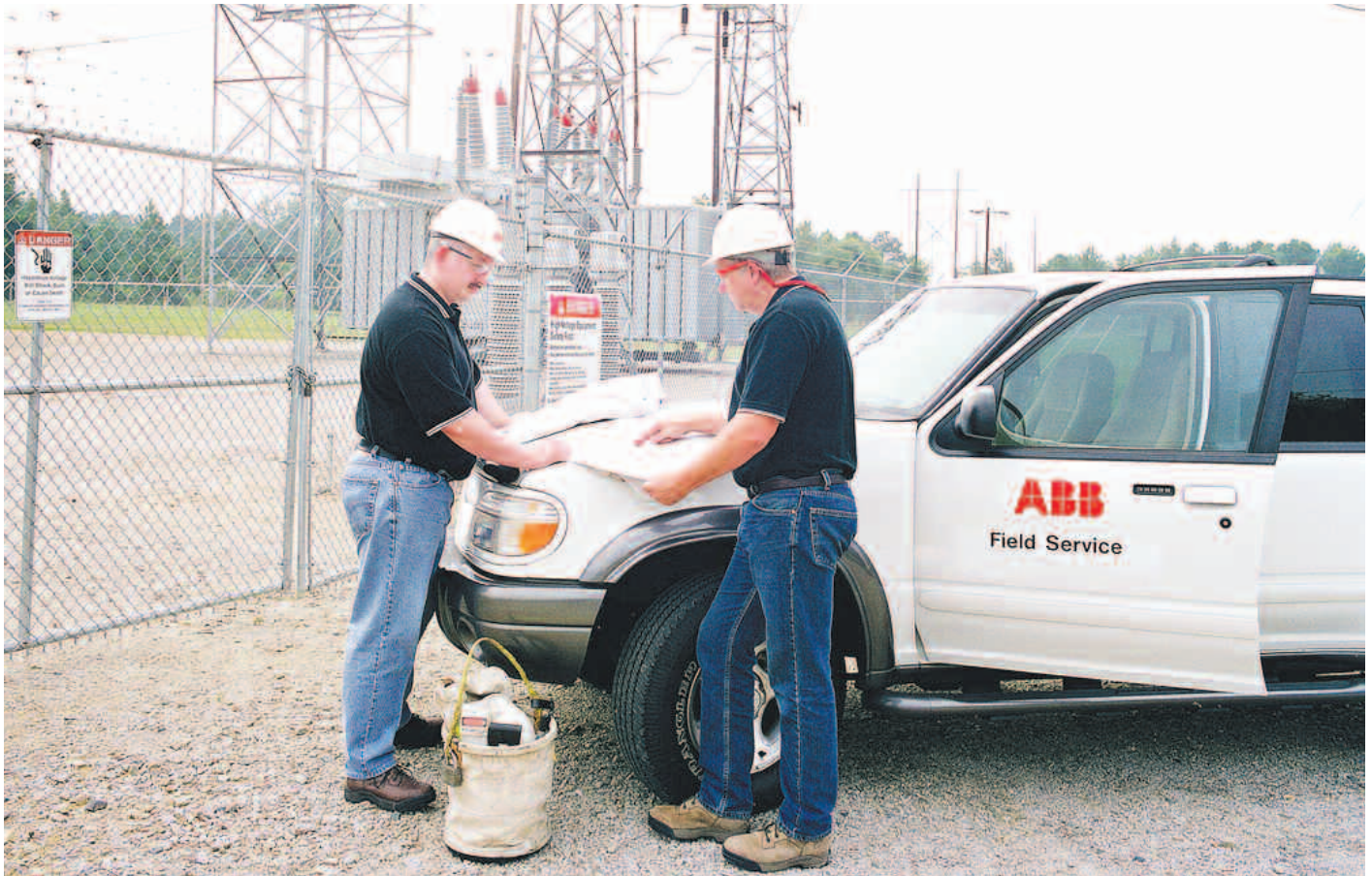




# Transformer Service

## Intelligent service for a reliable future

# Competence makes all the difference



## A team for every mission

Our transformer service teams at ABB are experts in their own field. We have the knowledge and experience to meet all your needs in both on and off-site activity and are located in all five continents with service centers close to you.

