

# THE CREATION OF AN EFFECTIVE PRODUCT LIFE CYCLE PROCESS

## Standardization allows excellent customer support throughout all phases of production

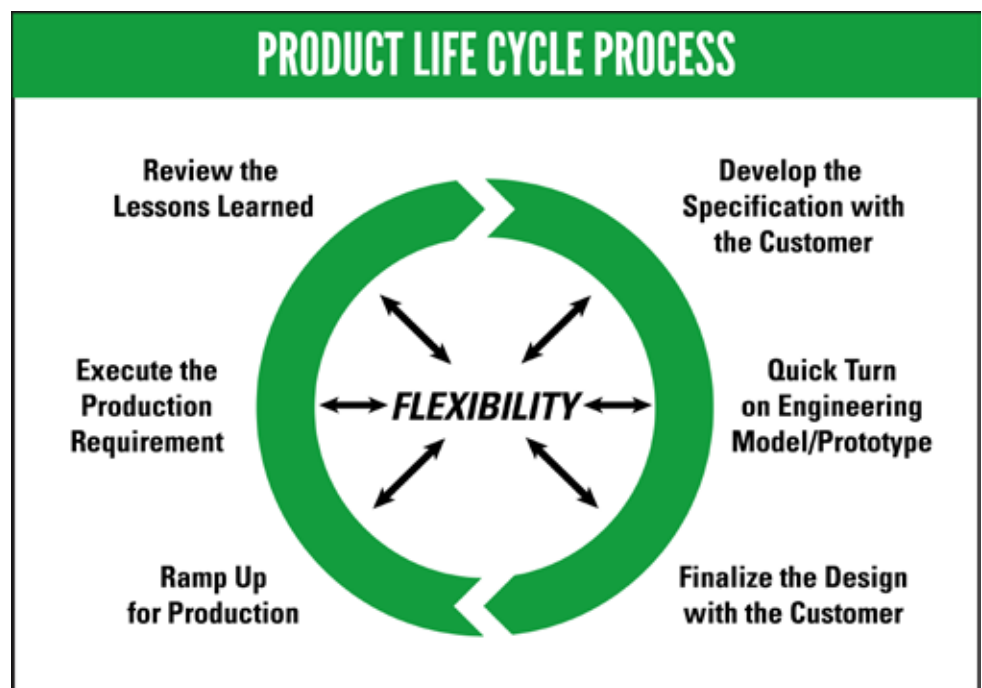
By Rey Green, Vice President & Chief Operating Officer, Orbel Corporation

Over the past ten years there has been a significant focus on companies becoming “lean.” Through the implementation of lean manufacturing principles, large OEMs have been able to reduce cost and cycle times by removing non-value operations from their processes. Our manufacturing base is stronger today because of the implementation of lean principles.

Where at one time the focus of lean principles was primarily manufacturing, today all departments and positions within an organization are subject to process mapping with the intent of removing non-value-added operations and reducing cycle times and cost. The end result, in many cases, has been standardization throughout the organization, improving customer service, streamlining utilization of resources, and enhancing products that can provide a competitive advantage in the marketplace.

In line with lean principles, supporting custom, application-specific designs is critical to satisfying the demands of EMI/RFI shielding customers. Development cycle times and budgets are being compressed as speed to market becomes even more critical to the success of these customers. As technology drives for more functionality in smaller volumetric footprints, OEMs are looking to partner with key suppliers to achieve high-quality designs that are reliable and manufacturable. Through the design process, customers are looking for “real time” feedback on design alternatives and are exploring means to reduce the number of design iterations from initial concept to production-rate parts and assemblies.

Designed to support customers throughout all phases of product development through maturation into production, the Product Life Cycle Process (Fig. 1) is the standardization of a proven process that allows the delivery of technical support and product solutions that provide customers with a competitive advantage in the markets they serve. This process describes the interrelationship between all phases of development through production. In addition, it describes a relationship where the supplier becomes an integral part of the customer’s variable design team.



**Figure 1:** The stages and goals within an effective Product Life Cycle Process.

## THE CREATION OF AN EFFECTIVE PRODUCT LIFE CYCLE PROCESS (cont'd)

The following is a description of each major milestone within the Product Life Cycle Process:

**1. Develop the Specification with the Customer:** Very often customers will provide a concept drawing or model. This provides customer service and technical teams the opportunity to work with a customer's engineers to further develop the concept into a specification that can be realized through an engineering model. During this phase, various design and cost-saving alternatives can be reviewed with a customer's engineers to ensure that the design is fit for the intended use.

**2. Quick Turn on Engineering Model/Prototype:**

Vertically integrated shielding manufacturers offer chemical milling, plating, metal forming, custom stamping, and heat treating in a single location (Fig. 2). This permits the selection of the most economical process in terms of cost and lead time when developing an engineering model/prototype. The goal is to get the engineering model in the customer's engineer's hands as quickly as possible for system integration and test. If iterations are required based on customer integration and test results, vertical integration from product modeling and design to processing prototypes is critical to keeping customers' schedules on plan.

**3. Finalize the Design with the Customer:** Through the engineering model/prototype, the customer provides feedback to the manufacturer. This may result in an iteration to or finalization of the design. Once the design has been finalized, the manufacturer completely documents the design. Customers approve and sign off on the documentation for the final design to make sure that all of their critical requirements have been captured and understood by the supplier.

**4. Ramp up for Production:** After the design has been finalized by the customer, it's time to design the necessary tooling to support production volumes. Tooling is "mistake-proofed" during the ramp-up stage, and internal processes are documented to reduce variation. Very often First Article Pieces will be provided to the customer to ensure that all critical design parameters have been achieved.

**5. Execute the Production Requirement:** With a fully documented process, skilled operations team, and significant investment in capital equipment, companies like Orbel have the capabilities to handle volumes ranging from the hundreds to the hundreds of thousands of parts and assemblies (Fig. 3). Vertical integration permits the provider to utilize the most effective and economical approach to satisfy the customer's requirement. The design and manufacturing process should be supported by a Quality system that is ISO 9001 and AS9100 certified.



*Figure 2: With chemical milling, plating, metal forming, custom stamping, and heat treating under one roof, Orbel can offer clients a full range of EMI shielding products and other precision components.*

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6. Review the Lessons Learned: Through an effective ERP and quality system, metrics are established to review critical operations and features of the product. These metrics are then reviewed with quality, engineering, and operations to determine opportunities for continuous improvement. Likewise, the customer service team works closely with customers to ensure that service levels are exceeding the requirements of the program. Customer feedback is a critical input to the provider. It becomes a key benchmark for continuous improvement and helps further align the provider with their customer.

At the center of the Product Life Cycle Process, FLEXIBILITY is highlighted. The relationship between the customer and the provider needs to be one that is built on trust. Since the development process is iterative, ideas between the provider and customer need to be free flowing. In-house design tools are used to support the “free flow” of ideas, reducing cycle time and design iterations. When iterations are required, the flexibility of an experienced staff and effective internal processes will support customers’ critical technical and cycle-time demands.



**Figure 3:** By consistently utilizing a tested and proven Life Cycle Process, Orbel is able to fulfill custom board level shielding orders ranging from hundreds of pieces to hundreds of thousands.

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### Rey Green, Vice President & Chief Operating Officer, Orbel Corporation

An operations and management specialist with more than 25 years of experience in the EMI, RFI, and microwave industries, Rey Green maintains an expert eye on the ways engineering, operations, sales, and quality control work together at Orbel. Rey is a firm believer in the benefits of vertical integration and helps Orbel offer aggressive production times on both prototypes and the full manufacturing cycle.