

Thesis proposal - Matlab Integration into PSCAD/HiDraw

1. Introduction

Control functions used for static synchronous compensators (STATCOM) are individually developed and tested using the Matlab or Simulink environment. Once a function has been tested, it must be integrated into simulation tools. Simulation tools used by ABB FACTS are PSCAD, an ElectroMagnetic Transient Program (EMTP) based on FORTRAN and HiDraw which generate C or C++ code to be executed on different computer platforms.

2. Task definition

The student will learn about the existing simulation platforms, control models and tools, operating in an international R&D environment and in close cooperation with other departments focused on delivery of large projects world-wide.

The task objective would be to create a process and application for integrating functions written in Matlab/Simulink into PSCAD and HiDraw.

A Matlab script can be converted into C code using Matlab Coder and Embedded Coder. C files can then be brought into Visual Studio to build Lib files. However, a specific interface between FORTRAN and C has to be written, in order to get the functions into PSCAD. The goal would be to have the FORTRAN to C interface generated automatically.

A second task would be to extend the process, generating the C or C++ code in a format suitable for export to HiDraw and thereby making Matlab scripts available for easy integration in HiDraw as well.

The thesis shall be concluded in a written report stating the results found during the work. Further the work shall be presented to involved parties at ABB.

2.1 Requirements

We expect a suitable background for this thesis project is in computer science or similar, combined with proficiency in C and C++.

2.2 Study time and place

The study will be performed for about 5-6 months at ABB, Västerås, Sweden.

2.3 ABB contact person

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