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Title:

Improvement of the Overall Equipment Effectiveness (OEE) of Circular Knitting Machines using Total Productive Maintenance (TPM) Tools: A Case Study of James North Zimbabwe (Pvt) (Ltd).

Submitted in partial fullfiment of a Bachelor of Textile Technology (Honours) Degree.

ABSTRACT

Total Productive Maintenance (TPM) has been recognised by manufacturing organisations as one of the significant operation strategy to regain production losses due to equipment inefficiency. The research project highlights the underlying concepts, issues and benefits of implementation of Total Productive Maintenance in a circular knitting machine plant at James North Zimbabwe (Pvt) (Ltd) to improve the Overall Equipment Effectiveness (OEE). The study identified many barriers to effective implementation of Total Productive Maintenance as well as success criteria to overcome the barriers.

The success criteria can be classified into human oriented and process oriented. The human oriented strategy is generally strategies that actively involve human administrative applications of management methods in achieving a higher extent of Total Productive Maintenance implementation. These involve top management involvement and leadership, total employee involvement and training and education. Process oriented strategy includes all kinds of technical approaches to maximise the Overall Equipment Effectiveness through quantitatively increasing the equipment availability and quantitatively eliminating all production losses that result from inefficient equipment.

The barriers align closely to the success factors for success Total Productive Maintenance implementation that is successful implementers leverage the success factors to overcome the obstacles and barriers. The barriers includes, lack of management consensus, underestimating the importance of knowledge and neglecting the basics that is without a focused organisational commitment to the basics of variation reduction, service, cost and safety, there is no foundation on which to build a successful strategic plan. The findings indicate that Total Productive Maintenance does not only lead to increase in efficiency of manufacturing equipment by reducing the failures, time loss and defects but also helps organisation to improve morale of the people and working environment significantly. After the implementation of Total Productive Maintenance, the production losses due to equipment inefficiency must be significantly reduced thereby improving the profitability of operations at James North Zimbabwe (Pvt) (Ltd).