

PRECISION CASTPARTS CORPORATION

DEVELOPMENT OF SEPARABLES FITTING QUOTING SYSTEM

Student Team:

Phillip Scavulli – Master of Supply Chain Management
Trevor Sultana – EGL (BSE/MSE Mechanical Engineering)

Project Sponsor:

Ryan Kinslow – Vice President, Fluid Fittings and Bushings Division

Faculty Advisors:

Hyun-Soo Ahn – Ross School of Business
Robert Inman – College of Engineering

Precision Castparts Corporation (PCC) is the world's largest producer of metal aerospace components with annual revenue of \$10B. The Fluid Fittings Division produces threaded and permanent connectors for the hydraulic and pneumatic lines in aircraft, a critical application requiring precision tolerance and extreme durability. In 2013, PCC began acquiring and consolidating four fluid fittings manufacturers in the Los Angeles area. The threaded or "separable" fittings segment is the most operationally and strategically challenged but offers the most potential for revenue growth. The company sought to both increase revenue and reduce costs by standardizing its pricing and sourcing strategies across the brands. To do so, the company needed to develop a cohesive and universal pricing protocol and with it a systematic understanding of the costs. This was a complex undertaking because the sales people or customer service representatives (CSRs) had historically formed the decision-making core of the separable fittings business, using judgement, intuition, and tribal knowledge to make pricing, operations, and inventory judgments.

The Tauber team set out to standardize and automate the price quoting process by integrating the operational, financial, and marketing data required for pricing into one quoting system through which pricing policies could be established, refined, and implemented based on changing costs, market forces, and available production capacity. The team built a universal part classification system that categorized all parts based on the often inconsistent product codification standards. With the foundational classification system designed, the team then developed a pricing engine that automated and improved upon the existing "black art of quoting" currently practiced by seasoned CSRs. After six weeks of testing and iterative development, the final product is a VBA-powered quoting system used by all CSRs that programmatically generates prices for the top-selling separable fittings based on raw material cost, cycle and setup times, quantity, inventory availability, manufacturing site, production lot size, market segmentation, price elasticity of demand, ordering minimums, and long-term agreements. An administrator module allows management to tailor the parameters of the quoting system and the prices it generates to best fit the market environment, while also providing an eagle-eye view into quoting throughput by all CSRs. On project completion the quoting system was fully implemented.

The holistic nature of quoting and the demands of automating this process required developing and implementing several valuable building blocks. The prior lack of a systematic approach introduced wide variation into both the cost structure and the quoting process. While building the quoting system, the Tauber team also provided Permaswage with its first thorough cost analysis and sourcing framework for separable fittings. The team also developed an "Availability to Promise" (ATP) system that allowed the different sites to combine and transfer their inventories between sites without the concern of undercutting their own backlogs.

After implementing the quoting system, immediate annualized savings were \$1 million, owing to reduced reliance on manual quoting, minimization of pricing error, and improved insight into sourcing. Another instant benefit from the quoting system was an estimated 10% reduction in static inventory as a result of the new system's ATP functionality. The system generates competitive prices roughly ten times faster than previous methods and provides PCC with visibility into, and thus the opportunity for refinement of, its revenue model. Long-term savings and profit gains from full implementation of this quick, accurate, and consistent quoting system and its revenue optimization framework are estimated at \$5 million per year. Once structurally unscalable due to a lack of repeatable pricing, the separable fittings business is now positioned for substantial growth, which could yield gains that dwarf our current projections.