

Thesis Projects Spring 2017

Product Development Research Lab is the research lab within the Department of Mechanical Engineering¹.

Our vision is

With practice and science we support innovation teams in product development through new work methods, tools and processes that will empower them to create and develop new product and services for the sustainable society.

The research is applied and considers methods and tools that will support companies, and organisations, to enhance their capabilities to deliver value towards customers based on products. The goal is to support companies and organisations both in being more efficient in their development (i.e. incremental improvements) and in finding totally new value adding solutions for the market (i.e. radical innovation). Our platform is the subject of Mechanical Engineering.

For the upcoming spring we're looking for some skilled students who want to join in a collaborative effort with ABB in developing design automation capabilities.

¹ <http://www.productdevelopment.se/>

DESIGN AUTOMATION OF HIGH VOLTAGE CABLES

Master thesis project for Spring 2017

Objective

Development of a demonstrator for Design Automation of design of cables for High Voltage applications.

Description of the work

The work will be done in collaboration with ABB High Voltage Cables (HVC) in Karlskrona and the Product Development Research Lab at BTH.

The work should focus on literature review regarding Knowledge Based Engineering and Design Automation theory and techniques, followed by empirical work and data collection at ABB in Karlskrona. Thereafter the students should develop a Design Automation tool to be deployed at ABB. This work should be reported in a thesis and a supplementary design guideline that can be used by ABB in moving forward.

The research questions to be addressed are:

1. How can design engineering knowledge be captured and structured with a view of formalizing and packaging it in a design automation application?
2. How can a design automation tool be designed for reuse of knowledge between different (similar) design applications?
3. How can a design automation development project be document with a view of reusing the accumulated knowledge and skills for future projects?

The parallel work on all the questions shall lead at the end to the development of one UNIQUE PROTOTYPE encompassing the design automation application, taking relevant constraints, rules and activities into consideration when developing different product concepts. The prototype should feature an easy to use graphical user interface (GUI) for use by novice engineers and designers.

Industrial context

The project will be carried out in collaboration ABB. Part of the work will be performed on site at ABB HVC in Karlskrona.

Number of students involved and skills required

Potentially a project group of 2 people

- mechanical engineering students with skills and knowledge in CAD/CAE, Knowledge Enabled Engineering and/or Computer Science.

Timeline

Starting on January 2017, final prototype presentation on May 2017. End of thesis June 2017.

Contacts

- Assistant Professor Christian Johansson christian.m.johansson@bth.se
- Professor Tobias Larsson, tobias.larsson@bth.se