

THROUGHPUT ANALYSIS CASE STUDY

MARCH 2013

Leading Auto Maker Increases Key Component Output by 14%

Unbalanced line serves as model for new production process

CHALLENGE

Despite investments, manufacturer failed to achieve targeted throughput levels.

In an effort to meet worldwide demand for more than nine million of its cars and trucks sold each year, a leading United States vehicle manufacturer upgraded one of its aging, post WWII foundries into a state-of-the-art facility for producing castings for its new engine line. The first line to ramp-up was not only expected to meet demanding throughput targets, but to serve as a model for additional lines to come. Unfortunately, despite precise planning, the initial line failed to achieve its production goals.

SOLUTION

“Unbalance” the line to optimize performance at the constraint.

Pinnacle Strategies visited the foundry for one week of Throughput Analysis and Training to identify and fix the problem in the casting line, and teach the manufacturer’s engineers how to find untapped capacity. The Pinnacle team began with hours of direct observation of the three-step line process: core making, in which the precision sand cores were assembled; casting—the actual pouring of the metal; and finishing, the removal of residual sand and extraneous metal. Their observations revealed casting as the constraint, the crucial step in the process that dictated the overall cycle time—and ultimately the throughput—of the entire line. Further, the team could see that the cast line was both starved for input (the cores) and blocked with output downstream. Based on these observations, Pinnacle consultants made the following recommendations:

REDIRECT ATTENTION FROM DOWNTIME TO CYCLE TIME When Pinnacle did the math, they showed the engineers that they could achieve greater throughput at less expense by making minor adjustments in cycle times rather than major improvements in downtime.

MANAGE THE BUFFERS Operations needed to shift its attention to ensure that the core buffer before the cast line was always full, while the buffer after the cast line—the constraint—be almost empty; managing the buffers would minimize the impact of core and finish downtime on the constraint, the cast line.

CLIENT OVERVIEW

REGION

North America

INDUSTRY

Vehicle manufacturing

CUSTOMER PROFILE

The customer is a global manufacturer that sells more than nine million vehicles in over 120 countries.

BUSINESS SITUATION

Updated foundry line failed to reach throughput target.

SOLUTION

A Throughput Analysis and Training adjusted buffers and cycle times to allow the cast line to work at optimal efficiency, improving overall line throughput.

RESULTS

14% INCREASE IN THROUGHPUT
IN JUST 30 DAYS

OVERTIME EXPENSES CUT BY **50%**

CLIENT ENGINEERS TRAINED TO
REPLICATE SUCCESS ON ADDITIONAL
FOUNDRY LINES

UNBALANCE THE LINE The line had been designed to be “balanced,” with a consistent cycle time of approximately 45 seconds at each of the three major stages. Pinnacle encouraged the manufacturer to unbalance the line by slightly reducing the cycle times at both the core and finish stages to allow for optimal performance at the cast line.

SET PRIORITIES DURING PRODUCTION In any given combination of disruptions, those at the cast line would receive top priority. By concentrating on the constraint, the manufacturer would reach its performance targets for the entire line.

RESULTS

Targets reached with 50% reduction in overtime.

Within just 30 days of implementing the recommended changes, the manufacturer improved throughput on the casting line by more than 14%. Line improvements decreased dependency on additional labor, reducing overtime expenses by 50%. The successful implementation of Throughput Analysis on the first line then served as the model for making improvements on new lines in the foundry as they were added.



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