



Connecticut Center for Advanced Technology, Inc.

Value Stream Mapping & Discrete Event Simulation



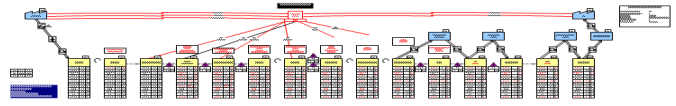
GKN Aerospace Engine Products offers more than five decades of complex metal shaping experience, including expertise in Electro-chemical machining, multi-axis high speed milling, CNC turning, CBN grinding, creep feed grinding and more, delivering the skill to finish components to the tightest specified tolerances. They provide a uniquely effective combination of diverse manufacturing experience, engineering expertise and state-of-the-art equipment for prototypes and production components. GKN Aerospace serves the Aerospace, Medical, Automotive, Oil and Recreational industries. Their products include fan Blades, Compressor Blades, Turbine Components, Cases / Structures and Blisks / IBRs / Impellers. GKN Aerospace Engine Products facilities have earned ISO 9001:2000 and AS9100 certification.

Introduction

In 2008, CCAT engaged with GKN Aerospace to demonstrate how electronic Value Stream Mapping (eVSM™) and Discrete Event Simulation software (DELMIA QUEST®) tools integrated together can help them improve their utilization of resources and reduce the levels of work in process (WIP) in their facility. The eVSM™ software was designed to provide the user with an easy to use tool for implementing the Lean Enterprise Institute methodologies associated with “*Learning to See*”, “*Seeing the Whole*”, “*Making Material Flow*” and “*Creating Continuous Flow*”. Value stream mapping is an important visualization tool for supporting the implementation of Lean concepts. The goal when applying this tool is to identify and eliminate waste in a process. While it is primarily a communication tool, it can also be used as a planning and a change management tool. DELMIA QUEST® is a comprehensive three dimensional digital factory environment that is used for process flow simulations and analysis. DELMIA QUEST® enables evaluations of a facility layout and resource allocations for design improvements, reduced risk, reduced cost and maximized efficiencies. The Value Stream Mapping and Discrete Event Simulation capabilities matched well with GKN Aerospace request for assistance with identifying waste and current process flow constraints.

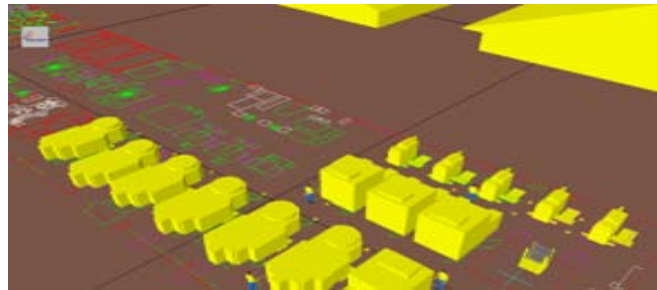
Methods / Procedures

CCAT worked directly with the GKN Aerospace - New England Continuous Improvement Manager and Production Supervisor to construct a current state VSM of a machining process line for turbine blades at their Manchester, CT facility, as shown in the following figure.



GKN Aerospace – New England Current State Value Stream Map

CCAT used their internally developed interface macros to quickly build a QUEST® model for the complete process line. The Discrete Event Simulation model shows the impact on the variation of processing time between equipment and the impact of raw stock arrival time on the level of WIP in the system. The image below is a snapshot of the QUEST® model.



Conclusions

CCAT was able to quickly create a VSM and Discrete Event Simulation model for GKN Aerospace. In addition, prior to demonstrating any “what if” scenarios, GKN confirmed that the model exactly mimicked the reality of their existing production. More specifically, their current bottlenecks or constraints were identical to what the model displayed. The “what if” scenarios allowed them to analyze process options that easily went from conceptualization to implementation.

References

“CCAT has provided access to tools that have helped us better understand how to make our value stream lean. Using their value stream mapping and factory modeling software, we were able to run “what if” scenarios on our future state. Our team was able to see the impact of batch sizes, buffer stock and asset utilization in a virtual environment before implementation. This has given us the validation we needed to move forward on our shared resource value stream. I highly recommend any manufacturing company to tap into the CCAT’s state of the art offerings.”

~Brian J. Wilczynski, Continuous Improvement Manager

For more information

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