CASE STUDY

HIGH-PERFORMANCE AND SPACE-SAVING: DATWYLER CABLING SYSTEMS FOR CITY OF ZURICH DATA CENTRES

The City of Zurich is using top quality Datwyler cabling systems in the conversion and construction of its data centres. Thanks to largely pre-assembled solutions TurnKey Communication AG has been able to implement quick, space-saving installations which will also allow reliable transmission of future applications.

Zurich Organisation and Informatics (OIZ) is the city's centre of IT expertise, responsible for the provision of basic IT services and interdepartmental IT projects. As part of the municipal IT strategy, which is based on standardisation and consolidation, OIZ has built a second data centre in the metropolitan area, in the industrial area of Hagenholz, for the redundant provision of key components in parallel to the data centre in Albisrieden.

In June 2011 the OIZ invited tenders for a copper and fibre optic (FO) cabling solution for the modernisation of the existing data centre and for the new site. The requirement was for high-performance solutions which were tailored to future applications as well, with outstanding port densities at the same time. For the FO data centre cabling, for example, OIZ stipulated the latest generation of MTP connection technology, also suited to parallel optic applications such as 40/100G (Gigabit) Ethernet and 120G InfiniBand.

At the end of August the city of Zurich awarded Maréchaux Elektro AG the contract for communications cabling to both data centre sites. This company commissioned TurnKey Communication AG to carry out the detailed planning and the cabling work for the project. Turnkey collaborated with Datwyler in selecting a new premium quality cabling solution which not only met all the target specifications, but even improved on the original plan thanks to its unique design.

From October 2011 onwards the cabling systems were installed in four construction phases, two of which were completed in 2011 and the last in April 2012. On the two data centre sites the installation team created altogether around 10,000 fibre optic and 4200 copper links.

Pre-assembled system solutions

The FO system in the OIZ data centres is a modularly expandable solution recently developed by Datwyler, allowing packing densities of up to 96 fibres per rack unit (RU). It is based on sub-racks fitted with pre-assembled slide-in cassettes known as "modules". On the back of each of these modules are two couplers for MTP connectors, and they are cabled with MTP mini-trunks. At the front they provide OIZ with twelve LC Duplex or E2000 connections as required.

The 10G-capable copper cabling installed in parallel consists of Category 7 type CU 7702 4P data cables, which Datwyler supplied with IEC Standard-compliant Cat. 6_A RJ45 modules connected to one end. The other end – a total of 8400 Cat.6_A modules – was linked up after the transfer.

On both data centre sites the rack rows are set up on the front-to front-principle, and the cold aisles in between, which are supplied with cooling air by way of the double floor, are completely enclosed. The copper and fibre optic trunks are fed to the racks via a cable tray system on the ceiling.

In the central distribution racks the MTP mini-trunks – almost all of them with bend-optimised OM3 multimode fibres – are lined

up with 1500 FO modules in 270 sub-racks with 4RU (including patch management tray) and in the server racks in 210 FO panels with 1RU. For the termination of the copper cables Datwyler supplied 135 3RU sub-racks with 1160 modular 6-port front panels and 285 1RU panels with 24 ports, depending on the rack type. There are also 13,300 FO duplex patch cables and 9100 copper patch cables for the connection of active devices.

Project-related resources created
The FO trunk variants used in the data centre sites include trunks with 12, 24, 48, 72 and 144 fibres, either pre-assembled with MTP, LCD or E2000 connectors at both ends or with MTP connectors at one end and LCD connectors at the other. Such a lot of trunk variants, for the most part ordered at very short notice, posed a special challenge for the material suppliers.

Datwyler therefore put a special project manager in charge of this project in order to coordinate all the requirements with TurnKey and ensure that set deadlines were met.

Impressive test results
Acceptance testing of more than 14,000 links in total was carried out on completion of each construction phase, most recently in spring 2012. Thanks to the MTP elite ferrules and the very precise connector configuration used by Datwyler, the cables and modules achieved excellent insertion and return loss values which far exceeded the already high quality standards set by OIZ. The measured values even impressed the first collocation clients so much that they decided to forgo planned follow-up measurements.

Top quality
This is how Patrick Eggeler, Manager of Data Centre New Buildings & Operation at OIZ, summed up the experience: "The cabling installed in our data centres is a really top quality and comparatively economical system solution which will reliably transmit all our future applications. It was flawlessly implemented and handed over on time. We are also very satisfied with the planning support by TurnKey and Datwyler, and with the services rendered in relation to the installation."

Following on-time handover of the cabling infrastructure, OIZ is busy with the successive relocation of IT systems on over 100 sites throughout the metropolitan area. The ambitious timetable has completion of the universal basic cabling for the entire new data centre scheduled for the end of August 2012.

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