Cabling Solutions

INNOVATION

CABLING SYSTEMS FOR DATA CENTRES

THE CHALLENGE OF WLAN

REFERENCE PROJECT

STUTTGART CITY LIBRARY: MODERN, EFFICIENT AND SAFE
Dear Readers,

Not all that long ago the debt crisis in Europe and the strength of the Swiss franc were the dominant topics. We, like many other companies, were forced, in the face of an extremely unstable situation, to introduce drastic measures aimed at achieving a sustained improvement in our competitive position.

In the meantime our lift cable production facility in Shanghai (China) is already running at full capacity, whilst at Děčín (Czech Republic) we have been assembling lift cables for use within Europe since January 2012. Up to the middle of 2012, Datwyler will also be able to manufacture its full lift cable portfolio in the Czech Republic, which will mean that our European customers will continue to benefit from short delivery times and attractive transport costs.

Much has been happening too at our factory at Altdorf (Switzerland) where Datwyler is based. It is gradually becoming evident (and not only visually) that we are conducting a streamlining operation at our plant to ensure maximum efficiency from an operational viewpoint. Around a third of the current investment package amounting to 30 million Swiss francs has already been released during the course of the last 12 months, a major part of this for the modernisation of our machinery as well as for significant optimisation work in terms of layout and process. As a Datwyler customer, you can look forward in the future to further reductions in throughput and delivery times as well as to benefiting from an even more competitive product portfolio.

Nevertheless, having introduced these measures, we are definitely not using them as an excuse to sit back on our laurels. The distorted nature of the currency situation, the continuing uncertainty in many markets and the on-going process of consolidation among manufacturers in our sector still represent major challenges. Not only the competitive landscape but also the purchasing habits of many of our customers have changed, in some cases to a massive extent. Business areas that traditionally run well may, for example, suddenly and unexpectedly fall into the red and we need to look to the market for new solutions.

However, the new environment also offers opportunities, and it is important to grab these opportunities with both hands. We at Datwyler are endeavouring to maintain close proximity to the market at all times and, at the same time, to take up a proactive stance as far as you, our customers and business partners, are concerned. This will ensure that we recognise the changes described above quickly and are able to make wise and speedy decisions for you and for ourselves on the basis of a ‘win-win’ strategy.

As you will see from the current edition of “Panorama”, we are adopting a logical and consistent approach to implementing our strategy. The major strides that we have made in terms of our operations find expression, among other factors, in the increasing number of international customer projects that we have successfully handled.

Have a good read!

Johannes Müller
CEO Datwyler Cabling Solutions
Member of the Datwyler Group Executive Board
In 2017 the building complex at the Federal Office for Civil Protection in Bern is scheduled to undergo a general refurbishment. Forming part of this refurbishment will be the installation of a new structured communications cabling system. However, rewiring could not wait until 2017. The introduction of Windows Vista made it necessary to bring the installation forward so as to prevent any disturbances to routine operations that might otherwise be anticipated. This meant bringing the communications network forward to the period between December 2010 and May 2011. The project comprised the extension of the existing network in the buildings at Monbijoustrasse 47-51 as necessary and a comprehensive programme of replacements at the buildings situated at 51 A and at Giessereiweg 4-6. What made these installations special was the fact that the work was carried out while business was proceeding normally.

**Powerful Class E\textsubscript{A} system**

The faulty infrastructure, in parallel with the existing cabling, was to be replaced by a modern, powerful Class E\textsubscript{A} system serving as a basis for future 10 Gigabit Ethernet (10 GbE) transmissions and offering long-term investment protection. Based on a design by Robert Thommen, Telematics Management Consultancy, Category 7\textsubscript{A} copper data cables and Category 6\textsubscript{A} RJ-45 Keystone connection technology were specified in the office area. For the backbone cabling, the requirement was for fibre optic (FO) cables with category OM 3 fibres. The respective order from the Federal Office for Buildings and Logistics, based on a solution devised by Datwyler, went to ARGE Elektro Burkhalter AG and Agel AG. On each storey the fitters installed the AWG 22 CU 7150 cables, terminating in Category 6\textsubscript{A} RJ-45 Keystone modules in 19” patch panels. The backbone solution consists of Datwyler’s FO Outdoor cables with G50/125 µm OM 3 fibres and ready-to-splice FO patch panels. The new cabling was tested in accordance with Class E\textsubscript{A} to ISO/IEC.

