



# Bryco Machine Welcomes SME and AME

October 1, 2008



## Type of Shop

- Leading precision machining contract manufacturer
- Manufacturer of complex parts that require state-of-the-art equipment and high level expertise in machining
- Provider of both short (100 pcs.) and long (250,000 pcs.) production runs with prototyping capabilities under the same roof as our production environment

## Company History

Founded in 1983 by Bryon Bettinardi, Bryco Machine is located in Tinley Park, IL. Over the past 25 years Bryco has evolved from a 1-person job shop to a 50-person precision machining operation.

The 'Bettinardi' name is synonymous with quality in the precision machining industry.

- Donson Machine (Don, Joe and Jim Bettinardi)
- X-Cel Technologies, Inc. (Bob Bettinardi)
- Bettinardi Golf (Bob Bettinardi)

# Bettinardi Businesses



## Customers, Industries and Partners

- Bryco has quality and longstanding relationships with customers across industries including:
  - Hydraulics
  - Wireless Communications
  - Medical and Dental
  - Electronics
  - Federal and Local Governments
  - OEM's

## Investing in the Business to Move Forward

- In response to changing industry demands, Bryco reinvested over \$4M into the business over last three years
  - New Building
  - New Machines
  - New Positions
  - New Technology
  - **LEAN Manufacturing**

# LEAN Manufacturing

A team of consultants from Chicago Manufacturing Center worked with a “LEAN-Team” from Bryco Machine to lead Bryco through the LEAN Journey

- Value-stream mapping
- Shop Redesign
- Kaizen Blitzes

## Value Stream Mapping

- Visually mapping our job's production path (materials and information) from "door to door."
- Serves as a starting point helping us recognize waste and identify its causes.
- Physically mapping our "current state" while also focusing on where we want to be, our "future state."

