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.

**A new option for remanufacturing/repair**

ABB is renowned for its flexibility in the repair of many different types and brands of transformers. ABB is ideally positioned to get failed or at-risk transformers up and running as soon as possible because we have access to original design files and documentation of 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 now offers even greater speed of repair with TrafoSiteRepair™, where we bring the transformer factory and test floor to the customer site.

Before recommending whether a transformer should be repaired on-site, repaired in a workshop or replaced, ABB performs technical and economical analysis of the transformer. TrafoSiteRepair™ is often the best solution when transportation presents a challenge.

**Bringing the transformer 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. TrafoSiteRepair™ typically consists of the following steps: disassembly of the transformer, replacement of windings, refurbishment of the core, drying of the active part and high voltage testing.

**ABB brings the following to each TrafoSiteRepair™**

- If the customer does not have a repair facility, ABB will arrange one. This will include building a temporary controlled environment for working on the transformer.
- If there is no installed heavy lifting capability, ABB will make arrangements to bring it to site. A core and coil assembly up to 400 tons can be handled on site safely under the supervision of ABB expertise.
- 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 all activities.
- 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 oil impregnated at the transformer factory.
- The final drying of the active part achieves a moisture level of <1 percent.
- The windings are 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™ system.

*ABB, ASEA, Ansaldo, BBC, GE USA, Kuhlman, Moloney, National Industrial, Stromberg and Westinghouse*
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 330 power and special type of transformers repaired on-site globally during the last 20 years. The largest transformers 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 year 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 Tr$	ext{a}$fo$	ext{S}$iteTesting™ mobile test system.

What did the customer gain?
- the transformer was back in operation before the summer peak
- production loss was minimized

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

What did the customer gain?
- the repair time of 4 months greatly reduced the risk of downtime at the plant
- transport time, cost and risk were eliminated

Conclusion
There can be no doubt that, in cases where transportation is challenging, site repair of a power transformer offers time and cost advantages that benefit the customer. Tr$	ext{a}$fo$	ext{S}$iteRepair™ also offers a solution for those difficult cases where infrastructure no longer supports the transportation of large power transformers.

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