Lean Flow Manufacturing Development

(Case History)

The Challenge

A leading maker of industrial air compressors wanted to upgrade their assembly operations. The goals were:

- Use Lean Flow best practices
- Reduce assembly lead time
- Minimize work-in-process inventory
- Improve productivity
- Minimize non-value overhead

Project obstacles included the products' custom-configurable features from small simple units to large complex units, a broad array of component inventories, and upstream machining constraints.

Project Approach

Working with a Cumberland consultant, the manufacturing team went through several project stages:

New Manufacturing Options Review:

- Lean Flow Manufacturing concepts
- Lean Flow Mfg. simulation exercise
- Visual Pull Systems exercise

Process Analysis and Development:

- "As Is" process characteristics
- "To Be" process characteristics
- "To Be" manufacturing process map

Implementation:

- "To Be" manufacturing floor layout
- Operator instructions and training
- Action plan and follow-up

The project team was led by an assembly supervisor and included key people from assembly operations, engineering and scheduling groups.

The planning work went quickly with a project roadmap that kept the key steps clearly in view, and the team's deep knowledge of the process to identify important issues. Implementation was slower due to product complexity and a need to keep everyone coordinated during the action plan "chess game."

Results

The new operations were very successful with a smoother overall production flow. Specific benefits included:

- 50% productivity increase
- 80% WIP inventory reduction
- 80% lead time reduction from 10 days to 2 days

In addition, several people from the project team gained experience and exposure for future leadership roles.

Success Factors

"Fact-based decision-making" is a fundamental success factor in any process redesign project. Especially in processes with complexity and scope that make the variables and interactions difficult to see all at once, in context.

Any manufacturing process can become leaner and more agile with:

- Minimal setup times & WIP queues
- All process steps "in line"
- Minimal non-value material handling
- Visual controls, "pull" systems
- Balanced workloads and crew
- Smoothed production sequence
- Simplified scheduling and materials supply systems