

CASE STUDY

BORLINK™ LS4201S SUPPORTING HIGH VOLTAGE CABLE POWER TRANSMISSION ACROSS ZHOUSHAN-DAISHAN BRIDGE, CHINA



The Zhoushan-Daishan Bridge, Zhejiang, China. (Photo courtesy of Chongqing Taishan Cable Co., Ltd)

BACKGROUND

The Zhoushan-Daishan Bridge is a 16.35km long cross-sea bridge connecting the islands of Zhoushan, Daishan, and Changbai in Zhejiang province, China.

It is an integral part of a future transportation network of cross-sea bridges and highways passing through Ningbo, Zhoushan, and Shanghai, which will become the world's largest cross-sea bridge cluster upon completion. The network is expected to improve regional traffic and further enhance the growth of Ningbo Zhoushan Port, the world's busiest cargo handling port.

Installed on the Zhoushan-Daishan Bridge is China's longest 220kV high voltage cable network along a cross-sea bridge. This cable network is one of the key power supply lines supporting the Zhoushan Green Petrochemical Base project, a new integrated refinery and petrochemical project developed by Zhejiang Petroleum and Chemical (ZPC).

Chongqing Taishan Cable Co., Ltd, owned by Shandong Electric & Electrical Group, a subsidiary of State Grid Corporation of China (SGCC), was appointed to design, manufacture and install 52km of these 220kV high voltage cables that are an important part of the whole network linking the power grids of Luojia (500kV) and Yudong (220kV).

CHALLENGES

As a leading national enterprise in the wire and cable industry, Chongqing Taishan specialises in the research and development as well as manufacturing of electrical power equipment such as wires, cables, transformers etc.

However, the Zhoushan-Daishan Bridge 220kV cable project presented challenges such as:

- Rainy weather in the coastal location of the project, creating challenging conditions to install cables and accessories
- Tight project completion schedule and complex transportation routes covering both land and sea
- The longest cable length required (1,000m) is a very challenging length to produce for such a big cable size (220kV, 2,500mm²)

SOLUTION

Having worked with Borouge LS4201H grade in strategic SGCC land cable 110kV projects, Chongqing Taishan selected cable insulation grade Borlink™ LS4201S from Borouge and semiconductor grade Borlink™ LE0592S from Borealis to meet the challenging demands of the project.

Borlink™ LS4201S is specially tailored for high stress high voltage applications with rated voltage of up to 230kV, and can perform at a maximum operating stress of 10kV/mm.

Produced under strict cleanliness requirements, Borlink™ LS4201S offers XLPE cable producers the benefits of design flexibility, superior scorch security and a low degassing burden. This enables less factory joints, greatly increases single cable length production time, and ensures stability and quality of the cable in the long production run.

With lower risks of insulation defects and reduced degassing time, Borlink™ LS4201S enabled Chongqing Taishan to optimise production cycle time and achieve timely delivery of the high voltage power cables while maintaining high quality standards.

Procurement director of Chongqing Taishan Cable Co., Ltd, Mr Chen Jian commented, “The Zhoushan-Daishan Bridge is a project of national importance, and thus we rely on trusted partners such as Borouge and Borealis, who have an excellent track record in safe and reliable high voltage cable solutions. Their strategic supply locations also allowed us to obtain cable materials at reduced lead times, enabling us to execute the project requirements efficiently and at optimal quality standards.”

SUMMARY

Project name	Luoja-Yudong 220kV cable network across Zhoushan-Daishan Bridge
Project location	Zhoushan, Zhejiang province, China
Project owner	State Grid Corporation of China (SGCC)
Installation date	March 2021
Producer	Chongqing Taishan Cable Co., Ltd
Application	220kV high voltage cables
Project requirements	Land cable application for cross-sea bridge power transmission
Solution	Borlink™ LS4201S and Borlink™ LE0592S
Solution benefits	<ul style="list-style-type: none"> ▪ Reduced lead time in the supply of cable XLPE materials, enabling more efficient project execution ▪ Excellent scorch resistance performance ▪ Low degassing burden ▪ Produced under stringent cleanliness requirements to ensure quality consistency ▪ High extrusion output ▪ Proven track record in land cable applications

About Borouge and Borealis Borealis is a leading provider of innovative solutions in the fields of polyolefins, base chemicals and fertilizers. With its head office in Vienna, Austria, the company currently has around 6,900 employees and operates in over 120 countries. Borealis generated EUR 8.1 billion in sales revenue and a net profit of EUR 872 million in 2019. Mubadala, through its holding company, owns 64% of the company, with the remaining 36% belonging to Austria-based OMV, an integrated, international oil and gas company. Borealis provides services and products to customers around the world in collaboration with Borouge, a joint venture with the Abu Dhabi National Oil Company (ADNOC). Borealis and Borouge aim to proactively benefit society by taking on real societal challenges and offering real solutions. Both companies are committed to the principles of Responsible Care®, an initiative to improve safety performance within the chemical industry, and work to solve the world's water and sanitation challenges through product innovation and their Water for the World programme.

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