

FAILURE ANALYSIS OF THE FLOWLINE OF CRUDE OIL IN PIPES

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ABSTRACT

The study of failure analysis is wide and the failure in materials and machineries is much dreaded in manufacturing establishments. The materials used for pipelines must be of good mechanical properties, low cost and readily available. Carbon steel is mostly used due to low resistance level. The failure analysis comes to relevance in order to prevent the menace attached to these failures, such as: financial losses, dangers to workers and personnel, production breakdowns and also the likelihood to spark up an epidemic.

Our sources of research material are from library, online publication, questionnaire survey, oral interview, physical observation, use of mathematical model and computer aided design. A C⁺⁺ programme and Solid work were used in the analysis of failure by varying the pressure, diameter and pipe thickness as the fluid flows. The results obtained shows that as operating pressure increases at constant diameter of pipe, stress induced in the pipe increases. It also shows the rate at which liquid flow through the pipe at various operating pressures and diameter. The model gave the thickness of the pipe to be not less than 0.25 inch (6.35mm).It also gave a pressure drop of 21.11 psi (145.55 KN/m²) for every one Kilometer.

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