

ACME Medical – A Case Study

ACME Medical manufactures a large range of products in many different sizes. The majority of products start out as castings which are then cleaned, machined (drill, mill, grind, polish), assembled, and inspected before final packaging and shipment to distributors. Some of ACME's lines are dedicated to single products while others are assigned a mix. The value stream in the following example manufactures forceps, cutters and scissors.

Products



Forceps
Small
Medium
Large



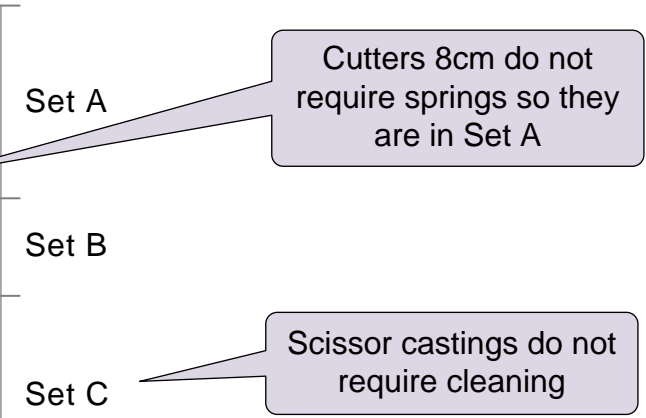
Cutters
12 cm with spring
10 cm with spring
8 cm no spring



Scissors
Small
Medium
Large
XLarge

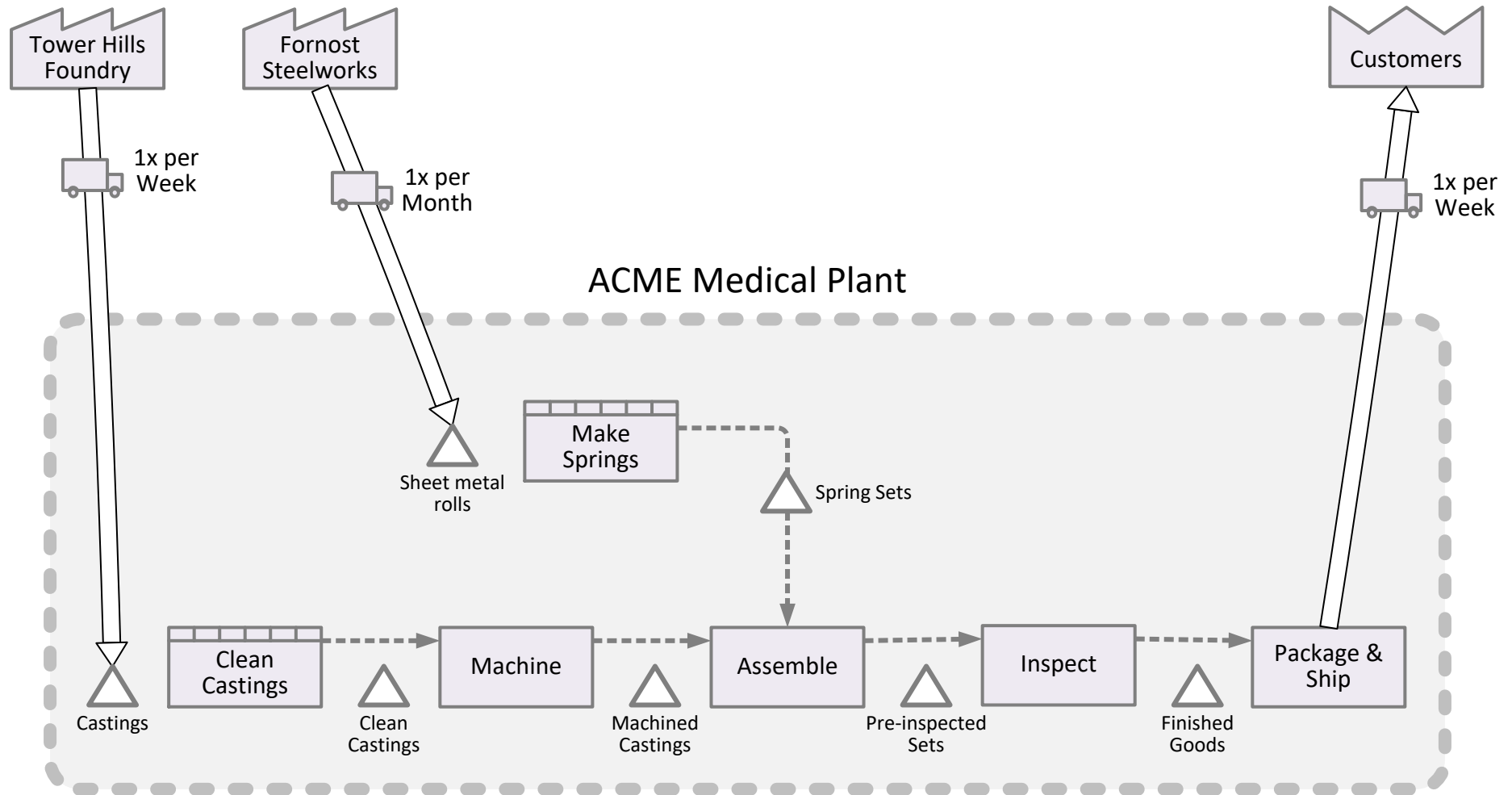
Products/Process Matrix - Sets

Item	ID	Clean	Machine	Make Springs	Assemble	Inspect
Forceps SM	1	X	X		X	X
Forceps MD	2	X	X		X	X
Forceps LG	3	X	X		X	X
Cutters 8cm	11	X	X		X	X
Cutters 10cm	12	X	X	X	X	X
Cutters 12cm	13	X	X	X	X	X
Scissors SM	21		X		X	X
Scissors MD	22		X		X	X
Scissors LG	23		X		X	X
Scissors XL	24		X		X	X

