

# Lean Process & Employee Involvement: Core of Innovative Manufacturing

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Sr. AME Operational Excellence

**Crown Equipment Corporation** 





#### Introduction to Crown



5 regional headquarters



2.4 Billion USD FY2013



10,700 employees



17 manufacturing plants in 11 locations worldwide



Over 500 retail locations across 84 countries



Leader in material handling innovation and technology



Global line of trucks designed to local work practices



Innovative fleet management solutions



Family owned and managed industry leader since 1945

#### One of the World's Largest Lift Truck Manufacturers



### **Global Line of Lift Trucks**



Designed to meet local standards and operator preferences





### **Global Manufacturing**



17 Manufacturing Plants in 11 Different Locations





# North American Manufacturing

New Bremen, Ohio (Corporate)

Troy, OH
Greencastle, IN
New Castle, IN
Kinston, NC
Queretaro, Mexico





# New Bremen Manufacturing



Fabrication/Welding/ Heavy Machining



**Precision Machining** 



**Wire Harness** 



Assembly Plant/ Distribution Center



**Motor Plant/Plastics** 



**Electronic Assembly** 



**Mast Plant** 



### **Crown Company Policy:**

"We are committed to leading the industry as manufacturer of choice by providing our customers with preferred products, parts and services that will support their success as well as our own. To that end, we are dedicated to the improvement of our people, product and processes."



# Crown Principles, Approach & Tools



### **Crown Principles**



Jim Dicke, Sr.

"Bricks, mortar, and technology mean nothing without good people."



# Crown Lean Approach

- Leadership read Lean Culture by David Mann
- Developed a Plan
  - Identified Modules
  - Identified Sites
  - Identified leads to deploy modules
- Executed a Structured Approach
  - Module Development
  - Subject Matter Expert Certification
  - Annual Assessments
  - Training for 100% of Leadership & Employees



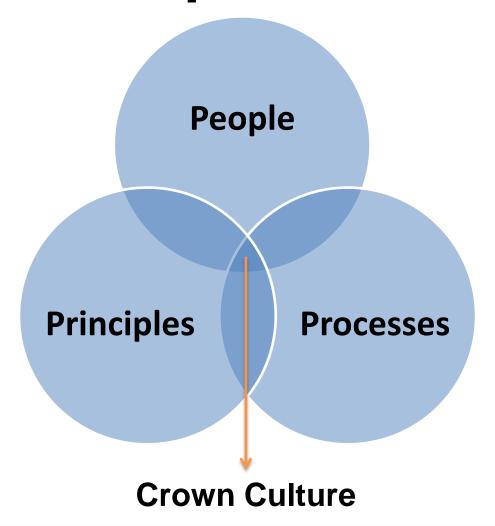
### **Core Lean Tools**

- 5S
- Standard Work
- Kaizen
- Value Stream Mapping
- Rapid Kaizen





### **Continuous Improvement Culture**







### **Support Structure**

Corporate
Operational
Excellence
Team\*

(7 People)

\*Supports all

of Crown

Plant Leadership Staff

(Lean Management System & Subject Matter Expert Coaches)

(9 people)

Subject Matter Experts

(13% of support staff with at least 1 certification)

White Belts
(All Employees)
(80% Trained)



### Crown's Lean Journey



### Crown's Lean Journey

#### Sustainment & Employee Engagement \* SME Development in Operational Excellence / Core 5 Modules Integrated Manufacturing \* Core 5 Tool / System Implementation in all Mfg Sites Lean Manufacturing \* Focus on Foundational \* Common Language Modules \* Module Development Understanding continues \* Modules maintained (Whitebelt / LMS) by plants under corporate for \* Continuous \* Train the Trainer common guidance and Approach - Sites train Improvement Ideas **Demand Flow Technology** deployment other sites through Crown Challenge \* Whitebelt Course -\* SME (Subject Matter Required for all mfg \* Started building to Takt Expert) Development Time to achieve flow employees started \* Lean Culture (Lean Craftsman / Job Shop / Mass \* Integrated Technology \* Lean Culture by David Management System) Production in the process Mann "Book Clubs" (automation, tooling, etc) course for plant \* 8 Hour Lean Basics \* Bay Build \* Implemented Group leadership Training "Whitebelt" \* International Op Ex Leaders & Process Developed Intranet Website was Technicians to help \* Corporate team developed sustain flow established \* Used our product as a process tools Pre 1999 2000 - 2010 2010-2012 2012-2014 2014 - Future

