

GCB Replacement - Kyndby Vaerket in Denmark

Enhancing Power Plant Reliability

One of the major products in the High Current Systems is the Generator Circuit-Breaker (GCB) that is used in Power Plants world over. Irrespective of the nature of the Power Plant, be it thermal, nuclear or renewable energy comprising of hydro or wind, it needs a Generator Circuit-Breaker. While providing the services for the GCBs, ABB is not only supplying spare parts, performing repairs, inspections, overhauls and reason based maintenance but also actively involved in Replacement or Retrofit of GCBs.

In a broader sense, GCB Replacement means replacing an old Generator Circuit-Breaker by a new state-of-the-art GCB in an existing power plant. This may be due to aging of the GCB or the owner's decision to install the state-of-the-art GCB or due to non-availability of spare parts for the existing GCB as the manufacturer might have ceased manufacturing of such GCBs or to match the requirements of the plant that is upgraded in its power or such parameters.

Retrofitting of a power plant with a new GCB means installing a Generator Circuit-Breaker into an existing power plant, which has no Generator Circuit-Breaker or has only a load break switch installed.

The Story

One such challenge came to ABB from Kyndby Vaerket Power Station in Denmark owned by DONG Energy. This Power Station has 2 x 63MW Gas Turbines for peak load operation and it is one of the emergency and peak load plants in Denmark. The plant was built in 1972 and was equipped with BBC compressed air breakers of the type DB. The customer planned to refurbish some parts of the power plant that included voltage converters, several air operated isolating switches as well as the Generator Circuit-Breaker.

It is a known fact that old air blast circuit-breakers require more maintenance and more downtime for maintenance which



is not economical. Also, the short circuit current calculations showed that a vacuum circuit-breaker was not an optimal choice for the existing equipment at site, as GCB replacement would be. As a result, the customer opted for the state-of-the-art and more reliable SF6 type of GCB manufactured by ABB in Switzerland.

While accepting the order with pride, ABB also realized that, for this project, the key to successful supply, installation and commissioning of the new GCB lay in the planning. Since this power plant has to be on stand-by quite often, be ready to come on line to supply power to the grid and also work as a peak load supporting machine the downtime for the GCB Replacement action needed to be minimum. The commitment to execute the replacement action on time and within the time frame ABB had to prepare a detailed plan for all activities onshore at site as well as offshore in Switzerland.

After the first plant walk around ABB gave a feasibility report consisting of technical details and a detailed time schedule to the customer.

ABB's scope included the design and supply of two complete systems comprising of:

- ABB GCB Type HGI 3
- Line disconnect with integrated earthing switch
- Start-Up disconnect switch

- Instrument transformers such as Voltage Transformers and Current Transformers
- Connecting pieces of tubular bus bars and other connection zone material
- Dismantling of the existing GCB, erection, commissioning and testing of the new GCB

The experience gained from the vast installed base of ABB GCBs with feedback from around the world in installing, commissioning and maintaining a fleet of more than 7'000 GCBs came in handy when ABB got a challenge like Kyndby Vaerket. The pillars of success in this project were

- Site survey and technical clarification meetings with the customer prior to the start of the project
- Establishing an open and direct communication channel with the customer
- Close cooperation with ABB in Denmark
- Highly professional engineers, supply chain managers, local support manpower, experienced project managers, erection and commissioning specialists of ABB

ABB is proud that it stood by its commitments and completed the GCB replacement projects at Kyndby Vaerket on time in January 2012 for the first GCB and in December 2012 for the second GCB accommodating the time slots given to ABB by the customer. Satisfied customers is ABB's bedrock for growth.

Of late, the importance of the GCB Replacement and Retrofit in existing power plants is gaining customers' attention. Many existing power plant projects around the globe, are either getting refurbished or getting their life extension upgrades. Power Plant Owners are allocating necessary budget and management attention to such projects. To address this market segment ABB has created a special focus group within the High Current Systems that specifically champions GCB Replacement and GCB Retrofit projects across the world.

ABB is currently working on several projects that need GCB Replacement or Retrofit on a turnkey basis. The expertise and the knowledge base established by ABB by being the market leader in GCB is its strength and serves as a source of its continuing success.



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