

TEAM OPS PRESENTS



Lean Implementation & Operational
Improvements



Plasticraft - Brief Overview

- Product Offering



Plasticraft - Brief Overview

- Product Offering
 - 5 unique taxi lights



Plasticraft - Brief Overview

- Product Offering
 - 5 unique taxi lights
 - 3 of the lights are available w/ optional lenses



Plasticraft - Brief Overview

- Product Offering
 - 5 unique taxi lights
 - 3 of the lights are available w/ optional lenses
 - All lights are available w/ optional lettering



Plasticraft - Brief Overview

- Product Offering
- Customers



Plasticraft - Brief Overview

- Product Offering
- Customers
 - Clients throughout the continental U.S.



Plasticraft - Brief Overview

- Product Offering
- Customers
 - Clients throughout the continental U.S.
 - Major accounts distribute to large taxi cab companies.



Plasticraft - Brief Overview

- Product Offering
- Customers
- Competitors



Plasticraft - Brief Overview

- Product Offering
- Customers
- Competitors
 - Four major Competitors in U.S.



Plasticraft - Brief Overview

- Product Offering
- Customers
- Competitors
 - Four major Competitors in U.S.
 - Also receive competition from Canadian Manufacturers.



Plasticraft – What they do well

- JIT – Just In Time Manufacturing



Plasticraft – What they do well

- JIT – Just In Time Manufacturing
 - Goods are produced to meet customer orders



Plasticraft – What they do well

- JIT – Just In Time Manufacturing
- Pull Ordering System



Plasticraft – What they do well

- JIT – Just In Time Manufacturing
- Pull Ordering System
 - Production does not begin until an order has been placed



Plasticraft – What they do well

- JIT – Just In Time Manufacturing
- Pull Ordering System
- Low WIP Inventory



Plasticraft – What they do well

- JIT – Just In Time Manufacturing
- Pull Ordering System
- Low WIP Inventory
 - Batch size of 10 units



Plasticraft – What they do well

- JIT – Just In Time Manufacturing
- Pull Ordering System
- Low WIP Inventory
- Low Finished Goods Inventory



Plasticraft – What they do well

- JIT – Just In Time Manufacturing
- Pull Ordering System
- Low WIP Inventory
- Low Finished Goods Inventory
 - Orders are shipped in batches of 10 immediately following production



Finding Improvements

- Finding Critical Path



Finding Improvements

- Finding Critical Path
- Determining the Pacemaker Process



Finding Improvements

- Finding Critical Path
- Determining the Pacemaker Process
- Creating and Evaluating Value Stream Maps

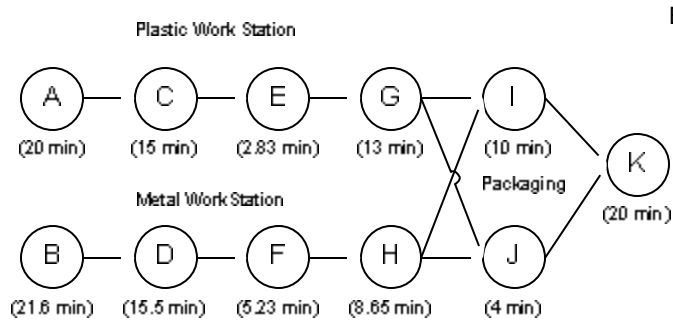


Finding Improvements

- Finding Critical Path
- Determining the Pacemaker Process
- Creating and Evaluating Value Stream Maps
- Identifying Individual areas of Improvement



