Customer need

ABB Power Transformers manufactures ≤ 800 kV HVDC and ≤ 800 kV AC power transformers and ≤ 800 kV AC shunt reactors, with fixed or variable reactive power consumption for stabilizing line voltages. In a comprehensive, major contract with a customer in the Middle East, testing was requested at 300 Mvar rated power, 400 kV rated voltage and with 3-phase energizing. To accomplish this, ABB Power Transformers determined that a test hall upgrade was necessary.

Specifications for the bank called for extremely low PD levels and reconnection capabilities at various Mvar ratings. To house this new equipment, the test hall was expanded.

ABB solution

Expertise is readily available at ABB Capacitors, which operates on adjoining premises in Ludvika. Each delivery from Transformers is unique and thus requires the capacity to run many different test cases at various voltages and outputs. This was a technological challenge on a major scale.

The solution developed in collaboration between ABB Power Transformers and ABB Capacitors is a flexible solution, consisting of a capacitor bank made up of modules (a total of 24). Each module has unbalanced measurement using optical measurement transformers. The flexibility permits testing in various combinations – ≤146 kV 300 Mvar, one- or three-phase with 50 Hz, 60 Hz or 240 Hz.

To achieve a low bank height, each phase is constructed as two capacitor stacks for a total of six for the three phases. This configuration enables the placement of switch gear/bus-bar runs in ceilings and on walls. With its advanced control system, ABB Power Transformers can utilize automation to connect the various test cases. The high PD demands are met by equipping each floor with corona rings.

ABB Capacitors:

- Designed and built the technically complex bank according to stringent specifications.
- Met the extremely high PD requirement.
- Delivered quickly. The bank for testing of shunt reactors was put in operation well ahead of schedule.

The test hall capacitor bank is in regular operation, doing its job of generating reactive power for testing of larger shunt reactors and power transformers.

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The capacitor bank was installed and energized during 2008.
Customer benefits

- A secure and flexible solution which fulfilled the criteria for testing
- A solution that considered the actual situation on site
- A complex solution that could in a short time be designed, produced and installed.
- A very satisfied customer

A complete program with comprehensive support

ABB in Sweden has more than 70 years of experience in developing and manufacturing power capacitors.

ABB’s capacitors and their applications are used both in transmission and distribution grids.

We have delivered filter components, shunt- and series-compensating gear and HVDC and FACTS transmission systems to power companies and industries all over the world.

There is potential for efficiency gains in most grids and our capacitors and filters are key components in achieving them.

As an ABB customer, you gain access to an all-embracing line of capacitors as well as complete support in the form of analyses, calculations and suggestions on custom solutions for generation of reactive power and harmonic filtering. Solutions that make it possible to increase active power and reduce disturbances.

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