**In stages and to plan**

Meanwhile, in the office area, ARGE’s installation and commissioning activities were proceeding floor by floor. In so doing, the installation teams came up against the Federal Office’s requirement to minimise the amount of disruption to the working practices of its employees. One of the advantages here was the fact that new cabling fitted into the existing racks.
The refurbishment project included the network in the buildings at Monbijoustrasse 47-51 and 51 A as well as at Giessereiweg 4-6.

RJ45 modules could be installed relatively quickly on site. In addition, the fitters were able to accommodate the copper system in the existing distributor racks as planned – and to achieve high port densities. It also proved possible to continue using the existing FO cabling (62.5/125 µm OM 1) between the floor and the main distributors to a major extent.

“This project was one of the first in Switzerland to be implemented using the new Keystone Cat.6, modules”, explained Markus Gautschi, the Project Manager responsible for Telematics at the Federal Office. In his experience: “Datwyler’s solution offers good value for money, good quality material which can be quickly connected to the supply as well as guaranteeing excellent values. This has meant that installation and commissioning have been a very straightforward and structured operation, wholly in accordance with the customer’s time constraints”.

A further and not insignificant contributory factor was the fact that the network department at Heiniger Kabel AG has always been ‘on the ball’ and ensured punctual deliveries.

Robust, expandable network
Today, the communications cabling provides a robust foundation for all workplace data applications up to 10 gigabits. Thanks to the AWG.22 cables, it is also possible to connect all the equipment supplied to the cable system using Power-over-Ethernet capability. The network is scheduled to undergo expansion by 2017 at the latest. It is then that the Federal Office for Civil Protection is planning the integration of the Voice-over-IP telephones together with all applications up to 10 GbE.

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Since October 2011 the City of Stuttgart has a new, ultra-modern city library. Generating some of the “lifeblood” of this architecturally striking building are its powerful communications cabling and a reliable fire safety cable system, both of which owe their origins to Datwyler.

On 24th October 2011 the City of Stuttgart opened its new City Library on the Mailänder Platz. Its striking architecture which characterises the building is based on a design by the South Korean architect, Eun Young Yi. From the outside the new-build, with its walk-on double facade made from concrete, glass blocks and glass, gives the impression of a shining cube, and it is also brightly lit at night. In the centre of the building there is also a cube-shaped room around which various themed areas including reading and learning stations, a children’s library, a music library, an art print library, a gallery, an art room and a ‘literature café’ are arranged. In the library visitors have access to multi-media learning facilities with in-house netbooks, in addition to which they are able to access the most modern media via WLAN. Some high-end computer stations even offer the chance to use 3D or virtual reality programs.

The physical basis for the large number of communication possibilities offered by the City Library to its visitors is a powerful data network using fibre optics (FO) in the riser area and high-quality copper technology at individual floor level. Construction of the communications cabling system was carried out by Siemens Building Technologies based on City planning guidelines.

System solution in copper and fibre optics
It was Project Manager Achim Matzka and the responsible site managers who made the network a reality, complete with a system solution from Datwyler. The server room in the basement was connected with the distributors on the individual floors via tight buffered (TB) fibre optic cables,
each with 12 or 24 OM 3 multimode fibres. The required optical fibre pigtales and connection cables were supplied by Datwyler, complete with pre-assembled SC connectors on both sides. On the individual floors the installation engineers laid halogen-free Category 7 type CU 7080 cable in flame-retardant construction. Together with the RJ45 MS-K modules and the corresponding patch panels and data outlets, Siemens laid a Class E communications network up to 500 megahertz capacity which is in line with the current ISO/IEC Standard.

