



Bachelor's project on Optimization driven finite element analysis of a transformer frame design 80-100% (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

Transformer frame, whose primary scope is to clamp together the magnetic foil sheets the core is composed of, is often subject to different external loads according to the final application. These loads are induced by either the transformer manufacturing operations such as lifting and transportation and to specific working conditions such as vibrations, shocks, wind dynamic pressure or seismic excitation. Some of the loading scenario listed above are always present (lifting and transportation), whereas others are specific to the application (rolling stock, marine or windmill), required by the customer or defined by regulations and standards (seismic and others). Since Hitachi ABB PG manufacturing is principally based on custom built transformers, it is not always possible to define generic and standard design rules. For this reason, a finite element-based procedure has been developed for a rapid simulation of a specific transformer frame (WS frame). This tool has been conceived for the development and optimization of the WS frame and afterward made parametric and extended for the definition of the design rules for this specific frame design. The duration of the bachelor project is 6 months.

Your responsibilities

The scope of the thesis project is to study the current assessment procedures for the WS transformer frame when subject to lifting and transportation loads, to review the current FE tool for the verification, to optimize the structure and to define the design rules to the technical office.

This can be divided into the following conceptual steps that will be summarized in the final thesis project:

Preliminary study of the assessment procedure and methodologies currently used in Hitachi ABB PG

Review of the FE tool and extension to other load scenarios

Optimization of the structure and definition of the design rules

Final report with the description of the analysis procedure and the summary of the design rules in the form of technical standard

Your background

Mechanical engineer with base knowledge of the FE tool and calculation for mechanical structural analysis

Knowledge in the use of 2D/3D CAD tool

Proficient in English and Italian

Excellent relationship-building and communication skills paired with a highly proactive and result-oriented attitude

Strong team player mentality

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.

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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

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