

Håkon Sundt



Department of Civil
and Environmental
Engineering

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Environmental design
for multiple interests
under future flexible
hydropower operation

Supervisor: Knut Alfredsen
Co-supervisor: Torbjørn
Forseth



Background

Environmental design is key for combining hydropower production and river health in a sustainable way. Building on environmental design methodologies established in FME CEDREN, the PhD will look at how we can enhance and expand the methodology in question using new and available technologies.

Using data from satellites, laser instruments and drones with optics, the PhD will analyse the collection and use of such data in future environmental design projects.

An example:

Green laser technology (LIDAR) makes it possible to map large river stretches in short time, obtaining high accuracy terrain data, also to a certain degree beneath the water surface. This terrain data can be put into hydraulic computer models for analysis of physical

mitigation measures, water quality, biological elements, hydrology and a range of other applications.

Other issues we want to look into:

- Do the different methods for data collection give different results in our hydraulic models?
- Can we use new data collection technologies to establish a better connection between the physical environment and the biology in regulated rivers?
- How can we establish long-term surveillance of physical processes in rivers using satellite data?

With all this in mind, we still need to verify the quality of data collected using the new technology. And there is also a question of time spent on data processing, which may be the biggest challenge when using new technology.

