HIGH PERFORMANCE MANUFACTURING GROUP

Innovate Motivate Collaborate

KMA Kawartha Manufacturers' Association

QUINTE MANUFACTURING ASSOCIATION

NMA NORTHUMBERLAND MANUFACTURERS ASSOCIATION

Improvement Through Collaboration

HPM Group Identified Priorities

The purpose of the High Performance Manufacturing Strategic Focus Group is to:

1. Establish an active HPM network amongst Manager and Shop Floor Personnel
2. Share Continuous Improvement Best Practices
3. Establish interactive and productive plant tours
4. Develop a HPM Tool Kit

HPM Group Networking Event

The HPM Group met for a Lean - Informal Networking event at the Cat & Fiddle in Cobourg on November 18th, 2015.

Action Items Included:

1. Guest Speaker, Tara McDonough, who provided an overview of Lead to inform both new and experienced lean practitioners.
2. Established an active HPM LinkedIn networking group.
3. Development of a framework for HPM Group Plant tour/site visits to collectively resolve an identified on-site issue and share best practices

HPM Group
1st Workshop – CpK Interior Products

CpK Interior Products hosted the 1st HPM Workshop on May 18, 2016. The workshop was used to focus on:

- The company's continuous improvement journey
- The sharing of best practices
- Resolution of a problem/loss in the Plant

The half day workshop consisted of employees from

Chem-Ecol
Sabic
ESCO
Custom Plastics
Untrack
Canadian Resin Recovery

Objectives

1. Understand the foundation of CpK Interior Products' lean system (World Class Manufacturing)

2. Review the Injection 11 process for their Dodge and Chrysler Instrument Panel Retainers.

3. Identify improvements on the line to reduce the time it takes to process a part and to reduce the labour requirements

Workshop Agenda

	Start	End	Duration	Activity
May 18th, 2016	8:00	8:20	0:20	Safety and Cpk Interior Products Plant Overview
	8:20	8:35	0:15	World Class Manufacturing (WCM) Overview
	8:35	8:45	0:10	7 Steps of Focused Improvement
	8:45	9:05	0:20	Injection 11 - Floor Exercise
	9:05	9:15	0:10	5W1H Exercise
	9:15	10:15	1:00	3M Analysis Training and House Building Exercise
	10:15	10:25	0:10	Step 2 of a Kaizen
	10:25	10:35	0:10	Step 3 of a Kaizen
	10:35	11:30	0:55	Step 4 of a Kaizen
	11:30	11:45	0:15	Step 5 -7 of a Kaizen
	11:45	12:00	0:15	Wrap Up
	12:00	12:45	0:45	Lunch and Open Discussion

