

INVESTIGATING THE IMPACT OF POOR UTILISATION OF QUALITY MANAGEMENT SYSTEM IN A SOUTH AFRICAN FOUNDRY

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ABSTRACT

Background: In 2007 alone, twenty six foundries were closed down when the castings industries directory was released. A high scrap rate due to a lack of quality management is one of the root causes of low productivity and low profits, resulting in closures. Method: This research paper focusses on the impact of defects on productivity and monetary losses due to poor utilisation of the quality management system in sand casting. Data was gathered on defects and productivity and the company's quality control records were used for monetary losses due to scrap. The study was conducted over a period of one year at a South African foundry. The standard multiple regression analysis method was used to assess the ability of five defects (cross jointed, bad mould, shrinkage, core fault, and gas porosity) to predict monetary and productivity losses. Results: Cross jointed and bad mould defects had a correlation coefficient of 0.727 and 0.716 respectively which indicated a strong positive correlation. The overall variance explained by the model was 61%, $F = 16.263$, $p < .005$. Thus the prevalence of these two types of defects can significantly predict monetary losses, while core fault predicted productivity. Conclusion: Foundry should concentrate on eliminating cross jointed and bad mould defects to avoid a high scrap rate, and core fault to improve productivity.