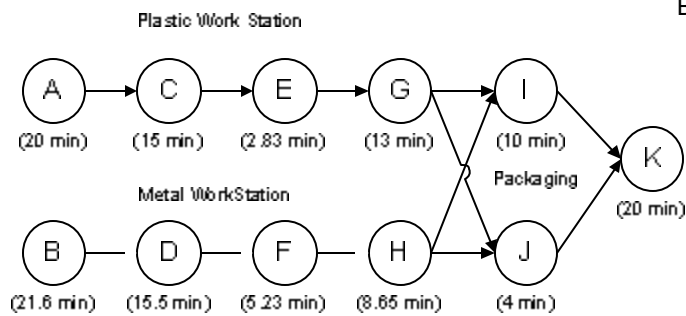
Finding the Critical path



Plastic Total: 56 min
 Metal Total: 51 min
 Packaging: 34 min



Finding the Critical path



Plastic Total: 56 min
 Metal Total: 51 min
 Packaging: 34 min

Critical Path



Finding the Pacemaker Process

		Plastic Process						
		Cut	Heat	Vacuform	Shape	Bore	Drill Mount	Glue
		Plastic	Plastic	Light	Corners	Light hole	hole	Lens Cap
Products	19	x	x	x	x		x	
	400	x	x	x	x		x	
	500	x	x	x	x		x	
	600	x	x	x	x		x	
	25N	x	x	x	x		x	
	400L	x	x	x	x	x	x	x
	25NL	x	x	x	x	x	x	x
	19L	x	x	x	x	x	x	x



