

A Case Study for Performance Evaluation of Motorcycle Assembly Line through the Lean Manufacturing Practice of Overall Equipment Effectiveness (OEE)

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Abstract

Overall equipment effectiveness (OEE) measurement is one of the most commonly used tool as a Key Performance Indicator (KPI) for any production plant in conjunction with lean manufacturing. Objective: The aim of this study is to measure the performance of a motorcycle assembling plant through the lean manufacturing practice of OEE. The major objective include the calculation of OEE data on machine performance to understand the equipment losses. The second objective is to identify the gap between the plant's OEE and world class OEE. The ultimate objective is to highlight the causes and this gap and suggest the corrective measures to minimize this gap. Initially the equipment is selected as target for calculating OEE. Then the losses and bottlenecks are observed. The related information is collected about production and planned schedule time. The OEE is calculated as per standard process and losses are identified. The OEE factors are compared with world class and gap is identified. In the end the corrective measures are suggested to minimize the gap. The OEE matrix is calculated and results are interpreted. It is observed that OEE factor at the availability is 88.46%, performance is 36.42%, quality is 97.44% and Overall OEE is 31.55%. The achieved result shows gap between the plant's OEE and world class. The major reason for the gap is performance factor level. Three OEE losses i.e. downtime, speed loss and quality loss are measured and the responsible factors behind these losses are identified.

Keywords: Performance evaluation, Overall Equipment Effectiveness (OEE), Key Performance Indicator (KPI), Lean Manufacturing, Assembly Line, motorcycle

Biographies

Muhammad Ali Khan Nagar is working currently as Assistant Professor in as Department of Industrial Engineering and Management from Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan. He has almost 16 years teaching experience the undergraduate level and few years at post graduate level. He has also supervised more than a dozen students at undergraduate level and a few at post graduate level. He is also PhD scholar in the same department. He has completed the Master of Engineering in Industrial Engineering and Management from the Department of Industrial Engineering and Management from Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan. He has also completed his PGD in Industrial Engineering and Management from the Department of Industrial Engineering and Management from Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan. He has also completed his MBA in Industrial Management from IoBM, Karachi, Pakistan. Earlier, he has also completed his bachelor of engineering in Industrial Engineering

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