Overall the teams, under the direction of Martin Jakob, Thomas Kyll and Ralf Kohl, installed 126 kilometres of copper data cables in Simplex and Duplex construction together with 144 patch panels, each with 24 ports, as well as 6,400 MS-K modules and 3,200 data outlets which are protected by dust covers if not used. In the fibre optic cabling, there are a further 3,200 metres of FO Indoor cable and 33 FO patch panels, each with 12 pre-assembled Duplex connections.

Today, it is not only the PCs, netbooks, telephones and WLAN access points that are connected to the new network, but also a number of other systems, for example, the VA/PA system, the book cataloguing and book security installations and the electronic book issue and return systems. Physically, strict separation is maintained between the internal administration network and other networks, e.g. the connections accessible to the public.

Safe and secure power supply
Even where security lighting and the provision of an emergency power supply – both disciplines associated with central building services – are concerned, Siemens have made use of solutions from Datwyler. Here the installation engineers have fitted around 14 kilometres of safety cables, around 1,000 Hermann clamps and single clips as well as countless special pins – offering system circuit integrity E 30 / E 90. Naturally, all the components have the necessary test certificates. These confirm that entire cable installation can be relied upon to continue to supply the connected safety systems with power for up to 30 / 90 minutes in the event of a fire.

Future-proof to a major extent
The installation took place between August 2010 and May 2011 and, in the main, things went smoothly. Prior to acceptance tests for the communications network in September 2011, Siemens carried out extensive and very thorough measurements and tests on all copper and FO links installed. Only four faults were identified out of a total of 3,200 links – an excellent proportionate score for installations of this magnitude.

As Project Manager Achim Matzka is able to state with some conviction: “The Datwyler communications network is in accordance with the latest state-of-the-art technology; it offers high power reserves and can be extended at any time. To this extent, it may be said that the installation offers high levels of reliability for the future.”

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From the outside the new build gives the impression of a shining cube.

Halogen-free Category 7 type CU 7080 data cable.

FO patch panels with pre-assembled connectors.

Safety cable offering circuit integrity in case of a fire.
**REFERENCE PROJECTS**

**CURRENT PROJECTS – IN BRIEF**

**Data centre cabling for Shanghai Electric Group**

The Shanghai Electric Group, whose company history goes back more than 100 years, is one of the largest engineering companies in China with a widely diversified portfolio and with a focus on accessories for energy equipment. The company is entering the market as a supplier and as a general contractor offering extensive services. In November 2011 a new cabling system was installed as part of the Project R & D Centre (Phase II) in the data centre in the Gujing Road in the Xuhui district of Shanghai. The solution provided by Datwyler comprised Category 7 cables type CU 7080, offering a bandwidth of up to 1,000 megahertz, the RJ45 modules MS-K 1 / 8 Cat.6/E, and a range of fibre optic cables. The data centre at the Shanghai Electric R & D Centre holds 80 racks with around 3,000 ports covering an area of around 500 square metres. Shanghai Electric is very happy with the Datwyler products and services as well as with the rapid and problem-free implementation of the new cabling system.

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**Data networks for schools in Portugal**

In 2007, the “Parque Escolar” programme was launched in Portugal. The aim of this programme is to renovate all the country’s schools and to equip the buildings with new technology, including Internet connections in every classroom. Within the framework of the current third phase of the programme, Datwyler is to supply, via local partner Policabos, the data network technology for the Emidio Garcia school in Bragança and the Dr. César Augusto da Silva Ferreira School in Rio Maior. In both buildings a Class E cabling system is to be installed. Significant factors that influenced the award of the contract were the high quality of the Datwyler solution and long-term system warranty.

