**Challenges**

The reconfiguration of the factory floor to support a new product is a costly and time-consuming process. Typical challenges include:

*What is the optimal manufacturing process layout?* The redesign of the factory floor to support a new product can be expensive and time-consuming, and may require rework if not planned properly the first time.

*Will the process and existing equipment support the needed volume and inventory?* The existing facility and manufacturing equipment need to be considered, as they form constraints for the new process.

*What if a "build out" of the existing facility or a brand new facility is needed?* The space required to support the expansion can be difficult to visualize.

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**The Solution**

**Factory Floor Modeling and Simulation**

The ability to create the factory floor model, using software to “virtually” see the flow of parts provides the supporting information needed to make good decisions. Figure 1 shows a typical model of actual equipment and parts as they flow through the manufacturing process. The rate of production and the size of the parts can be simulated to determine if any bottlenecks or problems exist virtually, before funds are expended on the desired changes.
Solution Benefits

The benefits to factory floor modeling and simulation include:

Reduced risk in the proposed change

By laying out the exact configuration based upon usage and demand, rework is eliminated. There are no surprises once the process is physically enabled.

Reduced the cost for the proposed change

Better decisions are made for both the investment and the proposed work that can be manufactured.

Process improvements

Once built, the software facility model can be used repeatedly as needed for process improvements.

Implementation

The Professional Services required for factory floor modeling and simulation are as follows:

- Phase 1 – Discovery
  Determine the “as-is” facility and equipment and the requirements for the new facility.

- Phase 2 – Design
  Establish a functional specification for the desired model.

- Phase 3 – Development
  Build the model based on the functional specification.

- Phase 4 – Implementation
  Demonstrate and train key personnel on the use of the model.

The factory floor modeling and simulation solution requires a software application such as ProModel (www.promodel.com). A demonstration is available upon request.

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.