

ABSTRACT

Heat exchanger is one of important equipments used in industry nowadays, especially in petrochemical plant. It is functioned to cool down or rise up the temperature of medium which flow through it by using two different medium. During internship period at Petrochemical Plant in Terengganu, author had an opportunity to face a real case study, which is regarding the Heat Exchanger Tube leakage. During shut down in November 2010, it is found that one of the heat exchanger tube bundles available in the plant was leak. The affected heat exchanger used to cool down ethylene gas after it being compressed by the compressor. The ethylene gas is the main gas used in the plant as it will be processed to become Low Density Polyethylene (LDPE). Heat exchanger tube leak is one of the problems in petrochemical plant that keep reoccurring although appropriate action had been taken before. The objectives of this project were to perform failure analysis on the heat exchanger tube bundle and to suggest possible solutions so that this problem will not keep reoccurring in the future. In this project, author focused on the failure analysis methodology to reduce the risk of heat exchanger to fail again in the future. Methodology of this project was based on the standard and study performed by the author. The findings of this project were High TDS from cooling water caused by filter media break through from the side stream filter, accumulation of solids leading to deposition/pitting at the U-bend portion of the heat exchanger, drain port available but no drain line installed, damage/peeled of coating due to mechanical method of cleaning and Low inter-baffle shell side velocity, which lead to several recommendation to improve the performance of heat exchanger in the future.

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