PFISTERER

New cable connection between offshore platforms

For the first time, two sister platforms in an offshore wind farm will be connected by means of a bridge system with the aid of a new, flexible high-voltage cable with a conductor cross section of 800 mm². This increases the guaranteed energy feed-in for the wind farm operator. Pfisterer has received a major contract for this pilot project within the framework of the connection of the DolWin3 converter station. The converter station is a part of the network connection project DolWin3 for the transmission system operators TenneT. The electrical connector manufacturer Pfisterer already possesses the pre-qualification for the Feltoflex connecting cable with a conductor cross section of 800 mm². The onshore work to equip the converter station with medium-voltage cable systems has already started.

In the southwestern area of the North Sea, the DolWin gamma converter platform with a capacity of 900 MW is currently being constructed as the third connection within the DolWin cluster. Offshore converter platforms are connected to the mainland by means of a submarine cable. So far, HVAC connections between platforms have been a rarity. This solution, which raises the availability of the connected systems, is now being realized with DolWin gamma. To be able to switch over between the converter stations when necessary, the mother and daughter platforms – DolWin alpha and DolWin gamma – are linked by means of a bridge 80 kilometers offshore with a powerful AC-high-voltage cable.

Unique offshore cable routing

Pfisterer will lay all the high-voltage and medium-voltage cable systems on the AC side within the platform, as well as the cables on the connecting bridge. This major contract with a value of about six million euros is being carried out as a turnkey project. The configuration also includes a feasibility study, including dimensioning and calculation of current carrying capacity. "One particular challenge is laying the high-flexible Feltoflex HV. For this purpose, we have developed an extraordinary concept. The cable is routed from the upper deck of the DolWin alpha platform by means of a bridge to the DolWin gamma platform," explains Vukasin Basara, Project Manager for HV Cable Projects at Pfisterer.

High flexibility in rough seas

The connection between the platforms by means of a highly flexible 155 kV Feltoflex cable will have an overall length of over 200 meters and therefore be the world's longest connection between two offshore platforms. The cable, comprising approximately 4,000 individual strands of wire, is insulated with a special mixture of high modulus ethylene propylene rubber (HEPR) instead of cross-linked polyethylene (VPE). The increased flexibility of this cable is a definite advantage in high winds. This allows the platforms to move by up to 800 mm relative to each other, without causing any mechanical damage to the cable.

Pfisterer has already started with onshore work cabling the converter station DolWin3. The next step will be the offshore high voltage cabling stage. Two platforms will then, for the first time ever, be connected by a bridge with a highly flexible 155 kV cable. Demonstrating an overall length of over 200 meters, this will be also the world's longest link between two offshore platforms'

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Tested and safe

To ensure the construction of a cable connection with a power rating of 155 kV and the extraordinarily large cross section of 800 mm² was possible in the first place, Pfisterer was included at the project development stage back in 2011. In the course of prequalification, the company conducted numerous preliminary investigations for its solid-insulated CONNEX pluggable connection system. This successfully passed the contact aging test according to ICE 61238-1, as well as the electrical tests specified in IEC 60840 Section 12.4.

MV installation started

The platform is currently being constructed in the dockyard at Rostock-Warnemünde. The start of the onshore installation work in the medium-voltage range also marks the start of the execution phase for Pfisterer. The internal cable connections between the switchgear and the transformers will first be installed with MV cable, including the connections to the joint compartments with HV cable, before the offshore cabling stage. In the next stage the HV cables will then be installed, as well as the CONNEX connection system and CONNEX HV joints in various sizes. "The DolWin3 order is consolidating our position as the leading manufacturer of cable assemblies in the offshore wind energy sector, as well as our expertise and ability to offer complete integrated systems," explains Eduardo Santana, Director Sales Cable Accessories & Systems at Pfisterer.

About PFISTERER

PFISTERER is a leading independent manufacturer of cable and overhead line accessories for sensitive interfaces in energy networks. The Group is headquartered in Winterbach, near Stuttgart in southern Germany. PFISTERER develops, produces, and sells internationally successful solutions for 110 V to 1,100 kV voltage levels. With its end-to-end range of products for application in energy networks, consulting, installation, and training, the manufacturer is a valued partner to companies specializing in power supply, plant construction, and electrified rail transport around the world. PFISTERER operates production plants in Europe, South America, and South Africa, as well as sales offices in 18 countries across Europe, Asia, Africa, South America, and the USA. The Group employs around 2,700 employees following the recent acquisition of LAPP Insulators Holding.