Reference report

tde – trans data elektronik GmbH and Westfalen Weser Netz develop modular central office solution

tde's Custom-built Distribution Frames Banish Chaos from the Patch Panel

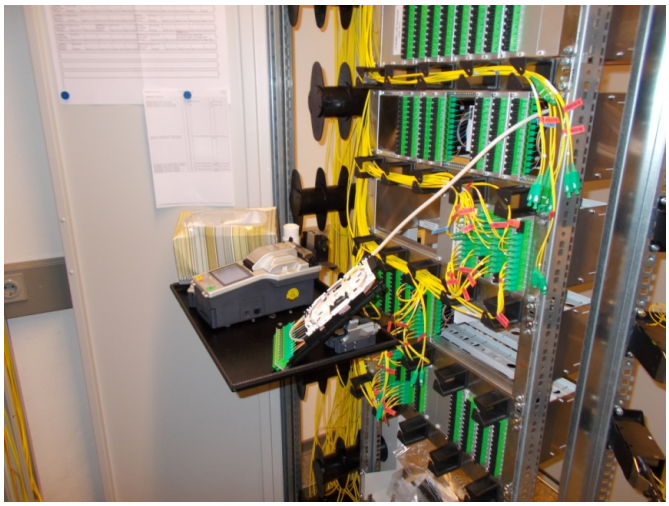
Westfalen Weser Netz

When network know-how meets energy supplier, the result is an overcharge of innovative energy. The same is the case for tde - trans data elektronik GmbH and Westfalen Weser Netz: The development of the modular tDF - tde Distribution-Frame-Solution benefited from vital input by the regional provider of gas, water and electricity. As a result, the networking expert was able to successfully create a modular central office solution which is able to house up to 4032 fibres with minimal space requirements. On top of that, the solution effectively reestablishes order on the patch panel. It meets the high standards of Westfalen Weser Netz regarding high-speed and high availability.

With a power grid 31.500 kilometres long, a natural gas network consisting of 4.000 kilometers and a water-pipe system of 2.200 kilometres, Westfalen Weser Netz supplies industry, businesses, agriculture and households with power, gas and water. The regional distribution grid spans two states and roughly 6.400 km2 in the fast-growing regions of East Westphalia-Lippe and the South of Lower Saxony. The regional energy supplier controls and regulates its many branch plants from central sites in Herford and Paderborn via its modern control center in Oeynhausen.
With its very own telecontrol network the supplier measures, manages and regulates what is fed into the network. The high-voltage grid and the power flow from the transformer stations is also managed by the telecontrol network. This is why the data network and the regulation technology need to be absolutely fail-proof and operate smoothly. The numerous distribution stations guarantee the reliable operation of the grid.

Distribution frames - new territory for tde

tde has supplied Westfalen Weser Netz with custom-ordered patch cables in the past. „As we needed to replace our previous Distribution Frame Solution and were not satisfied with the patch panel by a competitor, we were glad that tde actively approached us“, Stefan Kenneweg who is responsible for the passive information and communications technology infrastructure at Westfalen Weser Netz remembers. „We required compatible terminals for our extensive fibre optic cable network in form of an optical fibre distribution boxes, also known as ODFs (Optical Distribution Frame).“
Even though tde has been developing and producing scaleable cabling solutions for years, ODF was new territory for the company. The bar was set very high for the new solution: „Existing ODF systems are often comprised of many small parts and, due to that, are unnecessarily complex in handling. Many users prefer to work with standardized splice cassettes rather than with Single Circuit management splice trays“, sums up Elmar Herwig, Sales Engineer at tde. What is more, these often entail



tedious product development and protracted delivery times.

And end to the chaos in the patch panel

Westfalen Weser Netz found the ideal partner in tde: The energy supplier's wishes were taken up and developed into a completely new ODF solution in close consultation with the client. In order to properly assess the distributors used so far as well

as what was required of the solution and the local conditions, tde's CEO André Engel and Elmar Herwig paid a visit to Westfalen Weser Netz. The specific challenges of the project swiftly revealed themselves: „The modularity and easy installation of the system was important to us, with as simple a construction and as few individual parts as possible, so that the panel could be disassembled easily at any time. The ODF had to be user friendly and clearly structured, so that the patch cable could be neatly installed while remaining cost-effective," Stefan Kenneweg sums up the goals of the project.

