

## Production Efficiency Improvement in a Stamping Production Line using Lean Techniques



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**Keywords:** Lean Manufacturing, SMED, Kanban, 5S, Production Efficiency

**Abstract:**

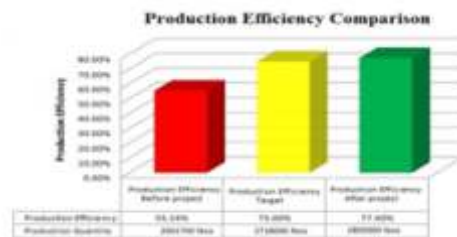
Organizations face strong competition from their competitors in the current business scenario. Due to the competition, organizations have started concentrating on quality products with the minimized cost and timely delivery. In the current business environment the organizations need to increase their efficiency and effectiveness to gain upper hand over the competitor. The inefficient methods followed in the manufacturing processes may lead to the delay in product delivery. The major reasons for the poor delivery performance are the line stoppage, machine down time and high setting time.

The project target has been to Improve the production rate of A-C contact spring (PT610) component in press shop by 20% using lean methodology. The various causes and effects of low production efficiency of the PT610 were analysed using fishbone diagram, which pointed toward higher machine down. The causes for machine down time were analysed using paratto chart. The root cause for each problem has been identified using Why – Why analysis. Tool setup time was found to be high, lack of 5S, frequent strip missfeeding and the dealy in strip availability for pucnching operations was also observed. All these factors resulted in high machine down time. To overcome these issues, two modular fixtures were designed for reducing the setup time. The best design among the two was selected, which significantly reduced tool setting by providing proper alignment between tool and strip. 5S & Kanban signaling system was also implemented in the company in order to eliminate the waiting time for the strip.

The project has resulted in a total improvement of 22.17% in the production efficiency of PT610 component. The tool change over time was reduced from 144.06 minutes to 56.36 minutes. Similarly the tool clamping fixture reduced the setup time by 26.12 minutes. The monthly machine down time was reduced from 142.13 hr/month to 72.68 hr/ month. The result of the study can also be extended to other product categories in the organisation.



**Monthly machine downtime**



**Production efficiency comparison**



**Before Implementation**

Setup Time – 144.06 Minutes  
 Tool setting time - 34.54 Minutes  
 Number of parts/ Month – 2001700 No's  
 Time for strip changing – 21 Minutes

**After Implementation**

Setup Time – 56.36 Minutes  
 Tool setting time – 8.42 Minutes  
 Number of parts/ Month – 2805000 No's  
 Time for strip changing – 6 Minutes