarrarnäsgatan 5
Box 1247
SE-164 28 Kista
Telephone +46 (0)8 447 5200
Fax +46 (0)8 447 5201
info.se@hubersuhner.com

Switzerland

HUBER+SUHNER AG
CH-9100 Herisau
Telephone +41 (0)71 353 41 11
Fax +41 (0)71 353 44 44
info@hubersuhner.com

HUBER+SUHNER AG
CH-8330 Pfäffikon ZH
Telephone +41 (0)44 952 22 11
Fax +41 (0)44 952 24 24
info@hubersuhner.com

United Arab Emirates

HUBER+SUHNER Middle East
Trading LLC
Dubai Investments Park (DIP)
European Business Center,
Office 156
PO Box 75843
Dubai, UAE
Telephone +971 4 81 35 35-0
Fax +971 4 81 35 35-1
info.me@hubersuhner.com

APAC

Australia

HUBER+SUHNER (Australia)
Pty Ltd
Unit 6, 4 Skyline Place
Frenchs Forest
AU-Sydney NSW 2086
Telephone +61 (0)2 8977 1200
Fax +61 (0)2 9972 7549
info.au@hubersuhner.com

China

HUBER+SUHNER (Hong Kong) Ltd
Unit 1101 & 1121, Level 11
Tower 1, Grand Central Plaza
138 Shatin Rural Committee Road
Shatin, N.T.
HK-Hong Kong
Telephone +852 2866 6600
Fax +852 2866 6313
info.hk@hubersuhner.com

HUBER+SUHNER (Shanghai)
Co., Ltd
Part B 2-3, 2/F
333 Fu Te Xi Yi Road Waigaoqiao
CN-Shanghai 200131, P.R. China
Telephone +86 (0) 21 5190 1111
Fax +86 (0) 21 5190 1371
infoshanghai@hubersuhner.com

HUBER+SUHNER (Shanghai)
Transmission & Communication
Manufacture Co., Ltd
1330, Jin Hu Road
Jin Qiao, Pu Dong New District
CN-Shanghai 201206, P.R. China
Telephone +86 (0) 21 5190 1111
Fax +86 (0) 21 5190 1371
infoshanghai@hubersuhner.com

HUBER+SUHNER ELECTRICAL EQUIPMENT
MANUFACTURE (SHANGHAI) CO. LTD.
356 Long Gui Road
CN-Shanghai 201201, P.R. China
Telephone +86 (0) 21 5190 1111
Fax +86 (0) 21 5190 1371
infoshanghai@hubersuhner.com

India

HUBER+SUHNER Electronics
Private Limited
682, Udyog Vihar, Phase V
IN-Gurgaon 122 016, Haryana
Telephone +91 (0)124 452 61 00
Telephone +91 (0)124 452 62 00
Fax +91 (0)124 410 27 04
info.in@hubersuhner.com

Malaysia

HUBER+SUHNER (Malaysia)
Sdn. Bhd.
No 2, Jalan Pensyarah U1/28
HICOM Glenmarie Industrial Park
40150 Shah Alam
MY-Selangor
Telephone +6 03 5035 3333
Fax +6 03 5035 3335
info.my@hubersuhner.com

Singapore

HUBER+SUHNER (Singapore)
Pte Ltd
11 Chang Charn Road
#05-02 Shriro House
SG-Singapore 159640
Telephone +65 6573 5500
Fax +65 6473 5522
info.sg@hubersuhner.com

Thailand

HUBER+SUHNER (Thailand)
Co., Ltd.
896/3 SV City Office Tower 1,
4th Floor, Rama III Road,
Kwaeng Bangpongpang,
Khet Yannawa,
TH-Bangkok 10120
Telephone +66 (0)2 682 6868
Fax +66 (0)2 682 6669
info.th@hubersuhner.com

Americas

Brazil

HUBER+SUHNER América Latina Ltda
Rodovia Presidente Dutra, Km 154,7
Prédio 4 – Rio Comprido
CEP 12240-420
BR-São José dos Campos-SP
Telephone +55 (12) 3946 9500
Fax +55 (12) 3946 9528
info.br@hubersuhner.com

USA

HUBER+SUHNER, Inc.
19 Thompson Drive
US-Essex Jct., VT 05452
Telephone +1 800 493 9758
Fax +1 802 878 9880
info.na@hubersuhner.com

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HUBER+SUHNER

HUBER+SUHNER AG
Degersheimerstrasse 14
CH-9100 Herisau
Telephone +41 (0)71 353 41 11
Fax +41 (0)71 353 44 44

HUBER+SUHNER AG
Tumbelenstrasse 20
CH-8330 Pfäffikon ZH
Telephone +41 (0)44 952 22 11
Fax +41 (0)44 952 24 24

WWW.HUBERSUHNER.COM