

**PERFORMANCE STUDY OF CONTROL SYSTEM
TEMPERATURE, RELIABILITY AND SAFETY ON HEAT
EXCHANGER PT. PETROWIDADA GRESIK**

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Abstract

HT-3120 Heat Exchanger is a plant that serves to raise the temperature of Ortho-Xylene. In order for the process can run safely, the control system must be able to properly control and protection systems must have an adequate level of security. In the heat transfer process is expected temperatures of Ortho-Xylene as expected, amounting to 140 oC in which Ortho-Xylene initial temperature of 30 oC. Therefore, we need a reliable control in order to maintain the temperature of the Ortho-Xylene by manipulating the flow rate of steam. So in this final task, carried out a simulation of integrated processes, systems control and protection system of the model has been obtained. From the simulation results obtained that for the temperature control system has a Mp 31.01%, ts 1165 sec and Ess 0.1%. These three parameters represent the performance of temperature control systems. Calculation of the total PFD of the system at $T_i = 8760$ hours or 1 year which is 0.81373 while at $T_i = 83,712$ hours which is 6.33429, the system is currently available in the heat exchanger HT-3120 system that has categorized as SIL 1.

Keywords: *Heat Exchanger, Ortho-Xylene, Temperature, Probability Failure of Demand (PFD), Safety Integrity Level (SIL).*