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Datwyler Cabling Solutions

panorama

Car manufacturing plant, San Luis Potosí:

EQUIPPED FOR THE FUTURE

Datwyler Study:

How digital ARE SMALL AND MEDIUM-SIZED BUSINESSES?

Innovation:

DATA CENTRES: Micro and mini data centre solutions

DATWYLER

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EDITORIAL

IT infrastructure:
LIFEBLOOD IN THE CRISIS

Dear Readers

The ongoing corona crisis has clearly revealed on what a thin thread our high standard of living hangs. At the same time it has exposed the weaknesses in an environment which we believed secure and which must now be remedied. In this sense – and of course in this sense only! – today's unprecedented situation also has a positive aspect.

Staying at home, working from home, temporary lockdown or even quarantine – it has hit us all directly or indirectly. Somehow or other we have kept on "functioning" despite everything. Suddenly things got done, even without planes, trains and cars. Video conferencing with Skype and Zoom, online ordering and delivery services, Netflix and other streaming services have enabled us to clear the hurdles and do our jobs despite all the limitations.

These applications and services are backed by something which we (too) often take for granted: a perfectly functioning IT infrastructure with sufficient speed and bandwidth. Now and then we have already noticed that this "lifeblood" of our modern society is in danger of reaching its limits. Even in future we must bear this experience in mind: nowadays nothing can be done without the Internet and without electronic communication.

Datwyler – together with its customers and partners – is heavily committed to expanding and modernising the IT infrastructure so that our society can function efficiently. We are focusing on the expansion of data centres, campus networks, fibre optic networks and, last but not least, edge computing, i.e. local (real-time) data processing close to the data sources and users – as a supplement to the cloud services which are currently booming. There are many good reasons for the latter, such as data protection, enhanced operating security, reduced dependence on the outside world, low latency times and cost savings.

In this issue read how and where Datwyler is making a contribution to the lifeblood of our society, the IT infrastructure. Get in touch! We would be happy to assist you with your projects as well.

Kind regards

Johannes Müller
CEO

Unfallkasse Nordrhein-Westfalen, Düsseldorf:

BECAUSE IT HAS TO DO WITH SAFETY

Unfallkasse NRW is using Datwyler fail-safe cabling solutions in their new headquarters. The company which installed them was Frings Elektro-Installationstechnik.

New head office in Düsseldorf (2019)

Unfallkasse Nordrhein-Westfalen, the North Rhine-Westphalia Accident Compensation Fund, is a public sector accident insurer for the statutory accident insurance of around 6.6 million policy holders. At the end of 2019 the head office in Düsseldorf moved to a new building in the district of Oberbilk. This brought together under one roof the 500 or so people employed in the city.

The modern block was built by Freundlieb Bauunternehmung on behalf of Kölbl Kruse GmbH. The new building is equipped with a high-performance structured building cabling system among other things. This gives Unfallkasse NRW, the tenant, a high-performance data network – with fibre optic cables for the backbone cabling and copper cables on all floors.

Between January and August 2019 Frings Elektro-Installationstechnik GmbH, a long-standing certified Datwyler partner, installed the data network in several stages.

The system solution, which came entirely from Datwyler, passed acceptance testing in August and started operation in October, just in time for the move.

Fail-safe connectivity

In the 130-metre long new building there are two data centres linked by fibre optic and copper cables. For fire safety reasons a protective wall divides the ten-storey building into two halves. This division is reflected in the structure of the data network: On each floor these two sections are connected to two independent server cabinets, allowing the stand-alone operation of each section. In addition there are redundant links to all the floor distributors – via a 12-fibre "FO Universal" cable and the "CU 7702 DX", a copper data cable with 100 paired wires.

On the floors the 350 or so office units and the seminar rooms are connected via copper data cables. Most of the RJ45 connections for the employees' devices are housed in floor boxes.

Frings, the main supplier, installed an end-to-end high-performance system solution from Datwyler, the cables and components of which are perfectly matched.

"The solution which we proposed to the general contractor gave the end customer the desired high quality, but at a better price," explained Marijo Bellendorf, Project Leader at Frings. "When the planning expert saw 'Datwyler', he cleared it immediately."

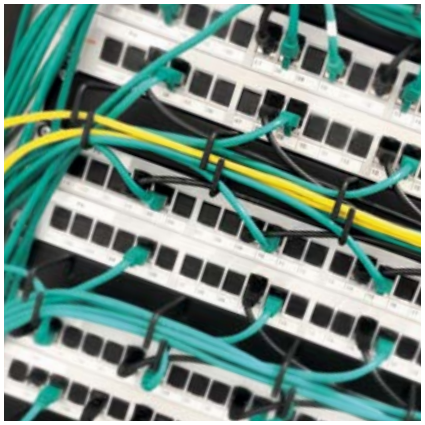
A solution for every application

In addition to the products mentioned, the complete solution also features Category 6_A "KS-T Plus" modules, KS panels, type "OV-S" telescopic FO patch panels, network cabinets, wall-mounted housings and telephone panels.

The accident compensation fund has incorporated numerous services and applications into this cabling: in addition to office applications it includes video technology, access control, an alarm system and intercom system as well as measurement, control and regulation technology (MCR).

A Datwyler system solution was also used for preventative fire safety. This consists of various types and versions of high voltage and low voltage cable with E30 and E90 enhanced functional integrity, single and multiple-cable clamps, strap clamps, plugs and "Hercules" distribution boxes.

Fail-safe connectivity: end-to-end high-performance system solution from Datwyler



"As long-standing partners of Datwyler we don't need any support," says Bellendorf. "The main thing is that deliveries are on time. In this project it worked out perfectly once again." *(urk/dir)*

Victorinox AG, Ibach:

IT INFRASTRUCTURE SOLUTION

for logistics centre

Victorinox, the Swiss pocket knife manufacturer, relies on a shielded 10G cabling solution from Datwyler in the new European central warehouse in Seewen.

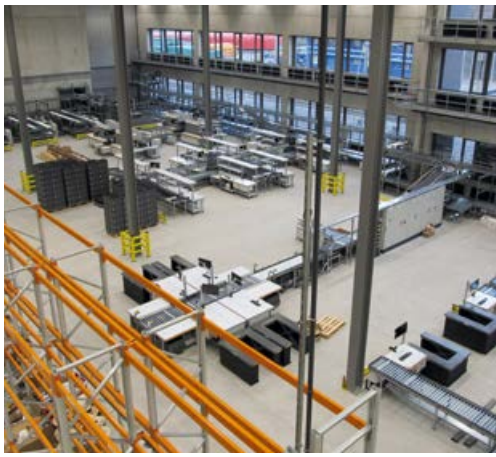
IT rack on the ground floor

Plant room installations

In 1884 Karl Elsener set up a cutlery business in Ibach in the canton of Schwyz. In 1897 he developed the Swiss Officer's and Sport Knife – known today as the Swiss Army Knife – thus laying the foundation stone for a thriving business. Today Victorinox is a global company supplying household and professional knives, watches, luggage and perfumes as well as pocket knives.

Until recently Victorinox operated 17 warehouse facilities in Switzerland and Europe. In the past two years a new European distribution and logistics centre has emerged on the former Usego site in the Swiss municipality of Seewen, only a few kilometres from the company headquarters. The central warehouse of Victorinox has a volume of 173,000 cubic metres, is fully automated and designed for between 30 and 35 workstations. It brings together six regional field warehouses, thus optimising storage and distribution.

View in one of the plant rooms



Picking up to and including packing

Communication in the modern central warehouse is based on a future-proof IT infrastructure designed for transmissions of up to 10 gigabits per second. In September 2018 those responsible for the Victorinox IT and electrical systems decided to equip it with Datwyler shielded cables.

Cost-effective and risk-free

For Victorinox a shielded solution was the preferred approach for high-speed copper links. The advantage of the shielded system is that it allows a 10G infrastructure to be operated more economically and with less risk than with an unshielded solution. Nor is it necessary to field test the cabling for alien crosstalk due to the considerable performance margin of the shielded data cables. Last but not least, the Datwyler solution means that Victorinox is equipped for future leaps in technology.

The cabling was installed in several construction phases between December 2018 and April 2020. Today the central server room is connected by 24-fibre single-mode fibre optic cables to four distribution racks housed in two plant rooms and a storage area in the basement, and in the packing section on the ground floor.

From the distributors the copper cabling ensures secure high-speed connections into the offices, to the packing conveyor belts and to the fully automated small parts warehouse. It comprises shielded type "CU 7002 4P" Category 7 data cables as well as patch cables and Category 6_A connection technology. Wireless communication (WLAN transmitter) and the intercom system were integrated in the data network.

The test runs for the small parts warehouse and the conveyor system in the packing section were carried out at the end of 2019 and the beginning of 2020. The offices came into service between February and May. *(dap)*

Car manufacturing plant, San Luis Potosí:

EQUIPPED FOR THE FUTURE

In its San Luis Potosí plant, a German car and motorbike manufacturer has installed a high-quality cabling infrastructure from Datwyler.

The car industry is accelerating – and also promoting growth and economic development in Mexico. In 2017, its share of the gross domestic product of the country already amounted to 2.9 %. Mexico is the seventh-largest car producer in the world and the largest in Latin America. That means more than one fourth of every 100 vehicles built around the globe originates from Mexican plants. In total, nearly two million people work in this industry so important for the country.

