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New dynamic library of reverse osmosis plants with fault simulation

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ABSTRACT

This paper presents an update of a dynamic library of reverse osmosis plants (ROSIM). This library has been developed in order to be used for optimization, simulation, controller testing or fault detection strategies and a simple fault tolerant control is tested. ROSIM is based on a set of components representing the different units of a typical reverse osmosis plant (sand filters, cartridge filters, exchanger energy recoveries, pumps, membranes, storage tanks, control systems, valves, etc.). Different types of fouling (calcium carbonate, iron hydroxide, biofouling) have been added and the mathematical model of the reverse osmosis membranes, proposed in the original library, has been improved.

Keywords: Reverse osmosis; Desalination plant; Simulation library; Dynamic simulation; Fault simulation; Fouling modelling

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