Keeping Lean Alive
How to Sustain Your Lean Initiative

Rick Howard
Plant Manager
Lean Champion

CARD-MONROE CORP.
CREATING POSSIBILITIES...

Chattanooga, TN
Get Engaged

How involved is your lean initiative with Lean Principles?
• What is your reliance on Lean Tools?
• Are your metrics having an impact?
• Do you have lots of “events” with short lasting results?
• Is sub-optimization present in your value streams?
Agenda

• Intro to Card-Monroe Corp.
• Sustaining Lean – Principle Driven Focus
• Three Keys to our Lean Success
• Lessons Learned
• Take Away
• Q & A
The World Leader in Tufting Technology™

Who we are.

What we do.

Where we do it.
(Chattanooga, TN)
Customers in 31 Countries

Who we do it for.

60% of our customers
Our Lean Challenges (1 of 2)

- Low Volume – High Mix manufacturing & assembly
- Every machine is configured to unique customer specifications
- Machine specs involve up to 4,000 unique parts and subassemblies
- Over 300 different suppliers of materials, parts, and components
- Over 7,000 different Service Part SKU’s
- 50% of Service Parts are shipped less than one time per year
- Average lead time request on Service Parts orders is 0.8 Days
Our Lean Challenges (2 of 2)

- Up to eight concurrent processes merge into the final system
- Demand fluctuates in an unpredictable fashion
- Long lead time deliveries on key components
- Customers change specs at any time – even during installation
- Synchronizing installation with customer controlled projects
- Conversion (refurbish) projects involve continuous discoveries
- 20+ year history of push production & labor specialization
Keeping Lean Alive

Our Lean Timeline

- **2004**: First 5S Projects & Setup Reduction
- **2006**: Production scheduled by demand pull
- **2008**: Parts order flow and metrics reengineered, on time improved
- **2010**: Mill machining capacity added to eliminate bottlenecks
- **2010**: Customers begin benchmarking visits to CMC
- **2012**: Paint-booth capacity updated to eliminate bottlenecks and prevent nonc.
- **2012**: ERP software updated to include Lean features
- **2013**: Major machining center added for capacity and cycle reduction of cycle time
- **2014**: IE Dept added to enhance Lean capability
- **2016**: Enhanced Production Pull Scheduling with single que concept
- **2017**: Added mill machining capacity with pallet changer to eliminate setup
Sustaining Lean – Keeping it Alive

- **Principle Driven**: Imbedding Lean principles and thinking into culture (5%)
- **System Driven**: Structured use of tools intended to improve a system (15%)
- **Tools Driven**: Using specific methods to improve processes (80%)

**Beware the “Tools Trap”**
Kaizen is probably the most abused
Principles of Lean

- **Value Streams** (End-to-End Business Processes)
- Elimination of Waste
- **Velocity** (Cycle-Time)
- **Lot-Size of One** (Single Piece Flow)
- **Demand Drives Flow** (Synchronized Pull)
- **The Whole System** (No sub-optimization)
Card-Monroe Corp. – Three Keys to Lean Success

1. Do Lean for the right reasons
2. Measure it properly
3. Improve Value Streams end-to-end
Key # 1- Do Lean for the right reasons!

Unacceptable answers include:

- To save money
- To reduce waste
- To improve productivity
- Because the boss said so
- Because the consultants said so

1. To better serve our customers!
2. Become better stewards of our resources!
Focus on the Customer

• Every activity in a Lean initiative should be directed towards creating value for the customer.

• Asking “How will this add value to the customer?” should be a part of every decision in the Lean strategy.

• If the customer does not feel the benefit, it is probably not the right thing to do, or the right time to do it.
Adopt a good working definition of Lean…

“A systematic approach of creating value* by pulling product through the value stream at the demand of the customer without waste.

*Value is defined by the customer!

Would your customer pay you to do/make more of it?  Yes = Value  No = Non-value or Waste
Key # 2 - Measure it properly!

Don’t bother measuring:
• How many employees get trained
• Number of kaizen events
• Kaizen dollars saved
• Value Stream Maps created
• Process Improvement projects completed

Measure things that your customers, employees and owners care about. Measure what matters.
Measuring the Impact of Lean
(Expected results from effective application of Lean Principles)
Key # 3 - Improve Value Streams end-to-end!

Avoid sub-optimization!

- Individual employee and machine utilization is not the focus
  - When people try to optimize their piece, it often sub-optimizes the system

- The system trumps individual processes

- Velocity is the key measure
Traditional vs. Lean Thinking

It’s not about working harder….

but performing better.

Focus is on Individual / Process Efficiency

Most recent kaizen project!

Focus is on Value Stream
What is Lean?
A systematic approach for creating value by pulling production through the value stream at the demand of the customer without waste.

Principles
- Value Streams
- Eliminate Waste
- Velocity (cycle time)
- Lot Size of One
- Demand Drives Flow (Pull)
- The Whole System (end-to-end)

Why we do it.
To better serve our customers and become better stewards of our resources.

Lean Tool Box

- Operating Essentials
  - Workplace Organization (5S)
  - Process Capability & Control
  - Visual Management
  - SMART Set-ups (Reduced Lot Sizes)
  - Cellular Manufacturing
  - Overall Equipment Effectiveness

- Engage the Customer
  - Takt Time (Rhythm = Demand)
  - Pull System
  - Kanbans / Point of Use
  - Single Piece / Synchronous Flow
  - Theory of Constraints
  - Value Stream Analysis

- Expand & Enhance
  - Engaged Workforce (Kaizen)
  - Lean Supply Chain
  - Lean Product Development
  - Standard Work
  - Lean Accounting
  - Six Sigma (DMAIC)
The Impact of Lean at Card-Monroe Corp.

- Assembly Cycle Time: 30% reduction
- Machine Shop Setup: 15-25% reductions
- Machine Shop WIP: 50% decrease
- Overall On-time Shipments up 15%
Lessons Learned (1 of 2)

- Organize, manage and measure around your *value streams*.
- Ensure process *integrity* and equipment *reliability*.
- Enable *faster setups/changeovers* (reduce lot sizes).
- Pull production through the system on customer *demand* to eliminate work *queues* & WIP (embrace the *lot-size-of-one* theory).
- Use *visual management*, *standard work* and *kanbans* wherever practical.
- Utilize the *cellular* approach as much as possible.
Lessons Learned (2 of 2)

- **Synchronize** & **balance** processes throughout the value stream (use TOC).
- Improve the **whole system / end-to-end** (even at the expense of individual processes).
- Make **velocity** the trump indicator (reduce cycle-time).
- Refine the **design** of products to enhance manufacturability.
- **Encourage** (create opportunities for) your employees, suppliers and customers to embrace these concepts with you.
Take Away

Drive Continuous Improvement with focus on Lean Principles:

- Focus on the overall value stream
- Measure things that are meaningful to the business
- Utilize tools where useful and appropriate
- It’s a journey
Q & A
Thank You!

Your opinion is important to us!

Please take a moment to complete the survey using the conference mobile app.

Session No: ThS/58
“Keeping Lean Alive – How to Sustain Your Lean Initiative”
Rick Howard
Card-Monroe Corp.
rickhoward@cardmonroe.com