

# Abstract

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## **SCADA/HMI Development for a Multi Stage Desalination Plant**

The desalination plant is a project that needs to control and monitor the operation sequence. This paper describes the construction of a Supervisory Control and Data Acquisition system (SCADA) and the corresponding Human-Machine Interface (HMI) for a multi-stage flash Brine Recirculation (BR) desalination plant. It consists of eight main cycles: the sea water cycle, the brine recirculation cycle, the brine heater cycle, the distillation cycle, the brine blow down cycle, the steam cycle, the condensate cycle and the pressure reduction cycle with a large number of inputs and outputs signals. The relay matrix is used to minimize the number of signals connected to the S7-3000(PLC) Siemens controller; connect it with (WINCC) software to show the application running under control. To maintain healthy system in case of main server failure we must create a redundant server connected with the main server by Ethernet; connected with the main control loop by Multi Point Interface (MPI). In this paper the SCADA/HMI main control loop is MPI because it is faster than Ethernet connection while MPI the control speed is 185kbps but the control speed in Ethernet is only 10/100kbps.