Failure Analysis of a Bar Soap Extrusion Machine

[1]**Ogur, E. O** and [2]Mburu, J. K
[1]**Department of Mechanical and Mechatronic Engineering**, **Technical University of Kenya.**
[2]Department of Mechanical Engineering, National Youth Service Engineering Institute.

Abstract

Failure occurs where a component or structure ceases to function as intended. Failure analysis is the process of collecting and analyzing data to determine the causes of failure. It is a vital tool used in the development of new products and for the improvement of existing products. This study investigates, using failure analysis, a bar soap extruding machine. The extruder shaft of the machine failed and the equipment ceased to function as intended. The extruder had a spiral

screw which was welded along the shaft. There were cracks on the welded point. In this study, destructive and non-destructive tests were conducted to establish physical properties of the failed component. Chemical analysis was performed to determine chemical composition of the failed parts. The analysis of data led to the conclusion that failure occurred due to poor maintenance of the equipment. The manufacturing processes had defects which acted as sites of crack initiation and the crack propagation was accelerated by cyclic loading.

Keywords: Failure mode and effects analysis, crack propagation, magnetic particle crack detection.

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