

# THROUGHPUT ANALYSIS CASE STUDY

MAY 2014

## Systems Focus Unlocks Foundry Productivity, Increases Output

### CHALLENGE

#### State-of-the-art foundry fails to reach production targets

When a leading auto manufacturer opened a state-of-the-art aluminum casting facility in Mexico, expectations ran high. The engine blocks cast there would be a crucial part of a more fuel-efficient powertrain that would help the company meet its Corporate Average Fuel Economy (CAFE) standards. And the new facility was modeled on an Ohio foundry that had been successfully meeting its output goals.

But their hopes were consistently frustrated. While the foundry maintained high marks for safety and quality, it failed to achieve its daily production target, threatening automobile output downstream. Further, even if the company was willing to accept the added expense of overtime, the intense demands of 2000°F pouring imposed unavoidable downtimes for routine maintenance.

### SOLUTION

#### Shift focus from solitary pieces to entire workflow system

Right away, Pinnacle Strategies consultants noticed that the industrial engineers responsible for productivity were focused almost exclusively on individual machines and operators. Buried in analyses of data drawn electronically from almost every link in the production chain, they had failed to literally and figuratively see the whole, the workflow system on the foundry floor. The solution? Analyze the system, identify the constraint, and communicate shared goals everyone, from the production managers in the office to the operators on the line, could understand and aim for.

Implementation included:

#### ESTABLISH COMMON GOALS BASED ON SYSTEM UNDERSTANDING

At every stage in the workflow, engineers and operators were optimizing machine performance without understanding its impact on overall system performance, which could ultimately lead to greater output. Without rational goals, decisions about output objectives and maintenance downtimes were made without regard to overall workflow impact. The Pinnacle Strategies team encouraged a system of visual, fluid communications among operators and managers that would allow rational adjustments in real time, focused on a shared output goal.

**LINK BUFFERS TO THE BOTTLENECK** While the foundry had automatic buffers in place, they were not tied to the one element that really mattered: the bottleneck, or constraint, that dictated the rate of overall production. The experience of the facility's sister plant in Ohio proved misleading; the Mexican foundry had only one line, as opposed to four in Ohio, so had no means of compensating for shortcomings or overproduction on one line by shifting parts to other modules.

## CLIENT OVERVIEW

### REGION

Mexico

### INDUSTRY

Automotive manufacturing

### CUSTOMER PROFILE

U.S. automotive manufacturing foundry

### BUSINESS SITUATION

State-of-the-art foundry failing to meet output expectations

### SOLUTION

Pinnacle Strategies taught client team to shift its focus from individual machines to the overall workflow system, and to apply new insights to communications, buffer management and metrics

## RESULTS IN NUMBERS

IMPROVED THROUGHPUT BY **27%**

MAINTAINED EXCEPTIONAL SAFETY AND QUALITY

NEW TEAM WAS TRAINED ON HOW TO SOLVE THEIR OWN PROBLEMS IN THE FUTURE

UNITED THE TEAM TOWARD COMMON GOALS

CREATED SINGLE PRIORITY FOCUS ON CONSTRAINT

In the facility in Mexico, engineers had misplaced their attention downstream, failing to address the true bottleneck, the pouring into the molds. As a consequence, the pour operation suffered from the starving of necessary casts, and blocking—the intermittent overproduction of casts that couldn't be effectively absorbed downstream. The team readjusted the placement and management of buffers to maximize the pouring efficiency, lifting production of the line as a whole.

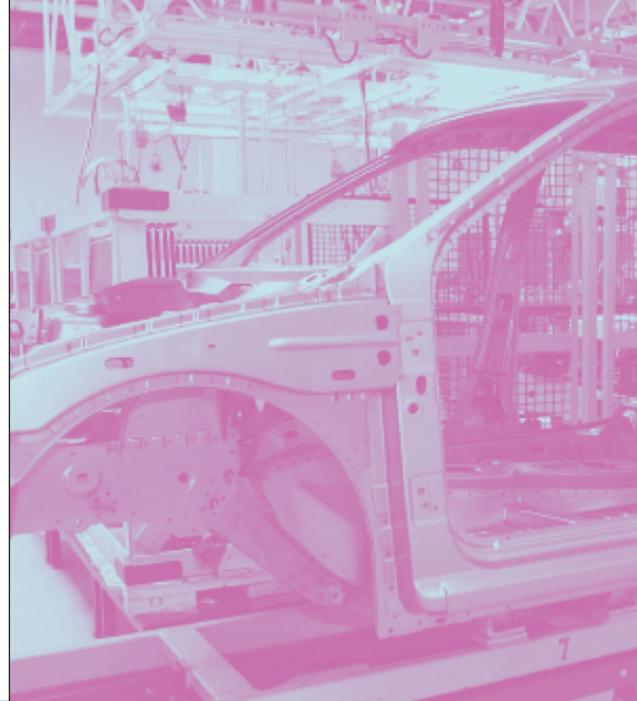
#### REDIRECT PERFORMANCE MANAGEMENT TO RELEVANT METRICS

Engineers had no shortage of data, but were absorbed in measurements that were irrelevant; they needed information that could answer the questions they *should* be asking, the ones whose answers would improve productivity. The Pinnacle Strategies team helped managers craft a small set of metrics that set common expectations across the entire process, and revealed current performance against those expectations. With the revised metrics, everyone worked from one rational perspective—was performance consistent with expectations? If not, they were encouraged to communicate their concerns *before* they escalated into crises.

## RESULTS

### A 27% improvement over the average production rate

In the very first day of new policy implementations, the foundry ran its best day on record: a 99% goal achievement representing a 27% improvement over the average production rate for the year. Under Pinnacle Strategies' guidance, the foundry moved toward simplified, more relevant metrics, improved communications of expectations and performance, and a systems awareness for sustainable improvement of workflow productivity.



#### BEST PRACTICES SOLUTIONS

Pinnacle Strategies is an international management consulting firm focused on operations management excellence. We work with organizations to increase shareholder value by developing high-performance business processes that significantly enhance productivity, reduce costs and time to market, improving profitability and accelerating sustainable growth. Pinnacle Strategies offers results-driven consulting solutions in the areas of performance management, project management, operations management, and supply chain.

#### ELEGANT SOLUTIONS TO COMPLEX PROBLEMS

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