– Our motto: Responsiveness.

## Solutions for every situation

With over 100 years of experience in the design, development and manufacturing of power, distribution, traction, industrial and special transformers and associated services we have established a wealth of technical solutions and equipment and have the largest installed base of

transformers of any manufacturer worldwide. We provide all-encompassing service through-out the life of a transformer from erection and commissioning to recycling of all brands and types of transformers. We maintain archives containing full technical information for the following legacy brands: ABB, ACEC, ASEA, Ansaldo, Breda, BBC, CGE, Challenger, Elektrisk Bureau, Elta, GE (> 40 MVA), GTE, Gould, IEL, ITC, ITE, Indelve, Industrial Design, Italtrafo, Lepper, MFO, Marelli, Moloney, National Industri, No-Tra-Mo, Ocren, OEL, OTE, Richard Pfeiffer, Sécheron, Strömberg, TIBB, Thrige, Westinghouse, Zinsco.

## Worldwide network responsiveness

### Engineering and consulting

With our optimal equipment redesign, analysis, expertise and solution proposals; the implementation of action plans, together with training, can form the basis for a successful future. The total knowledge and experience of ABB's team of worldwide transformer experts is at your disposal when it comes to solving complex problems.

– Competences when you need it.

# Perfect transformer care – from installation to removal

## Preventive maintenance

Our services which include condition enhancement, on-site refurbishment, supply of original spare parts, tap-changer rework, logistics, transportation and a 24/7 service is our offering, guaranteeing maximum availability of your equipment. We are also your partner from the planning phase through to final commissioning. Our professional management of the processes and site activities support you in developing the optimal solution.

- Reduce life cycle costs

## Retrofit and remanufacturing

We can improve the performance, increase the value and extend the asset life of existing equipment by carrying out a full technical restoration. Using our transformer expertise in design and manufacturing we do not repair but remanufacture the unit,

delivering an as-new unit based on today's technology and know-how. This work can be carried out in our specialized service repair factories located around the world or on-site, using ABB's TrafoSite Repair™ solution where the factory is brought to site.

- Extend asset life time

## Service contract

Our service includes the identification and traceability of equipment, periodic status assessment, condition based maintenance, repair and performance improvement, asset optimization, new transformer transportation, erection and commissioning, outdated material recycling and operator training. Relax in the knowledge that ABB provides:

- Maximum availability at optimal cost



# A complete portfolio of service solutions



Transformer repair at the Entraque Hydro Power Plant in Italy

## Global experience – Local solutions

Whatever your expectations, your installed power and the size of your network, ABB has a full portfolio of services providing solutions for all eventualities. Each and every job, on or off-site is accurately assessed, utilizing highly developed skills and technical tools to provide the best end result. Our solutions take all factors into consideration, including the technical, financial, environmental and safety aspects. The result is a reliable and long-lasting solution.

ABB has over 50 transformer facilities and more than 25 service centres worldwide backed up by a permanent research and development program aimed at ensuring benefits are provided for our customers. Our service and repair teams are available 24 hours a day. It does not matter where you are in any of the five continents – your ABB partner is ready with all its knowledge and worldwide expertise to ensure that

you get the best you deserve in record time. Dedication to service is a rare phrase nowadays, at ABB it is still alive.

## Condition Assessment

Our solid knowledge of the equipment status based on history, design review and advanced diagnosis, anticipated fault detection, corrective action planning enables greater reliability and optimization of network assets.

- Move toward Condition Based Maintenance

## Always one step ahead

With condition assessment, you at all times: know...

- know the status of available assets
- ensure an optimal use of equipment
- eliminate unexpected problems
- can rely on uniquely skilled teams anywhere in the world with a complete portfolio of service solution

- anticipate and bring your asset back in service in a record time

## On-line Monitoring System

With the measurement, monitoring and continuous follow-up of main operation data, analysis and interpretation of the evolution of one or more specific parameters, identification and evaluation of contingent fault or aging causes, our system optimizes unit performance and guarantees availability. State of the art algorithms and models providing valuable information such as aging of insulation, bubbling temperature, tap changer status are just a few examples of the benefits provided by the ABB monitoring system. Staying ahead means taking the right decisions, at the right time, based on the right information. ABB Transformer Service is an active partner in your business.