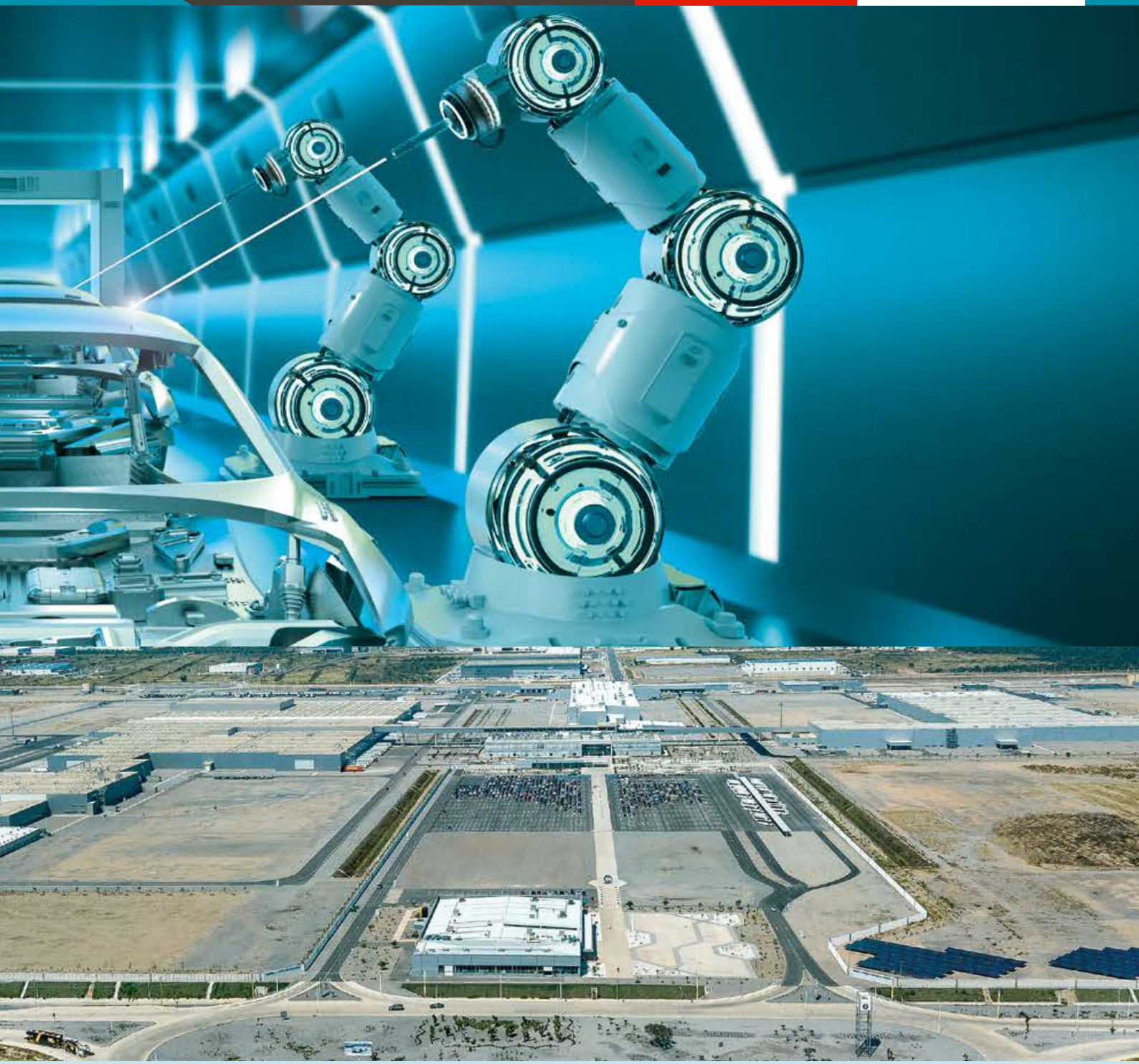
Mexico also plays a crucial role in the strategy of many car companies operating worldwide.

Solutions specific to the customer's requirement

As for many other worldwide companies, Datwyler delivered the structured cabling system for the San Luis Potosí site of the BMW Group. The Datwyler specialists were involved in the project at an early stage, so sometimes specific product solutions tailored to the requirements of the BMW Group were developed. The combined experience of both partners, the vehicle manufacturer and the IT infrastructure solution provider, contributed to the cabling project meeting all specific requirements with regard to cost and capacity.

The system solution which operates in the new plant today consists among other things of 950 kilometres of Category 7 S/FTP data cables and approximately 20,000 shielded RJ45 modules. It offers the user outstanding advantages and improvements as regards electromagnetic disturbance such as NEXT (Near-end Crosstalk) and AXT (Alien Crosstalk) as well as reserve capacity of the power supply to terminals over the data network (Power over Ethernet). This high quality and the security of being able to use the installed system on a long-term basis, also in respect of future transmission standards, was one of the central requirements of the BMW Group.

The backbone cabling and campus cabling consists of 260 kilometres of fibre optic universal and outdoor cables, which are connected to 520 panels specially designed for the BMW Group. For safety reasons only cable products with flame-retardant, low-smoke and halogen-free coatings, which in the event of fire contribute to the protection of people and property in equal measure, were used throughout the plant.



The San Luis Potosí site of the BMW Group

Cost savings through prefabrication

Regarding the installation in the BMW Group plant, it was beneficial that Datwyler could provide around 300 prefabricated copper and fibre optic trunk cables. These cables enabled the installers to work with multi-cables, which were preassembled exactly according to the customer's standards, cut to length – often custom-made in stages – and fitted with the necessary connectors under laboratory conditions. The use of such cables not only resulted in excellent attenuation values but also led to faster installation without special equipment, and thus to cost savings.

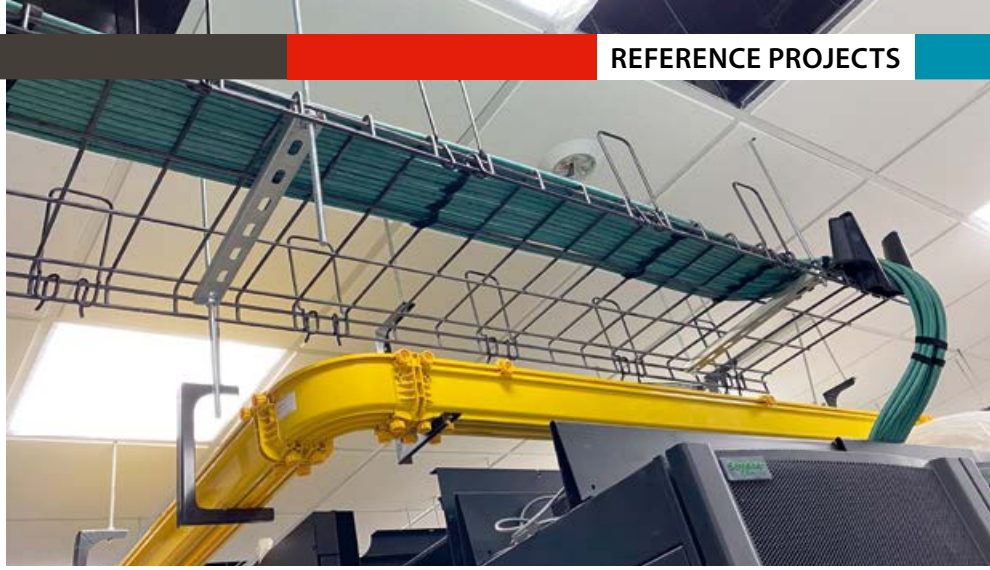
With their good farsighted organisation Datwyler's Mexican distributor, Marathon Eléctrica de Puebla, contributed to the success of the project just as much as the fully engaged qualified system technicians on site. They ensured a smooth process, on-time acceptance testing and commissioning as well as – perhaps the most important aspect for the BMW Group – high quality installation in conformance with standards meeting the requirements. *(enl/toh)*

Anfas Medical Care Hospital, Riyadh:

Cutting-edge technology FOR PATIENT WELFARE

In order to maximise the functionality of medical technology, the AMC Hospital in Riyadh opted for high-performance IT infrastructure solutions from Datwyler.

The Anfas Medical Care Hospital in Riyadh specialises in lung diseases.



Fibre optic connection to the racks in the data centre

The Anfas Medical Care Hospital (AMC Hospital) is a specialist hospital in Riyadh, the Saudi Arabian capital. It primarily treats patients with chronic lung diseases which require mechanical ventilation.

When the building was planned three years ago those responsible laid great emphasis on installing the latest and most reliable IT infrastructure in order to support the systems of integrated healthcare. Because the cabling forms the foundation for this, AMC Hospital were looking for a very high-performance and high-quality system solution which would help maximise the functionality of the medical equipment.

Support in planning and selection

The technical team of Datwyler Middle East, its distributor in Saudi Arabia, Bright Wires Co. Ltd., and the solution partner, Counterpoint for Telecom and IT (CPTIT), supported those in charge at AMC Hospital in designing the communication network and in selecting the most suitable solution for the passive IT infrastructure.

An end-to-end fibre optic solution from Datwyler was installed in the hospital, comprising around 1400 connection points, including direct connections for the medical equipment. In addition to this there were 2100 links using copper technology.

For the data centre Datwyler also supplied a pre-fabricated data centre solution including, among other things, pre-terminated rapid-installation copper and fibre optic systems as well as the requisite fibre cable runs. *(soa)*

Preassembled cables and components simplified installation.

Shanghai YTO Dragon Group, Shanghai:

THE BASIS FOR INNOVATION

In YTO's new data centre an IT infrastructure solution from Datwyler forms the foundation for many of the group's innovative projects.

YTO Express transport vehicle

In 2019 Datwyler was awarded the contract to cable the new data centre of the Shanghai YTO Dragon Group. The "Phase I Project" was implemented at YTO head office in the Shanghai district of Qingpu. The client was YTO Technology, a group subsidiary.

