

## A) DRAG Reduction project (M.Sc thesis)

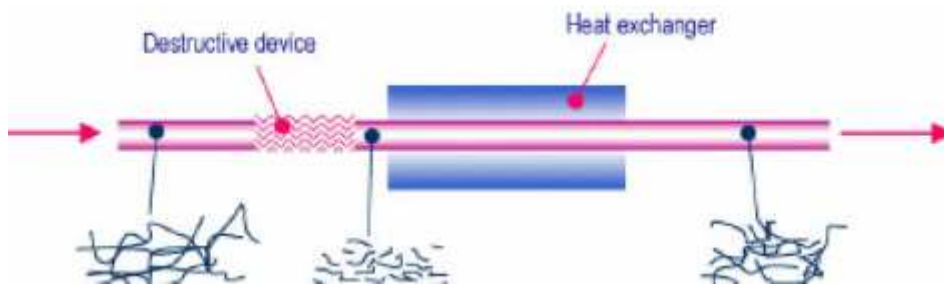
This project is divided into two parts and is suitable for 2/3 students. The first part is divided into two projects. Based on the number of the students the detail scope of work will be given.

### 1) Drag Reduction phenomenon in heat transfer system

Drag reduction phenomenon has been known for more than 55 years. The mechanism by which friction reduction occurs has been a subject of intense discussion. We have reported for the first time in the literature the mutual influence of the polymer drag reducers (DRA) and the paraffin deposition in pipelines. In order to understand this effect, as a first step, a study of the heat transfer in presence of DRA and means to counter act the effect of DRA on heat transfer efficiency. It has shown in our research work and others that heat transfer coefficient is reduced. This work is simply taking advantage of this interaction to understand the drag reduction mechanism.

The work consists of two parts

- 1) Shear degradation study of DRA polymer
- 2) DRA mechanism in non-Newtonian system



### 2) Study of Drag Reduction in Two-Phase flow

The oil industry is moving more towards sub-sea operation, this requires more understanding of the visco-elastic behavior of polymers in two phase flow. This would give a more flexibility in operation i.e. increase the capacity of the system; as well as reduce energy consumption, hence contribute to improve of the environmental impact from operation. A first stage of developing a two-phase system has been done this year 2005. A preliminary study on the effect of two-phase flow system on drag reduction has been conducted this year (2005). The second stage is planned to include different two-phase flow regimes.

During the project work, students will familiarize themselves with the previous work done and perform some limited experiments. The master degree work will be continuation of the findings from the project.

## **B) Sand Control**

This project will be for 4 students with extension to M.Sc thesis for max 2 students in the spring of 2006. The work is associated with Weatherford company.



## **Sand Control Project**

Stavanger University, September 05



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## **C) Production optimisation (M.Sc thesis)**

During this project student will learn the concept of optimisation from templates connected to wells with different fluid properties and production regimes. The project will be extended to a master thesis work where the different parameters that affecting production will be studied. The parameters, which will be addressed, are the skin factor, GOR, water, etc.

## **D) Water Injection**

There are different ways to assess the water flooding performance; one of these ways is the use of tracer. During the project the student will familiarise her/him self with the tracer techniques and the modelling aspects. The developed techniques during this period will be used for looking at different tracer behaviour with consideration of non-ideal behaviour of tracer components that are in the injected water. Knowledge of reservoir simulation is required.

## E) Open Projects

Students with suggestions for industrial work is possible after discussion.