- Ensure high availability

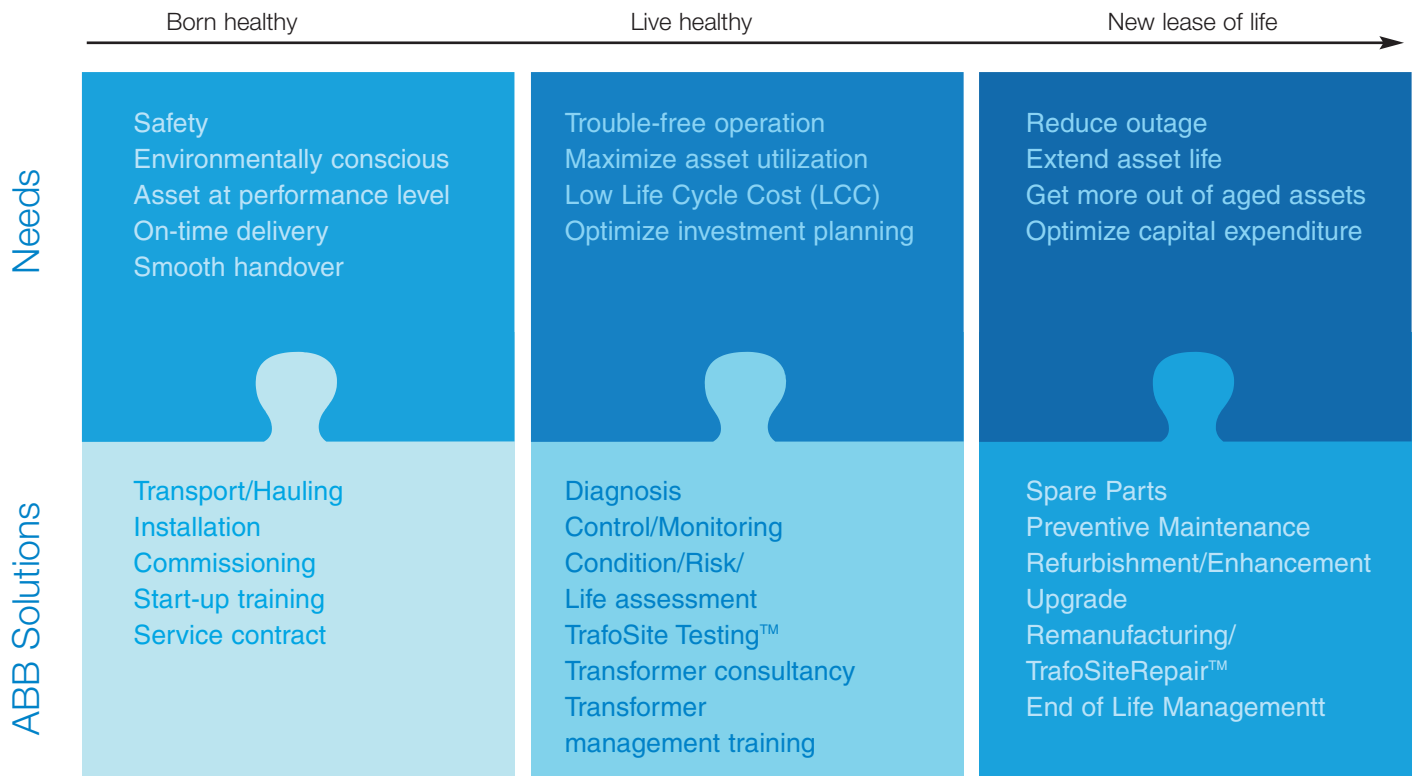
# Perfect transformer care

## Reap the benefits

- Trouble free operation of generation, transmission and distribution systems
- maximize asset availability and minimize downtime
  - reduced operation and maintenance costs
  - more power from your existing transformers
  - retrofit of aging equipment
  - planned and optimized investment
  - personal safety and environment protection



## Ensuring local needs with global knowledge



# Our portfolio



## Engineering Solutions

Our Engineering Solutions provide a new level of “intelligent” services improving the performance, availability, efficiency, and predictability of a transformer fleet or single unit. Full batch of diagnostics and testing, on-line monitoring supervision, condition assessment, innovative solutions meeting environmental conditions, training courses, engineering and consulting services all form an integral part of our portfolio supporting the needs of our various customers.

