A DECISION SUPPORT TOOL FOR WATER-FIT-FOR-USE

Introduction

Due to a lack of fresh water and to meet the high demand for process water, industrial water treatment companies face the use of varying water sources. Current decisions on large-scale design and operation of water treatment technologies are in most cases based on expertise and simple steady state tools. This contrasts with the large amounts of experimental data containing useful information on the system behavior, which are continuously collected at plants but systematically underused. Pooling this into a decision support tool allows to explore possible alternative treatment configurations under (simulated) dynamic conditions and as well as exploring uncertainties.

Methodology

As a first relevant unit process, reverse osmosis (RO) is considered. Based on the solution-diffusion model to describe membrane transport, a model with spatial dependence is built. The model will be extended based on data collected at pilot/full scale. This is a first step towards a calibrated dynamic RO model at full-scale.

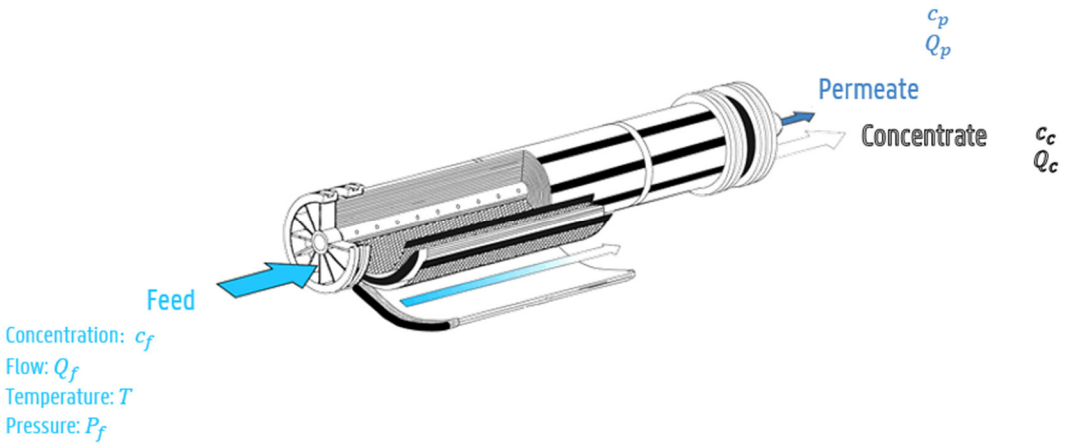


Figure 1 - Representation of a RO module and some variables involved in the model describing this process.

Objectives of the thesis

The purpose of this thesis is to further develop a model for reverse osmosis, based on a combination of modelling and experimental work. In addition, also other water treatment techniques are looked at, in order to expand the model database of the decision support tool.

SUPERVISORS

Prof. dr. ir. Ingmar Nopens

Prof. dr. ir. Arne Verliefde

Dr. ir. Marjolein Vanoppen

TUTOR

ir. Dorien Gaublomme

BACKGROUND

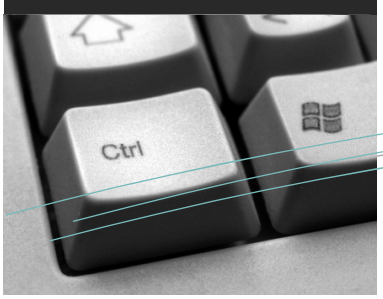
MT, C&B

LANGUAGE

Nederlands/English

MORE INFO

Dorien.Gaublomme@UGent.be



PaInT Particle and Interfacial Technology

BIOMATH