

Dynamic Evaluation of Single Minutes of Exchange Die (SMED) Using Network Data Envelopment Analysis (DEA)

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A B S T R A C T

Single Minutes of Exchange Die (SMED) is a widely applied approach in reducing the changeover time of the machines. The time reduction can be made by converting the activities that need to be executed while the machine is stopped to the activities that can be executed while the machine is running. The former is called an internal setup activity while the latter is called an external setup activity. The objective of this paper is to evaluate this converting process dynamically. Since the company tried to improve the changeover year by year, the result in the previous year will give the certain effect to the activities in the following year. Therefore, it is necessary to observe the performance's trend of the changeover's activities. In this paper, both internal and external setup time of a metal stamping company was collected from 2011 to 2014. The Network Data Envelopment Analysis (DEA) has been used to evaluate the performance of the SMED activities in the company by considering all the relationship between the activities in every year. As a result, we can determine the performance of an activity where the result can be used as a guideline for further improvement in the company.

Keywords: Single Minutes of Exchange Die Network DEA, Performance Measurement Dynamic Evaluation