Eaton – Überzeugend bei Sicherheit, Performance und Verfügbarkeit.

IEC/EN 61439

Shift to Future –

xEnergy Schaltanlagensysteme für Panel-Builder.

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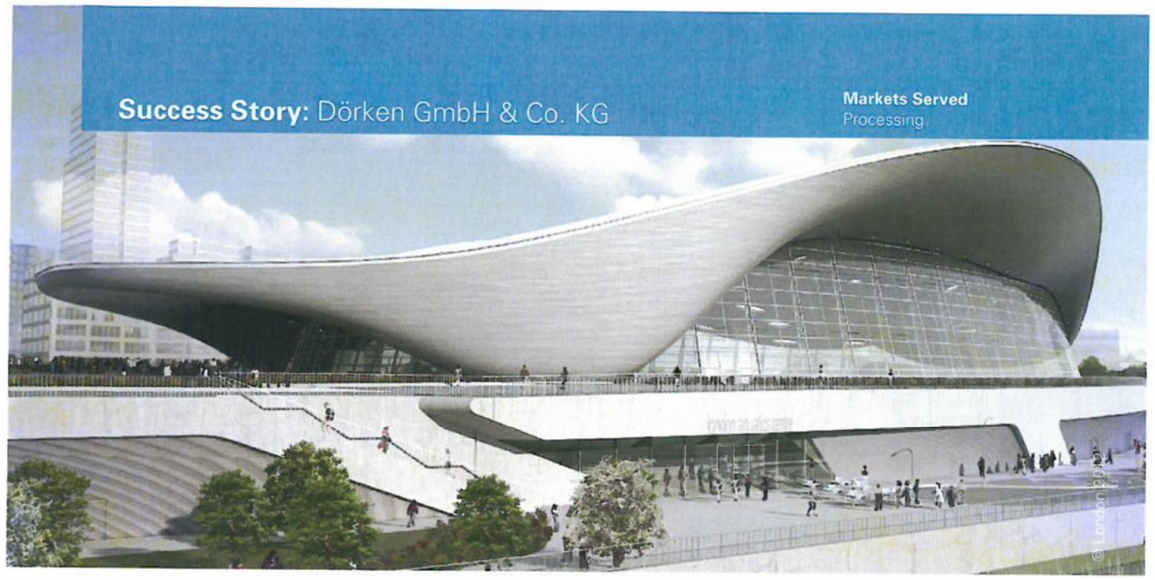

Bundle of Energy

Location:
Herdecke, Germany

Segment:
Processing

Problem:
Construction a new lowvoltage main distribution system with nearly 5000 A.

Solution:
xEnergy with 5000 A busbar trunking systems, center feeder, IZM+NZM Circuit breaker

Results:
An assured and highly reliable power supply at extremly limited space

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Eaton was the only bidder that could provide an effective and impressive solution. We are ideally equipped for the next expansion.

Christian Stetter, project engineer, Dörken

Background

The major issue in the solutions developed Dörken GmbH & Co. KG is protection from moisture and water. The company is one of the leading developers and producers of composite construction laminates for use in private, commercial and public buildings. In its production facility at its headquarters in Herdecke, the power distribution system for the extrusion plants had reached its limits. xEnergy partner Hepp-Schwamborn from Mönchengladbach was awarded the contract for the new low voltage power distribution system, and was able to complete the project successfully in collaboration with Eaton in spite of the demanding conditions involved.

Under the Delta brand, Dörken supplies a wide range of sheets, covers, drainage and sealing systems that keep moisture and water safely in check in all areas of a building from the cellar to the roof as well as in civil engineering projects. The London Aquatics Centre – a new building constructed for the 2012 Olympics – is one of its showcase projects, in which swimming, synchronized swimming and diving events were held and broadcast. This is a spectacular building with a flowing design, in which the roof is shaped in the form of a giant wave. In many respects, however, these round shapes present a particular technical challenge. Dörken was able to successfully overcome one of these with its Delta-Exxtrem protective membrane. This special, highly tear-resistant PES non-woven fabric with a vapor permeable but watertight dispersion coat was laid in a special technique behind the open wood paneling of the facade and guarantees here reliable weather protection.

Like all other composite construction laminates, these are developed and produced in Herdecke. In the 120-year history of the company, the Dörken Group has expanded considerably over a wide range of buildings. Even today, building and reconstruction work is in full swing as the company expands and continues to grow. When the power distribution system for a large production hall with extruders had to be renewed due to its age and limited capacity, it was decided for the new design to include at the same time the power supply of a building still under construction and designed for the manufacture of a new Delta product. A total of eight transformers, each providing approximately 2,000 to 2,500 kVA, are located around the site. It was determined that almost 5,000 A and therefore 3,150 kVA were required for the new low-voltage main distribution system to supply the extrusion plants and the additional building.