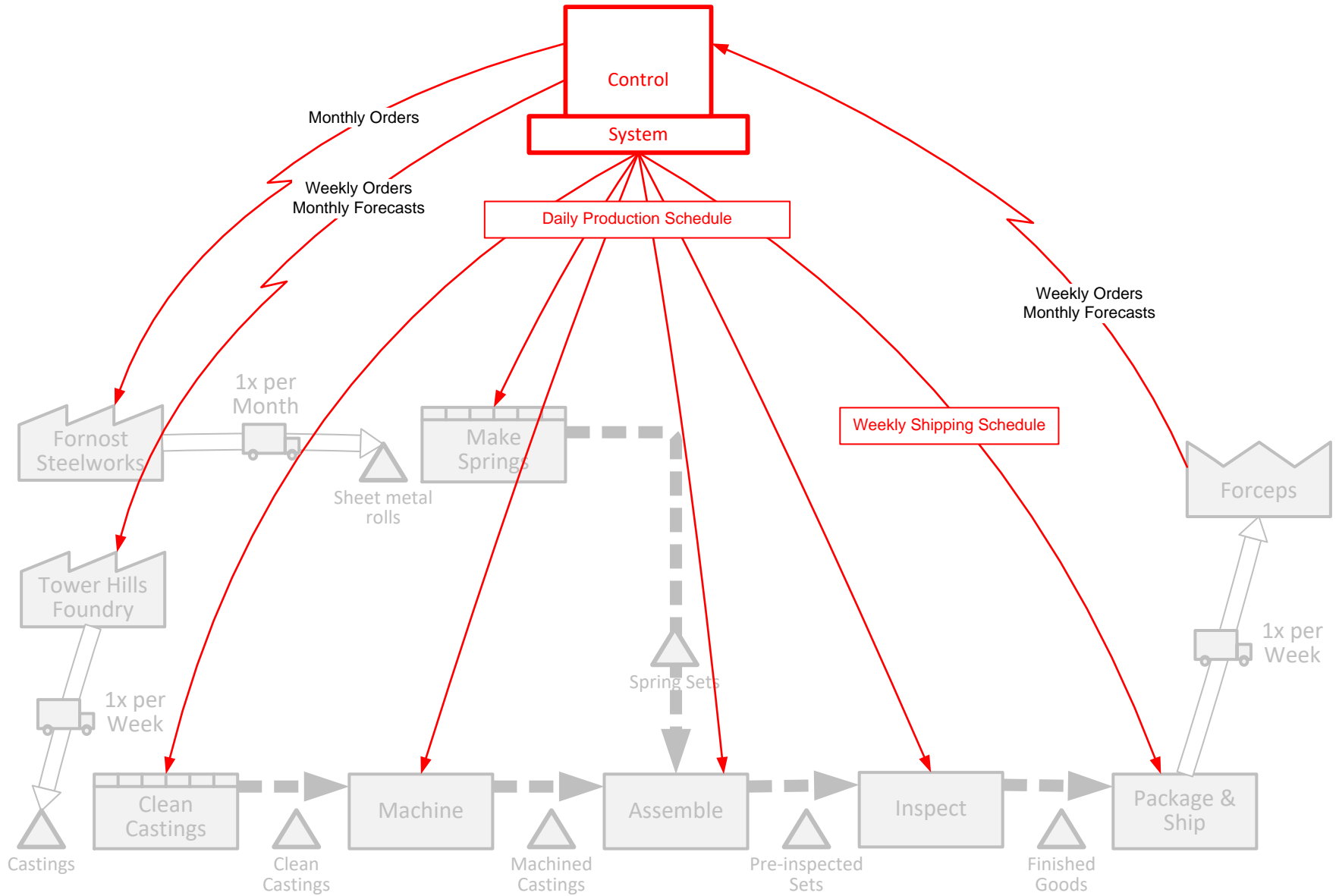


ACME Medical – Current State Material Flow

See castings and sheet metal rolls arrive into the plant, the main material flow within the plant, and final delivery to the customer.



