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ELECTROTECHNICS AND MECHANICS OF STRUCTURES
R&D EXPERTISE AT THE SERVICE OF INDUSTRY



3SF800602

FIELD EXPERTISE

TESTING AND MEASUREMENTS

NUMERICAL SIMULATIONS

PROTOTYPED PRODUCT

MARKET-READY PRODUCT

PROJECT MANAGEMENT ASSISTANCE

Validating the design and reception of electric motors and generators

YOUR STAKES

- Verify the conformity of manufacturers' datasheet with bespoke specifications
- Ensure system performance and durability
- Detect high-risk designs

OUR OFFER

The offer consists in:

- Support for the drafting of the specifications
- Design review
- Support and assistance during acceptance tests
- Validate the equipment through additional tests

The offer can be detailed as follows:

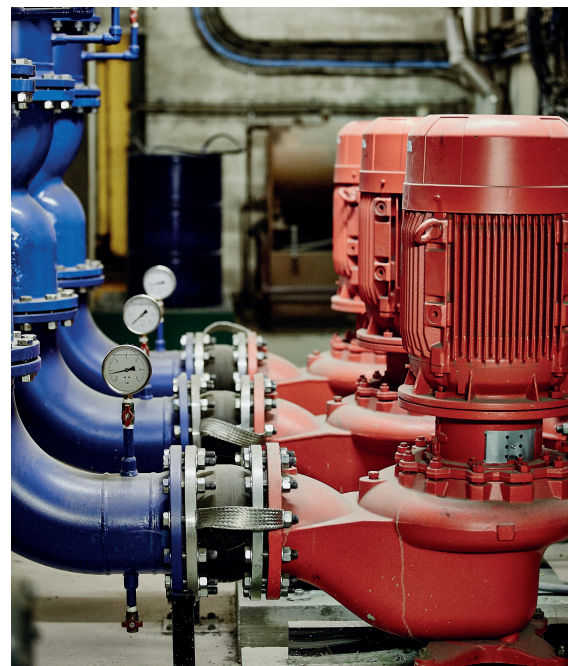
- Assistance during the drafting of the specifications
- Design review
 - Compliance with specifications
 - Expert advice (on thermal, dielectric and mechanical performance)
- For acceptance tests, support for the specification, monitoring and review of acceptance tests
- Assistance during on-site measurements for commissioning to verify compliance with the specifications
- The motor Laboratory offers tests on electric motors, generators and their power electronics components

Additional tests:

- Functional performance verification: on-load and start operation tests, heating tests, and loss & performance measurements
- Verification of immunity to electrical disturbances: tests on voltage and supply frequency variations, voltage interruption and dip tests
- Functional endurance verification: accelerated ageing tests by "start/stop" cycles, dielectric endurance tests.

SECTORS OF APPLICATION

- Engines, generators and electronic power supplies for:
- Renewable energies, nuclear power stations, thermal power stations, industry, tertiary sector, electric mobility



Water circulation pump units

Validating the design and reception of electric motors and generators

KEY FIGURES:

- EDF R&D has in-depth knowledge of the thousands of electric motors installed on electricity production sites.
- Several power test benches up to 160 kW, three-phase power sources up to 500 V and 2000 A, motor and generator tests up to 3 tons.

OUR ASSETS

- A recognized expertise in the field of low and high voltage electric motors, knowledge of the industrial fabric and mastery of the rules of the art. Technical know-how proven by the industrial studies conducted for EDF's generating fleet over the past 30 years.
- The installations of the motor Laboratory allow to test rotating electrical machines by reproducing their real conditions.

TESTING OF ALL TYPES OF MACHINES

- Asynchronous motors, dual-powered generators
- Alternators, synchronous machines with magnets or variable reluctance
- Electronic speed controllers, starters, static launchers
- Representative models of real machines

TEST MEANS SIMULATING MACHINE APPLICATIONS

- Programmable mechanical loads to simulate usage
- Power supply noise generators
- Automation for the realization of test sequences

PRECISION MEASURING EQUIPMENT

- Equipment adapted to rotating electrical machines and their electronic power supply components: broadband watt meters, torque meters...
- Continuous digital recordings during testing

ASSISTANCE IN CARRYING OUT TESTS

- Support from EDF Research Engineers, experts in machine technologies and their applications
- Help in defining test procedures and interpreting test results

SATISFIED CLIENTS

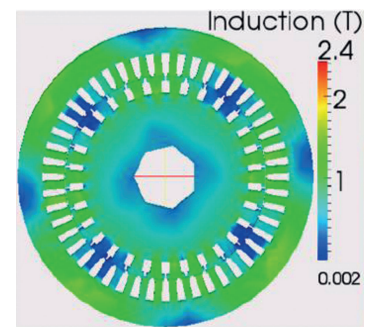
- EDF nuclear engineering
- EDF Renewable Energies
- EDF Sales Department

CONTACT:

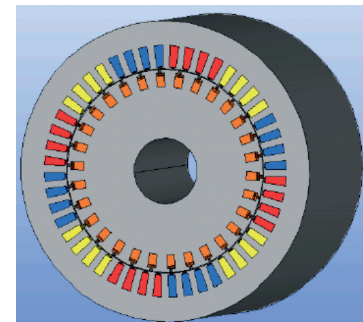
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Tests and measurements on alternator test-bench



Calculated field map of a motor



3D geometric pattern

A RICH HISTORY

- Proven technical expertise, recognized by French and foreign industrialists.
- EDF R&D has been testing rotating electrical machines for more than 50 years. The Laboratory has contributed to the technical validation of equipment exploited at EDF nuclear power fleet.