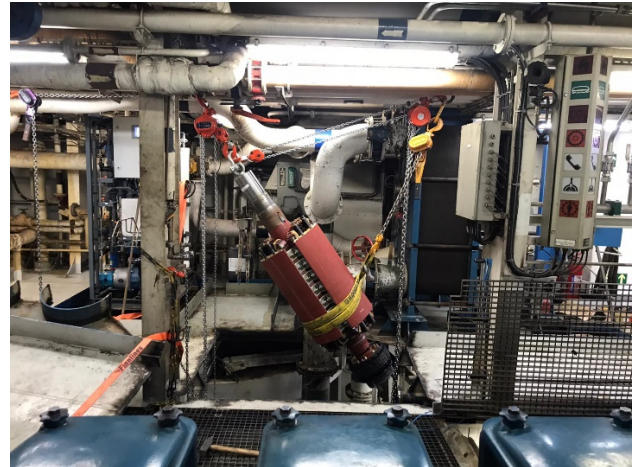
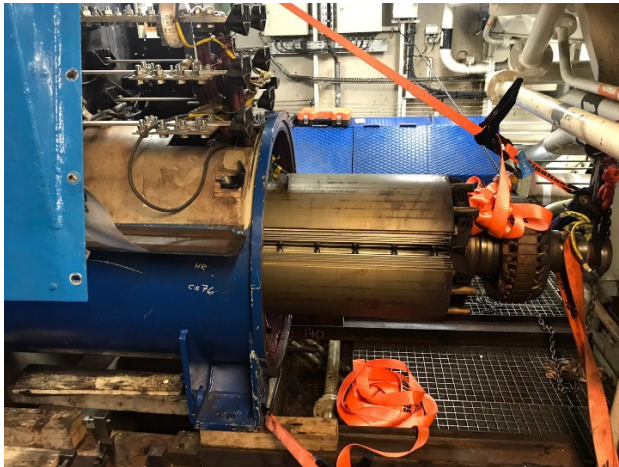


# TECHNICAL BULLETIN

NAOY\_TB62021-06

## INDUCTION MOTORS AND GENERATOR SYSTEMS; MAINTENANCE & SERVICES

Northern Automation / Northern Power & Automation Oy has strongly furthermore enforced and expanded the generator systems-related maintenance and service functions; these services are available globally for various fields in power generation - and for all brands and manufacturer`s induction motors and generator systems: land-based power plants, marine, vessels & offshore applications.



### VARIOUS SERVICES FROM SYSTEM STUDIES TO TURN-KEY SOLUTIONS

**Trouble Shooting and System Studies:** Full study in co-operation with customer and their requirements for smooth service/upgrading project; from pre-planning to completion of the installation works.

**Maintenance and Service:** Several levels of pre-planned maintenance packages available; will be tailor made according the customer requirements. Service levels are ranging from L1 to L4 (from minor to larger overhauling activities). Full coverage of generator and related systems electrical measurements carried out – with reporting and analysing.

**Special CO2 Cleaning:** High Tech equipment used for dry ice cleaning; utilizing our inhouse specially designed and constructed machinery & tool sets/kits – in accordance with air freight regulations – fast & secure delivery through normal flight cargo routes worldwide. The works are carried out by our professional and experienced staff.

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**Vibration Measurements and Alignment:** High tech measurement equipment used with corresponding reporting available; single or double bearing units; shaft generators. Likewise coupling and shaft, air cap, base frame and foundation measurements; installation of lock pins, taper pins etc. equipment fastening/securing may be included.

**Spare Parts and Materials:** Spare parts and installation materials are supplied as well, including on site “special maintenance and service required temporary structures” design and manufacturing - where and when needed. Usually for larger works scopes in land-based power plants, very commonly required on vessels as well. Generator bearings, sealings, slip rings, labyrinth rings, diodes, varistors, new CT`s or VT`s and special LV/MV cables with termination kits are available also.

**Upgrading and Improvements:** Replacements of older units with new ones for required power and capacity increase or due to any feasibility improvements, for example because of the older unit`s spare parts unavailability.

**Excitation Systems, AVR`s; Control and Automation Systems & Protection Relays:** Typical modifications, like AVR replacement`s; latest available technology controls, additional or replacement of existing measurement sensors, automation system implementations and protection relays – individual components or entire systems



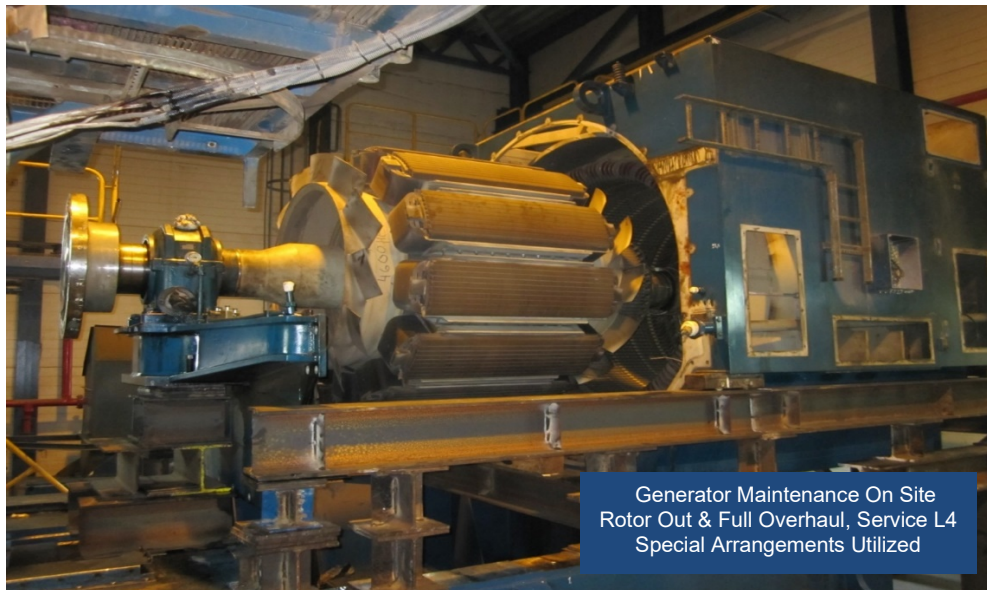
Generator Maintenance On Site  
Rotor Out & Full Overhaul, Service L4

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