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Datwyler and ITCore maintain a partnership that is established on a solid foundation. As regards the Italian market, this has seen continuous growth over the past seven years. In order to celebrate this success together with their customers, the two partners organised a go-kart race in the Autodromo di Franciacorta which is a race track in the vicinity of Brescia.

The idea of the race, which was preceded by a safe driving course, was to show that reaction capability and reliability represent basic success factors – not only at work but also in one’s private life. This is a message that ITCore and Datwyler have been successfully transmitting to their customers for some time now: Over the past two years ITCore has been Datwyler’s main sales partner in the north-west of Italy.

“We are very happy working with Datwyler”, says Francesco Zubelli, Sales Manager at ITCore. “Their approachability, awareness and the fact that you can count on an immediate response are the underlying basis for our success when it comes to teamwork”.

ITCore S.p.A. emerged from the merger of Intertelefonica and Tecnotel in 2009 and is now part of the Aertermica Group. In its capacity as a systems integrator, ITCore has been active for more than 30 years on the Italian ICT market, initially in the field of classical telecommunications then subsequently also in the planning and realization of passive and active LAN and WAN infrastructures. Thanks to the continuous expansion of its expertise in relation to high-tech systems, ITCore today is a competent partner when it comes to the planning and delivery of complete ICT services and solutions.
MARKET INFORMATION

ANOTHER HAT TRICK OF “TOP 10” TITLES IN CHINA

Datwyler was singled out for a number of important awards in 2011 from the Chinese building technology sector.

On 18th November 2011 the “China Engineering Construction Standardization Association” singled out Datwyler as a “Top 10 China Cabling Brand” during the “China Data Centre Network and Cabling Summit Forum”. The award was accepted by Dr. Xiaoping Pu, Managing Director of Datwyler in Shanghai, in person (Fig. 1).

On 7th December Datwyler received the award of “Top 10 Generic Cabling Brand” (Fig. 2). More than 200 guests were present at the Award Ceremony, which was organised jointly by the “China Exploration and Design Association” and the “Intelligent Building & City Information Magazine” and included end users, manufacturers, branch experts, planners, systems integrators and media representatives.

On 16th December Qianjia.com once again put Datwyler in fourth place among the “China Intelligent Building Brands” (Fig. 3). This Chinese “Oscar” for intelligent building is awarded annually on the basis of data from the “Qianjia Brand Index” which, in turn, is based on online voting, professional systems tests and user feedback.

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Award of the “Top 10 Generic Cabling Brands” on 7th December.

The “China Intelligent Building Brands” Award Ceremony on 16th December.
Modern WiFi arrays make extended bandwidths available to a number of users at the same time.

INNOVATION

THE CHALLENGE OF WIRELESS LAN

The proliferation of smartphones and tablet PCs also means an increase in the need for systems to access mobile data traffic.

A current Cisco study into the development of mobile networks is predicting an 18-fold increase in mobile data traffic by 2016. Around Christmas 2011 alone, Andy Rubin, Google’s Head of Mobile Applications, reportedly received more than 3.7 million new registrations for Android devices. No wonder then that the requirement for “classic” wireless networks has also been growing steadily for some years.

Datwyler took this development into account at an early stage by expanding its product and service portfolio to incorporate WLAN solutions. One example of a strong and innovative partner here is Xirrus. The US American manufacturer’s WiFi arrays are based on new technology where a number of access points within a single device are connected together via one gigabit switch. By comparison to conventional technologies it is possible, in addition to gaining range, to guarantee up to 8 times more bandwidth. Plus the number of users able to work with WLAN at the same time via a single array is significantly higher at a maximum of 1,280.

The organisers of trade fairs and events in particular are faced with the challenge of having to offer extended bandwidths to large numbers of users. Schools and universities offer their own intra- and internet portals for e-learning as well as online lectures which can be accessed via tablet PCs and e-book readers. In hospitals more and more doctors are downloading patients’ records to mobile devices. Here WLAN is also used in conjunction with a number of different devices, for making phone calls (voice-over WiFi) and even for television.

