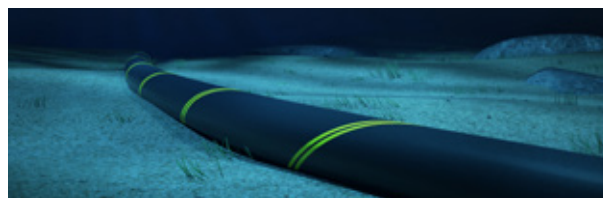
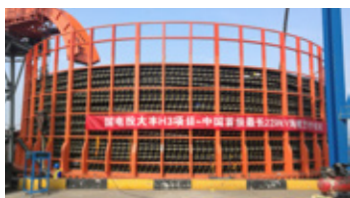




# Zhongtian Technology Uses DOW ENDURANCE™ Compounds to Deliver Record-breaking 220kV Submarine Cable



## Project

Zhongtian Technology Submarine Cable Co. (ZTT) is the leader and most comprehensive manufacturer of submarine cable in Asia. Their advanced facilities are equipped to produce long continuous high-voltage (HV) power cable in super-clean conditions.

**ZTT provided all the three-core 220kV and 35kV submarine fiber optic composite power cable for the CLP Dafeng H3 Offshore Wind Power Demonstration Project.** The project is located in the Yellow Sea near Dafeng City. It has a planned area of 90 square kilometers with anticipated installed capacity of 300MW. The farm will install 72 wind turbines, each at 4.2MW single-unit capacity. Reliable HV power cables will be essential to the project's success.

Supported by materials technology and service from Dow, ZTT manufactured a 52.5-kilometer, three-core 220kV submarine cable for the project. This cable broke a company record for delivery length and weight.

**The single length of delivered complete cable eliminated offshore joints, shortened construction time and reduced laying costs.**

DOW ENDURANCE™ HFDB-4201SC super-clean insulation, and DOW ENDURANCE™ HFDA-0801 BK semi-conductive and shielding compounds, were used for the HV power component of the record-breaking cable.

Dow compounds also helped achieve long extrusion with excellent scorch-resistance performance. This resulted in the manufacture of a quality cable at extrusion efficiencies and economic benefits with a shorter installation time and less operational risk over the life of the cable.

## Challenges

The technical teams at Dow and ZTT anticipated, prepared for and successfully met several challenges with manufacturing, installation, and cable performance.

- For cable performance and longevity, the production process and raw materials had to meet superior standards for super-clean manufacturing.
- Degassing time needed to be minimized to shorten cable lead time.
- A 26.3 km cable, that contained 120 MT of insulation, had to be continuously extruded without a single stop. For this to succeed, stringent requirements for material anti-scorch performance had to be combined with world-class manufacturing capability.
- Cable must have a long life to keep operational and repair costs down.

## Solution

ZTT worked together with Dow to improve and optimize insulation extrusion and processes to meet the high requirements of this important project. As a result, ZTT was able to produce a 26.3-kilometer insulated core in 18 days.

The two companies discovered multiple ways to improve efficiency and shorten overall production days. By reducing degassing time in accordance with the findings of materials research, the lead time of the Dafeng cable project was shortened by 20%.

To enable high performance and longevity of the composite submarine cable, ZTT partnered with Dow to employ clean manufacturing practices from raw materials to finished cable. ZTT improved production efficiency and ensured a high-quality final product due to the comprehensive technical guidance provided by Dow.

For the HV power component of the three-core cable, Dow supplied two super-clean compounds: DOW ENDURANCE™ HFDB-4201 SC for insulation and DOW ENDURANCE™ HFDA-0801 BK for semicon.

The benefits of using DOW ENDURANCE™ materials for this milestone project are:

- Long run performance based on Dow's unique low-scorch technology
- High reliability from super-clean and stable insulation material
- Long service life; accelerated lab testing suggests a service life of over 40 years in lab conditions.

Both Dow and ZTT are industry leaders devoted to continuing technology innovation in submarine cables that provide outstanding high-quality and reliable connections for the marine market.



### Project summary

#### CUSTOMER:

Zhongtian Technology Submarine Cable Co., Ltd.

#### APPLICATION:

Three-core 220kV submarine fiber optic composite power cable.

#### MATERIALS USED:

DOW ENDURANCE™ HFDB-4201 SC HV XLPE insulation compound and DOW ENDURANCE HFDA-0801 BK crosslinkable conductor shield and bonded insulation shield compounds for HV cables.

#### FUNCTIONAL REQUIREMENTS:

Super-clean compounds with proven performance and long extrusion run capability.

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