ABB to energize world leading facility for materials research using neutrons

Zurich, Switzerland, December 7, 2015 – ABB technologies to provide reliable and sustainable power to support innovation in materials research

ABB will supply a complete distribution substation solution to the European Spallation Source (ESS) research center being constructed in Lund, Sweden. When completed, ESS will be a world leading facility for materials research using neutrons.

Neutron science is a critical tool in for example the development of industrial and consumer products worldwide. The new research facility will help to study and develop materials with applications in a wide range of industries as manufacturing, pharmaceutical drugs, aerospace, plastics, information technologies and biotechnology.

"ABB technologies will play a key role in ensuring optimum power supplies, fulfilling extremely high requirements in terms of quality and stability," said Claes Rytoft, Chief Technology Officer, ABB Group and Power Systems division. "We are also proud to support the sustainability vision of ESS by minimizing environmental impact." The annual energy consumption for the research facility is estimated to be below 270 GWh.

ABB is responsible for project execution of the 20-kilovolt and 400-volt grid that will provide power to the facility. This includes the design, supply, installation and commissioning of the primary and distribution substations. The scope of supply includes medium-voltage switchgear, dry-type transformers and ABB's MicroSCADA system, which will monitor the facility in real time and support operators in taking corrective action in the event of any disturbance or fault. All the substations have been designed for maximum safety and reliability.

To support ESS in its sustainability vision, ABB will also deliver the medium-voltage switchgear that deploys an alternative eco-efficient gas mixture to the normally used SF6 gas. The transformers will be oil-free and halogen-free cabling between the switchgear will be used. Communication will be digitally managed based on IEC 61850 open protocol systems, minimizing the amount of cabling and conserving materials.

"It is important to design this facility so that the energy system operates optimally and without any disturbances. That's why we've placed extremely high requirements on the power equipment both in terms of quality and stability," said Kent Hedin, Head of Conventional Facilities Division at ESS.

"This is a challenging assignment and power supply is a critical component. With ABB as a partner, we have a full-range supplier for the entire system and we look forward to this collaboration," said Dan-Magnus Sköld, Project Director at Skanska, the contractor that builds the research facility.

The vision of ESS, a partnership of European nations, is to become the world's first sustainable research facility, and the energy solution provided by ABB is an integral part. The research facility will have 400 to 500 employees when fully operational and approximately 3,000 guest researchers visiting each year. The first neutrons are to be produced in 2019.

Spallation is the process for producing neutrons by means of a particle accelerator and a heavy metal target (in this case, tungsten). Researchers can use neutrons to study different materials and learn more about their composition and how they work. ESS will provide neutron beams up to a 100 times brighter than any existing neutron source, enabling scientists to see and understand basic atomic structures and forces at lengths and time scales unachievable at other spallation sources.

ESS will provide researchers with a "super microscope," which will radically improve their ability to develop materials.



About ABB

ABB (www.abb.com) is a leader in power and automation technologies that enable 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 140,000 people.

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