ACME Medical – Current State Information Flow

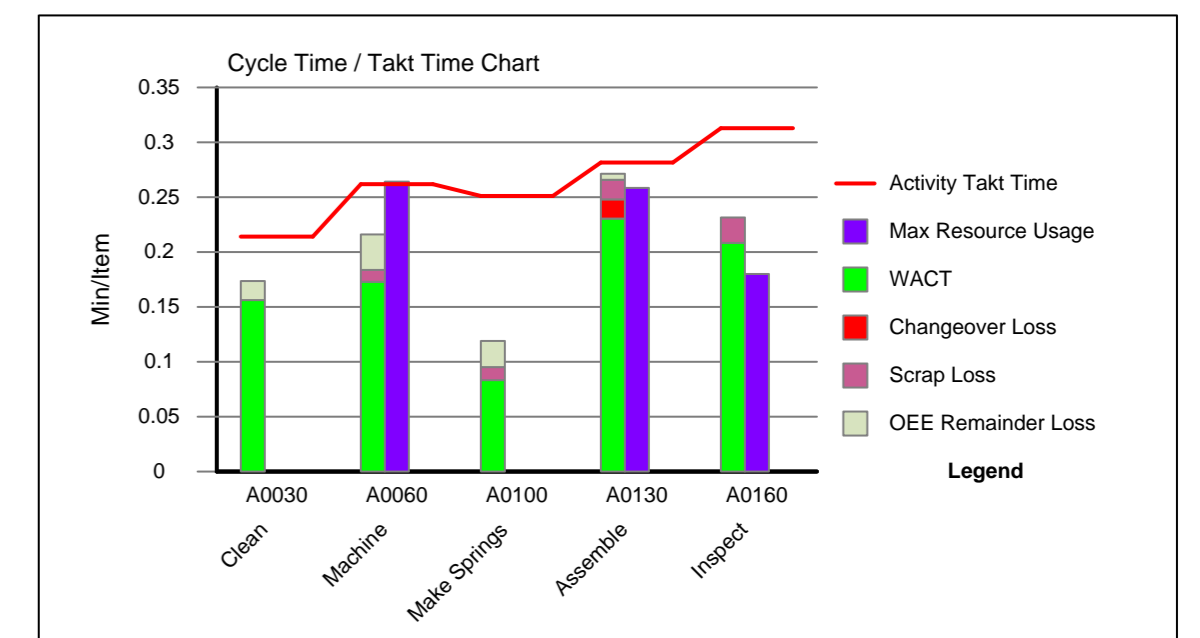
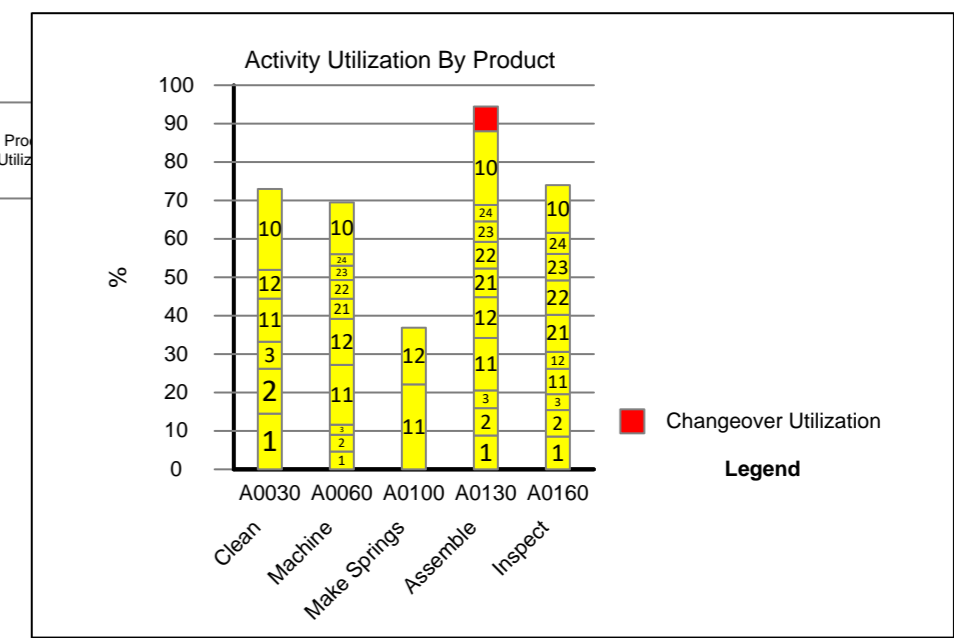
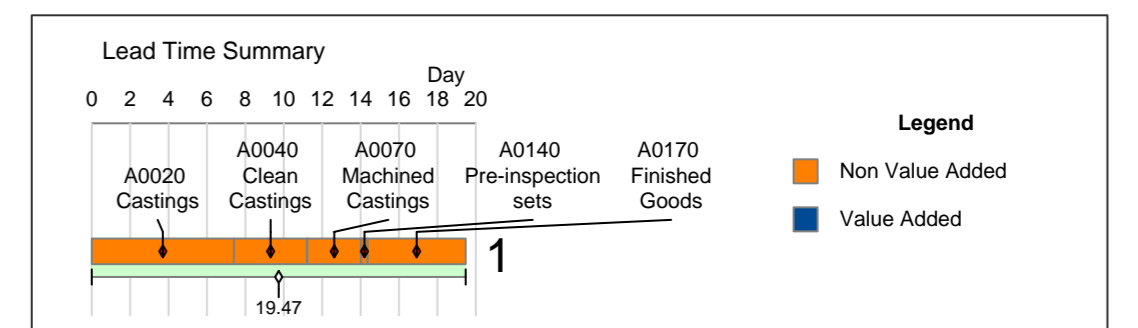
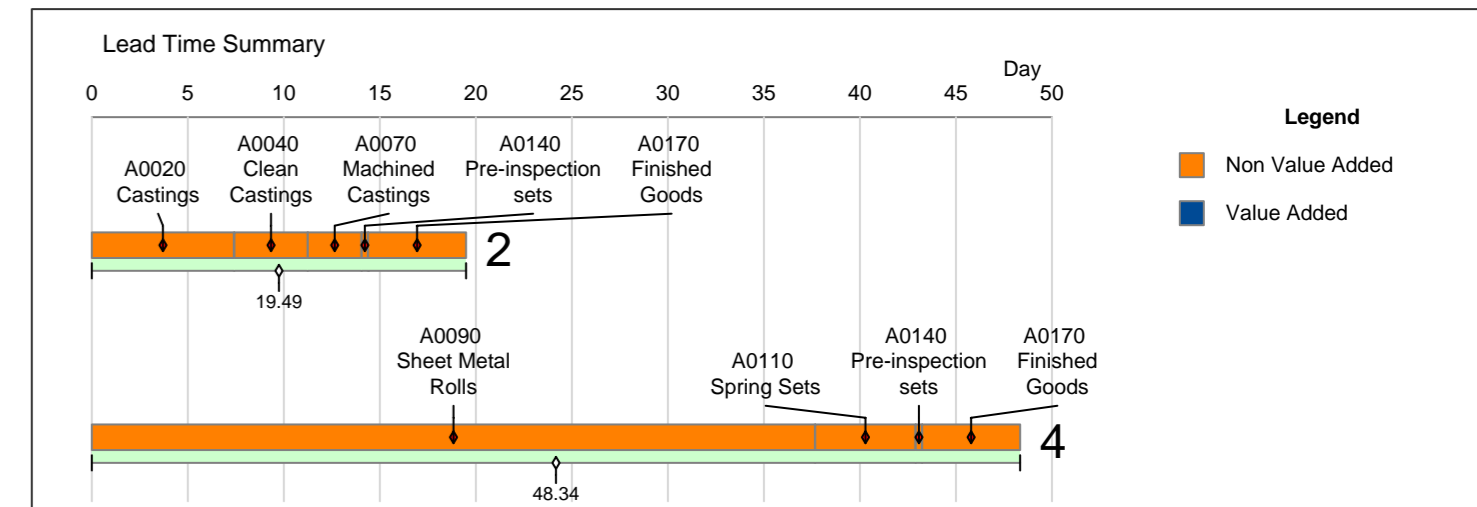
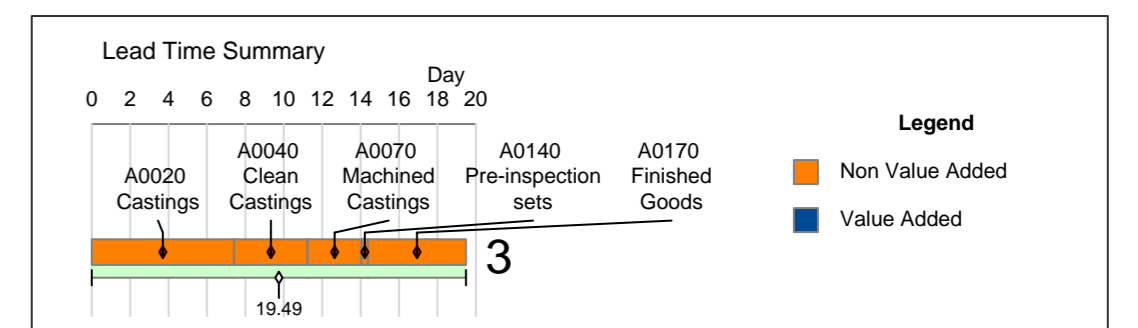
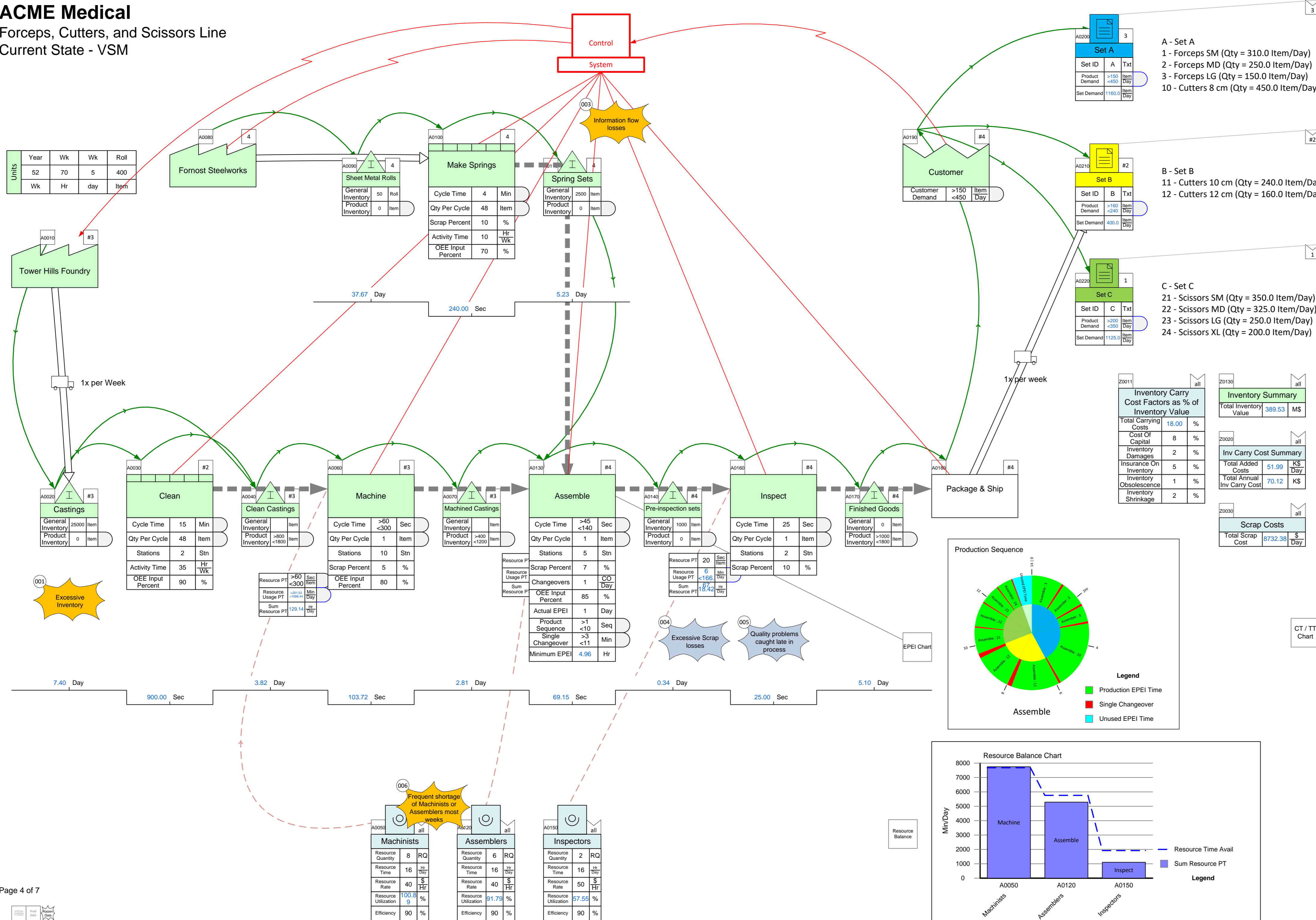


