MASTER THESIS

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Modernised GUI and automated optimizing of hydropower schemes for nMag

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Background

Computer programs have been steadily improving and projects are nowadays almost unthinkable without them.

nMag is a hydropower and reservoir operation simulation program. It has been used by both students and researchers at NTNU for decades to better study the effects of regulation, environmental flow release and other changes done to a water course.

A simple user interface makes it possible to set up all kinds of systems, but by now it has become outdated and user-unfriendly.

Objective

By developing a new UI, the program will be easier to use and can be better integrated in the curriculum. Most of the changes will improve the features that already exist, for example:

- Visual overview / interaction with the modules.
- Less complicated data entry.
- Automatic result handling.

The update will also add the tools to run automatic optimization; to increase production, reduce spill or to satisfy other conditions.

A screenshot of an early version of the new GUI. Different types of modules can be seen in this hydropower scheme.