**Knowing the condition of a transformer fleet or unit is the key to success for your optimal maintenance program**

## Factory Remanufacturing/Repair

We provide performance improvement and increased value of existing equipment due to full technical restoration, modernization and complete component check. We also have an effective service network across its range of transformer factories and dedicated facilities.

Repairing a transformer, instead of replacing it, can in certain cases lower your capital maintenance cost dramatically and provide quicker turnaround than buying new.

**We work with their customers to develop a repair plan which goes beyond replacing worn out parts. The ultimate result is a remanufacturing that ABB calls “as-new” compared to the original.**

## TrafoSiteRepair™

Our 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. Combining more than 100 years of transformer manufacturing experience, we are in a unique position to offer site repair services for all types and brands of transformers including the following on site works.

- Disassembly of the active part
- Replacement of complete windings
- Refurbishment of the core
- Drying of the active part, High voltage testing
- Recommissioning.

**TrafoSiteRepair™ is often the best solution when time or transport presents any kind of a challenge due to expense, time and complexity.**

## TrafoSite Testing™

Our latest development is a Mobile High-Voltage Test System for On-Site Testing of Power Transformers. Worldwide, it is the first 3-phase Mobile High-Voltage Test System for Power Transformers based on a static frequency converter which is especially designed for performing routine and special tests according to standards as IEC 60060-3, IEC 60076 and IEEE Std. C57.12.00.

Supplemented by the most common diagnostic methods used under field conditions, the Mobile High-Voltage Test System enables us to offer a full range of testing on all types and brands of transformers from small grid transformers up to the largest step up generator transformers.

**ABB, with its globally coordinated and quality assured processes is the partner of choice when customers opt for quality-secured repairing and state-of-the-art testing of transformers using TrafoSite Testing™.**



### Field Service

We provide condition enhancement and on site refurbishment, supply of original spare parts, tap changer rework, logistics and transportation, 24 hours a day service in order to guarantee the maximum availability of the installation.

We are also your partner in the planning phase. Our professional management of the processes and site activity support you in finding the optimal solution. We offer: identification and traceability of equipment, periodic status assessment, condition based maintenance, repair and performance improvement, asset optimization, outdated material recycling, and user training.

**We believe in proactive, preventive and predictive maintenance. Our field personnel are trained and certified to help you avoid downtime and get you back online as quickly as possible.**

### Advanced Field Service

LFH - ABB's Low Frequency Heat drying method heats a transformer core with an electrical pulse, creating a vapor action that effectively pushes moisture from the insulation into the oil extending the life time of a transformer by 33% compared to conventional drying.

Oil reclaiming - Water, acids and sludge are the oxidation products that cause the most concern for oil ageing. Reclaiming of transformer oil is a measure to restore the oil's properties to very near those of new oil.

Advanced diagnostics - Close observation of dissolved gases in the oil and other oil properties provides the most valuable information about transformer health. ABB's advanced diagnosis analysis typically reveals the severity of the problem, locate the fault and provide you with expert advice on what action to take.

### Spare Parts

Having critical parts on hand can significantly reduce the down-time associated with transformer maintenance and failure. Some of these parts can be purchased quickly "off-the-shelf" from the manufacturer. Other parts can take months to obtain.

We have access to the original design documents for the impressive number of transformers installed worldwide, which belong to the ABB family: ABB, ASEA, Ansaldo, Breda, BBC, CGE, Elektrisk Bureau, Elta, GE, Gould, IEL, ITE Indelve, Italtrafo, Lepper, MFO, Marelli, Moloney, National Industri, Ocren, OEL, OTE, Richard Pfeiffer, Sécheron, Strömberg, TIBB, Thrige, Westinghouse and others.

**This makes it possible to trace part numbers and obtain original parts for replacement within a record time. We can also provide additional engineering support to find equivalent parts or to redesign parts to replace the ones that are no longer available.**

## Contact Us

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