The group comprises several innovative firms. YTO Express, for example, with over 130 transit centres and around 70,000 customer service facilities throughout China, is one of the top 3 express delivery service providers in the country. Other companies in the group are involved in air freight, new technologies, new retail, coordinated development and other sectors.

Tier 3 data centre

YTO is active in driving forward scientific and technological innovation – for the benefit of its own companies and that of customers. This is the reason why at its head office in Qingpu YTO Technology has launched a data centre project to be used for developing intelligent solutions for the group and the entire logistics sector. Over 800 skilled personnel are involved in research and de-

Rack in the YTO data centre

The new data centre will be used for developing intelligent solutions for the entire logistics sector.

velopment, operation and maintenance. YTO is investing more than 50 million renminbi (6.3 million euros) annually in the new Tier 3 data centre.

For the data centre Datwyler is supplying a preassembled OM4 fibre optic system with MTP connection technology which supports 10G, 40G, 100G and higher transmission rates, as well as a copper cabling system comprising 8000 shielded links suitable for 10G. Datwyler's data centre solutions are not only cutting-edge, but are also easy to use, reliable, flexible and cost-effective.

The use of different colours means that the subsystem and installed links are easily distinguishable.

Foundation for numerous projects

Datwyler's solutions meet all YTO Technology's technical requirements: in the data centre they serve as the basic infrastructure for future optimisation projects, for perfecting the core system, and for an automatic monitoring platform.

In addition they enable all-round visualisable and controllable company operations and the comprehensive use of Internet applications, IoT, Big Data and other progressive technologies.

The project has added to Datwyler's experience in China. This helps towards being able to supply customers in future with advanced, reliable, robust and flexible IT infrastructure solutions which meet their requirements and incorporate technological innovation. *(gas, trj)*

CITIC Tower, Beijing:

FLEXIBLY SUSPENDED

An elevator cable suspension system developed by Datwyler for the CITIC Tower solves many of the problems posed by high-rise elevator installations.

The CITIC Tower in the Central Business District, the centre of the financial world, media and corporate services in Beijing, was opened in 2018. The skyscraper, also known as "China Zun", has 108 floors and at 528 metres is the highest building in the Chinese capital.

There are 27 elevators in the building, and the cabins travel up to the top floor – at a nominal speed of ten metres per second, which is equivalent to 36 kilometres per hour. Datwyler supplied specially developed high-rise elevator cables for these elevator installations.

Maintain distance

Space in the shaft is very restricted in the CITIC Tower. Due to the shaft dimensions, moreover, it is not easy to balance the equilibrium of the cabin to optimum effect.

Datwyler therefore developed new suspension for this specific project. The mechanism makes possible the flexible adjustment of the ideal position of the elevator cable below the cabin in order to compensate for lateral misalignment and to maintain the necessary distance between the cabin and the walls.

Datwyler's new suspension also opens the possibility of easily correcting any incorrect alignments during assembly, thus ensuring the safe movement of the travelling cable in the shaft and preventing collisions with movable parts of the elevator.

This solution was developed on the basis of several construction site visits and the knowledge gained thereby in close collaboration with the client. Datwyler was responsible for the project planning and implementation.

Passed the test

Following the first prototypes, which were manufactured in Datwyler's plants in China and Europe, the trial installations and test runs of the new suspension system have now been completed. Successfully! The mechanism is working as expected.

The next steps will be to develop further variants and industrialise the solution. *(erö)*

Gulf International Bank Saudi Arabia:

HIGH-SPEED DATA NETWORK

for Al Khobar offices

Datwyler has delivered a high-speed data network for the new operations centre of Gulf International Bank Saudi Arabia.

GIB Saudi Arabia's new building in Al Khobar

Gulf International Bank (GIB) in Saudi Arabia is a subsidiary of the bank of the same name headquartered in the Kingdom of Bahrain, which was founded in 1976 and maintains other branches in Great Britain, the USA and the United Arab Emirates. GIB is licensed by the Central Bank of Bahrain as a conventional wholesale and retail bank and is owned by the governments of the six countries in the Gulf Cooperation Council (GCC), of which the Kingdom of Saudi Arabia has the majority shareholding.

GIB Saudi Arabia is the first financial institute domiciled abroad to open a local commercial bank in the Kingdom and offers its customers innovative financial solutions. Its headquarters are in the Eastern Province and it has offices in Riyadh, Jeddah and Dhahran.

Cost-effective solution

In Al Khobar GIB Saudi Arabia recently constructed an operations centre housing business premises and a data centre. Datwyler was chosen for the cabling of the new building because the company provides reliable high-speed data networks at the same time as cost-effective solutions.

The project included 2900 Category 6_A links as well as OM3 fibre optic cables and IT racks. All the material was delivered and installed by mid 2019.

The installation of this IT infrastructure solution marks the beginning of a good partnership between GIB and Datwyler. Johannes Müller, the CEO of Datwyler Cabling Solutions, recently visited GIB Saudi Arabia and thanked them for their confidence in Datwyler. At the same time he took advantage of the occasion to discuss the data centre in the building with those in charge, and to extend Datwyler's offer of acting as a strategic partner for all GIB branches in Saudi Arabia in future. *(soa)*

On-site visit (from right to left): Asem Shadid, Managing Director of Datwyler Middle East, Johannes Müller, CEO of Datwyler Cabling Solutions, Murtadha Taher, Projects Manager at Gulf International Bank, Soubhi Al-Aliwi, Sales Manager, and Ihab Gazawi, Head of Data Centre Experts, both Datwyler Middle East.

Egypt:

STRONG DISTRIBUTION PARTNER

Amgad Habib, Datwyler Middle East Sales Manager, Ahmed Mousa, SKY CEO, Asem Shadid, Managing Director of Datwyler Middle East, Sherif El-Daly, Chairman, and Hady Galal, SKY Supplier Manager (from l. to r.)

In December 2019 Datwyler gained SKY Services as a distributor for micro and mini data centres as well as for data network solutions and fibre optic solutions in Egypt.

SKY Services, a SKY Group company, is one of the leading suppliers of IT infrastructure solutions in Egypt and the preferred partner of national ICT companies such as Telecom Egypt, Vodafone, Orange and Etisalat.

In the Cairo district of Mokattam SKY Services maintains a service centre for splicing as well as for testing and maintaining their customers' fibre optic networks.

In view of the fast-growing Egyptian market and the new technologies which are relevant to every industry, SKY is aiming to expand its solution business in the data centre, data network and fibre optic network sectors.

Conversely, the company's skilled, dedicated and customer-orientated staff and its strong customer base mean that SKY Services makes a very promising distribution partner for Datwyler Middle East. *(amh)*

Those attending the Cashless ICT conference came from the banking sector.

Egypt:

CONFERENCES in Cairo

At the end of 2019 Datwyler took part as a platinum sponsor in two well-attended IT events in Egypt.

The "Cairo Consultants Forum", held in the Hilton Heliopolis hotel at the end of October, was aimed at leading IT consultants. The financial services sector in the region was the target audience of "Cashless ICT", a conference held in the Dusit Thani Lakeview Hotel in early November.

Shaheer Shaaban, Head of Technical & Project Management, at the "Cashless ICT" conference

Both conferences were well attended. The organiser, IT Events, had attracted high-profile speakers who shared their knowledge of the latest technologies and trends in IT infrastructures, data centres and IoT with the visiting specialists. One of the speakers was Shaheer Shaaban, Head of Technical & Project Management at Datwyler Middle East. He discussed current IT infrastructure standards, market trends, and micro and mini data centres.

For Datwyler the events were a wonderful opportunity to raise awareness of the company name, demonstrate the team's capabilities, and establish valuable contacts with representatives of the participating companies. *(amh)*

Shaheer Shaaban, Head of Technical & Project Management (2nd from l.) with other speakers at the "Cairo Consultants Forum"

China:

OUTSTANDING PERFORMANCE

"Best Supplier of the Year", awarded by Schindler China

During the past year Datwyler again received numerous awards in China on the part of both the cabling and lift sectors.

For the first time in twenty years Schindler in China named a cable supplier – Datwyler – as the "Best Supplier of 2019". This prestigious award is the high point in a series of honourable mentions by the well-known company. In 2016 Datwyler won recognition from Schindler for "Continuous Improvement", and in 2017 for "Best Support".

"Top 10 Brand for Outstanding Cabling Products" from Intelligent Building Magazine

The "Oscar" from the Qianjia Brand Lab

Last year Datwyler also again received one of the sought-after "China Intelligent Building Brand" awards from the Qianjia Brand Lab, which is considered to be the "Oscar" of the cabling industry, and took fourth place in the "Structured Cabling System" category.

For another consecutive year Datwyler won prizes as "China's Preferred Brand for Integrated Cabling in Airport Construction", awarded by Airport Construction Magazine and the China Airport Construction Network, as "Top 10 Brand for Outstanding Cabling Products" from Intelligent Building Magazine and the journal Electrical Engineering in Intelligent Buildings, as well as "Top 10 Brand" for cabling services, awarded by the portal www.rdyww.com. *(chc)*

Singapore:

LUNCH & LEARN WORKSHOP

In Singapore Datwyler has launched a strategic training initiative for system integrators.

A "hands on" Datwyler Micro Data Centre Solution

Since 2019 Datwyler has been providing regular updates and training courses in Singapore, presenting the company's most recent new developments in the data centre environment and in value-added services to system integrators and other Solution Partners. These workshops are part of the efforts to intensify collaboration with all the partners.

