

SERVICES

## Hydro Services

### ABB Electrification Industrial Solutions

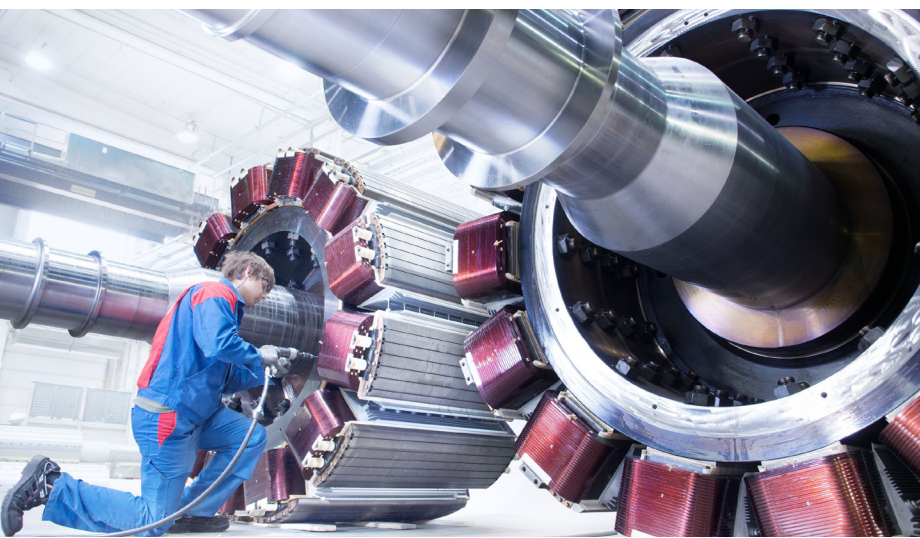


ABB has been manufacturing and servicing hydropower equipment for over 100 years. We are uniquely qualified to provide testing, inspection, parts, and repair services to extend the life and improve the performance of your critical hydro plant assets. We offer a complete range of services for turbines and generators in our network of service facilities or on-site at your location.

Back in the 19th century - when hydroelectric power generation was in its infancy – ABB was there. Every year since, we've been continuing to learn and improve how to deliver the right parts and services that keep hydro equipment running and power flowing. We've never stopped learning, and no one has accumulated more knowledge, experience and insight than ABB.

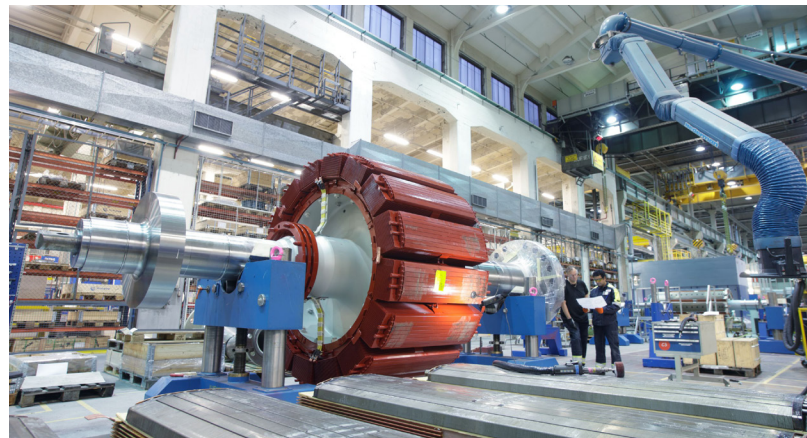
Today, we remain strongly committed to maximizing the investments that allow you to tap into that knowledge. This includes investments in truly global operations and engineering innovations, and ensuring we have the capacity and technically trained resources to help you achieve the highest performance possible from your hydro equipment. It also includes investments in continuous development and refinement of the smart tools that enhance the quality of the work we perform and the documentation that details the result.

#### **What can you expect from ABB's Hydro Services team?**

Whether the project is large or small, straight-forward or complex, our customers expect:

- a global mindset, with a local presence
- complete product offerings with new and innovative technologies
- a pro-active approach to all aspects of Environmental Health and Safety
- responsiveness and commitment - from beginning to end
- deep domain expertise in engineering, project management, and craftsmanship
- an understanding of today's challenges – the kind that comes from experience
- improvements in equipment performance (regardless of its manufacturer)

Wherever your hydro power generation assets are located, ABB is on the ground and ready to provide the products and services you need. Anywhere in the world, ABB is bringing solutions to the hydro industry.



#### **Site Services**

- On-site management and supervision
- Mobilization of tools, equipment, and trained personnel
- Environmental Health and Safety
- Generator preparation, asbestos abatement, and monitoring
- Mechanical inspections
- Performance testing
- Regional Service Center support
- Quality methods and pre-planning

#### **Hydro Generator Repair Services**

- Test and Inspections
- Stator rewedges and repairs
- Rotor pole refurbishment
- Generator rewinds (high and low voltage insulation systems)
- Generator core restacks
- Stator and rotor cleaning
- Upgrades/modifications
  - Increased output
  - Efficiency improvements
  - Rotor pole upgrades
  - Voltage change
  - Frequency conversion
- Replacement parts

#### **Mechanical Services**

- Turbine repairs - Weld repair
- Wicket gates
  - Gate and shaft repairs
  - Bushing replacement
- Shaft repairs

- Machine shop/parts fabrication
- In-shop and on-site balancing
- Thrust and guide bearing repair
- Head cover repairs
- Control ring repairs
- New shaft packing/seals
- Restore seal housing

#### **Measurement and Control Solutions**

- Vibration monitoring
- Oil-in-water detection
- Turbine governor upgrades/retrofits
- Generator protection and excitation upgrades/retrofits
- Unit and plant control systems
- Cyber security assessment/solutions
- Pressure and level sensing
- Pipe flow solutions

#### **Power Delivery**

- Transformer
  - Oil analysis and processing
  - On-site Rewinds
  - Retrofits
- Generator Protection
  - Relay testing and programming
  - Electromechanical to Solid State Relay upgrades
- Generator Breaker
  - Breaker retrofits and upgrades
  - Breaker testing
  - Bus duct testing, modifications and replacement

Contact us:

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