

Usage of rigorous thermodynamic package in dynamic simulation study

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Introduction and background:

Due to expected increases of CO₂ amount in the feed to Kårstø gas processing plant it is of interest to look into ways of capturing this CO₂ to stay within sales specification. One possible way of doing this is to capture it in the ethane processing part of the plant, and then it becomes important to increase the overall ethane recovery of the plant. This recovery is dictated by the gas extraction process of the plant and for this thesis this has been the focus

In this thesis different retrofit scenarios have been studied, with the use of dynamic process simulation, to increase the ethane recovery. The scenarios differed from operational changes to physical changes to the plant.

The dynamic process simulation was used for the studies. This was of interest due to the possibility of verifying the dynamic behavior together with high fidelity process simulation. A large part of the thesis was to tune and validate this model for this usage. Both linearized and rigorous thermodynamics was used and assessed.

Problem description and objective:

The thesis is divided into two main objectives. The first is to test and validate the usage of the existing dynamic process simulator as a high-fidelity representation of the plant. The other part is to use this simulator to test out different retrofit scenarios and their impact to the process.

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