

Operational Improvement of Warehouse Operations

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Abstract

The study provides modeling, simulation and improvement of wheel repacking area. A time study was conducted of the repacking line and the data was collected to gain better understanding of the operations and the processes involved. Based on the data and analysis, a flow diagram was developed with operational time distribution as part of the work standard. The major bottleneck is in the line management of the repacking area. The TAKT times for existing production line and future production line are compared. As a result, line production improvement can be achieved to 30% without a major investment. This can be achieved by better repacking line management. Some additional workers would be required for cleaning and line management. The fork lift truck drivers were not shown as a significant bottleneck. Minor issues could be resolved with better managing and scheduling for the drivers. The automation option requires further detailed analysis. The wheel inspection system and technology could be improved without full line automation. There are some cheaper solutions for inspection systems. The banding technology should be improved so that it can cope with line synchronization of other operations. Line integration / coordination are a challenge. Visible work instruction for line workers as well as inspectors could improve the line efficiency as well.

Keywords

Modeling, simulation, repacking, wheel

Biography

Nirav Sheth is a student in Master of Science Industrial Engineering program at Lawrence Technological University, Michigan, USA. He is working as Processes Engineer Intern at FTE Automotive USA. He holds a Bachelor of Engineering in Mechanical Engineering from Pune University, India. He has experience in design and quality engineer at Ploytech Cooperation, Mumbai India. He has published Proceeding in Industrial Engineering & Operation Management. His research Interest Includes manufacturing, optimization, productivity, simulation (Arena), Microsoft Project Management, Minitab, Six Sigma and 3D Modeling (CATIA, Pro/E, Unigraphics, AutoCAD).

Parth Patel is an Executive Director at Apollo Techno Equipments Limited, Gujarat, India. Previously, He was working as Quality Engineer at Sakthi Automotive Group USA. He was a Master of Science student in Industrial Engineering Program at Lawrence Technological University, USA. He holds a Bachelor Degree in Mechanical Engineering from Visvesvaraya Technological University, Bangalore, India. He has attained an industrial experience working as a Mechanical Engineer at Apollo Construction Equipments Private Limited, India. He completed his training on Industrial Hydraulics at Rexroth Bosch Group, India. He has knowledge of ANSYS, AutoCAD, and Minitab. His expertise lies in CNC Programming, CIM Modeling and Arena. His research interest includes Manufacturing Process, Quality, and Six Sigma. He has a positive energy and a dream of manufacturing world-class facility that can contribute to the growth of his country.

Ahad Ali is an Associate Professor, Director of Master of Engineering in Manufacturing Systems and Director of Master of Science in Industrial Engineering in the A. Leon Linton Department of Mechanical Engineering at the Lawrence Technological University, Michigan, USA. He earned B.S. in Mechanical Engineering from Khulna University of Engineering and Technology, Bangladesh, Masters in Systems and Engineering Management from

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Donald M. Reimer is currently a fulltime senior lecturer and Director of The Lear Entrepreneurial Program in College of Engineering at Lawrence Tech. Mr. Reimer holds a Bachelor of Science degree in Industrial Management from Lawrence Technological University and a Master of Arts degree in Political Science from University of Detroit/Mercy. He is a Certified Management Consultant with over 35 years of experience in working with closely-held businesses. He has taught courses in entrepreneurship, management and corporate entrepreneurship and innovation for engineers. Mr. Reimer served as member of the Minority Economic Development Committee of New Detroit. Mr. Reimer serves as a KEEN Fellow for The Kern Family Foundation and is a member of United States Association of Small Business and Entrepreneurship.

Sanjeev Manjunathan is currently a full time student perusing his Master Degree in Industrial Engineering at the Lawrence Technological University, Michigan, USA. He earned his Bachelor of Science degree in Mechanical Engineering at Visvesvaraya Technological, India. He is an active member in IEOM, SAE, and SME.

Anupam Byri is currently a full time student perusing his Master Degree in Industrial Engineering at the Lawrence Technological University, Michigan, USA. He holds a Bachelor of Technology in Mechanical Engineering from Jawaharlal Nehru Technological University, Hyderabad, India. He has an Industrial experience working with Scope Industries India Limited. He has carried out Research on Heat Treatments and Quality on Titanium Alloys at DRDO, Hyderabad, India. His Interests Include Quality, and Six Sigma. He is an Active member of IEOM.

Rajashekar Geddadi is currently a full time student pursuing his Masters of Science degree in Industrial Engineering at the Lawrence technological University, Michigan, USA. He earned his Bachelor of Technology degree from Jawaharlal Nehru Technological University. During his Bachelors he actively participated in organizing many events related to Robotics and Modelling. He has done the project on horizontal wind mill which as selected as the best project and stood first among the other projects during bachelors. He also has work experience on designing software's like with AutoCAD, CATIA. He has exposure on the tools six sigma, Gauge R&R. He is an active member in IEOM student Chapter.

Gomanth Duvvuru is a student in the Master of Science in Industrial Engineering at the Lawrence Technological University, Michigan, USA. He holds a Bachelor in Mechanical Engineering from Jawaharlal Nehru Technological University, Anantapur from India. During his Bachelors he actively participated in organizing many events are TEDx Tirupathi and UAV's Modelling. His research Interest Includes, simulation (Arena), Apple Inc. Technology Management, Minitab, and 3D Modeling (Pro/E, AutoCAD). He is an Active member of IEOM.