

2003 Showcase in Excellence Awards Recipient Boeing-Mesa Lean Manufacturing Process and Tools



Boeing-Mesa:

Highest Ranking Official:
Ed Koopman, General Manager

Contact Person:
Wayne Vanlandingham
Manager, Lean Promotion Office
(480) 891-4703
wayne.r.vanlandingham.@boeing.com

Type of work:
Boeing-Mesa's principal lines-of-business is producing the AH-64D Apache Longbow Attack Helicopter for the US Army and international customers. The Mesa site also reconfigures older versions of the AH-64A model Apache Helicopters with newer electronics, and avionic systems. Boeing-Mesa contains the finest helicopter simulation facilities as well as high-technology research and a state-of-the-art manufacturing center. Also on-site is the Electrical Product Center which produces electrical assemblies for the Boeing family of products and for external customers.

Workforce: 4100

Testimonial of Value of Arizona State Quality Awards Program:

“This forum gives us an opportunity to share with businesses within the State of Arizona the methods we've been developing and sharing within Boeing for the past six years. The added bonus is getting feedback from a fresh set of eyes with varied professional qualifications”

– Wayne Vanlandingham

Highlights of Lean Manufacturing Process and Tools:

In 1997 the Boeing-Mesa site began a “1000 More” strategy to acquire more orders for the Apache aircraft. This strategic imperative spawned a market analysis which concluded our Apache product wasn't cost competitive – it was 20% over the cost of comparable helicopters. Besides the challenge to market our product globally we had manufacturing challenges. In 1998 the Apache helicopter, our primary product, experienced: low productivity; high cycle time and delivery delays to customers; poor financial trends and low employee involvement in continual improvement. With these challenges ahead of us we invested our energies and people in Lean Manufacturing concepts, and tools. Our results to date:

- Build hours reduced by 67 percent (target was 50%)
- Cycle time reduced by 69 percent (target was 50%)
- NO additional square footage -- (reduced by 9,000 square feet)
- NO additional people -- actually reduced by 30 people through normal attrition/promotions

Recognized throughout industry and the state as a Lean Leader, the Mesa Lean program has been benchmarked by Intel, Honeywell, Lockheed, Cessna, MIT, Army, Navy, Air Force, and affiliated educational institutions across the US, Canada, Mexico, and Europe. Arizona Governor Napolitano has requested Boeing Lean process expertise be provided to nine Arizona State agencies to facilitate business processes improvement.

Though the concepts of Lean Manufacturing are not new, organizations continue to struggle with its deployment for various reasons. The approach Boeing-Mesa uses in both the development of an annual Lean plan and the simplified deployment process is unique and is critical for Lean success at Boeing-Mesa.

Our annual Lean plan is developed considering both our corporate rating against the Lean Manufacturing Assessment (LMA) tool and our company's strategy and needs. The LMA is a tool, developed by The Boeing Company, to measure progress towards a lean production system that optimizes key performance metrics. It provides an in-depth view of the many facets of manufacturing: Leadership, culture, people, methodologies, etc. The LMA also measures specific elements against benchmarks defined by The Boeing Company's Best Practices Assessments. LMA scores range from 1-5 with a score of 5 being considered world class. For the past three consecutive years Boeing-Mesa has lead The Boeing Company in the highest LMA score. To score our site, Lean experts from other Boeing components conduct a weeklong assessment of our current culture, plans, processes, etc., according to the LMA criteria. Similar to a Baldrige Assessment this assessment culminates with a score and a feedback report. Boeing Mesa uses the feedback report to develop the following year's Lean plan to ensure we continue to progress to our longer range strategic plan.

The long range strategic plan identifies "Focus Elements" which describe areas for improvement, strategic interest, and overall company direction. Annual Lean projects are identified and planned according those needed to meet our strategic needs as defined by the LMA. Performance to the annual Lean Implementation plan is monitored monthly via the same tool used to monitor overall company performance – the Vision Support Plan.

Once an organization, program, or area has been identified for Lean Manufacturing implementation, we use an established set of Lean tactics. Boeing Mesa's Lean success creating the Pulse moving line became the model used to develop the Lean Tactics deployed throughout The Boeing Company. The Lean Tactics step teams through the Lean implementation process with a focus on implementing a critical Lean concept. Once completed the sequence is repeated.

Before:



After:

