ABB helps implement special power protection and isolation in unit substations for onshore wind farms

14 March 2016 - ABB has supplied and advised in the implementation of power protection and isolation using a special medium voltage switch-fuse combination switchgear in unit substations for one of the country’s largest wind power projects – the Longyuan Mulilo De Aar 1 & 2 wind project in the Northern Cape, South Africa, with an expected installed capacity of 100 and 139 MW respectively.

ABB’s NALFWind 36 kV switch-fuse combination units will be incorporated into 163 unit substations as part of a R15 million order from Adenco Construction, the EPC (Engineering, Procurement and Construction) contractor for the R5 billion wind project which was part of the 3rd round of the DoE REIPPPP program.

The R15 million order from Adenco includes the supply and delivery of 163 ABB 36 kV NALFWind switch-fuses, 20 ABB 36 kV OVB-VBF outdoor vacuum circuit breakers and 10 ABB 145 kV LTB SF6 circuit breakers. The MV and HV equipment will be supplied by ABB’s local Electrification Products and Power Grids divisions. The first delivery of the breakers and fuses from ABB will begin in May 2016 and complete delivery is expected in October 2016.

The 36 kV switch-fuses combination units will be sourced from ABB in Poland, the 145 kV circuit breakers from ABB in Sweden and the 36 kV outdoor circuit breakers from ABB in India.

The ABB NALFWind 36 kV switch-fuse combination units are specially designed for use in wind electricity distribution environments where HRC fuses are required to handle high levels of fault energies to provide protection and isolation on the windfarm electricity network, one of the fastest-growing renewable energy sectors.

The solution chosen was considered the most cost-effective solution for transformer/network protection at each of the 163 unit substations (1 per wind turbine).

It is the first time that the NALFWind 36 kV switch-fuse combination units will be used in a unit substation at an on shore wind farm project where the switch-fuse forms an important component of the network.

The fuses used for ABB’s NALFWind are a new design, based on fast acting ABB CEF-S, which secure and protect against faults in low-voltage switchgear. The CEF-S fuses are specially designed to achieve the lowest possible breaking current value within 100 ms (milliseconds).

ABB is working together with Adenco Construction to develop a unit substation prototype, to be supplied by Powertech Transformers, in which the 36 kV switch-fuse devices combination units will be mounted.
“This is an advanced technology breakthrough in the way that the application has been developed for these windfarm projects to maximise cost effectiveness and safety,” says Mike de Swardt, Regional Manager, Western Cape Region, ABB South Africa, who worked closely on the project. “It is far more cost-effective than traditional ring main unit solutions for compact substation applications,” says de Swardt.

Says Alec De Waal, Director at Adenco Construction and Project Director on the De Aar projects, “Adenco Construction has been conducting business with ABB since we started Adenco 22 years ago. This long standing relationship is not only based on the high level of expertise and cutting edge technology which ABB brings but is also equally important based on the excellent pre- and after-sales service, solutions driven mind set and can-do attitude we have experienced with ABB and its staff.”

The Longyuan Mulilo De Aar 1 & 2 – Wind Project, commenced towards the third quarter of 2015 and is expected to be operational by the last quarter of 2017.

ABB (www.abb.com) is a leading global technology company in power and automation that enables utility, industry, and transport and infrastructure customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in roughly 100 countries and employs about 135,000 people.

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