7 Steps of Focused Improvement

Step 1

Setting of an important subject
Bottleneck Process
Large wastes and losses

Step 2

Stratification of Losses based on S-Matrix, CD, QA Matrix

Step 3

Deciding the theme
Promotion, Planning and Preparation

Step 4

Select Project Team

Step 5

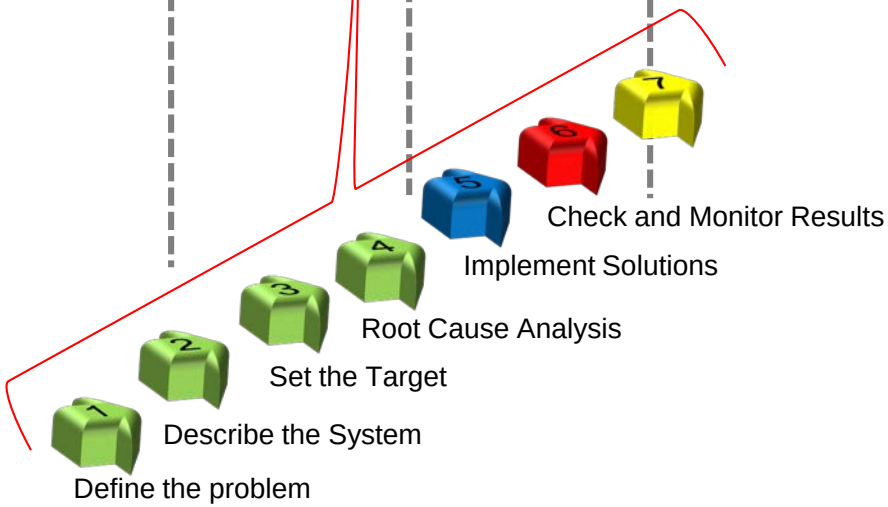
Project Activities with Proper Method

Step 6

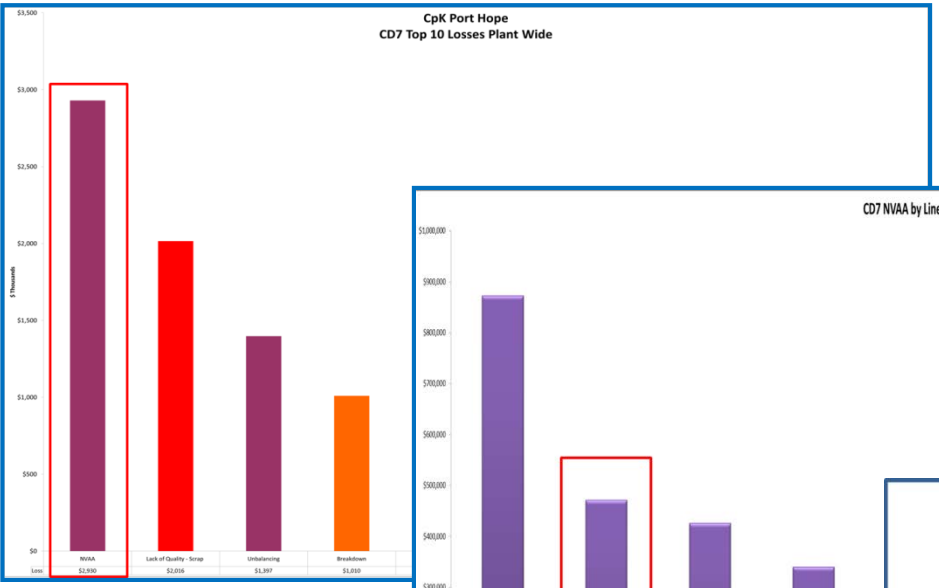
Benefit/Cost Analysis

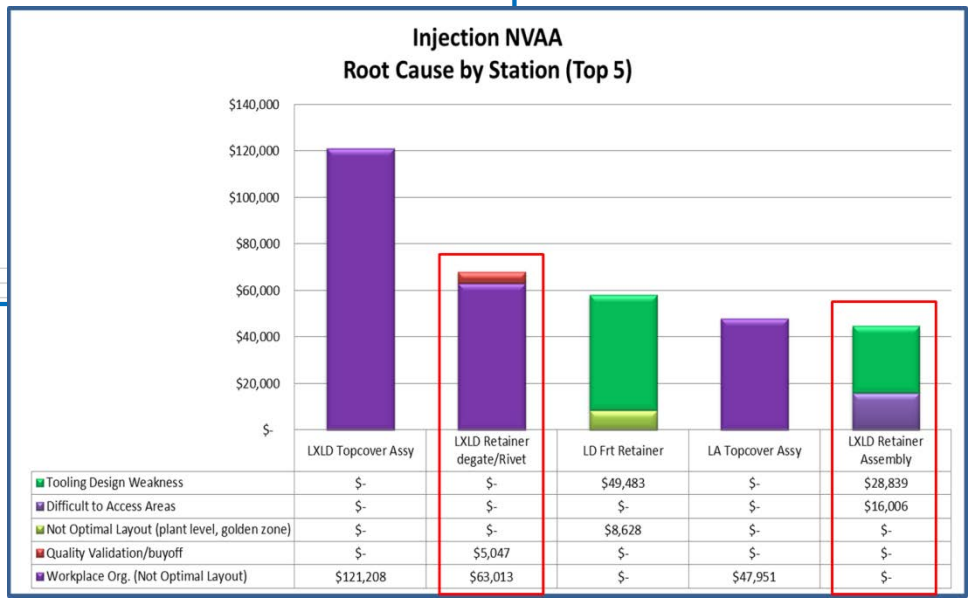
Step 7

Follow-up and Horizontal Expansion



Why Are We Here?





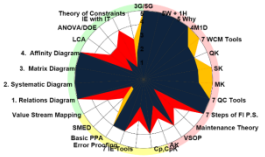
Building a Project Team

As a Project Lead why would you need to build a Team to attack your project?

1. Bring knowledge to the project
2. Bring experience to the project
3. Facilitate Data collection (Generally a good Team Leader function)
4. Roles and responsibilities in the facility
5. Spreading of knowledge
6. Development

Building a Project Team

1. Make a list of Tools/Skills/Knowledge you need to attack the problem



2. Working with People Development pillar assess your abilities/knowledge of the required tools. We do this using radar charts.