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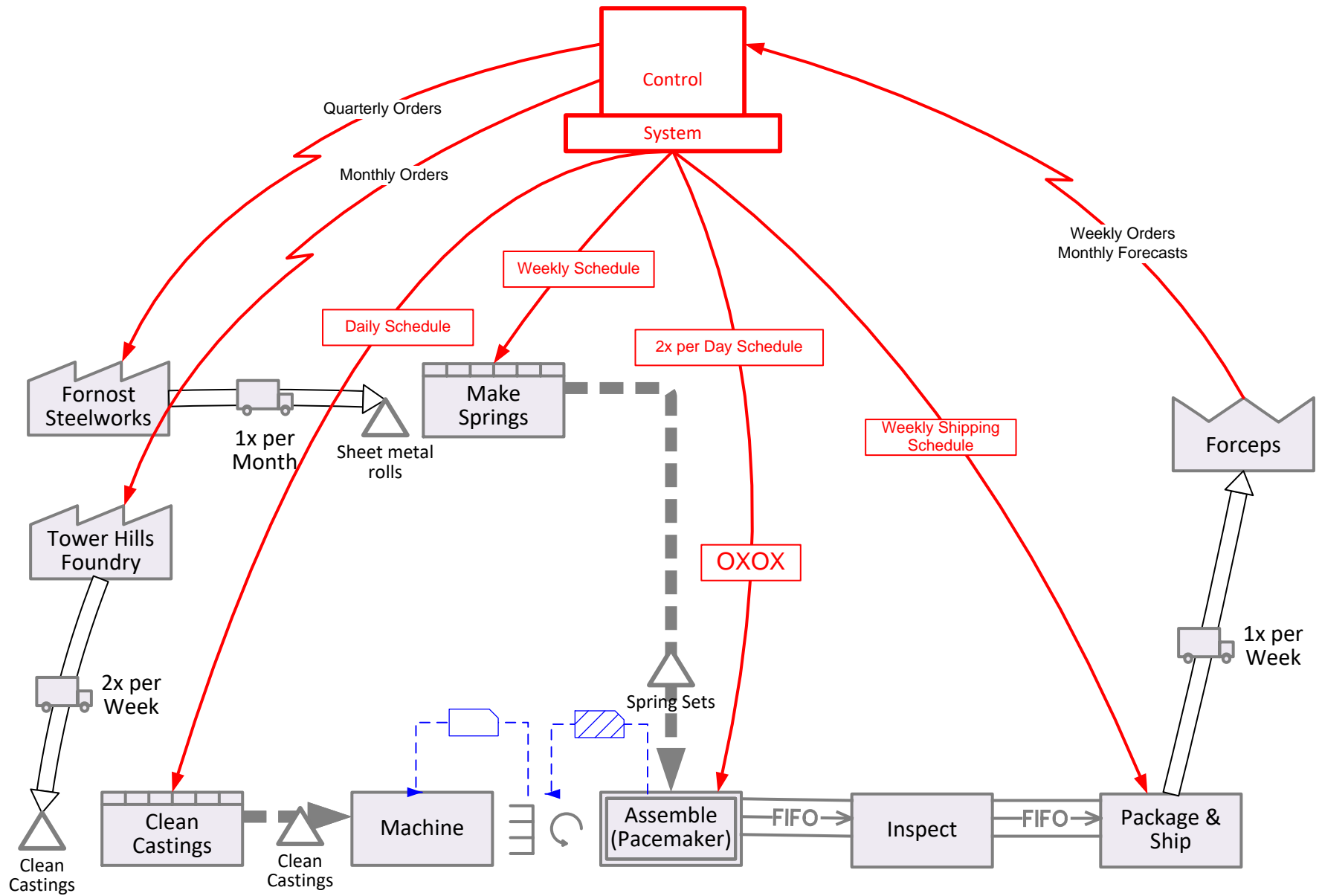
Forceps, Cutters, and Scissors Line

