# Lean Training Improves Setup Efficiency and Drives Growth at Phoenix Manufacturing

## BACKGROUND

Phoenix Manufacturing, Inc., founded in 1989, is a privately held family-operated small business in Enfield, Connecticut, specializing in precision machining for the aerospace industry. What began as a two-person operation in a 2,000-square-foot building has grown into a company with over 100 employees operating out of a 114,000-square-foot, state-of-the-art manufacturing facility.

As a contract manufacturer, Phoenix specializes in complex, tight-tolerance components, supported by more than 40 CNC machines and a multi-axis mill/turn line. The company provides end-to-end manufacturing solutions—from engineering consultation through full-scale production—serving commercial aviation, spaceflight, and defense markets for both domestic and global customers, including leading aerospace and defense OEMs.

A defining element of Phoenix's growth has been its strategic investment in advanced manufacturing technology, particularly palletized machining centers. Since 2017, the company has added 11 machining centers integrated with palletized systems, enabling unattended, automated production and significantly expanding machining capacity. This automation journey has positioned Phoenix to better meet increasing customer demand while maximizing machine utilization.

Phoenix's commitment to quality is central to its operations and customer relationships. Managing more than 600 active part numbers, the company strives for 0 parts per million (PPM) defects and 99% on-time delivery (OTD) for major OEM customers. Its quality management system is certified to ISO 9001 and AS9100 Rev D standards, and Phoenix also holds NADCAP certifications in Nonconventional Machining and Nondestructive Testing, reflecting a rigorous, inspection-driven approach to delivering consistent, high-quality results.

Guided by a mission to deliver high-quality, cost-effective products through advanced technology and an uncompromising commitment to quality, Phoenix continues to invest in innovation, automation, and the next generation of manufacturing leadership.

## CHALLENGE

Phoenix Manufacturing was experiencing a significant backlog of work that was negatively impacting both internal operations and customer satisfaction, particularly in

### Results for Phoenix Manufacturing:

CONNSTEP's work with Phoenix Manufacturing resulted in the following metrics for the company:

- **Increased Sales: $500,000**
- **Retained Sales: $100,000**
- **Cost Savings: $25,000**
- **New Investments: $3.07 Million**
- **Jobs Created or Retained: 7**

*"We had a clear need for improvement in our CNC Mill-Turn Department and knew CONNSTEP was the right local partner to help us get there. Their approach helped us quickly uncover inefficiencies and take meaningful steps forward."*

*Donna DeVito*
*Human Resources & EHS Manager*

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meeting delivery commitments. The production strain was also limiting the company's ability to achieve key financial and performance goals.

A primary contributor to these challenges was inefficiency in the changeover process on the multi-axis mill/turn line. Extended setup times were reducing machine availability and limiting the number of productive "chip-cutting" hours—constraining overall capacity despite the company's investment in advanced, automated equipment.

Despite significant investment in high-tech machining centers, outdated setup processes were holding the team back from fully realizing the efficiency and capacity these systems were designed to deliver. Recognizing this gap, Phoenix identified a need for external support to help uncover inefficiencies and implement improvements.

Phoenix set a goal to reduce setup time on the mill/turn line by 30%, with the broader objective of increasing machine uptime, improving throughput, and better aligning production capacity with customer demand.

## SOLUTION

To help achieve its goals, Phoenix Manufacturing partnered with CONNSTEP, Connecticut's MEP Center, based on industry expertise and prior experience working together. Together, they launched a focused Setup Reduction Training Event on the multi-axis mill/turn line targeted for improvement.

The four-day training session introduced Lean principles with an emphasis on setup reduction and process optimization. A cross-functional, four-person team—including mill/turn setup personnel, the lathe department supervisor, and the production manager—followed a structured methodology beginning with baseline measurement and direct observation of the existing changeover process. The group documented and timed the full setup sequence, from the last good part of the previous job through first-piece approval of the next, establishing a clear current-state baseline.

Using Lean tools such as observation, video analysis, spaghetti diagrams, and safety evaluations, the group identified and classified sources of waste. Key issues included excessive operator movement, lack of point-of-use tooling, tool crib delays, inconsistent documentation, and variability in setup execution and inspection practices.

Based on these findings, the team developed targeted improvements to streamline changeovers and reduce non-value-added activity. Solutions included relocating tooling and materials to their point of use, implementing quick-change tooling, increasing tool block availability for offline preparation, and introducing a two-cart system to stage all required tools and gauges in advance. Ergonomic improvements, including torque-assisted fastening methods, were also incorporated.

Throughout the event, the team focused on implementing quick wins, piloting process changes, and developing standardized work to support an optimized setup process. Visual management tools and a sustainability plan were also established to reinforce long-term adoption and continuous improvement.

## RESULTS

To move from concept to action, the team designed and implemented several practical, shop-floor solutions that could be rapidly tested and refined. These included a prototype setup cart to stage all required tools, gages, and hardware at the point of use, custom tooling shadow boards to improve organization and visual control, and a magnetic communication system to clearly display setup status and key information at the machine. These solutions were deployed ahead of a test run, allowing the team to evaluate their effectiveness in reducing setup time, minimizing wasted motion, and improving overall process flow in a live production environment.

The results were clear and measurable from the initial test run. Operator walking distance was reduced from 2,586.7 feet to just 169 feet—eliminating more than 2,400 feet of movement per setup and removing 10–13 minutes of non-value-added time. Setup time was reduced from 446 minutes to 304 minutes, a 142-minute (2.36-hour) improvement representing a 31.8% reduction—exceeding the team's initial goal of 30%.

Following these results, the improved setup processes were standardized and implemented across all machines on the multi-axis mill/turn line. As Phoenix continued to invest in additional mill/turn equipment, these optimized processes were applied to new machines as well, supporting the expansion of the department and strengthening overall manufacturing capabilities.

Beyond the operational gains, the improvements delivered meaningful business impacts. Reduced setup times and increased efficiency helped decrease employee overtime while increasing available machining capacity. This enabled Phoenix to offer more competitive pricing on mill/turn projects, directly leading to additional contract wins, while also helping the company maintain long-term customer relationships by leveraging efficiency and advanced technology to offset external cost pressures.

By aligning advanced automation with optimized processes, Phoenix Manufacturing has positioned itself to fully leverage its technology investments and support continued growth.