

## Performance Genesis: Platform Architecting for Industrial Component Commonality

**Client:** An international Fortune 500 market leader in heating, ventilating, and air-conditioning

**Challenge:** The client had multiple established lines of chiller equipment associated with large scale refrigeration systems. They were independently developed over a number of years, and served multiple market segments around the world, using different components (which accomplish similar functions) depending on the specific model.

Product Genesis was brought on to evaluate and plan a platform-based refinement of a specific client-identified component to improve profitability. Goals for the component solution included: (1) reduced chiller cost per installation; (2) compatibility with and adaptable to varying configurations and sizes of all chiller models under review; (3) lower cost per unit to produce; and (4) accommodating the same technical requirements that were current at the time. The ultimate program goal was to increase profitability of each chiller installation.

**Diagnosis:** The client had a good understanding of the market requirements for their products. To satisfy the fragmented and evolving requirements in the various customer segments, the client had developed multiple models within the product line.

This approach resulted in the design/selection of system components that, although performing essentially the same function in each of the models, were significantly different. These differences resulted in greater than necessary component and installation complexity (cost), which impacted the company's profit per installation. To remedy this would require a broad, cross-product-line reevaluation of product architectures and component usage/design to reduce cost and increase profitability, while maintaining the existing high quality and performance standards.

**Methodology:** Product Genesis' support of the platform architecture integration activity was divided into two phases. Phase one focused on mapping and understanding the complex interaction between technical, manufacturing, user, and service requirements. Phase Two focused on translating these requirements Video-Voice-of-the-Customer™ [V-VOC]™ and Voice of the Technology [VOT] into refined/redefined

platform architecture boundaries. This phase also focused on developing the requirements for the inter-model components.

To accomplish this, Product Genesis applied the Performance Genesis framework. The modular set of tools were customized and implemented to specifically address this client's unique situation.

Working from the client's established market, user, technical, and business requirements, and historical data on exiting platform configurations and components, Product Genesis applied cluster analysis techniques the various requirements (market, user, business, etc.). Product Genesis developed an understanding of interactions among requirements and across models within the product line.

Using the derivatives from the cluster analysis, Product Genesis worked with the client to redefine the boundaries of the product architecture. Product Genesis developed a number of component solution concepts targeted at meeting the goals of reduced installation cost, commonality across the product line and increased profitability while maintaining technical performance. These concepts were then evaluated from a number of different dimensions to determine how well they met the goals and product requirements. Leading concepts were then further developed to enable a more detailed evaluation to validate that the combined platform architecture and component concept did indeed meet requirements. Evaluation

involved developing sufficient design detail to enable detailed technical and business analysis.

**Results:** The platform architectures resulted in dramatic manufacturing and installation performance improvements, delivered directly to our client's bottom line. Measurable improvements included:

- Validated inter-model platform architecture definition and component design requirements
- Reduction to 5 inter-model components across the evaluated 31 model variations of the product line

Performance Genesis took a successful, but under-performing product line, and applied strategic innovation approaches to develop a technical solution that met business and market needs.