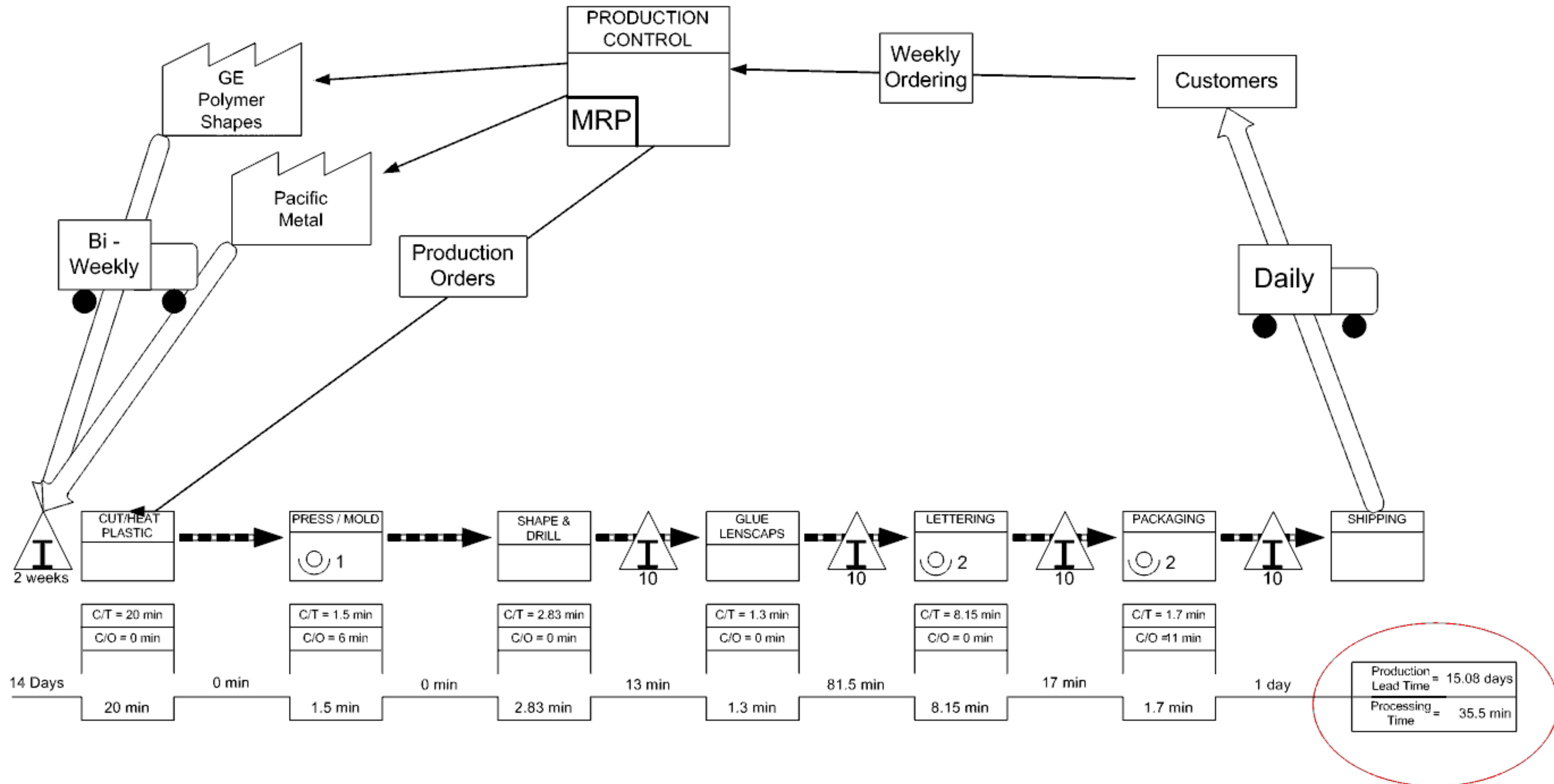
Finding the Pacemaker Process

- The products families with similar final processing Steps and Machines

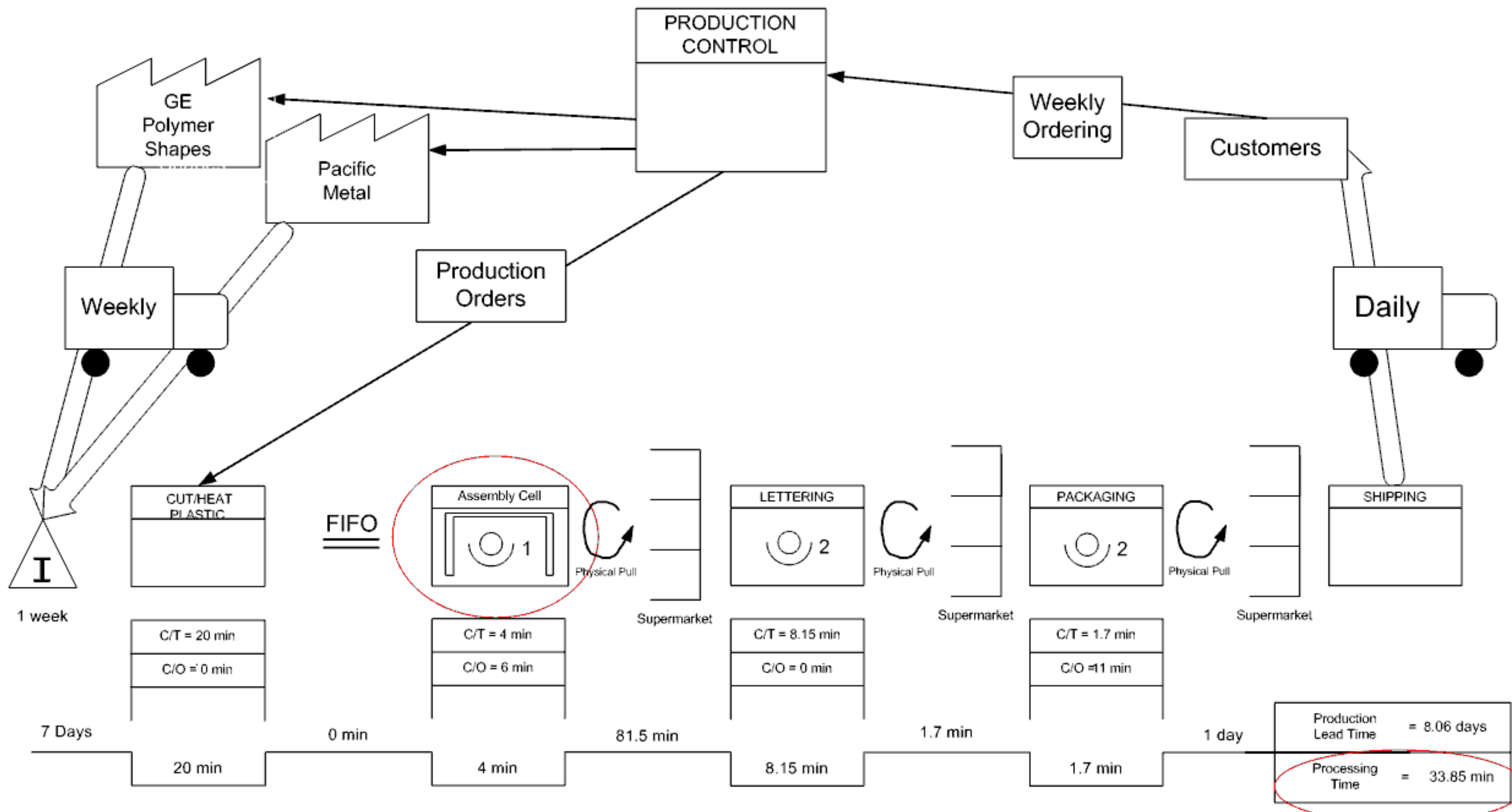
		Plastic Process						
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	25N	x	x	x	x		x	
	400L	x	x	x	x	x	x	x
	25NL	x	x	x	x	x	x	x
	19L	x	x	x	x	x	x	x