A good example is the "Lunch & Learn Workshop" for Lucky Joint Construction Pte Ltd, which was held on Datwyler's premises in mid-January 2020. Lucky Joint Construction is one of Singapore's largest providers of management and installation services relating to communication networks.

First on the agenda were Datwyler's solutions for turnkey data centres, micro and mini data centres, fibre optic networks and intelligent buildings. Informative presentations on these topics were given by the Datwyler Experts. Conversely, in the subsequent discussion the Datwyler team gained a lot of valuable knowledge about the market environment and the requirements and expectations of customers from the workshop participants.

Innovations "live"

On a tour of the Datwyler premises the participants came across a "hands on" micro data centre solution. The workshop concluded with a simple lunch.

Lucky Joint Construction showed a lively interest in working on future projects with the

Informative presentation on Datwyler's data centre solutions.

"The introduction of the micro and mini data centres is an innovative step which coincides perfectly with the surge of 5G base station installations. We can suggest MDCs to telecommunication companies as an end-to-end solution for their base station sites."

Calvin Yeow, Managing Director, Lucky Joint Construction

Group photo taken at the "Lunch & Learn Workshop" for Lucky Joint Construction

new Datwyler solutions. There was also positive feedback on Datwyler's value-added services, as these open up possibilities for future business.

The most important thing which the Datwyler partners took from the workshop is the company's vision of enabling customers to run their IT infrastructures seamlessly and scale their business with ease, thanks to futureproof intelligent IT infrastructures. *(jos)*

Switzerland:

SWISSCOM IOT DAY 2020

Datwyler presented the results of a test installation at the event in Zurich.

As part of a proof of concept study Datwyler and Swisscom recently networked a production facility in the Datwyler plant in Altdorf, and "tracked" cable drums (see page 32). Datwyler presented the results at the Hallenstadion in Zurich on "Swisscom IoT Day 2020" in January.

The example of Altdorf shows how IoT solutions can be utilised to improve business processes, change business models and monetise data. One of the central messages to the participants in Zurich was that only the context makes the recorded data valuable. The match with reference values, the monitoring of changes occurring over time, comparisons of like with like and data combination make it possible to improve processes and adapt business models to customer requirements.

Costs optimised

The consumption of sheath materials in cable production in the Datwyler plant can be tracked in real time using the plant's onboard data, a simple gateway and intelligent data processing. This allows plant operators to observe tolerances more accurately, thereby maintaining Datwyler's high quality standards on the one hand, and optimising costs on the other. The large amounts of real-time data are processed and stored in the "Edge", in a Micro Data Centre.

Delivery times reduced

Tracking the cable drums results in logistics paths being optimised and hence delivery times being reduced. In future it will also allow customers to establish exactly where the drums are. The small amounts of data and low latency time requirements called for a pure Cloud solution to this application.

The use of cutting-edge IoT technologies and a Micro Data Centre at Datwyler not only boosts productivity, but also allows those interested to learn more about these technologies. Datwyler will gladly give customers and partners the opportunity of having these forward-looking concepts explained to them on site. *(lar)*

Presentation by Laurent Roux, Datwyler Head of Operations, on "Swisscom IoT Day"

Egypt, Jordan:

THREE NEW DATA CENTRE PARTNERS

In the Middle East Datwyler recently launched their program for Solution Partners in the data centre segment.

The aim of the "Data Centre Partnership Program" is to deliver added value to loyal partners in the region, helping them to expand their business and making it possible for them to offer additional services to their customers.

As part of this initiative Datwyler recently signed an agreement with the Pro TECHnology Company in Jordan as well as with two Egyptian firms, United Egypt and Intercom Enterprises. The new system integration partners are customer-orientated companies which are investing heavily in strategic activities and are championing Datwyler's products, solutions and services in the region with great enthusiasm.

The PRO TECHnology Company, established in 2004 and with a head office in Amman, is a consultancy and supplier focussing on IT solutions. With its innovative solutions the company administers and protects the business data, systems and IT environments of its customers. Its core business comprises solutions for data centres, for high availability and data security, for IT management and monitoring, and for enterprise security and virtualisation.

United Egypt is a company belonging to United Group Egypt, a global distributor of electrical products and test equipment. The United Group maintains and operates distribution centres in eleven major Egyptian cities as well as in Libya and the Sudan.

Intercom Enterprises, one of the leading system integrators on the Egyptian market, has been creating added value for its customers since 1992. Its business covers virtually every aspect of information technology, including infrastructure, networks, security, intelligent buildings and industry solutions.

Interested trading partners in the region can contact the Datwyler team in Dubai at any time to obtain information on the program. *(shs)*

UNITED EGYPT
CONSULTATION & SERVICES

Intercom
Integrating People, Business, and Technology

PRO TECHnology
شركة إسناد لتكنولوجيا المعلومات

Abbas Mukadam, General Manager, and Saji Thomas, CFO of Strategy International Trading, Shaheer Shaaban, Head of Technical & Project Management, Ihab Gazawi, Head of Data Centre Experts, and Suresh Kumar, Sales Manager (all three from Datwyler), Rajesh Mohan, Business Development Manager, and Akash Ravi Kumar, Sales and Operations Executive of Strategy International Trading (from l. to r.)

Qatar:

ADDED VALUE FOR END CUSTOMERS

Strategy International Trading is Datwyler's new distributor in Qatar.

At the beginning of 2020 Strategy International Trading WLL took over the distribution of Datwyler solutions in Qatar. The agreement covers most of the company's portfolio, from structured cabling through preventative fire protection to elevator cabling systems.

Datwyler greatly welcomes the new partnership, as Strategy International Trading is a customer-orientated and extremely committed distributor from whom the IT infrastructure solution provider holds out the promise of rapid market penetration.

Strategy International Trading was established in 2004 and quickly evolved into one of the leading distributors of high-performance low voltage (ELV) and IT infrastructure products in the Middle East, Africa and India.

Strategy not only trades with leading and highly sought-after world markets, its dedicated workforce also carries out product training and deals with technical support and technical compliance. This creates definite added value for Datwyler's Qatari end customers. *(suk)*

Cheerful faces among the core team of the project (from l. to r.): Adrian Bolliger, Managing Director Europe, Datwyler, Beat Schmid, St. Gallen Smart Infrastructure Branch Manager, Peter Nebiker, Zurich Smart Infrastructure Head Area, both Siemens Switzerland Ltd., Antonia Cornaro, Business Development Manager, Amberg Engineering, Klaus Wachter, Managing Director, SCAUT, and Adrian Burri, Head of Services Europe, Datwyler.

Switzerland:

SIEMENS joins industrial consortium

The new partner for the "Edge Computing - Underground!" project is contributing additional expertise for underground data centres.

In February 2020 the Smart Infrastructure unit at Siemens Switzerland Ltd. joined the industrial consortium which is driving forward the continuous development of an underground data centre. The "Edge Computing - Underground!" project thus takes a further step towards overcoming the spatial problems of future "Smart Cities" as well as fulfilling their sustainability requirements.

In autumn 2019 the prototype of a modularly designed data centre, developed for underground installation, was presented in the Hagerbach Test Gallery. The project, led by SCAUT (Swiss Center of Applied Underground Technologies) together with the industrial partners Datwyler Cabling Solutions and Amberg Engineering, aims to use underground space for edge data centres in order to be close and energy efficient to the end-user and to save the limited and expensive space on the surface.

Sustainable energy systems

The Smart Infrastructure unit of Siemens Switzerland Ltd. joined the consortium as the third industrial partner. Smart Infrastructure focuses on the intelligent connection of energy systems, buildings and industries to improve people's lifestyle and working conditions in infrastructures such as buildings. The company already has a great deal of expertise in the operation of sustainable energy systems. Since these are based on closed-loop technologies, they have a low carbon footprint. In the case of data centres, this applies particularly to energy consumption, energy storage and reuse. *(adb)*

For further information:
www.edge-computing-underground.com

The opening of the edge computing prototype took place last September in the Hagerbach Test Gallery.

Jordan, Qatar, Kuwait, UAE:

MORE HANDS ON DECK

Datwyler Middle East has added two new staff members to its team.

Ahmed Abdelaleem has recently been supporting Datwyler customers in the region as Technical Manager, and Hamman Abunaser is looking after Jordan, Qatar and Kuwait as Sales Manager.

Both have worked in the Gulf region for many years and have an in-depth knowledge of the information and communication technology (ICT) sector.

Ahmed Abdelaleem is an ICT and low voltage specialist with over 12 years of technical experience and outstanding expertise in IT infrastructure solutions. He is certified by BICSI as an RCDD, DCDC and OSP designer and is proficient in both technical and project management. Among other things he was involved in strategic and megaprojects for major contractors and consultancy firms as well as for reputable ISPs.

Ahmed Abdelaleem, Technical Manager at Datwyler Middle East in Dubai

Hammam Abunaser has been a sales expert for 15 years and has good contacts in Jordan, Qatar and Kuwait. He possesses excellent technical expertise in data centre solutions, including security, cloud connectivity and virtualisation. *(kaa)*

Hammam Abunaser, Sales Manager for Jordan, Qatar, Kuwait

Ihab Gazawi, Head of Data Centre Experts, at the "BICSI Technical Seminar" in Bahrain.

The "BICSI Technical Seminar" in Bahrain

Bahrain, Qatar:

TALKS GIVEN AT BICSI

In the Middle East countries, as throughout the world, Datwyler also uses conferences and seminars to spread the word about the company's technical innovations and further expand its network. The Datwyler Middle East team recently took part in two technical seminars organised by Building Industry Consulting Service International (BICSI).

The first seminar was held on 27th January on the premises of Mannai Corporation in Qatar, the second on 20th February in The Westin City Centre hotel in Bahrain.