Time



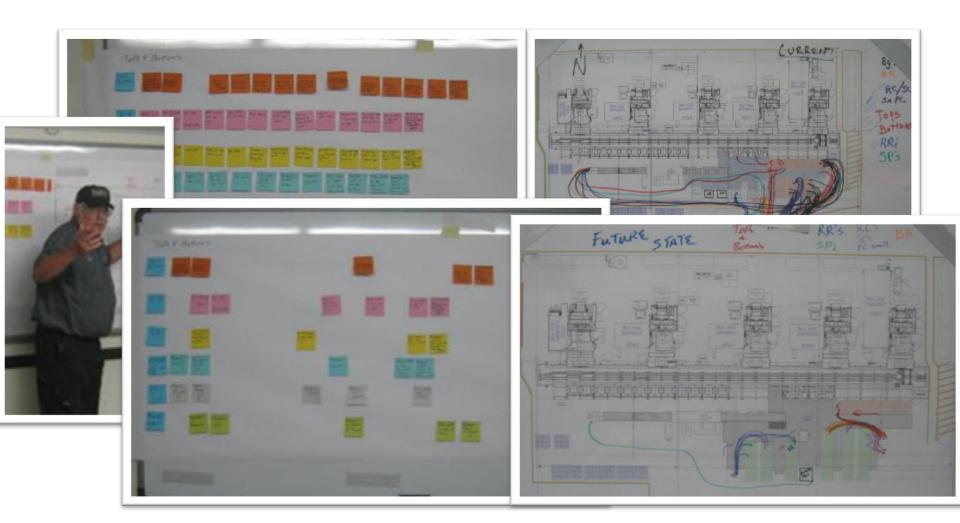


### **Lessons Learned**

- Lean Project Managers are much different than Lean Coaches
  - Focus needs to be on <u>Developing People</u>
- Establish standards to demonstrate desired lean behaviors to spread across the enterprise
  - Examples:
    - Lean Management System
    - Modules
    - Whitebelt



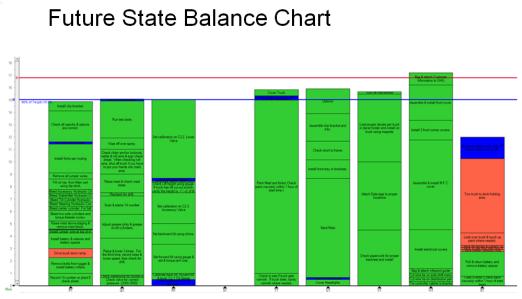
# Employee Involvement is Key





# Ownership of processes and work areas drive sustainment





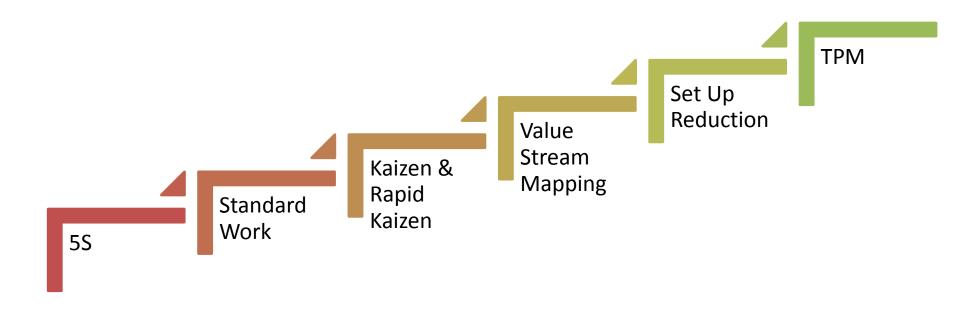


# Communication creates buy in from the support staff

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# Focus on foundational tools that create sustainable habits





# Continuous Improvement Tools & Training



### **5S**

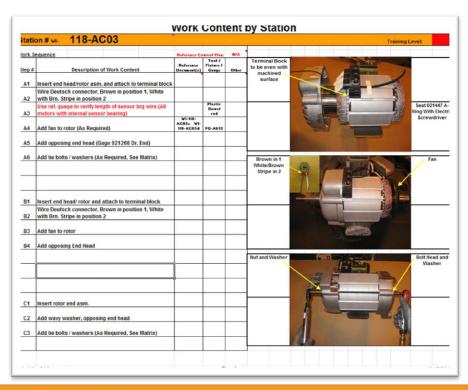
- Indicates change is happening
- Applicable to both office and manufacturing areas





### **Operator Standard Work**

- Baseline for improvements
- Difference between Standard Work (What) & Work Instructions (How)



"Where there is no standard, there can be no kaizen"

- Taiichi Ohno



### **Kaizen Events**

- Engage people in implementing ideas
- Teamwork (cross functional roles)
- Quick wins
- Build Momentum

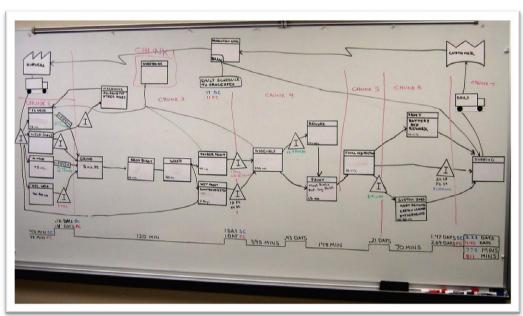






# Value Stream Mapping

- Organize change efforts and resources
- Connect improvements to corporate strategy
- Connect value streams across the business