Current State - VSM

Units	Year	Wk	Wk	Roll
	52	70	5	400
	Wk	Hr	day	Item



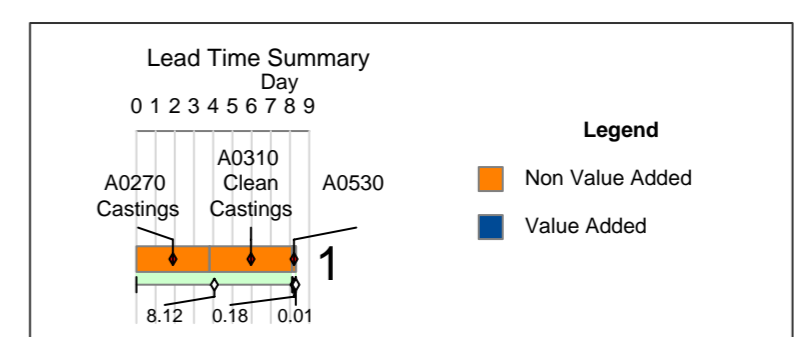
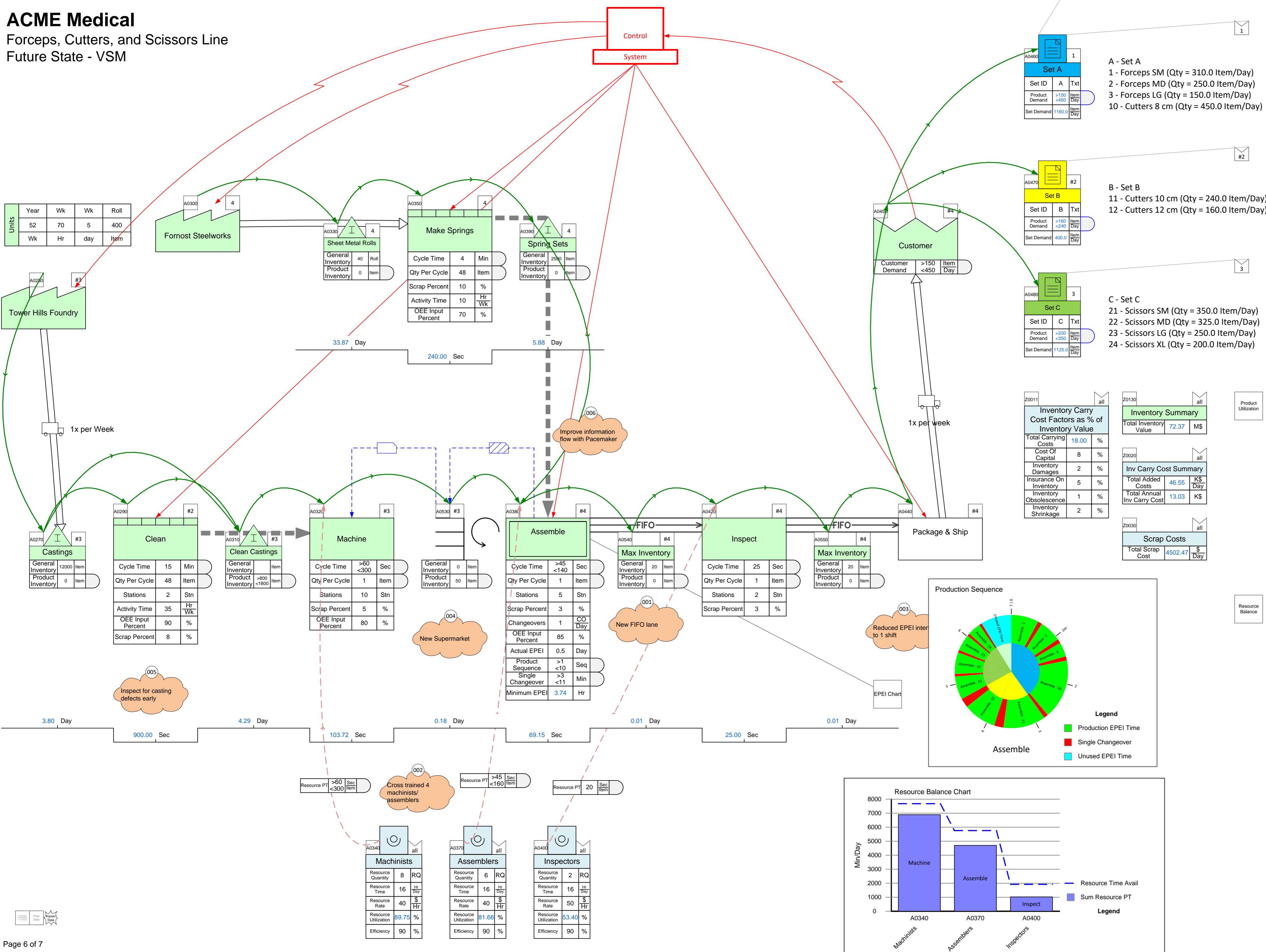
ACME Medical – Future State Material and Information Flow