The events were attended by numerous representatives of end customers and system integrators. All the participants received Continuing Education Credits (CECs) from BISCI.

Two experts from Datwyler were present at the events. Shaheer Shaaban, Head of Technical & Project Management, and Ihab Gazawi, Head of Data Centre Experts, spoke about current standards for IT infrastructures and about trends in micro and mini data centres.

Sales Manager Suresh Kumar also took the opportunity of establishing contact with those present and discussing Datwyler's data centre portfolio with them. *(ass)*

Shaheer Shaaban, Head of Technical & Project Management, spoke at the "BICSI Technical Seminar" in Qatar.

Datwyler Study:

HOW DIGITAL ARE SMALL AND MEDIUM-SIZED BUSINESSES?

Digitisation cannot succeed without a solid IT infrastructure: A study by Datwyler investigates the state of digitisation in the DACH region and China.

The current digitisation debate frequently revolves around modern future applications such as artificial intelligence, the Internet of Things, 5G and Smart Home. But how do matters stand – now and in the future – with the technological foundation, the IT infrastructure, with which the data for these applications can be processed and transmitted? These questions are answered by the IT Infrastructure Study*, a cross-industry survey of managers in small and medium-sized businesses in the DACH and China regions, carried out by Techconsult market researchers on behalf of Datwyler Cabling Solutions between December 2019 and January 2020.

A core message, with which nearly all the respondents agreed, was summarised by Johannes Müller, Chief Executive Officer (CEO) of Datwyler Cabling Solutions: "Successful digitisation only works with a sustainable IT infrastructure. In DACH around 83 percent of those surveyed thought the IT infrastructure was crucial or important for the process of digital change, in China this was as high as 98 percent."

Data centres and cloud structures form infrastructure basis

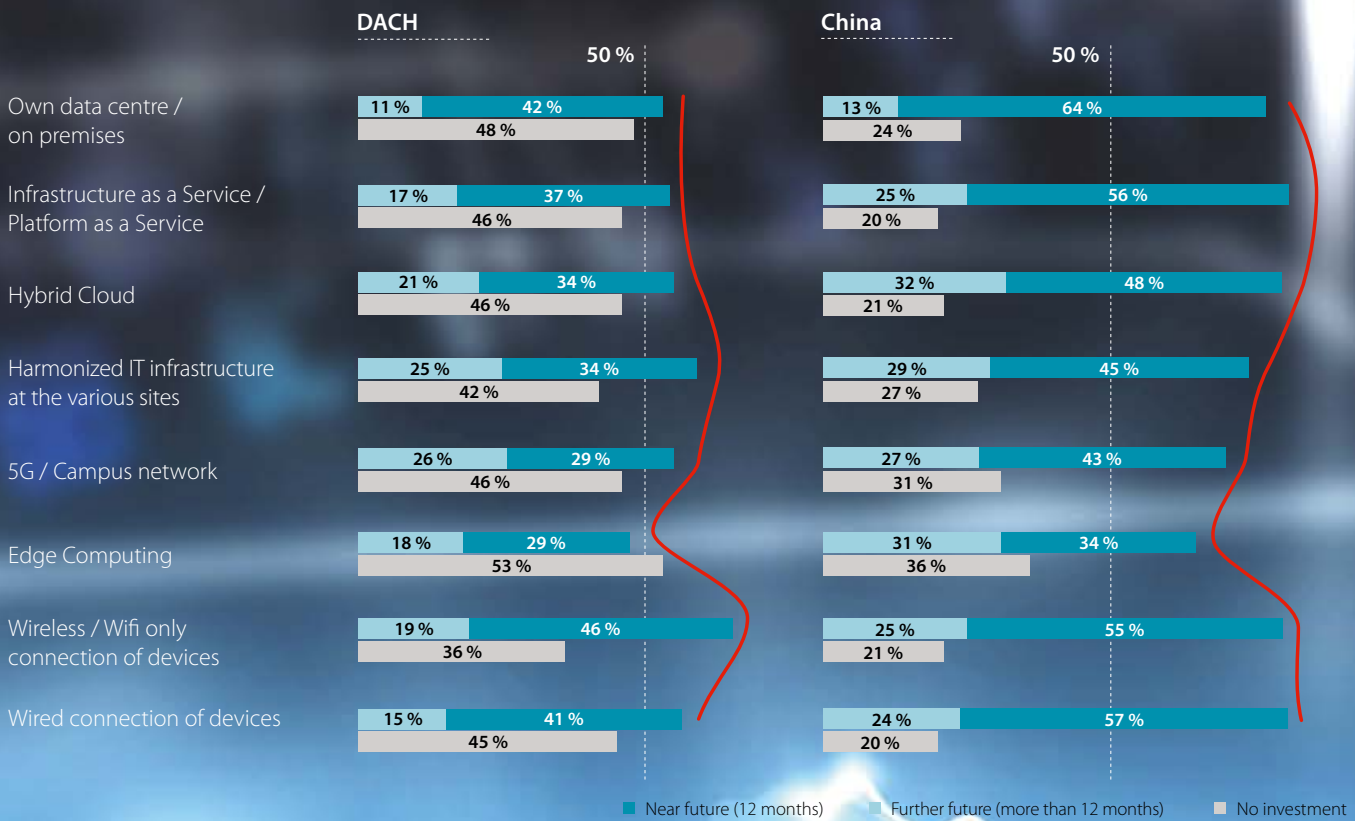
The Datwyler study initially analysed the current status of small and medium-sized business infrastructures. This showed that at least in DACH the foundation of a sound infrastructure for digitisation is still the classic data centre. This is the IT infrastructure most frequently installed.

Cloud models tend to be found in larger medium-sized companies, but there they also have multiple uses. The Chinese make significantly greater use of cloud services like Infrastructure as a Service (IaaS) or Platform as a Service (PaaS).

Keen willingness to invest

In DACH 81 percent of companies plan to invest in their IT infrastructure in the next 12 months. In the German-speaking countries altogether 54 percent of the businesses surveyed want to invest in the cloud, just under 53 percent of respondents want to invest in data centres. This would indicate a slight trend towards cloud computing.

Investment in digitisation at a high level

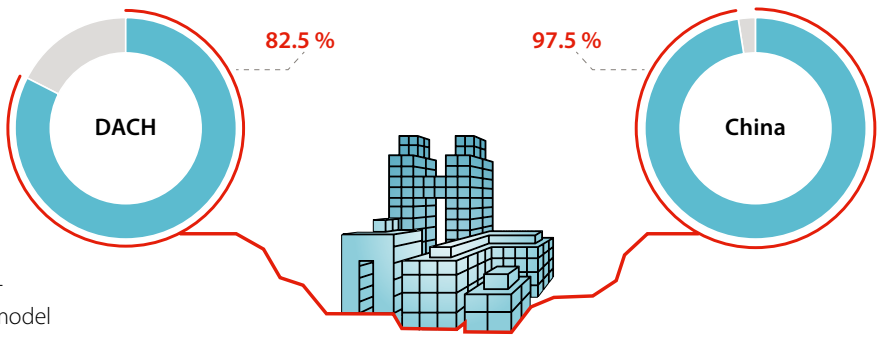


In China the number of businesses wanting to modernise their IT infrastructure is as high as 99 percent. 64 percent are investing in data centres over the next 12 months, followed by IaaS (56 percent) and hybrid cloud models (48 percent). The numbers suggest the link between cloud concepts and data processing in in-house data centres.

This is what Xubing Xia, Managing Director of Datwyler Cabling Solutions in China, has to say on the subject: "In fact as a rule our customers want their in-house data centres to combine seamlessly with flexible cloud services."

Digitisation radically alters business models in larger companies

Over half the managers in DACH (55 percent) think that a change in business model is necessary: "This is an unexpected result, as DACH countries tend to favour sustainability rather than adaptability and enthusiastic innovation. If in fact half of all companies introduce a new digital concept, the result would resemble a landslide," comments CEO Johannes Müller. In the DACH region most companies want to outsource cloud and infrastructure services to external suppliers (49 percent) or adopt a platform business model (47 percent).



Major significance of the IT infrastructure for successful digitisation

>>

How digital are small and medium-sized businesses?

In China the strategic change in business models accompanying digitisation is experienced in a more proactive way. There 80 percent of companies see a change as necessary – compared with 55 percent in Germany, Austria and Switzerland. Particularly for the Chinese companies with over 2000 employees this strategic shift is imperative (between 85 and 87 percent agreement).

64 percent of the Chinese companies want to provide their products and services via a platform, 63 percent purchase cloud services from external providers (cloud and service orchestration).

5G planning in China significantly more marked

5G applications are used to varying degrees: 5G can already be seen in DACH (10 percent). Applications such as campus networks for Smart Factories are generally still in the planning stage (33 percent).

15 percent of companies in China already currently work with campus networks. 52 percent plan to use 5G applications in the coming years.

Edge computing gaining ground

Edge computing still has great potential: in the regions investigated it currently plays a relatively small role in IT infrastructure (22 percent China, 20 percent DACH). This technology decentrally processes large amounts of data without latency in micro data centres outside the cloud. Edge computing is ideal for Industry 4.0 scenarios, M2M communication and rural locations with poor connectivity to the cloud.

Yet the technology is clearly on the agenda of many respondents. In DACH 47 percent and in China 65 percent gave data processing "at the edge of the network" as an area of investment in the years to come.

Top 2: security and mobile

In response to the question as to the areas in which companies are currently implementing digitisation projects, 42 percent of respondents in DACH stated that they are implementing security guidelines (43 percent in China) or setting up mobile solutions (42 percent in China).

