



Real Time Performance Analysis and Fault Diagnosis in Heat Exchanger

S.Monisa*, S.Vijayachitra

Department of Electronics and Instrumentation Engineering, Kongu Engineering college, Erode-638052, India.

Abstract: The heat exchanger is a device used for transferring of heat from medium to another medium. They are widely used in petrochemical plants, air conditioning, chemical plants, thermal power plants and etc. Due to the change in process parameters the overall heat transfer rate will be severely affected. In order to increase the efficiency of overall heat transfer rate, the possible faults developed in the heat exchanger have to be identified. For this purpose, various fault diagnosis methods are available. Among them, the process history based method is here chosen. This method requires large amount of process data. The real time readings from a shell and tube heat exchanger is obtained for both normal and fault operating conditions. And a transfer function model is also derived using the real time data. The frequency response shows the occurrence of the resonance effect in the heat exchanger. By using suitable diagnosis methods with these real time data, the possibility of occurrence of faults can be diagnosed and remedial measures will also be recommended.

Keywords: Heat transfer coefficient, fault diagnosis, shell and tube heat exchanger, fault detection.

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