3. Working with People Development pillar understand if the gaps present are in skill (gained through application) or in knowledge (gained through self study or formal training)

4. Develop training plan (if required) and begin to select Team Members.

Training the Team to Increase Knowledge

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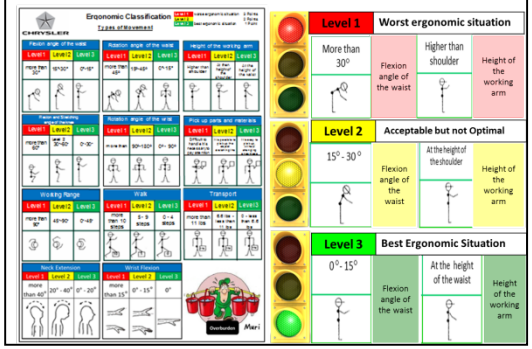
3M Analysis

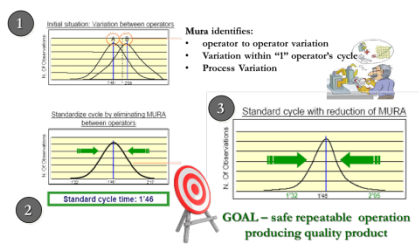
MURI MURA MUDA

11 Point Method for MURI Analysis

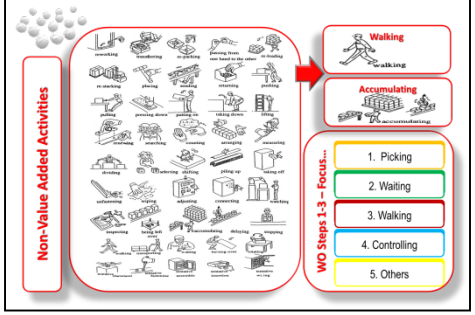


3M – MURA – Variation/Unevenness

Mura can only be **identified by studying the operation** and looking for differences. The best way to identify differences is **through video analysis.**



3M – MUDA– Waste



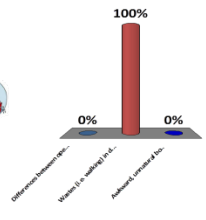
Knowledge Check

Muda is all about?

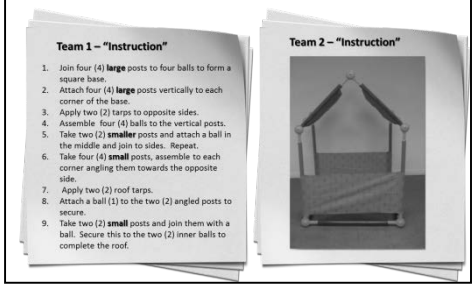
A. Differences between operators in how they do the job.

B. Wastes (i.e. walking) in doing the job

C. Awkward, unnatural body positioning to do the job



Exercise Review



Importance of Defining the Problem

Problem vs. Phenomenon

Problem: A deviation or gap between what is observed and what is desired.

Phenomenon: An abnormal condition producing the problem

When you go home tonight you find your window broken. You walk into the house and find a baseball in the middle of the floor.

What is the problem? What is the phenomenon? What is the root cause?

Importance of Defining the Problem

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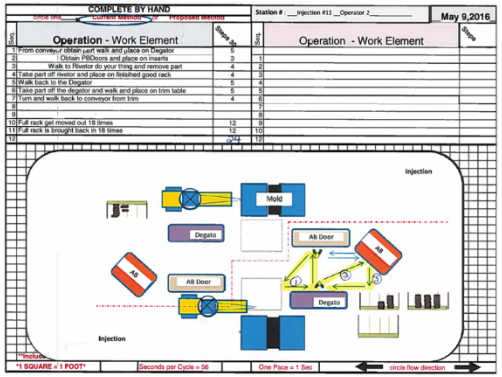
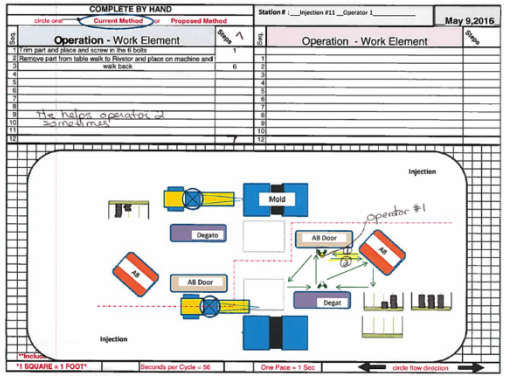
5W1H Analysis Sheet

