

PROGRESSIVE ASSEMBLY SIMULATION FOR THE FINAL ASSEMBLY AND TESTS OF TWO PRODUCTS

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ABSTRACT

Northrop Grumman Corporation was facing the growths of customer demands for two of its key products. A cross functional team had worked together to design a Progressive Assembly for Product A/B final assembly and test in the production facility to meet the volume of customers' demands. Simulation studies were requested to support multiple phases of production demands during the course of five years. The factory simulation engineer developed process simulation models to help the progressive assembly line project team quickly verify its design. The collected simulation results assisted the progressive assembly line project team in verifying and improving its design, helping managers to make data driven decisions of production schedule, eliminate or mitigate risk, and allocate funding for additional equipment. The simulation models and their input data were modified and re-used after the progressive assembly line was launched to further assist project teams in their continuous improvement efforts.

1 INTRODUCTION

This paper describes the use of a process simulation model of a Progressive Assembly Line for two product lines. The Progressive Line was built to meet growing demand and the model was used to assist the manufacturing team with identifying top bottlenecks. The bottlenecks were then the focus of continuous improvement efforts by the team as any improvements would result in the largest gains with regards to throughput.

2 SIMULATION INPUT DATA AND MODEL

The simulation models and their input data were modified and re-used after the progressive assembly line was launched to further assist project teams in their continuous improvement efforts. A recent call for a further study is in-progress to validate/verify the model with newly increased line capacity, and requires the simulation results to identify the new bottlenecks and other KPIs to assist cell management.

3 OUTPUTS

The collected simulation results assisted the progressive assembly line project team in verifying and improving its design, helping managers to make data driven decisions of production schedule, eliminate or mitigate risk, and allocate funding for additional equipment.

4 USE

The process simulation study can be applied not only to manufacturing processes, but also to supply chain and logistics, to business and services processes. It will assist engineers and managers to make their decision by using system analysis data.