Combining more than 700 years of transformer manufacturing experience, ABB is in a unique position to offer site repair services for all types and brands of core and shell type transformers. TrafoSiteRepair™ typically consists of the following steps: disassembly of the active part, replacement of complete windings, refurbishment of the core, drying of the active part, high voltage testing and re-commissioning.

A new option for remanufacturing/repair
ABB is renowned for its flexibility in the repair of many different types and brands of transformers. With access to original design files, documentation and technologies used over the last half century within the ABB family as well as the current common design, manufacturing and quality practices used by ABB transformer factories throughout the world, ABB is ideally positioned to get failed or at-risk transformers up and running as soon as possible. ABB can now offer even greater speed of repair by offering state-of-the-art TrafoSiteRepair™, in other words bringing the factory and test floor to the customer site.

Before proposing any recommendations on whether a transformer should be repaired on-site, repaired in a workshop or simply replaced with a new unit, ABB will assess the relative merits of each solution on a case-by-case basis based on technical and economical analysis. TrafoSiteRepair™ is often the best solution when transportation presents a challenge.

Bringing the factory to site
ABB Power transformer factories and workshops are characterized by their orderliness, cleanliness, heavy lifting equipment, special tools and fixtures. Specialized teams in each process area, drying facilities and test floor.

ABB brings the following to each TrafoSiteRepair™:
– If the customer does not have a repair facility then ABB will arrange one. This will include building a temporary controlled environment for work on the active part.
– If there is no installed heavy lifting capability available, ABB will make arrangements to bring it to the site. Large core and coil assembly up to 400 tons can be handled on-site and safely under supervision of ABB experts.
– ABB’s experienced and skilled operation teams will work on-site during the various phases of the project. Throughout the project a supervisor will coordinate and take ownership of all aspects.
– ABB provides full sets of special tools and fixtures.
– Maintaining the dryness of the insulation is paramount for quality control. All windings are manufactured, dried and impregnated at the transformer factory. The final drying of the core and coil assembly is achieved using Low Frequency Heating - a hot oil process with a moisture level of <1%. The windings are then specially packed, shipped and stored ready for assembly on-site.
– High Voltage testing of the assembled transformer is carried out on-site with ABB’s state-of-the-art TrafoSiteTesting™ mobile test laboratory as per industry and agreed customer specifications.
Quality
When the subject of site repair is discussed, quality is often a topic raised by the transformer owner. The question is, how can a full winding replacement be carried out in the field when factory repair or new manufacture needs carefully controlled conditions and extremely high quality control?

The answer is that the same quality control requirements which apply in the factory are applied in the field:
– Strict quality control of materials
– Environmental control for critical processes
– Extremely high standards of workmanship
– Rigorous testing of applied and induced voltage with partial discharge measurement.

Customer Success Stories
ABB’s site repair credentials are impressive, with more than 300 power and special type transformers repaired on-site globally during the last 20 years. The largest units have been up to 750 MVA, 800 kV AC and 600 kV DC.

Here is a brief overview of two projects:

Success story 1
An electrical utility experienced a failure in a 25 years old, 100 MVA 240/15 kV core type, generator step-up transformer. The utility had a time challenge since this transformer needed to be back in service before the summer consumption peak.

The repair work which included replacement of windings and core repair was executed by ABB at site within 40 days. The repair was verified by performing applied and induced high voltage tests with partial discharge measurement using ABB’s state-of-the-art TrafoSiteTesting™ mobile test unit.

What did the utility gain?
– The transformer back into operation before the summer peak
– Minimized loss of production

Success story 2
A nuclear power station experienced a failure in a 400 MVA single-phase shell-type generator step-up transformer. The generating company decided to replace the windings and upgrade the faulty unit.

What did the nuclear power station gain?
– Repair time of 4 months, greatly reducing the risk of downtime at the plant
– Elimination of transport time, cost and risk

Conclusion
There can be no doubt that, in cases where transport is challenging, site repair of a power transformer offers time and cost advantages that benefit the customer. It also offers a solution for those difficult cases where infrastructure no longer supports the transportation of large power transformers.

ABB is the global leader in site repair and TrafoSiteRepair™ offering a globally coordinated quality assurance process, is the partner of choice when customers opt for repairing a transformer on-site.

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