Plasticraft



Plasticraft



Value Stream Improvements

- Reduce Wasted Motion ~ 16 sec.



Value Stream Improvements

- Reduce Wasted Motion ~ 16 sec.
- Implement Moving Line ~ 5 sec.



Value Stream Improvements

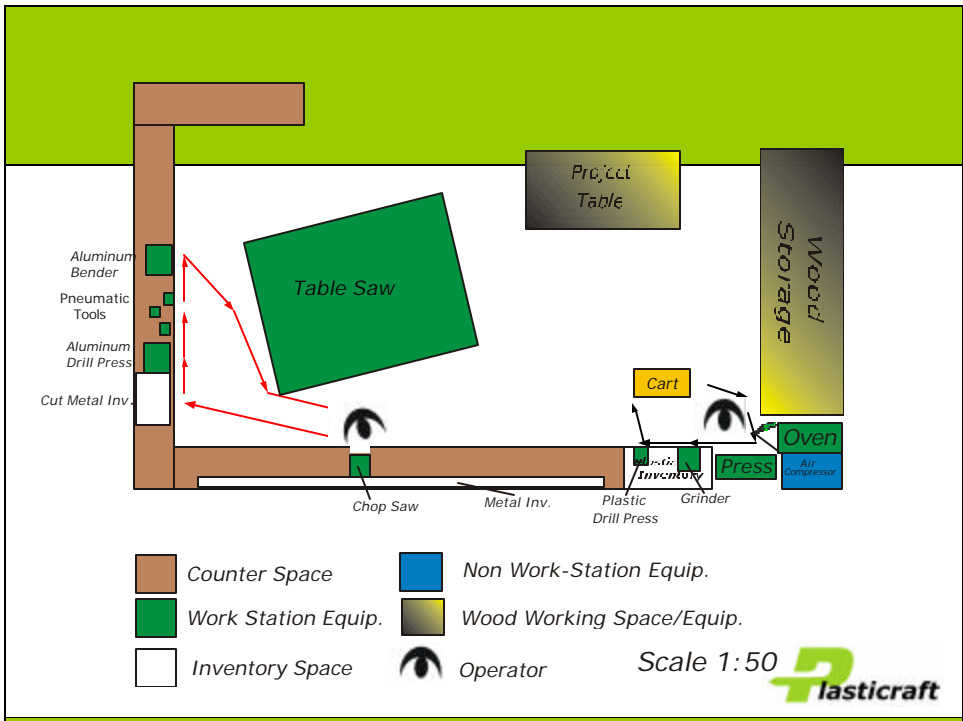
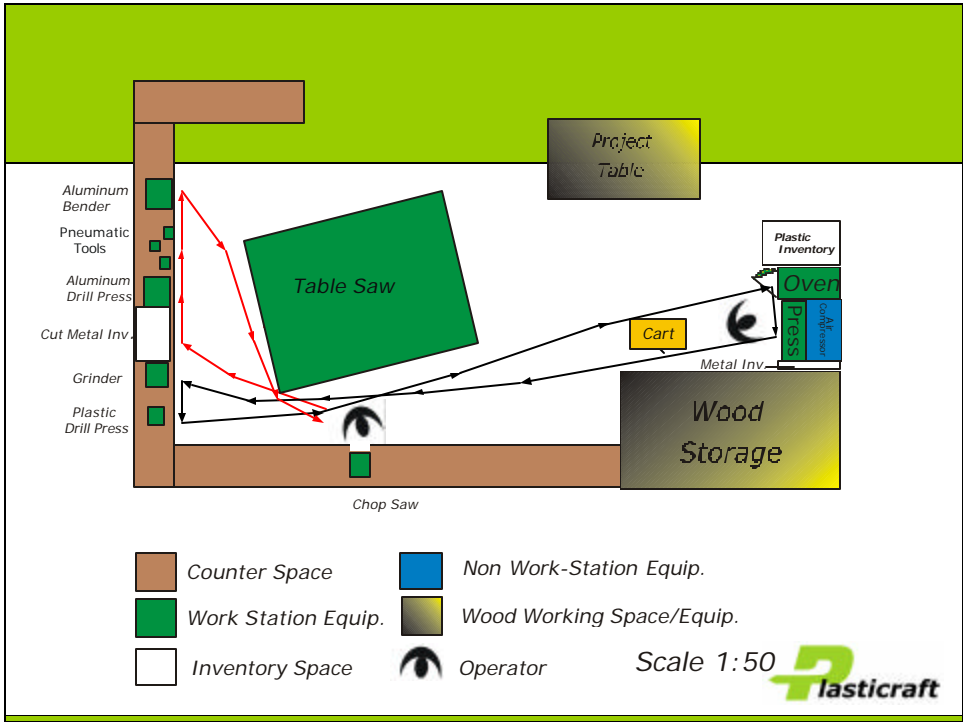
- Reduce Wasted Motion ~ 16 sec.
 - Move grinder next to oven reducing walk time.