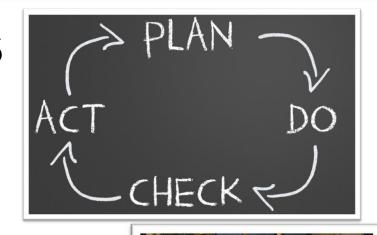


### Rapid Kaizen Events

- Point Improvements
- Achieve Target Conditions
- Use tools such as
  - Gemba Walks
  - Spaghetti Charts
  - PDCA Cycles







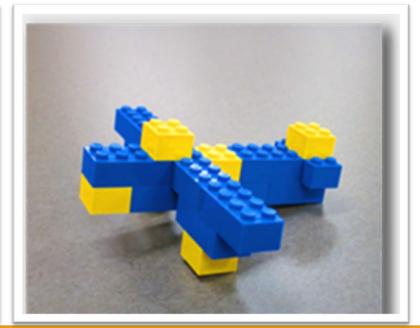




### Whitebelt

- "Lean Fundamentals"
- Creates a common language
- Hands on application of lean tools
- Generates excitement for lean application in their work areas





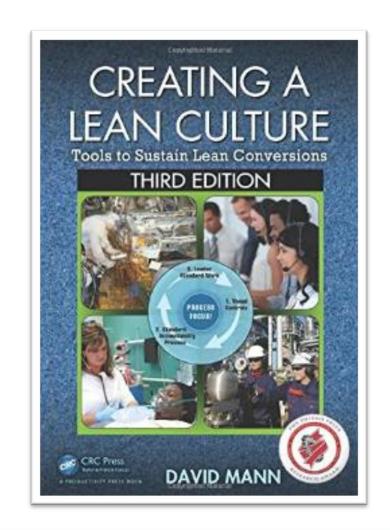


### Lean Management System

#### Leaders responsibility:

- Is the process running as designed?
- How can we improve the process?

We focus on the Respect for People!

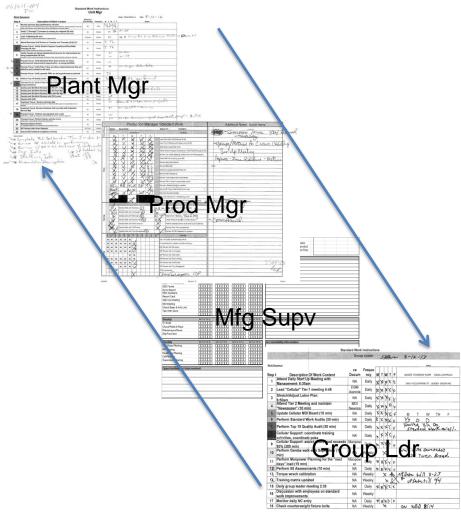




# 4 principle elements of LMS

- Leader Standard Work
- Visual Controls
- Daily Accountability
- Leader Discipline







# **Crown Challenge**

- Engages and rewards employees
- Improves communication and teamwork
- Supports business goals and objectives
  - Safety, Quality, Delivery, Cost, and Operational Excellence
- Creates a standard recognition process for
  - achievements





# **Our Next Steps**



# **Our Strategy for Manufacturing**

- Focus on implementing and developing Subject Matter Experts in the Foundational Modules at each site
  - 5S
  - Standard Work
  - Kaizen
  - Value Stream Mapping
  - Rapid Kaizen
- Leadership continues Lean Management System training and developing themselves as Lean Coaches
- Annual Progress Assessment



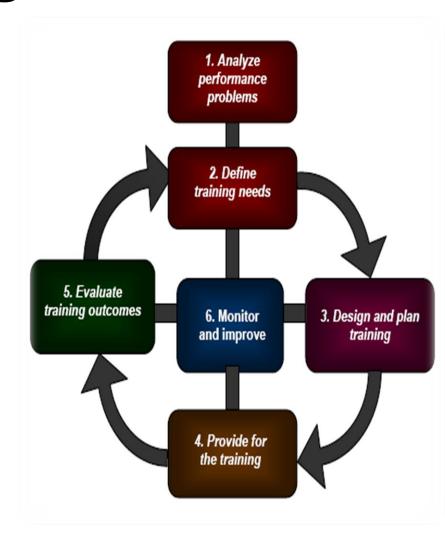
### As we grow...

- Our intent is that our:
  - Org structure will change as sites become less dependent on the corporate team
- New areas will be developed similar to manufacturing
  - Developing Subject Matter Experts in Core 5 Tools
  - Advanced Lean Experts will increase and become coaches to new Subject Matter Experts
  - Leadership will be trained and help deliver training to new leaders ("Walk the Talk")



# **Future Training & Modules**

- Advanced Lean course for Subject Matter Experts
- Facilitation Training for Subject Matter Experts
- Transactional Lean Application Training and/or Modules
- 3P (Production Preparation Process) Module





### For your consideration...



# For your consideration...

- Put together a plan
- Focus your efforts
  - Conceptual Training / Common Language
  - Use proper tools to address problems
  - Create an environment for involvement
  - Determine your method to drive sustainment
  - Leadership involvement



### Thank You!

Please complete the session survey at: www.ame.org/survey

Session: TP/07

**Lean Process & Employee Involvement:** 

**Core of Innovative Manufacturing** 

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**Crown Equipment Corporation** 

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