Challenges

Many challenges can occur should the designer of a complex part minimize considerations related to the ability to ultimately manufacture the part. As a result, product costs may be escalated and the product development lifecycle may be unnecessarily extended.

These challenges are typically caused by the following problems:

**Downstream needs and insights are not included in the design, which can slow the process or undermine quality.** The design of the product proceeds with little or no feedback from the manufacturing and sourcing organizations. Designers do not take the downstream users’ needs into account when creating electronic data, such as the 3-D fully annotated models that drive the manufacturing and QA processes.

**Scaling from low to high volume manufacturing becomes a costly problem.** When the prototypes of the product are made in a controlled, low-volume environment, the ability to scale the manufacturing process is not clearly understood.

Solution Benefits

The benefits of a DFM program include:

**Reduction in the product lifecycle**

Including manufacturing early in the development process ensures the success of downstream efforts to manufacture the product, thus reducing the time to market.

**Reduction in cost**

As the time to market is reduced, so is the cost required to manufacture the product.

**Improvement in quality**

By factoring in manufacturing early in the design process, the manufacturing process requirements can be properly planned and implemented. Thus the quality of the product in is vastly improved.

The Solution

The ultimate success of a product is enhanced by a Design for Manufacturing (DFM) program that is integrated with the product development process. The program requires involving the appropriate manufacturing experts early on in the design process. These individuals can also factor in the processes needed to support both low and full production rates needed for product launch. The program also addresses critical details such as establishing standards for 3-D models to support manufacturing and quality.

*Night Vision Devices, Courtesy of OSTI/FLIR*
Implementation

The Professional Services required for DFM are as follows:

- **Phase 1 – Discovery**
  In this phase, the "as-is" product development process is reviewed for DFM issues.

- **Phase 2 – Design**
  The DFM program is defined as a "to-be" process to address gaps in the product development process.

- **Phase 3 – Implementation**
  This phase includes tasks needed to implement the DFM program, such as process improvements and training for key personnel.

- **Phase 4 – On-going support**
  There is no software required for DFM.

About the Electro-Optics Center

The Electro-Optics Center (EOC), a proud part of The Pennsylvania State University, is a hybrid between the best components of a university and those of private industry. This relationship allows us access to the university’s researchers and scientists, its state-of-the-art facilities and leading edge research.

Our staff, comprised primarily of former industry and DoD personnel, brings experience in exceeding sponsor and corporate expectations. Through the application of this hybrid model, the EOC is able to provide its sponsors with solutions that combine leading edge research with on-time and on-budget deliveries. Learn more at www.eoc.psu.edu.