In just a few months the new WLAN standards 802.11ac and 802.11ad are set to be adopted. They take into account the requirements for increased bandwidth and higher numbers of users. The arrays offered by Datwyler have been set up to take the new standards into account: Thanks to their modular design, only individual elements need to be replaced. One considerable advantage, of course, is the smaller number of devices that one customer needs to install and manage. This means that the costs for cabling, installation, power supply etc. are significantly lower than in the case with classical WLAN solutions.

Datwyler make the equipment available complete with all the necessary accessories, including protective enclosures for gyms and heated frameworks for external use. The service facilities (optional) comprise site surveys, on-site measuring and – as part of turnkey projects – the installation as well as the training of the responsible staff and maintenance of the equipment.

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Cisco Forecast as regards mobile data traffic up to 2016 (in Exabyte).
In data centres today, high quality system solutions based on fibre optics already form the backbone for high speed data transfer between the active devices. Increasingly high transfer rates call not only for high quality fibre optic (FO) cables but also make increasing demands on the connecting components. These two parameters are crucial as far as the efficiency of the transmission channel is concerned.

**Demanding requirements**

One key requirement as regards the cabling solution in the current data centre environment is that it should be flexible. New systems need to be planned, assembled and installed within a very short space of time. New technologies such as, for example, blade servers or virtualisation, mean a simultaneous steady rise in the demands placed on the performance of the transmission channels.

Currently, the following are the main requirements with which a cabling solution may be confronted:

- The components used must be of the highest quality
- A high level of reproducibility as regards quality (tight tolerances)
- Minimum optical losses (material and cable assembly)
- No additional losses due to tight bending radii
- Possibility of migration to future applications (reserves)
- Scalable as a result of modular construction
- High packaging density with space saving cables and modules
- Rapid and simple installation (plug-and-go)
- Short lead times

**INNOVATION**

**CABLING SOLUTIONS FOR DATA CENTRES**

With global IT usage continuing to increase rapidly, there is also an increase in requirements as regards data centre infrastructures. Datwyler have developed a cost-effective, future-proof solution for this.

The modules are available in OM 3, OM 4 and OS 2 variants.

Modular housing for inserting up to twelve modules or front plates.

Mini-trunks pre-assembled with MTP® connectors.
New data centre solution
Based on these requirements, Datwyler has developed a modular system solution for the data centre cabling which can be adapted to suit the current needs. This consists basically of the following components:

- Pre-assembled FO mini trunks (low-loss)
- Pre-assembled FO modules/cartridges (low-loss)
- FO patch cables (low-loss)
- Pre-assembled copper trunks
- 19” distributor housings with modular placement facility
- Distribution troughs and cable routing accessories

These system components provide particularly flexible, high performance cabling with high packing densities. A high level of clarity is invariably maintained, even in routine operation.

Pre-assembled fibre optic trunks
Pre-assembled and previously measured multiple cables or “trunks” represent an ideal solution for ensuring rapid, neat and clearly laid out installations. For the FO multimode trunks Datwyler makes exclusive use of bend-optimised fibres. This means optimum protection for the power budget and efficient prevention of malfunctions as a result of excessively narrow bending radii.

When it comes to fibre optics there is, in the shape of the MTP® connector from US Conec, a standard multi-fibre connector available which is specified in the international standards as a multi-fibre connector for data centre applications. Datwyler offer this connector pre-assembled on mini-trunks with multimode fibres (OM 3 / OM 4) and with single-mode fibres (OS 2). The MTP*-connector at the same time offers a basis for future applications in the shape of parallel optical signals such as, for example, 40 / 100 gigabit Ethernet or 120G InfiniBand*. Depending on the requirement, mini-trunks are also available from Datwyler which are pre-assembled on one or both sides with single fibre connectors such as LC.

