Effective installation of high-voltage cable systems offshore

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Abstract

ABB is one of world’s largest manufacturers of submarine and underground cable systems. As the installation of submarine cable systems is highly complex and a substantial part of the overall scope, a professional execution preparation is key to success.

Objectives

As the installation of submarine cable systems is a very critical part of the execution, ABB use the experiences they have made in hundreds of projects around the world to identify the challenges to consider in order to reduce the risks when planning a new installation.

Methods

Offshore Engineering Center (OEC):

Here, the main engineering components for the offshore cable installation are brought together. A team of dedicated experts is working together and focuses on the reduction of risks by a process driven planning of the project and a preparation of the submarine cable installation.

1. Pre-engineering work: The marine engineers are investigating and evaluating the geophysical, geotechnical and UXO (Unexploded Ordnance) survey reports for the specified cable-laying project.

2. Development of the Burial Assessment Study (BAS): The soil related risks on the planned cable route are investigated to define the optimal burial method to achieve the required cable protection.

3. “Route Engineering-phase”: The OEC team is minimizing the execution risks by adjusting the route, e.g. where possible delays and the increase of costs are expected.

The result from the BAS is also an important basis for the interaction with the customer and involved authorities.

Installation Assets – Cable laying vessels and trenching tools:

ABB has different installation assets that are needed for the submarine cable installation as well as frame agreements with suppliers. This will secure the availability of the assets in the different installation projects.

What?: Investment in an own state-of-the-art cable laying vessel

Why?: This vessel will enhance capacity and flexibility in submarine cable installation.

Construction: It will be build according to ABB specifications at Kleven shipyard in Norway and will contain numerous leading ABB marine technologies.

Delivery: The delivery of the 140 meters long and 30 meters wide vessel is scheduled for 2017.

Results

Purpose-built cable laying vessel

Cable laying system design based on ABB’s power cables parameters
- Cables can be installed without compromising it’s integrity
- Straight firing lines
- Turntable capacity optimized
- Excellent weather capabilities
- Anti roll reduction system
- Optimized planning with Octopus system

Conclusions

With the experience from hundreds of successful cable installation projects around the world, ABB continuously utilize this knowledge when planning new projects.

Learning Outcomes

Managing knowledge is one of the key topics in every industry. ABB’s approach in the planning of cable projects might inspire delegates to install similar centers with specialists.