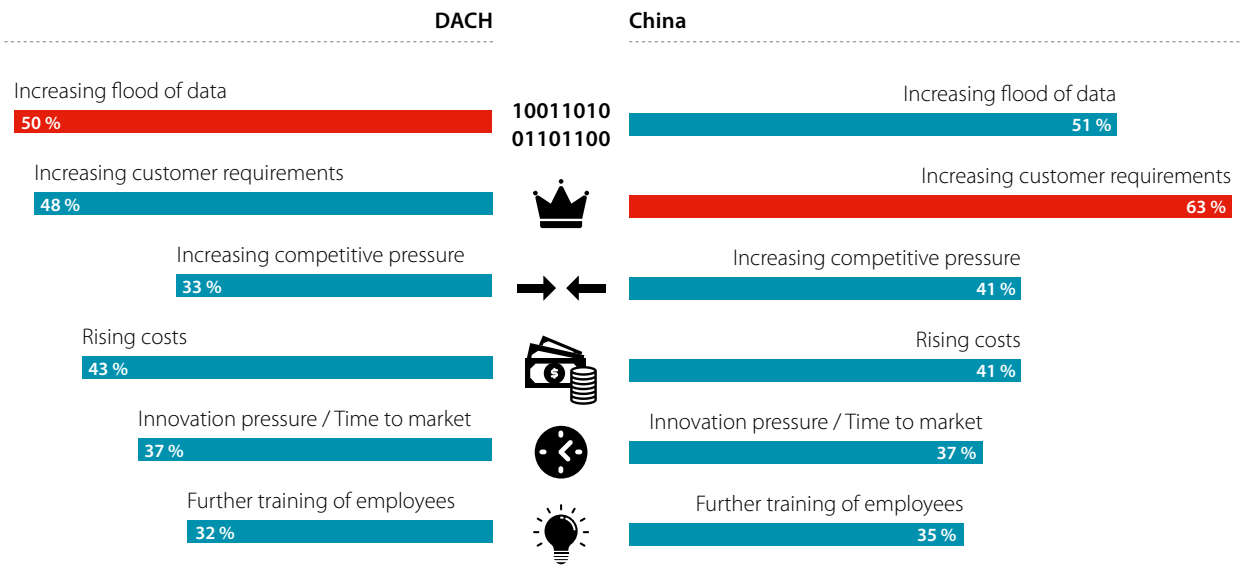
NEW CATALOGUE AVAILABLE IN JUNE

New short catalogue gives overview of Datwyler data network solutions.

Datwyler's "Data Solutions Product Guide" provides customers with a handy short catalogue. In addition to tried and tested items its 108 pages feature many new products and solutions for copper and fibre optic networks.

Furthermore, the short catalogue provides recommended links for copper data networks with transmission speeds of 1 Gbit/s, 10 Gbit/s and more – i.e. for all applications in office environments and data centres. Customers can choose between especially future-proof "high-end" and "premium" solutions as well as cables and components which are very popular with customers due to their cost-effectiveness or price-performance ratio. ■

The most important challenges in digitisation



In DACH during the course of 2020 smart products came first at 39 percent and artificial intelligence (AI) at 38 percent. In 2020 China is planning 46 percent each in the Internet of Things (IoT) and AI projects.

The top challenges

Respondents did not mention cost as the greatest challenge of digital change, as is usual in most other IT surveys. It was rather rising customer requirements (63 percent China, 48 percent DACH) and the increasing volume of data (51 percent China, 50 percent DACH) which are forcing companies to increase the pace of digital transformation.

The main challenges seen by the companies for a dependable, sustainable and scaleable infrastructure – the foundation of digitisation – are the following: quality of service, performance and availability. In DACH these points are rated as very important by 47 percent and as important by 41 percent. In China the skills shortage seems to be more marked than in DACH, for there filling posts is seen as the top challenge (44 percent very important, 48 percent important).

Johannes Müller summarises the main stumbling blocks to the success of digitisation projects as follows: "In many places the technologies are still not consistent with customer requirements, staff often lack the appropriate know-how, or there are security reservations." *(tad)* ■

*Methodology of the Datwyler Infrastructure Study

Between December 2019 and January 2020 the market research and consultancy company Techconsult was commissioned by Datwyler Cabling Solutions to survey 200 executives (managing directors, CIOs, IT managers, department heads) of small and medium-sized companies in both the DACH and China regions on the current and planned IT infrastructure base, their digitisation strategy (willingness to invest, digitisation projects pending, preferred new digital business models), and the opportunities and challenges of digitisation.

Data centres:

MICRO AND MINI DATA CENTRE SOLUTIONS

Anyone wanting to take advantage of the opportunities provided by digitisation needs intelligent IT infrastructures equipped to cope with this dynamic. Examples of these are Datwyler Micro and Mini Data Centres.

IoT, automation, 5G, robotics and artificial intelligence are enabling many new applications and business models. At the same time these result in huge amounts of data which need to be processed near sources and users because of efficiency and latency.

Datwyler has developed the Micro Data Centre (MDC) for applications like these. In a single rack they provide a preassembled IT infrastructure which, among other things, covers power distribution, UPS, a climate and security monitoring system, and an (optional) cooling and fire extinguishing system. In an enclosed or passively ventilated version an MDC is also suitable as a complete server rack solution for small firms.

For small data centres

Datwyler's Mini Data Centres are preassembled state-of-the-art plug-and-play IT infrastructure solutions. As well as the equipment rack with integrated power distribution, UPS and a monitoring system they comprise an in-row cooling system and up to seven additional racks for the user. They are suitable for small data centres and edge computing applications.

Every Micro and Mini Data Centre from Datwyler is a customised solution, tailored to meet the customer's specific needs and requirements. The Mini Data Centres provide various possible configurations for power supply and cooling redundancy, thus allowing cost-effective migration to future technologies.

The solutions can be operational within a few hours (MDC) or a few days. *(dir)*

Configuration tool:

BUILD YOUR OWN DATA CENTRE

Datwyler provides customers and partners in the Middle East region and Africa with a configurator for small and ultra-small data centres.

In February the Datwyler Middle East team officially introduced its new online configurator for Datwyler's Micro and Mini Data Centres. With this user-friendly tool customers and partners can plan and design an IT infrastructure solution for small or ultra-small data centres in a few minutes, including the racks, enclosure, UPS, power distribution, cooling, fire extinguishing system, fire alarm system, access control and environmental monitoring.

Based on the requirements stipulated by users, a few clicks of the tool generate shop drawings, technical specifications, data sheets, prices, RFQ documents and more. The relevant videos of the data centre solutions are also integrated in the configurator.

In addition the tool allows self-registration and can then track projects, prepare quotations, make technical suggestions for each design and send the relevant documents easily and quickly by email.

The configurator is available free of charge to customers and partners of Datwyler Middle East at www.datwylermdc.com *(shs)*

Fibre optic networks:

MORE FIBRES, LESS COST

With the new "C-Micro" product solution Datwyler provides network operators with an innovative cable which substantially increases the fibre density in duct systems.

The increasing density in access networks, city and wide area networks necessitates the installation of even more fibre optic cables in an already restricted space. There is therefore a demand for products which are as thin as possible and which can help reduce the costs incurred in civil engineering operations.

In the new "FO Outdoor wbKT C-Micro" cable Datwyler has now incorporated an OS2 single-mode fibre (G.652.D BLO) which has a diameter of only 200 micrometres (µm). The previous standard was 250 µm. By using this fibre Datwyler has reduced the cable diameter by around one third. For the user this means that more cable and fibres can be installed without the need to bury additional ducts.

The new metal-free fibre optic outdoor cable is currently available with 72 fibres. It has stranded loose tubes with dry interstices, so is simple to trim and very easy to assemble. It can also be easily blown into existing duct systems.

With all these advantages the "C-Micro" gives users the same performance features as Datwyler's tried and tested "Micro" and "S-Micro" cables, for example good tensile strength, good transverse compressive strength and impact resistance in accordance with IEC 60794-1-2. *(phb)*

Image above:
Thermal load test in the logistics distribution centre of a Swiss trading company using several 7kW load banks

Image left:
Thermoscan of a rack in a Datwyler customer's data centre

Services:

DATA CENTRE HEALTH CHECK

The Data Centre Health Check is a Datwyler service which provides customers with an initial basic inventory and assessment of the IT infrastructure and associated components in their data centre.

The test answers simple questions such as: Is the data centre being operated within the correct temperature range? Are there hotspots? But it also provides answers to much more complex problems: What would be the consequences if the IT infrastructure were to fail for an extended period? How sure can customers be that such a failure will not happen to them? Or: A migration step is imminent and the customer wants to know whether the existing infrastructure still meets the future requirements.

Based on a particular customer's IT and data centre strategy our certified specialists define the most economical availability class and compare the existing infrastructure with the relevant data centre standard – in Europe EN 50600.

Standardised test catalogue

Using a comprehensive test catalogue based on the industry standard, the Datwyler experts carry out a so-called gap analysis and give the infrastructure a manufacturer-neutral evaluation. A wide variety of measurements such as thermoscans, thermal load tests and performance measurements are able to pinpoint problem areas.

Tried and tested methods and processes also feed into the Data Centre Health Check so as to maintain reliable operation. Datwyler gives high priority to identifying the problems, evaluates general risks and gives recommendations as to how customers can remove these and improve their data centre environment. *(adb)*

You will find further information in this brochure:

Fibre optic technology:

FROM 3 TO 5

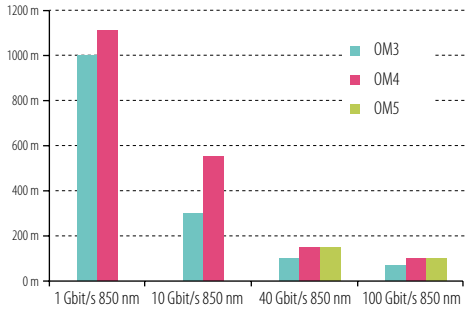
Since March Datwyler has been supplying products with OM5 multimode fibres.