Value Stream Improvements

- Reduce Wasted Motion ~ 16 sec.
- Implement Moving Line ~ 5 sec.
 - Lenses glued on moving cart instead of stationary workbench





Plasticraft - Optimization

~~OLD Plastic Workstation Time~~

- Plastic Setup
- Press / Mold
- Shape & Drill n
- Opt. Glue Lens Caps

~~Total Plastic = 56.33 min~~

New Plastic Workstation Time

- Plastic Setup ~ 20 min
- Press / Mold ~ 1.5 min
- Shape & Drill ~ 2.57 min
- Opt. Glue Lens Caps ~ 1.22

Total Plastic = 35 min

ALL OTHER PLASTIC WORKSTATIONS CAN BE COMPLETED DURING THE PLASTIC SETUP AND PRESS PROCESSES.



Plasticraft - Optimization

THIS SHIFTS THE CRITICAL PATH TO METAL

New Plastic Workstations

- Plastic Setup ~ 20 min
- Press / Mold ~ 1.5 min
- Shape & Drill ~ 2.56 min
- Opt. Glue Lens Caps ~ 1.22

Total Plastic = 35 min

Metal Workstations

- Cut Metal ~ 21.6 min
- Drill Holes ~ 15.5 min
- Clean Metal ~ 5.23 min
- Rivet & Bend ~ 8.65

Total Metal = 50.99 min

Packaging Total = 34 min

Lettering Total (Opt.) = 162.67 min



Additional Improvements

- Metal Cutting ~ 16 min. 24 sec.



Additional Improvements

- Metal Cutting ~ 16 min. 24 sec.
 - Reduce batch size from 50 to 10



Additional Improvements

- Metal Cutting ~ 16 min. 24 sec.
- Drilling Holes ~ 45 sec.



Additional Improvements

- Metal Cutting ~ 16 min. 24 sec.
- Drilling Holes ~ 45 sec.
 - Reduce setup through bit changing sequence



Additional Improvements

- Metal Cutting ~ 16 min. 24 sec.
- Drilling Holes ~ 45 sec.
- Packaging ~ 1 min for batch of 10



Additional Improvements

- Metal Cutting ~ 16 min. 24 sec.
- Drilling Holes ~ 45 sec.
- Packaging ~ 1 min for batch of 10
 - Items packaged off moving line



Plasticraft - Future Strategy

- Focus on decreasing process times within the new critical path.



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- Packaging needs to be relocated to a central area.



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- Reduce raw material lead time to one week.
- Design oven that mechanically rotates the plastic so operator time is reduced.



Plasticraft - Future Strategy

- Focus on decreasing process times within the new critical path.
- Packaging needs to be relocated to a central area.
- Reduce raw material lead time to one week.
- Design oven that mechanically rotates the plastic so operator time is reduced.
- Implement automated lubrication equipment for the drilling station.



Lean Implementation & Operational
Improvements

