Working Student: Oil Type Transformer Tank Design Optimization 50% (f/m/d)

Hitachi ABB Power Grids is a pioneering technology leader that is helping to increase access to affordable, reliable, sustainable and modern energy for all. We help to power your home, keep the factories running, and our hospitals and schools open. Come as you are and prepare to get better as you learn from others. Bring your passion, bring your energy, and plug into a team that appreciates a simple truth: Diversity + Collaboration = Great Innovation

Enclosures for distribution oil type transformers may be subject to different types of thermal and mechanical loads. Common service loads include in fact the hydrostatic pressure of the oil, the gravitational force applied to the entire transformer, and different thermal dilatations induced by the heating of the active part. In addition to these, other more demanding load scenarios must be considered such as the seismic excitation, as defined by relevant standards, and accelerations due to lifting and on-road transportation. For releasing a new design is therefore mandatory to perform accurate static and dynamic finite element simulations that include the fatigue assessment of welded and bolted connections. The optimization of the design allows for the minimization of the costs due to unnecessary material and manufacturing operations, keeping at the same time the system safe and fully operational.

The scope of this work is to support our team in Molinazzo di Monteggio to perform an electromagnetic-thermal-structural multi-physic finite element simulation campaign to assess and optimize the transformer tank for a specific HITACHI-ABB Powergrids design, verify this by experiment by means of strain gauges and accelerometers during both static and dynamic tests and deliver the relevant documentation to engineering. The duration of the internship is 6 months.

Your responsibilities

Preliminary study of current tank design
Finite element modelling of the system
Static assessment for gravitational and hydrostatic loads
Coupled electromagnetic/thermo-mechanic assessment of the structure
Seismic and transportation dynamic assessments of the structure
Structural optimisation of the tank design
Final report with detailed description of the performed analyses, results and chosen design

Your background

Final year master's degree student in the Engineering field (Mechanical/Aerospace or related discipline)
Solid bases in thermo-mechanics, vibrational fatigue and dynamics
Experienced in using finite element software (ANSYS preferential)
Knowledge of the following programming languages: a. Matlab, Visual Basic (preferential)
Fluent in written and spoken English, any other language is a plus
Excellent communication skills and team spirit

More about us

Hitachi ABB Power Grids is a global technology leader with a combined heritage of almost 250 years, employing around 36,000 people in 90 countries. Headquartered in Switzerland, the business serves utility, industry and infrastructure customers across the value chain, and emerging areas like sustainable mobility, smart cities, energy storage and data centres. With a proven track record, global footprint and unparalleled installed base, Hitachi ABB Power Grids balances social, environmental and economic values, and is committed to powering good for a sustainable energy future, with pioneering and digital technologies, as the partner of choice for enabling a stronger, smarter and greener grid. www.hitachiabb-powergrids.com

Interested in joining our team? If so, we look forward to receiving your full application (motivation letter, CV, references) only via our online careers tool.

Hitachi ABB Power Grids Switzerland
Richard Adu
Talent Acquisition

Location	Molinazzo di Monteggio,Ticino,Switzerland
Business Unit	Transformers
Publication Start Date	26.07.2021
Job Function	Research and Development
Publication ID	CH51816303_E1