

BORGWARNER EMISSIONS – BRAZIL

STRATEGIC EVALUATION OF THE PIRACICABA FOUNDRY

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BorgWarner Emissions Systems is a rapidly growing business unit within BorgWarner Inc. (\$8.3B 2014 revenue) dedicated to the design and manufacturing of industry-leading air management and emissions control systems for automotive and truck manufacturers around the globe. A significant proportion of the components used in the manufacture of these systems are high-pressure aluminum die-cast (HPDC) parts. Historically BorgWarner purchased these components from third parties, however through its acquisition of the Wahler Company (2014) it acquired its first HPDC plant which operates in Piracicaba, Brazil. BorgWarner was eager to assess the overall strategic and operating viability of the plant in the context of its overall global strategy, with particular attention being paid to the causes of the plant's low capacity utilization.

The Tauber team began the project by visiting key outside suppliers of HPDC parts to understand best practices in operations. The team then started its onsite work by analyzing Piracicaba's current value stream, cost structure, product portfolio, and manufacturing and business processes. As a result of the analysis and the benchmarking to best practices, the team identified the following seven causes of substandard performance: 1) fragmented demand profile, 2) irregular production planning, 3) disruptions in process flow, 4) unnecessary outsourcing of machine finishing, 5) higher proportion of manual labor, 6) inefficient mold changeover and 7) slow and inconsistent bidding processes. These deficiencies contributed to lower utilization, as well as lower inventory turns, quality, and plant margins, as well as frequently lost bids from prospective customers.

The team's recommendations, backed by detailed operations and financial analysis, included: 1) Expanding in-house machine finishing which improves quality, leading to dramatic cost savings, 2) Implementing preventive maintenance and automation procedures in deburring of cast parts to economize on labor leading to \$200,000 savings annually, 3) Rationalizing the type of parts produced in combination with enhanced production planning to improve inventory turns by 50%, 4) Revised mold management protocols resulting in 50% faster change-over and yielding an additional 200,000 parts/year, 5) Executing a new First-in-first-Out (FIFO) process flow, validated by a real-time pilot study implementation, that will result in 50% reduction in manufacturing lead time.

Taken together these recommendations will yield significant improvements in utilization, efficiency and revenue.