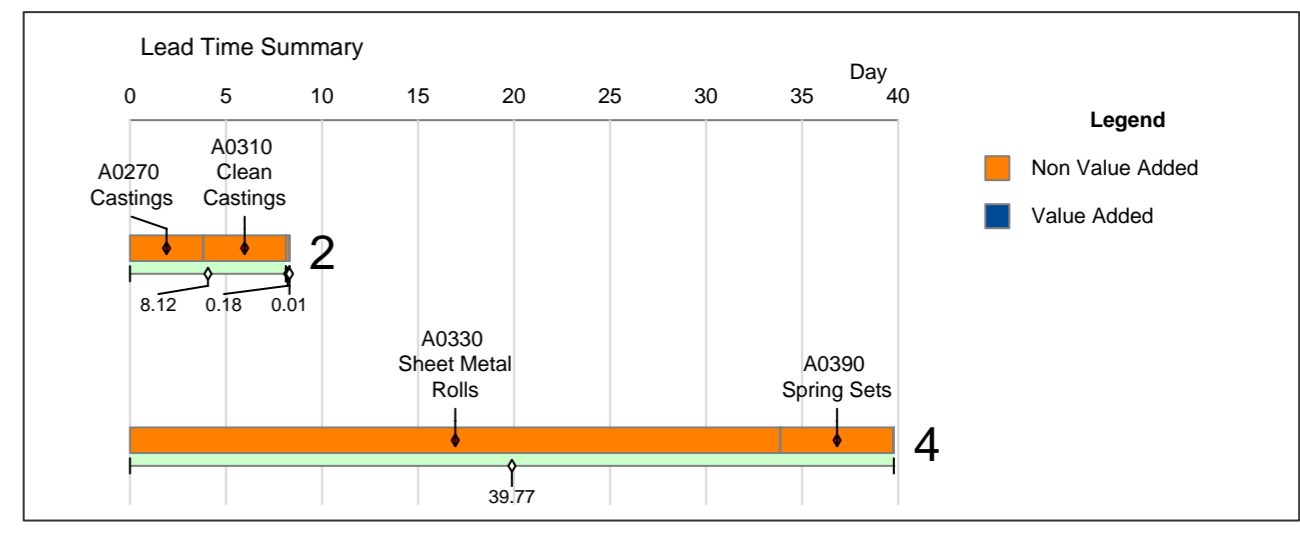
ACME Medical

Forceps, Cutters, and Scissors Line

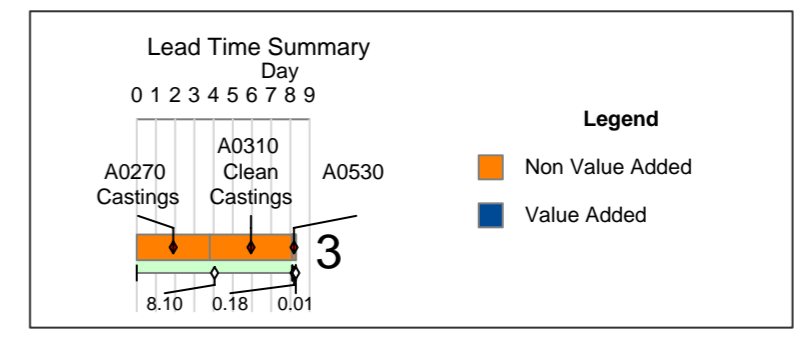
Future State - VSM



A - Set A
1 - Forceps SM (Qty = 310.0 Item/Day)
2 - Forceps MD (Qty = 250.0 Item/Day)
3 - Forceps LG (Qty = 150.0 Item/Day)
10 - Cutters 8 cm (Qty = 450.0 Item/Day)



B - Set B
11 - Cutters 10 cm (Qty = 240.0 Item/Day)
12 - Cutters 12 cm (Qty = 160.0 Item/Day)



C - Set C
21 - Scissors SM (Qty = 350.0 Item/Day)
22 - Scissors MD (Qty = 325.0 Item/Day)
23 - Scissors LG (Qty = 250.0 Item/Day)
24 - Scissors XL (Qty = 200.0 Item/Day)

Inventory Carry Cost Factors as % of Inventory Value

Total Carrying Costs	18.00 %
Cost Of Capital	8 %
Inventory Damages	2 %
Insurance On Inventory	5 %
Inventory Obsolescence	1 %
Inventory Shrinkage	2 %