Challenges

"The extremely limited building space available was a major challenge we had to face here," Christian Stetter, project engineer and responsible for all electrical installations at Dörken, recalls. In this case there was no possibility of covering the required power with several transformers. However, accessibility and space were not only severely limited for the transformer but also for the power distribution itself. With round the clock production that cannot be impeded, there is only a short time window each year between Christmas and New Year where building conversions and new installations could be considered. "Each hour that we cannot produce is very expensive for us," explains the graduate engineer who planned, managed and was responsible for the entire project on behalf of Dörken.

In order to meet these requirements, Christian Stetter looked for a suitable partner for the low-voltage power distribution project. Hepp-Schwamborn, a specialist in electrical industrial installations and an Eaton xEnergy partner, won the contract for the planning and implementation of the power distribution system. "Eaton's xEnergy is one of the few switchboard systems that can provide 5,000 A via a single feeder section," Dipl.-Ing. (FH) Ralf Lehmann, project engineer for power distribution systems at Hepp-Schwamborn, explains. "Given the conditions at hand, this was one of the key reasons why we were successful in being awarded and implementing this project."

Solution

xEnergy is a freely combinable system that consists of switching and protective devices, compartment systems, switching cabinets as well as planning and calculation tools. Thanks to its standard platform concept, it enables the creation of flexible configurations based on a modular system and includes a range of variants and dimensions for power and outgoing feeder sections. Busbar trunking systems can be routed to different systems in the panel. The system also offers a high packing density with an optimum degree of device utilization. To ensure efficient project handling, the function modules are type-tested to IEC/EN61439. Internal separation to Form 1 to Form 4 is also available.

Eaton and Hepp-Schwamborn developed a concept for the optimum utilization of the building space, taking Dörken's technical and spatial requirements into account. The result is a switchboard system with 28 back-to-back sections as the center feeder. An Eaton IZM63 circuit-breaker from the IZM26 series is used in the feeder section and is designed for 5,000 to 6,300 A. Dörken did not want to use any low-voltage h.b.c. fuses for safety reasons and so the outgoing sections were fitted with 46 NZM circuit-breakers. In this way, safe switching and protection is ensured through the use of NZM3s for the 125-630 A range and NZM4s for the 630-1,600 A range. There are also two sections with switch-fuse strips for small outgoers. "The fact that xEnergy enables us to install two circuit-breakers per section instead of the usual one, has been a major factor since we had to develop a solution that fitted," Ralf Lehmann stresses.

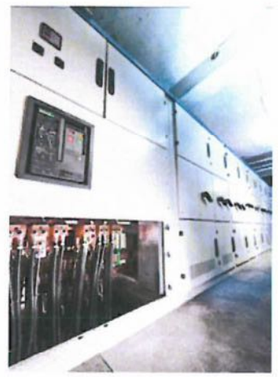
The switchboard system was first of all assembled on the Hepp-Schwamborn premises and then tested there to IEC/EN60439. After the final acceptance test and certification, however, it was not enough to simply dismantle the system into standard transport units. An extensive dismantling was required in order to bring the components to their destination in a restricted space via a lift. A special double floor design was installed at the destination site that it can take the weight of the 11 t switchboard.

On schedule completion despite these unfavorable conditions was only possible because all the partners involved worked together conscientiously and smoothly. "A project of this kind normally would take around three months," Ralf Lehmann estimates. "We are proud of the fact that we could successfully commission everything here at Dörken within only 1.5 months." The old system was switched off on December 27, 2011, and operation could be resumed already on December 30 – one hour earlier than was stipulated by Dörken. According to Lehmann, the success of this project was not just due to the product features of xEnergy, but also to the excellent support of conscientious Eaton employees as well as their excellent service. The entire xEnergy range is available with short delivery times either in flat packs or as pre-assembled panels. Appropriate software tools are provided for the configuration, dimensioning and ordering.

Results

"In my view, Eaton was the only bidder that could provide an effective and impressive solution for our particular requirements and the limited space available," Christian Stetter, project engineer at Dörken GmbH & Co. KG summed up. "We are very satisfied with the system and the completion of the project by Hepp-Schwamborn, and believe we are ideally equipped for the next expansion phase here in Herdecke, so that we will also in future be able to implement such exciting projects as the London Aquatics Centre with our composite construction laminates."

Christian Stetter is project engineer and responsible for all electrical installations at Dörken



Today, Eaton's xEnergy can provide as much as 5,000 A via a single feeder section

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