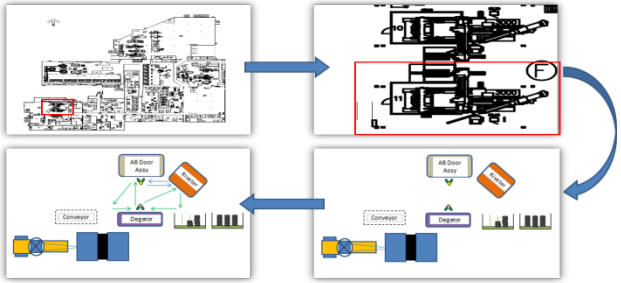
Initial Description of the Problem:
NVAA on the Injection 11 (LX/LD Retainer) – Not Optimal Layout & Tooling Design Weakness

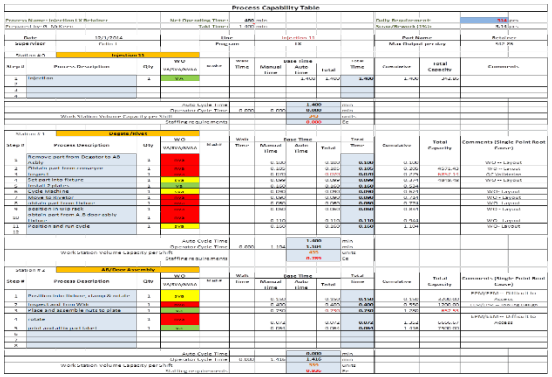
What	* What does the problem look like? What product, machine, material was being used? What size?	The injection 11 layout consists of an Injection Press, Degator, A/B Assembly station, and an A/B Riveter. The process is operated by two people.
When	* When did the problem occur? When in the sequence of operation; startup, continuous running, intermittent problem, shutdown, changeover?	The non-value added activities take place after the part comes off the injection press.
Where	* Where did you see the problem? Where on the equipment or material did you see the problem?	NVAA activities occurring within the operating procedure on the degator, A/B assembly, and the riveter.
Who	* Who does it effect? Everyone? Or is it less of a problem for some individuals or teams? (If so, what info can they offer?) Is it skill related?	The non-value added activities are effecting the operators on the line, as time is wasted walking, reworking, and assembling components in a non-optimal manner.
Which	* Which trend or pattern does the problem have? E.g. Is the problem more frequent on Monday mornings? After a change-over? Or is it random in nature? Which direction does the problem happen in? (Note: Not many problem are truly random!)	The problem takes place when injection 11 is running the LX and the LD Retainers, which require 2 operators to complete the tasks. It is an ongoing problem when this product is running.
How	* How is the state of the equipment changed from the optimal? How many times does the problem occur?	The state of the equipment has not been altered since put into production.

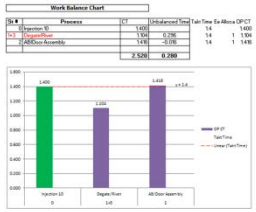
Revised Description of the Problem:
Injection 11 has several non-value added activities taking place on the secondary stations once the part comes off the press. Time is being wasted walking, reworking, and assembling components in a non-optimal manner. The problem occurs when running the LX and LD retainers using two operators to complete the tasks

