When a generator step-up transformer at Lumut Power Plant went out of service recently, the initial measurement and oil analysis results indicated the unit was damaged. Following numerous discussions with ABB to determine the best approach to take, Malakoff decided to opt for ABB’s TrafoSiteRepair™ to upgrade the existing ABB spare unit from 16kV to 19kV in order to meet the generator output voltage as the original non-ABB unit was taken out of service.

The story
The on-site repair involved replacing the LV windings on the spare unit. Collaboration with the ABB factory in Thailand allowed quick design, supply and delivery of LV windings (19kV) to site. Together, with support from ABB Halle, Germany supervised the exchange of the windings and active part assembly on site. This was very important for the customer who was loosing approximately $300,000 USD downtime per day.

The drying process and transformer testing at site was possible by using a Low Frequency Heating with Hot Oil Spray Technology accompanied by an ABB High Voltage Mobile Testing unit allowing ABB’s TrafoSiteRepair™ to tailor Malakoff’s individual needs at each step.

In less than 4 months the plant is now back in service. Completion of the transformer commissioning in November 2009 has allowed Malakoff to put this unit into service until end of January 2010, earning approximately $18.6 MUSD.

Customer Needs
- Modification of LV system (Exchange LV winding from 16kV to 19kV)
- Replacing ABB Transformer spare unit at existing plinth-yard
- Minimum downtime
- Exchange opportunity

ABB’s Response
- Supply new LV winding set (19kV) by using ABB’s TrafoStar™ design concept
- ABB network of facilities and expertise
- Exchange LV winding on-site by using all the ABB mobile facilities such as HV Mobile Testing, Low Frequency Heating, Oil Treatment Plant

Customer Benefits
- Shorten downtime period
- Easy to monitor and control the project schedule
- Completion time within 4 months
Bringing the factory to site
Power transformer factories and workshops are characterized by their orderliness, cleanliness, heavy lifting equipment, special tools and fixtures, specialist experienced teams in each process area, drying facilities and test bay. The ABB TrafoSiteRepair™ brings each of these capabilities to the site, tailored to meet the individual circumstances of each case:
– If the customer does not have a repair facility then ABB will arrange one. This will include a controlled environment for work on the active part.
– If there is no installed heavy lifting capability available, then ABB will bring it to the site, with lifting capacity up to 400 tonnes we can handle the largest active parts and cores.
– ABB’s experienced and skilled operation teams will work on site during the different phases of the project. Throughout the project a supervisor will coordinate and take ownership of all aspects.
– ABB provides full sets of tools and fixtures.
– Maintaining the dryness of the insulation is paramount for quality control. All windings are manufactured, dried and impregnated at the factory. They are then specially packed, shipped and stored ready for assembly onsite. The final drying of the active part achieves a moisture level of < 1%.
– High Voltage testing of the assembled transformer is carried out on-site with ABB’s state-of-the-art TrafoSiteTesting™ equipment, according to a test schedule that is pre-agreed with the customer.

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