To coincide with the discontinuation of the outdated OM1 and OM2 portfolio* Datwyler is expanding its range of fibre optic cables by introducing products with OM5 fibres, meaning the range of multimode fibres is moving from OM1 to OM4 on to OM3 to OM5.

Datwyler's OM5 multimode portfolio supports transmission systems with one or more wavelengths ranging from 850 to 950 nanometres. Among other things, the OM5 fibres are suitable for all Shortwave Wavelength Division Multiplexing (SWDM) applications.

OM5 products are backwards compatible with OM4 fibres and applications. You will find the OM5 fibre data sheet and other product data sheets on our website. *(phb)*

* Project-related orders and elevator cables will not be affected by this discontinuation.



Link lengths

Not only the fibre type and quality determinate the achievable link length. The achievable lengths significantly depend on the transceiver type and quality. For the connectors a maximum attenuation of only 1.0 dB is often permitted when using high bit-rate protocols.

Selection guide for optical fibres

The Datwyler product range consists of different types of optical fibre. The following overview lists some of the more important criteria which will help you select for the fibre types that meet your specific requirements.

		Single-mode fibres E9/125	Multimode fibres G50/125 bend optimized		
	Fibre type	**SMF E9/125 bend optimized (BL0)**	**MMF G50/125**	**MMF G50/125**	**MMF G50/125**
	Standard	**G.652.D G.657.A1**	**OM3**	**OM4**	**OM5**
Fibre properties	maximum attenuation dB/km 850 nm (installed)		2.7	2.5	2.4
	maximum attenuation dB/km 1300 nm/1310 nm (installed)	0.34	0.7	0.7	0.6
	maximum attenuation dB/km 1383 nm (installed)	0.34			
	maximum attenuation dB/km 1550 nm (installed)	0.21			
	maximum attenuation dB/km 1625 nm (installed)	0.23			
	maximum PMD ps/√km (installed)	0.10			
Transmission	LED 850/1300 nm (typically 100 Mbit/s)				
	VCSEL 850 nm (1 GbE-50 GbE)		●	●	●
	Laser 1280-1625 nm	●			
	CWDM / DWDM systems	●			
Application	Fiber-to-the-Desk tertiary cabling (typically 1 GbE)		●	●	●
	Campus / Backbone / Data centre (typically 10 GbE)	●	●	●	●
	WAN / National backbone	●			
	City / Access network	●			
	Fiber-to-the-Home	●			
Ethernet / Fibre channel protocols *	Link length in m				
	1000BASE-SX IEEE 802.3z		1000	1100	
	10GBASE-SR/SW IEEE 802.3ae		300	550	
	16GFC-SW		100	125	125
	32GFC-SW		70	100	100
	64GFC-SW		70	100	100
	40GBASE-SR4 + 100GBASE-SR10 IEEE 802.3ba		100	150	150
	100GBASE-SR4 IEEE 802.3bm + 100GBASE-SR2-BiDi		70	100	100
	128GFC-SW4		70	100	100
	200GBASE-SR4 IEEE 802.3cd + 400GBASE-SR16		70	100	100
	256GFC-SW4		70	100	100
	400GBASE-SR16 IEEE 802.3bs		70	100	100
	400GBASE-SR8 IEEE 802.3cm				100
	400GBASE-SR4.2 IEEE 802.3cm		70	100	150
	100GBASE-DR, 128GFC-PSM4, 200GBASE-DR4 + 400GBASE-DR4	500			
	40GBASE-FR, 50GBASE-FR, 128GFC-CWDM4, 200GBASE-FR4 + 400GBASE-FR8	2,000			
	40GBASE-LR4 + 200GBASE-LR4 + 400GBASE-LR8	10,000			
	100GBASE-ER4 IEEE802.3ba	40,000			
	40GBASE-ER4 IEEE802.3bm	40,000			

In the relevant cabling standards OM1 and OM2 fibres are only listed in the informative annex. Datwyler recommends to install cables with at least OM3 fibres in new networks.

Experiment with successes:

PROTOTYPE FOR DIGITAL PRODUCTION

Gateway on the production facility

In Altdorf Datwyler and Swisscom have developed a prototype to digitise Datwyler's production processes. It uses pioneering technologies such as IoT, 5G and Edge and Cloud Computing to collect data and transmit them both wirelessly and by wire.

For the feasibility study Datwyler and Swisscom cost-effectively networked a production facility in the Datwyler plant using simple methods to track cable drums. The data are pre-processed and filtered: business-critical and bandwidth-intensive information are processed locally – at the so-called Edge of the network – in a Datwyler Micro Data Centre. Non-critical or non-sensitive data are transferred to the Cloud and analysed there.

Intelligent data analysis

In January, on "Swisscom IoT Day 2020", the results of the feasibility study were presented posing the following questions: How can IoT be utilised to improve business processes, change business models and monetise data? The central message here was that only the context makes data valuable. In other words, the match with reference values, changes occurring over time, comparisons of like with like and data combination make it possible to improve processes and adapt business models to customer requirements.

Intelligent data correlation is already bearing fruit in the Datwyler plant in Altdorf. Instead of a costly system for measuring the amount of sheath materials used in cable production, consumption could be tracked in real time using the plant's onboard data, a simple gateway and intelligent data processing. This allows plant operators to observe tolerances more accurately, thus maintaining Datwyler's high quality standards on the one hand, and optimising costs on the other.

In the case of cable drum tracking it was possible to optimise logistics paths and re-

Braiding machine in Altdorf

Inspired by IoT, 5G, Edge and Cloud Computing, Datwyler and Swisscom show businesses the way to "Smart Factory" success.

Datwyler Micro Data Centre

duce delivery times. In future customers will also be able to "see" exactly where the drums are.

Plus points for edge computing

For the prototype Datwyler is collecting and processing real-time data and analysing these decentrally at the edge of the company network. Workshop operators and maintenance teams are able to carry out needs-based maintenance activities on the basis of the analytical data. This prevents production-critical machinery lying unnecessarily idle, and unscheduled downtime can be reduced. Local data storage and processing in the Micro Data Centre decrease network latency and the cost of network bandwidth.

At the same time fewer storage and security problems occur compared with the Cloud.

In the final analysis the edge processing of digital production data means more reliable, safer and more economical local connectivity, storage and processing performance.

Interested companies and Datwyler partners can see a live demonstration of the intelligent infrastructure solution based on a Micro Data Centre and learn how it can be used in their own industry. *(alm)*

Networked cable drums

Single-Pair Ethernet:

"BUILDING BRIDGES" IN THE INTELLIGENT BUILDING

SPE technology features in the standards. The relevant manufacturers are now working on finding optimal solutions for Industry 4.0, IoT and intelligent non-residential buildings.

Copper technology is prevalent in tertiary building cabling. The simple and robust installation provides a cost-efficient solution for both fast and slow communication tasks in non-residential buildings. With the introduction of Power over Ethernet (PoE) and the refinement of 4-pair PoE (just under 100 watts) moderate consumers, for example access points or cash register systems, can be supplied with power directly via the Ethernet.

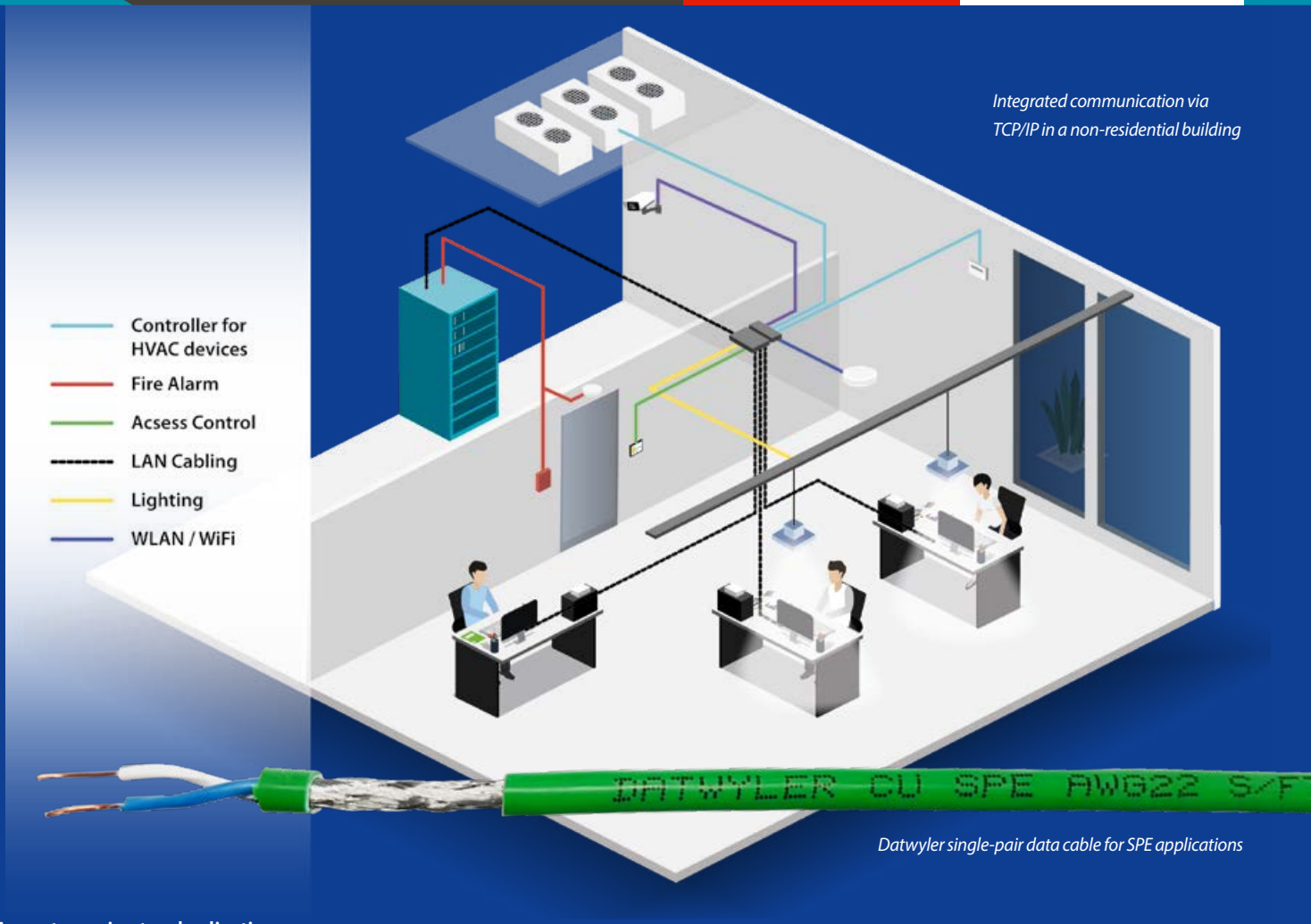
At the moment large sections of the internal condition monitoring and control in intelligent building complexes – offices, airports, tunnels etc. – are still being implemented by means of bus systems. Four-pair copper data cables are not the first choice here because of their range limitation and large cross-section. Standard ISO/IEC 11801-6 "Distributed Building Services" describes how gateways can be used to link standardised and proprietary control and alarm systems (bus systems) to universal building cabling. Thanks to these gateways higher-level monitoring and control systems can be implemented. On the other hand, such a system also has disadvantages in terms of complexity.