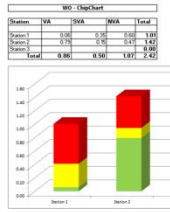


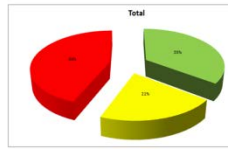


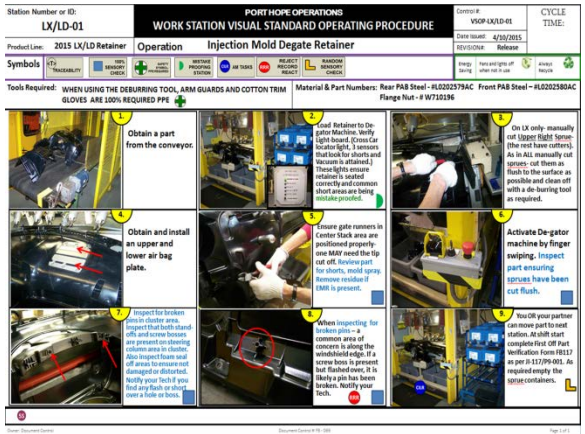




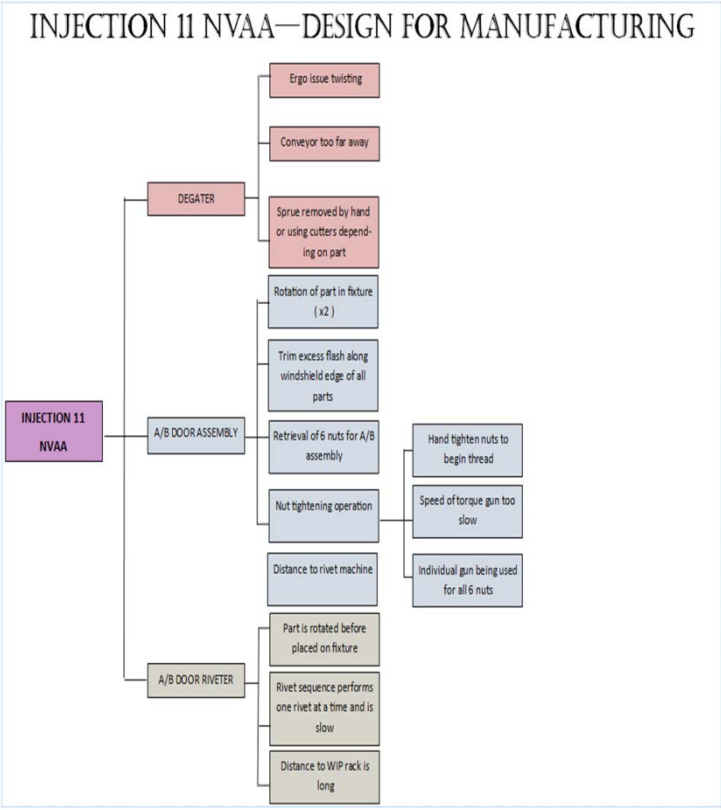








Root Cause Analysis and Identification of Countermeasures



Problem Description	Potential Phenomena	1st Why	Check	2nd Why	Check	3rd Why	Check	4th Why	Check	5th Why	Check	Countermeasure
Injection 11 has several non-value added activities taking place on the secondary stations once the part comes off the press. Time is being wasted walking, reworking, and assembling components in a non-optimal manner. The problem occurs when running the LX and LD retainers using two operators to complete the tasks	Conveyor too far away resulting in 8-10 unnecessary steps to be taken	Length of conveyor is shorter than distance to degator	NOK	Only conveyor available at the time	NOK							Extend conveyor to reach degator or place a roller table to feed part to degator
	Sprue removal by hand	Degator doesn't currently remove one of sprues	NOK	Degator did not have the capacity to cut the sprue in that area	NOK	Limited working space for cutter to fit into degator at the right angle	NOK					Install a degator on the end of arm tooling to cut the sprue off, prior to the part being placed on the conveyor

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	Trim excess flash	Flash left on windshield edge that must be removed	NOK	Creates potential build issues if flash remain	NOK							Review processing to reduce the amount of flash along the windshield edge
	Retrieval of 6 nuts for assembly	Nuts are picked out of a bin	NOK	6 nuts required for Air Bag Door assembly	NOK	Design requirement	NOK					Create and auto-feeder to dispense the 6 nuts required for assembly

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	Nut tightening operation	Hand tightening	NOK	Used in order to begin thread	NOK	No other current method in place to begin thread	NOK					Incorporate a magnetic head on the torque gun to allow for proper positioning of nuts
		Speed of torque gun	NOK	Torque of each nut takes too long	NOK	Speed of gun is too slow	NOK	Default speed in place for gun	NOK			Increase the spindle speed of the torque gun to complete the operation quicker
		Individual gun being used for torque	NOK	Gun required to completely tighten the nut to the bolt	NOK	The next nut can't be completed until the previous nut is tightened	NOK	Each nut requires appropriate torque	NOK			Develop a 6 gun nut runner with a balancer to allow all 6 nuts to be torqued at once

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	Distance to WIP rack is long	Rack is placed a fair distance away for operator to hang part	NOK	Rack was placed in current location to allow for forklift accessibi-lity	NOK	Forklift is used to transpo rt rack to wareho use	NOK					Move the WIP rack closer to the rivet station to reduce walking distance and work with LCS to replace forklift with a tugger for rack transportation

13 Root Causes Identified
11 Potential Countermeasures Being Considered

EHS – Environmental/Health & Safety
HR – Human Resources

NMA EHS Focus Group

NMA Human Resources
Strategic Focus Group