Studer Cables
Connected to HARTING

PROJECT REPORT 06/2020

Hamburg Wasser

Elbe Wastewater Siphon Rehabilitation

An exceptional challenge for the Studer medium-voltage cable (20 kV)

Every day, around 400,000 litres of waste water are pumped for treatment from the north bank of the Elbe to the waste water treatment plant south of the Elbe. The tunnel renovation project was also used to pull in a new medium-voltage power cable, which converts the treatment plant for additional use as a power station.

BETApower®
XDMZ-Z-Mono:

A custom development for extreme conditions.

A major challenge! The client was looking for a cable able to stand up to extreme conditions in the culvert, including constant water pressure of up to 5 bar and many chemical factors, with insulation needing to last at least 40 years. Since the cable would be permanently submerged, it would need to have long-term resistance to sewage and sewage constituents. In its search for a manufacturer able to offer such a product, "Hamburg Wasser" found the cable it needed at Studer Cables.

Studer Cables AG recommended the deployment of its **BETA**power® XDMZ-Z-Mono 240 mm² medium-voltage power cable. This cable is capable of fulfilling the stringent requirements set by "Hamburg Wasser".

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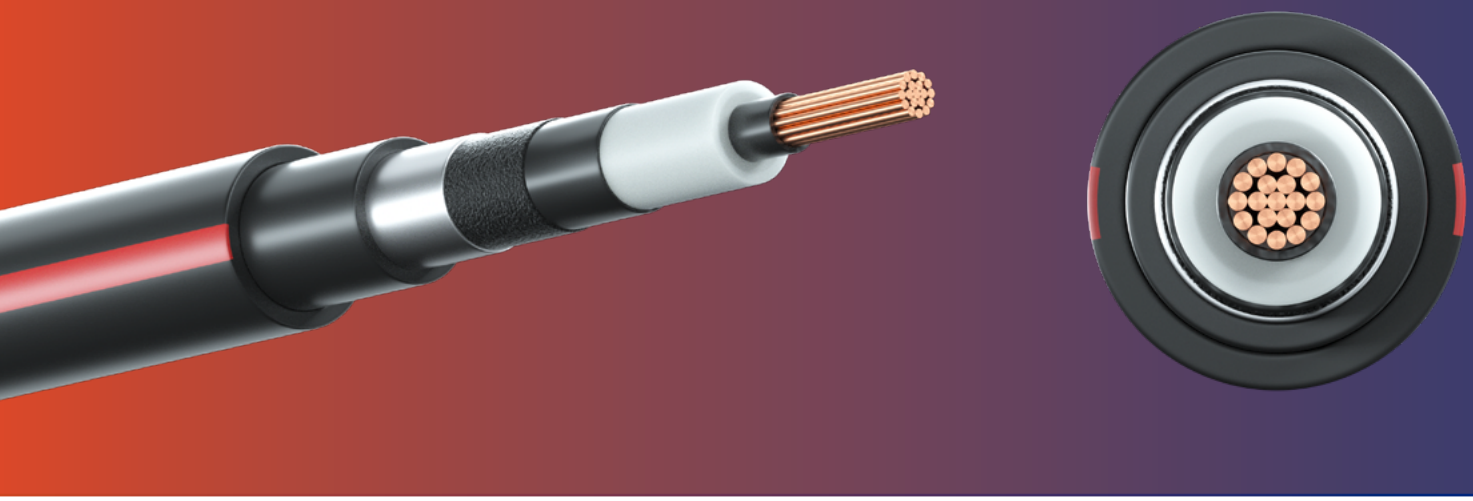

XDMZ-Z-Mono – A cable for extreme environments

The medium-voltage cable **BETA**power® XDMZ-Z-Mono offers an impressively robust, abrasion-resistant and tough outer jacket. The cable also features longitudinal/transverse waterproofing and minimal electromagnetic interference, and is halogen-free. The 10 / 20 kV cable can be buried directly in the earth or laid as an underwater cable. For the "Hamburg Wasser" project, an additional outer jacket was also extruded to meet the challenges of this extreme environment. This has extended the lifetime of the cable to over 40 years.

"Hamburg Wasser" also conducted external chemical tests to ensure the cable was tough enough to meet the demands of this challenging deployment. The cable exhibited extremely high resistances to many aggressive liquids, such as acids and bases, and proving that the **BETA**power® XDMZ-Z-Mono is the ideal cable for our customers project.

Sustainable power generation from waste water

"Hamburg Wasser" has long pioneered solutions in the field of decentralised power generation. With its renovation project for the Elbe sewage tunnel – some 760 m long and 30 m deep – the company is now taking things a step further. By laying the XDMZ-Z-Mono cable directly in the sewage culvert, the Hafenstrasse pump works can be supplied with power generated by the waste water treatment plant. The cable runs for a total length of 2.7 kilometres, with the remainder running underground through St. Pauli to the pumping facility.

The project brings "Hamburg Wasser" a number of benefits. First of all, generating power internally is both environmentally-friendly and inexpensive, saving the water utility company around EUR 220,000 on an annual basis. Excess electricity can also be used to supply up to 11,400 households with power. Apart from decentralised power generation, the new cable run also acts as an emergency backup, providing an emergency power supply for the waste water treatment plant if the regular power supply suffers an outage.

Waste water culvert below the Elbe during construction work (the neon tubes were only fitted for this phase)

Nor was Studer entrusted merely with supplying the cable for this key project. Engineers from Studer Cables AG also came up with a number of innovations to tailor the XDMZ-Z-Mono to the client's scenario. Thanks to the timely delivery and professional support offered by the Studer cable pull-in team, "Hamburg Wasser" was provided with an all-inclusive engineering service package that ensured the successful completion of this unusual project.

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