Inventory Summary

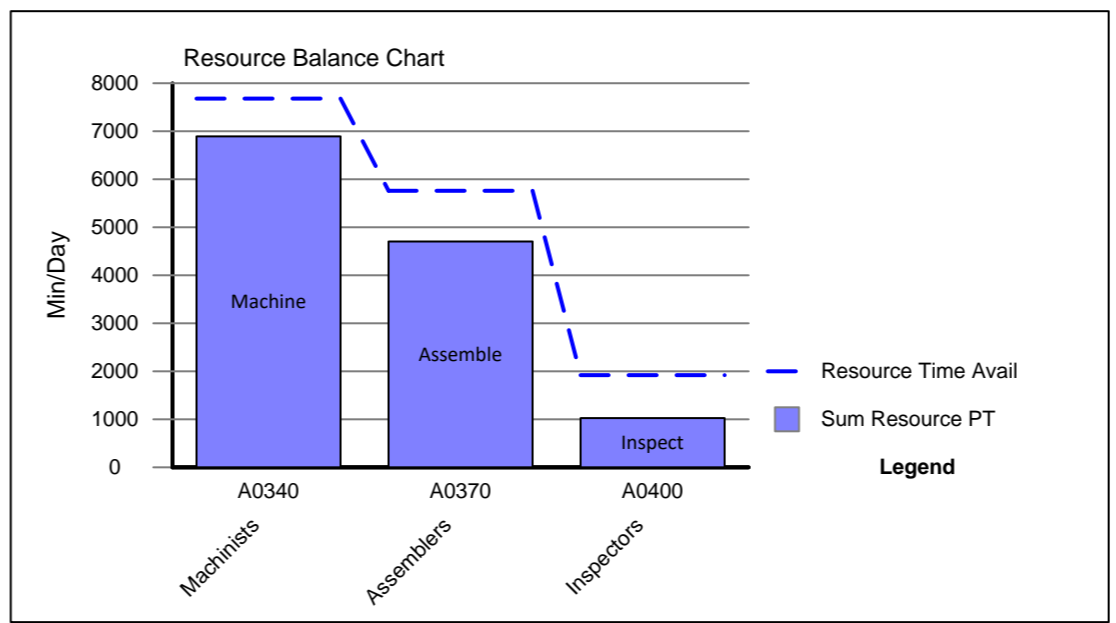
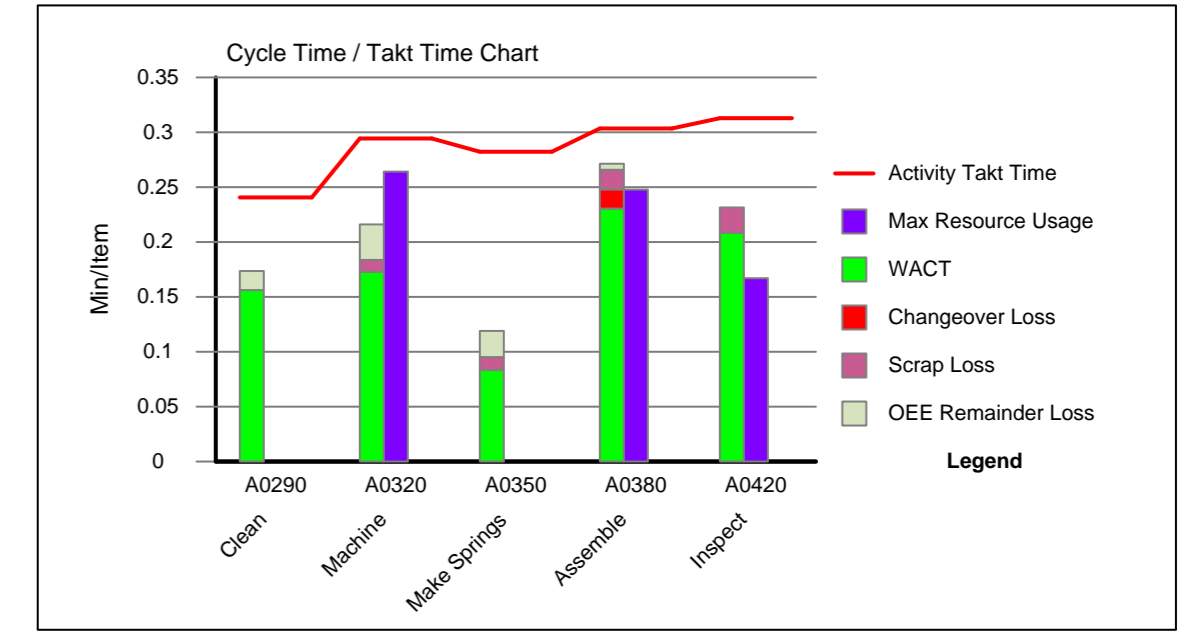
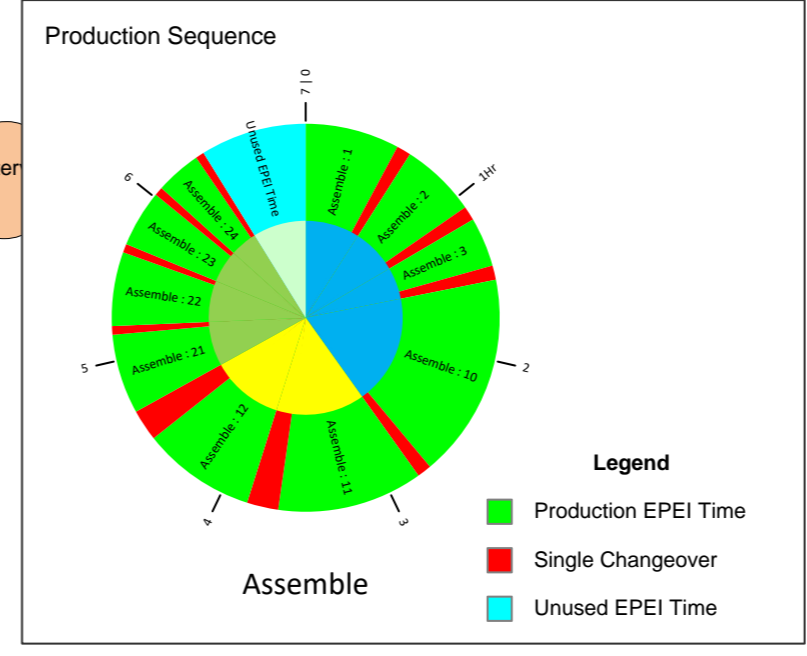
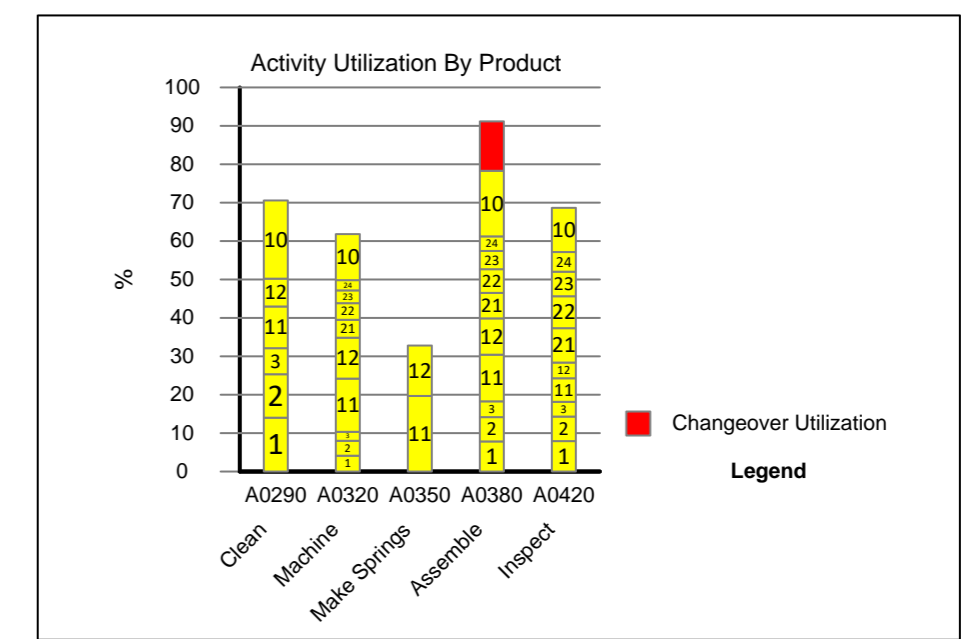
Total Inventory Value	72.37 MS
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Inv Carry Cost Summary

