

Constraint Analysis of Operational Inefficiencies in Precision Manufacturing: A Case Study

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Abstract: This study examines operational inefficiencies in the precision manufacturing sector, focusing on PrecisionWorks Manufacturing Pvt. Ltd., a mid-sized engineering firm specializing in aerospace components. It investigates three recurring challenges—production bottlenecks, tapping and threading errors, and documentation-related discrepancies—with the objective of identifying their root causes, assessing their impact on productivity and delivery performance, and proposing practical strategies for improvement. A mixed-method approach was adopted, combining shopfloor observations and semi-structured interviews with production operators, supervisors, quality inspectors, and planning personnel, along with analysis of production records, route cards, job trackers, and inspection reports. The findings indicate that these issues are interconnected and stem from frequent priority changes, uneven workload distribution, reliance on manual processes, and inconsistent documentation control, suggesting that improvements in capacity planning, process standardization, workforce management, and documentation accuracy can significantly enhance production efficiency, delivery reliability, and overall operational performance.

Keywords: Efficiency, Bottlenecks, Tapping Error, Documentation Error, Constraints, Precision Manufacturing

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