DESIGN OF INTERNAL MODEL CONTROL (IMC) PRESSURE SYSTEM ON SEAWATER DESALINATION UNIT – REVERSE OSMOSIS (RO)

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Abstract
Reverse osmosis is a process of reversal of the process of osmosis. Osmosis is the process of moving the solution from the solution with low solute concentration to a solution with higher solute concentration until there is equilibrium concentration. In the present study was conducted RO process control in Matlab Simulink using the Internal Model Control (IMC) is the inverse of the RO membrane rupture-prone tackling back. In the first RO and RO using the IMC controller both use to control the pressure. IMC control with this model of unity of control system, where the input of the system will be stabilized in accordance with the output of the process so that the setpoint of the feedback process. A major factor in stabilizing this control is on nlai flter gain, reaching a response signal corresponding to the setpoint. From the research shows that when unity IMC controller is given a disturbance of the sinus signal occurring at the response of the system to form a stable oscillation signal without any attenuation but perfect. The results for this unity IMC controller method that is in RO1; by 16.5% maximum overshoot, settling time at 19 seconds, and in RO2; maximum of 0.84% overshoot, settling time at 17 seconds.

Key word : reverse osmosis membrane, membrane pressure, Internal Model Control (IMC)