Total Added Costs	46.55 K\$ Day
Total Annual Inv Carry Cost	13.03 K\$

Scrap Costs

Total Scrap Cost	4502.47 \$ Day
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ACME Medical

Forceps, Cutters, and Scissors Line
3-month Improvement Plan

Proposed Projects

- 002 Improve information flow with Pacemaker
- 001 New FIFO lane
- 003 New Supermarket
- 004 Cross trained 4 machinists/assemblers
- 005 Reduced EPEI interval to 1 shift
- 006 Inspect for casting defects early

Current State	Planned Future State	Business Impact															
<p>Lead Time Summary Day: 0 2 4 6 8 10 12 14 16 18 20 Activities: A0020 Castings, A0040 Clean Castings, A0070 Machined Castings, A0140 Pre-inspection sets, A0170 Finished Goods Legend: Non Value Added (orange), Value Added (blue)</p>	<p>Lead Time Summary Day: 0 2 4 6 8 10 12 14 Activities: A0270 Castings, A0310 Clean Castings, A0430 Finished Goods, A0530 Legend: Non Value Added (orange), Value Added (blue)</p>	<ul style="list-style-type: none"> • 30% reduction in lead time • Improved resource utilization • 30% reduction in annual inventory carry cost • \$1M annual savings in scrap cost • Assembly operation Interval reduced from 1 Day to 1/2 Day 															
<p>Cycle Time / Takt Time Chart Min/Item vs Activity (Clean, Machine, Make Springs, Assemble, Inspect)</p>	<p>Cycle Time / Takt Time Chart Min/Item vs Activity (Clean, Machine, Make Springs, Assemble, Inspect)</p>																
<table border="1"> <tr><th colspan="3">Z0130 Inventory Summary</th></tr> <tr><td>Total Inventory Value</td><td>389.53</td><td>M\$</td></tr> </table>	Z0130 Inventory Summary			Total Inventory Value	389.53	M\$	<table border="1"> <tr><th colspan="3">Z0020 Inv Carry Cost Summary</th></tr> <tr><td>Total Added Costs</td><td>51.99</td><td>K\$ / Day</td></tr> <tr><td>Total Annual Inv Carry Cost</td><td>70.12</td><td>K\$</td></tr> </table>	Z0020 Inv Carry Cost Summary			Total Added Costs	51.99	K\$ / Day	Total Annual Inv Carry Cost	70.12	K\$	
Z0130 Inventory Summary																	
Total Inventory Value	389.53		M\$														
Z0020 Inv Carry Cost Summary																	
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Total Annual Inv Carry Cost	70.12	K\$															
<table border="1"> <tr><th colspan="3">Z0030 Scrap Costs</th></tr> <tr><td>Total Scrap Cost</td><td>8732.38</td><td>\$ / Day</td></tr> </table>	Z0030 Scrap Costs			Total Scrap Cost	8732.38	\$ / Day	<table border="1"> <tr><th colspan="3">Z0060 Inventory Summary</th></tr> <tr><td>Total Inventory Value</td><td>256.78</td><td>M\$</td></tr> </table>	Z0060 Inventory Summary			Total Inventory Value	256.78	M\$				
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Total Scrap Cost	8732.38	\$ / Day															
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<table border="1"> <tr><th colspan="3">Z0070 Inv Carry Cost Summary</th></tr> <tr><td>Total Added Costs</td><td>46.55</td><td>K\$ / Day</td></tr> <tr><td>Total Annual Inv Carry Cost</td><td>46.22</td><td>K\$</td></tr> </table>	Z0070 Inv Carry Cost Summary			Total Added Costs	46.55	K\$ / Day	Total Annual Inv Carry Cost	46.22	K\$	<table border="1"> <tr><th colspan="3">Z0080 Scrap Costs</th></tr> <tr><td>Total Scrap Cost</td><td>4502.47</td><td>\$ / Day</td></tr> </table>	Z0080 Scrap Costs			Total Scrap Cost	4502.47	\$ / Day	
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Total Added Costs	46.55	K\$ / Day															
Total Annual Inv Carry Cost	46.22	K\$															
Z0080 Scrap Costs																	
Total Scrap Cost	4502.47	\$ / Day															
<p>Production Sequence Assemble Legend: Production EPEI Time (green), Single Changeover (red), Unused EPEI Time (cyan)</p>	<p>Production Sequence Assemble Legend: Production EPEI Time (green), Single Changeover (red), Unused EPEI Time (cyan)</p>																