



## Sensitivity analysis of large-scale dynamic process models

### About Kongsberg Oil & Gas Technologies

**Kongsberg Oil & Gas Technologies** (KOGT) is a business area of Kongsberg Group ([www.kongsberg.com](http://www.kongsberg.com)). It supplies technology and solutions to the upstream oil and gas industry. We deliver world-class solutions for dynamic process simulation, integrated operations and multiphase flow solutions.

The **Simulation and Optimization** business unit provides software and services for dynamic simulation and process optimization, using the ASSETT, D-SPICE and K-Spice dynamic simulation tools.

### The Candidate

You are an enthusiastic student with a strong motivation to take on challenging tasks. You have a background in chemical engineering, petroleum engineering, automatic control / cybernetics or applied mathematics.

### The Project

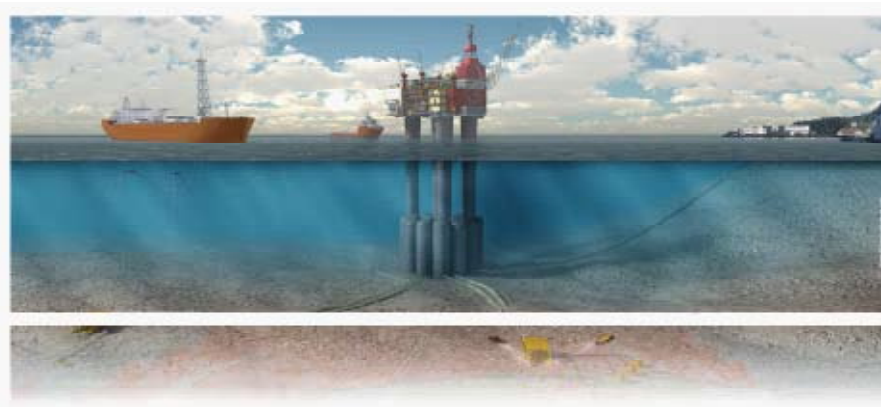
Your project will look at systematic methods for calibration of dynamic models built for oil and gas production facilities. Dynamic modelling of subsea and topside production facilities are essential tools for control and optimisation of operation of production facilities. Therefore your work will look into building and calibrating reliable dynamic models. Sensitivity and uncertainty analysis methods will be used to assess the fitness of the models for their purpose: decision making in engineering applications.

### Internship

You have the opportunity to have a summer internship during the summer of 2010. You will be working at Kongsberg's offices in Sandvika, near Oslo. Your task will be to build a generic simulation model for part of oil and gas technology process (e.g. subsea production facility). You will use Kongsberg's software K-Spice for model building and simulation. You will perform model calibration and implement linear error propagation to estimate parameter estimation accuracy and model prediction uncertainty.

### M.Sc. Thesis

You will follow up this work in your MSc project in autumn 2009 at DTU Chemical Engineering (Lyngby, Denmark). This work will involve implementing global sensitivity and uncertainty analysis for the calibrated dynamic models and verify the accuracy of implementation using the case study as the model developed during the summer internship. You will suggest a systematic methodology for implementing model calibration, sensitivity and uncertainty analysis in K-Spice for engineering applications.



**Application Deadline:**  
**31st March 2010**

## Tools

You will be using KONGSBERG's K-Spice simulation tool.

## More Information

More information can be obtained from Dr. David Cameron (David.Cameron@kongsberg.com) or Asst. Prof. Gürkan Sin (gsi@kt.dtu.dk). See our website at <http://www.km.kongsberg.com/oilandgas>.

## Conditions

Location is Sandvika. Pay and conditions during the summer intern period are KONGSBERG's standard conditions for summer interns.

## Applications

Please send applications, with CV and transcript of academic record to Dr. David Cameron (David.Cameron@kongsberg.com) with a copy to Asst. Prof. Gürkan Sin (gsi@kt.dtu.dk).