In order to ensure delivery of optimum connection technology, Datwyler use only the Elite ferrule with improved optical performance for pre-assembling the MTP* connectors. By means of this ferrule and a high precision connector configuration, the cables and modules achieve excellent values in relation to Insertion Loss and Return Loss.

Distributor with modular placement facility
The Datwyler solution is based on modular distributor housings in 1U, 3U and 4U (rack units). The aluminium housings provide space for the insertion of a maximum of twelve modules/cartridges or front plates. To the rear the modules are fitted with two MTP® couplings (2 x 12 fibres), which are routed via internal fan-outs to six LC quad couplers in the front area of the module. The modules are available in OM3, OM4 or OS2 variants. Front plates with 6 LC quads each serve as an alternative to the single fibre assembly.

With the modules and front plates, packing densities of up to 288 fibres can be achieved using 3U. This corresponds to 144 LC duplex connections.

Simple migration
Datwyler mini-trunks are of such high quality that they can continue to be used in any subsequent migration to 40 or 100 gigabits per second. For this all that is necessary is for the modules in the distributor housings to be replaced by MTP® front plates. Datwyler has high quality MTP® patch cables available for connecting to the 40 / 100 G transceiver.

Integration of copper cables
10 gigabit copper links can also be incorporated in the system presented here. For this Datwyler offer modular front plates and copper trunks. The 6-channel trunking is made up of shielded twisted pair cables, category 7 or 7a, which are connected on both sides to RJ45 Category 6, modules. A 6-fold trunk can be mounted on one front plate. This means that packing densities of up to 72 ports can be realized on 3U or 4U in one distributor housing.

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Using the LCQ front plates it is possible to achieve 144 LC duplex connections on 3U.
SUCCESSFUL EXHIBITION IN LONDON

In December 2011 Datwyler participated in Data Centre Dynamics (DCD) in London as an exhibitor. This time the accompanying conference programme covered five halls and included more than 70 technical presentations, project reports and platform discussions in just two days. With more than 80 exhibitors and over 2,000 delegates, the DCD London was the largest and most comprehensive conference of its type in the world. Datwyler was on the receiving end of several interesting specific project enquiries at the exhibition, one of which was a turnkey data centre project.

NEW RECRUIT AT DATWYLER UK

Alistair Sandy has been working with the British team since November 2011. Responsible for internal Business Development, he also assists Datwyler UK in responding to structured cabling tenders and generally in supporting the data side of the business. He has had previous experience with cabling solutions and is familiar with data centre customer requirements.

WORKING WITH BICSI

Paul Hunter, Technical Manager at Datwyler UK, is a Registered Communications Distribution Designer (RCDD) with the BICSI Federation (Building Industry Consulting Services International). BICSI devises and publishes standards and guidelines for the planning, installation and integration of IT systems, including those for communications infrastructures using copper and fibre optic technology. BICSI regularly organises conferences throughout the world.

At last year’s European Conference in Edinburgh, Paul Hunter was invited to become involved in the work of the BICSI European Standardisation Committee. This committee is working to ensure that cabling standards are less United States-oriented and are of greater relevance as far as European requirements are concerned.

You can find current news under “News” and “Events” on our homepage.
These days, simply marketing good products and solutions is no longer enough. The installation of electrical and ICT infrastructures is a high-tech area that calls for a great deal of know-how. Through the medium of training courses, Datwyler pass on to their partners the knowledge and experience they themselves have gained from international standards committees and from their work in collaboration with Research and Development institutes. This allows the partners to offer their own customers systems solutions reflecting the highest levels of competence and skills. Special training courses aimed at certification (which Datwyler will also conduct on site if required) qualify partners to pass on Datwyler’s long-term system guarantee to their own customers.

For dates and contact information please refer to the Datwyler homepage. In Germany, Austria and Switzerland these details can also be found in a separate seminar program.