The medium voltage substation that provides power to the connection across the Great Belt (Storebælt) in Denmark has been serviced and equipped with new busbar protection devices from ABB to insure stable and reliable power supply.

The Great Belt is the largest and most important channel between the islands Zealand and Funen in Denmark that connects Baltic Sea with the North Sea. The link across the Great Belt is 18 kilometers long and consists of a high-level bridge, two low-level bridges and a railway tunnel reducing travel times significantly; previously taking about an hour by ferry, the Great Belt can now be crossed in about ten minutes.

With their 254 meters, the pylons of the bridge are Denmark’s highest construction, and the tunnel, 75 meters below sea level, is one of Denmark’s deepest constructions. Only in 2015, the Great Belt link was crossed by 11,880,022 vehicles, of which 10,417,976 were passenger cars.

Importance of this link is vital, not only for Denmark, but also for rest of the Europe since this link is the only connection between Scandinavia and the rest of Europe by road. Therefore, the reliable power supply is absolutely necessary to sustain well working transportation network in that region.

The Great Belt link first opened in 1998 and the system put into operation during the construction is now 18 years old. Although the bridge itself has expected lifetime of 100 years, the electrical equipment must be maintained and replaced 6 to 8 times during that period.

This 18 km long link across the Great Belt Bridge is a vital part of the Danish infrastructure and is open 24 hours a day, 365 days a year putting an extremely high requirements on equipment controlling and supervising power supply.

Solution provided by ABB
The medium voltage substations have worked smoothly last 18 years, and to insure stable and reliable performance, for many years to come, equipment have recently been upgraded.

The portal buildings, at the end of the tunnel, contain two double busbars and duplicated (total of four) Safe Six medium voltage installations from ABB. Those have just been updated with new Relion® REB670 busbar protection devices. A busbar protection is an intelligent electronic device that measures the currents from all the bays and protects the copper busbars and associated switchboard against short circuits.
Concept delivered by ABB is double breaker topology. Previous installation was done by an older RADSS from ABB with interposing CT’s. Proposal from ABB was to exchange RADSS and associated equipment with busbar protection of type Relion® REB670. Total six units of Relion® REB670 are used to protect the busbar and the 10 kV switchgear consist of total 10 bays.

The medium voltage substation supplies not only electricity to the bridges, but provides also power supply down to 16 of the 32 cross passages between the two main tunnels. In those tunnels, equipment like distribution boards are installed, supplying power to the pumps in the main railway tunnel tube.

Customer feedback
“Without power, there will be no link, and for this reason, we have always used ABB’s components and expertise with great satisfaction”, says Jesper Brink, Operations Manager of the Great Belt link.

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