

Analysis of the Level of Production Failures by Implementing New Assembly Line

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Abstract : The article examines the process of implementing a new assembly line in a manufacturing enterprise of the household appliances industry area. At the initial stages of the project, a decision was made that one of its foundations should be the concept of lean management. Because of that, eliminating as many errors as possible in the first phases of its functioning was emphasized. During the start-up of the line, there were identified and documented all production losses (from serious machine failures, through any unplanned downtime, to micro-stops and quality defects). During 6 weeks (line start-up period), all errors resulting from problems in various areas were analyzed. These areas were, among the others, production, logistics, quality, and organization. The aim of the work was to analyze the occurrence of production failures during the initial phase of starting up the line and to propose a method for determining their critical level during its full functionality. There was examined the repeatability of the production losses in various areas and at different levels at such an early stage of implementation, by using the methods of statistical process control. Based on the Pareto analysis, there were identified the weakest points in order to focus improvement actions on them. The next step was to examine the effectiveness of the actions undertaken to reduce the level of recorded losses. Based on the obtained results, there was proposed a method for determining the critical failures level in the studied areas. The developed coefficient can be used as an alarm in case of imbalance of the production, which is caused by the increased failures level in production and production support processes in the period of the standardized functioning of the line.

Keywords : production failures, level of production losses, new production line implementation, assembly line, statistical process control

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