With these technical requirements in mind, tde began to create its ODF. During the entire course of the project, the input of Stefan Kenneweg and Axel Bleibaum, both responsible for the passive information and communications infrastructure at Westfalen Weser Netz, was vital for the development of the ODF. This included the suggestions to use replaceable fibre pigtails, the use of standard components as well as the utilization of cable distributors and mounting panels. tde took these wishes into consideration, presented them in the form of blueprints and implemented them in trial samples and trial installations. During additional meetings on-site tde presented individual modules and performed trial installations in close collaboration with Axel Bleibaum. After tde completed the distributor prototype, those responsible traveled from Westfalen Weser Netz to tde's German production facility in Bippen/Ohrte. There, the solution was put to the test: patch cables were detached and reattached in order to test the practicality and functionality of the tDF. The final installation followed after only a few months.

Intelligent design combined with high packing density

The intelligent design, ease of use, and user friendly assembly were the main features which Westfalen Weser Netz required of the rack system. The tDF is modular and consists of few parts. On the left side, a generous space is allotted to radii limiters for the patch cable over length management system. The right side houses the trunk cables. The rack is equipped with removable side panels and doors, can be mounted to a wall, or positioned back to back, and is stackable using sets of flaps. The base and cable entries available from below and above are optional. Due to standardized 19" grid struts the tDF offers great flexibility. Other 19" components can be additionally mounted, as long as they do not exceed a depth of 280 mm. Individual tDF sub racks can be integrated into existing distribution panels. To ensure a user-friendly assembly, patented sub racks can be equipped entirely on the front.

The inner workings of the tde ODFs is also impressive: the tDF is market leader in packing density. A networking technician

can terminate up to 4032 fibre cables with LC on 46 height units. One tDF rack can be fitted with up to 14 sub racks with 3 height units each. A 19" sub rack uses three height units and can house up to twelve tDF splice modules. Therefore, up to 288 fibres per sub rack can be terminated and up to 24 fibres with LC ports per tDF splice module. Westfalen Weser Netz chose the SC APC in line tier and can realize 144 splices on three height units as well as using common fibre optic cables with up to 144 fibres. The energy supplier leases dark fibre to third parties and is capable of reaching up to 10GbE in its own grid.

The splices are stored in standardized splice trays, a feature important to Westfalen Weser Netz. The loose tube over length management system is unique on the market, as it saves an additional height unit for the over length tray. A flexible tube protects loose tube over lengths so that networking technicians safely store them in the module. For splicing, the employees simply remove about 0,5 m flexible tube from the sub rack. The patch cable routes are installed on the sides within the three height units, where laterally installed cable guide holders contain the patch cables. Special tDF fan out units - here as well, a further request by Westfalen Weser Netz was successfully realized - convey the trunk cables laterally towards the sub racks and split them up at that point. This allows for minimal stripping lengths. Additionally, tde has designed its tDF distributors for various cable diameters. The loose tubes can be organized and fastened with the flexible tubes which convey them to the splice modules.

Fine-tuning the tDF

Westfalen Weser Netz has been using more than twenty tDF solutions since 2016, and has already ordered more. In ongoing operations they have proven themselves to be flawless and reliable. The energy supplier plans to invest in tDF solutions in the future as well. Nevertheless, tde and Westfalen Weser Netz are working together to further improve the easy assembly: This includes the installation of eyelets, integration of the cable lug and the possibility of installing the mounting plate on the right to enable a parallel plug-in power supply and splicing. „But that is only fine-tuning", says Stefan Kenneweg and continues „With the tDF we have created an ODF that lives up to our vision. The solution is easily mounted and the clear labelling makes the process very straight forward. Thanks to the modular rack system patching is a simple process." Kenneweg has only positive feedback to give to tde, especially in regards to the collaboration: „The cooperation was great. We valued that tde quickly responded to our requests and wishes as well as the short delivery periods. We especially like that tde manufactures in Germany and that we were able to tour the production facility - it establishes trust and the quality is excellent as well."

tde is happy that they can expand their portfolio: „Our tDF condenses our clients requests and wishes into a new system that is space-efficient, simply to handle, easy to install and readily available", explains Elmar Herwig. „We are very pleased to have clients that have given us decisive impulses in product development and who want to contribute constructive suggestions hereafter as well, so that we can optimize our innovative solution even further."