IoT as a driver of SPE

With Industry 4.0 and the Internet of Things it is clear that an unrestricted flow of information is essential for integral networked communication inside a building. Yet the structures beyond the above gateways remain invisible to the higher-level devices and their analysis and management programs. This fact limits the development capacity of the IoT idea and drives up the cost of integrating the field level into higher-level management. In addition to this, signal processing and transmission increase the latency times, something which is detrimental to time-critical applications. In fact bus systems such as KNX, LON, Profibus or EchoNet are also often only compatible within one family. This makes the overall system even more complex and prone to error.

Here Single-Pair Ethernet (SPE) provides the unique opportunity of combining the good characteristics of two worlds – TCP/IP and bus systems. For the first time SPE makes it possible to perform all the communication tasks arising within a building in a logical way, namely using only one protocol. SPE can cover distances of up to 1000 metres, consists of comparatively thin cables and small connectors, and is simpler and more cost-effective to install than four-pair solutions.

SPE connector in the industrial version (IEC 63171-5) and for the office environment (IEC 63171-2) with identical connector face. Source: Weidmüller



Integrated communication via TCP/IP in a non-residential building

Datwyler single-pair data cable for SPE applications

Acceptance in standardisation

Today Single-Pair Ethernet is already standardised by the IEEE. The specification family is IEEE 802.3 – as with the cabling architectures based on copper and fibre optics used to date.

The connector interfaces are also standardised. In the office environment commensurate with $M_1I_1C_1E_1$ provision is made for two connector faces: a two-pin one in an LC housing (IEC 63171-1) and the Phoenix Contact two-pin connector, which is available both in an $M_1I_1C_1E_1$ version (IEC 63171-2) as well as an $M_3I_3C_3E_3$ version (IEC 63171-5) – the latter for industrial applications.

Today SPE covers the following bandwidths and distances:

SPE protocol	Standard	Speed	Max. distance
IEEE 802.3ch	2.5GBase-T1	2.5 Gbit/s	15 m, shielded
IEEE 802.3ch	5GBase-T1	5 Gbit/s	15 m, shielded
IEEE 802.3ch	10GBase-T1	10 Gbit/s	15 m, shielded
IEEE 802.3bw	100Base-T1	100 Mbit/s	40 m, shielded
IEEE 802.3bp	1000Base-T1	1 Gbit/s	40 m, shielded
IEEE 802.3cg	10Base-T1	10 Mbit/s	1000 m, shielded

SPE also features in ISO/IEC 11801 Ed.3. The architecture, the performance characteristics for cables, connectors and the overall system (channel) are defined in all the relevant parts of the Standard. The SPE technology is seamlessly integrated into the existing architecture. SPE switches are used in addition to the switches for fibre optic cables and four-pair copper cables.

Power supply via SPE

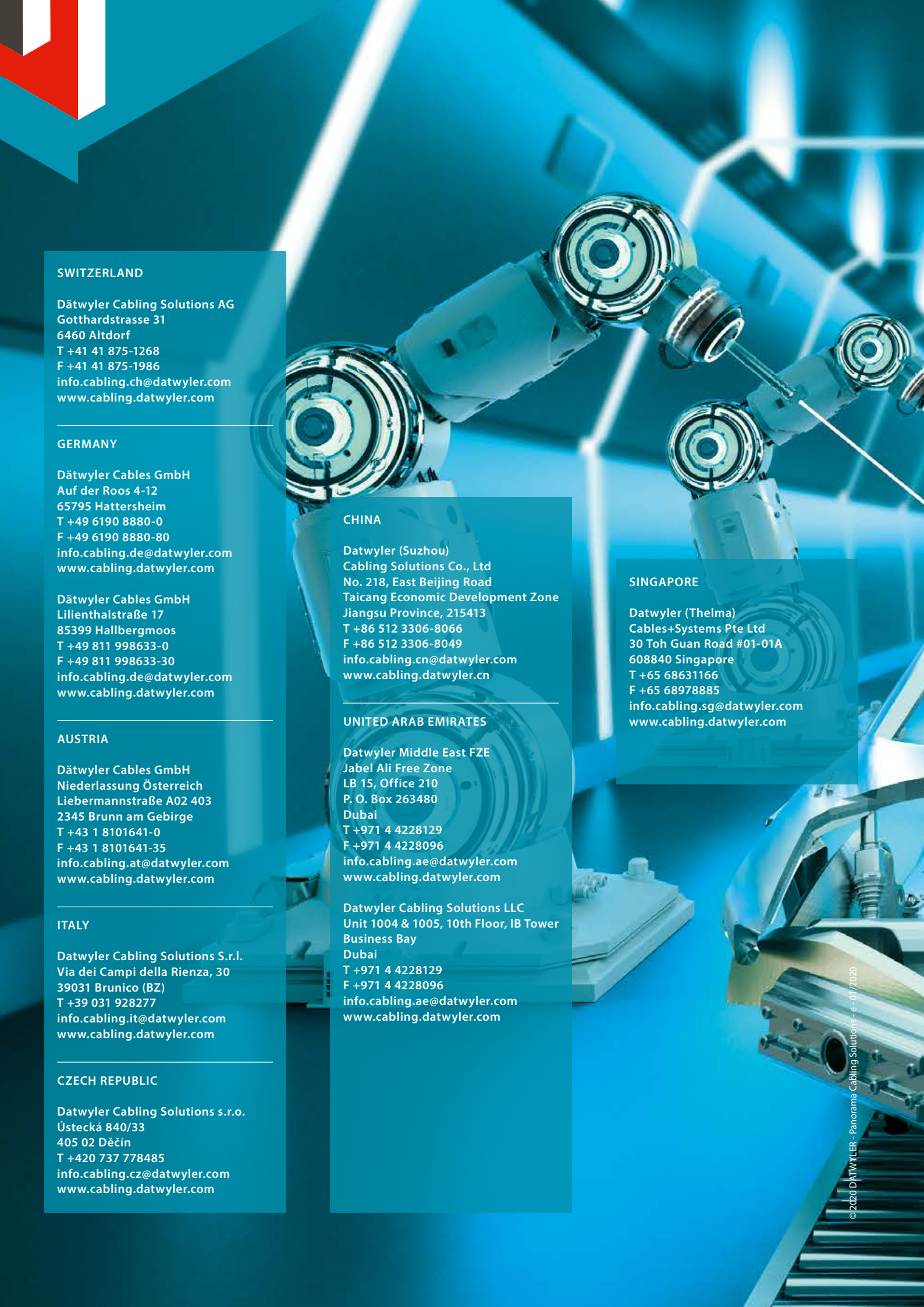
From the start Single-Pair Ethernet was designed to transmit electrical power as well as data. Power over Data Line (PoDL) is the Ethernet technology of choice for this. With PoDL decentralised and maintenance-intensive power supplies are no longer required, as PoDL is able to supply end devices with up to 60 watts via the two-wire line.

The IEC 63171-5 connector is the only standardised connector for SPE of a suitable size and shape for integration into standard M8 sensor connection technology.

Manufacturers work together

Datwyler is instrumental in helping to drive forward the technological development of SPE in non-residential buildings. In common with other companies – Weidmüller, Phoenix Contact, Sick, Microchip, Reichle & De-Massari, Fluke Networks and many more – there is already a lively exchange of technology information with the aim of refining Single-Pair Ethernet technology and finding the very best solutions for Industry 4.0, IoT and intelligent non-residential buildings. All the companies involved in the SPE System Alliance are convinced that SPE will revolutionise the possibilities and transparency of communication at field level. *(wea)* ■

Read more on our website



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