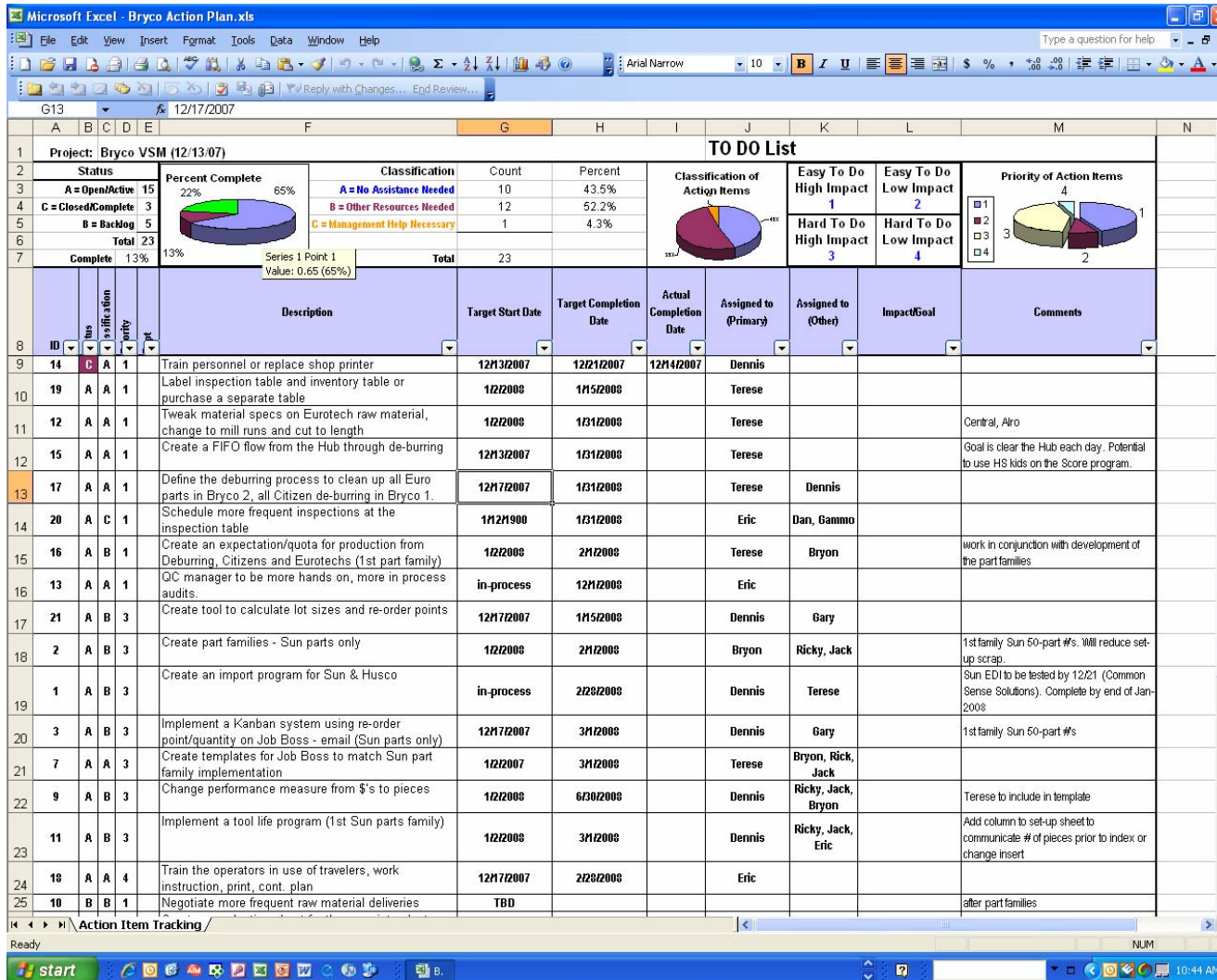
# Value Stream Mapping



## Results of Value Stream Mapping

- Action Plan
- Shop Redesign
- Kaizen Blitz's
  - ▶ 5S
  - ▶ Sales Order Import Program
  - ▶ Pull / Kanban System
    - Running jobs through our shop based on our schedule rather than being pushed by our customers schedule

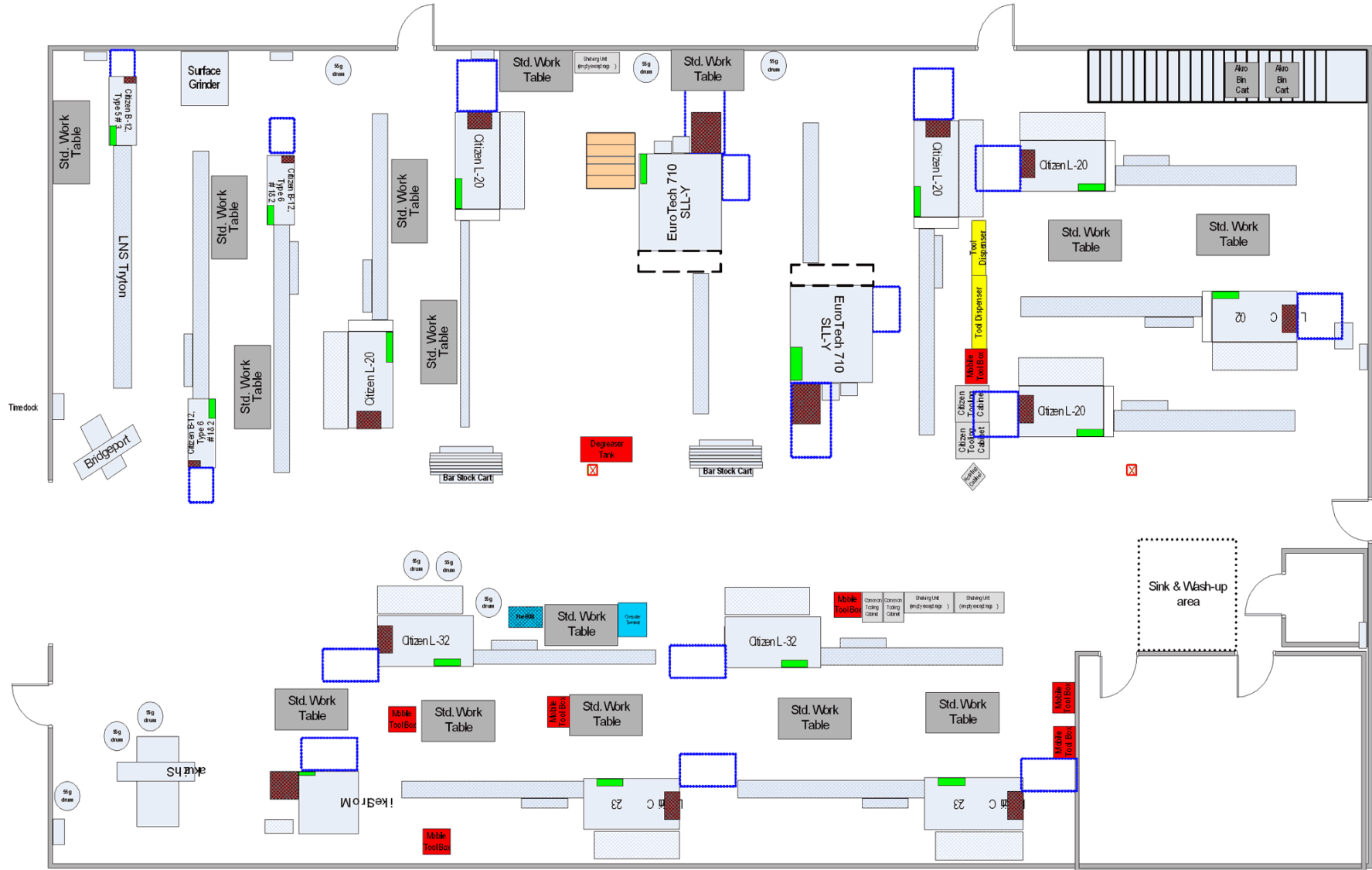
# Action Plan



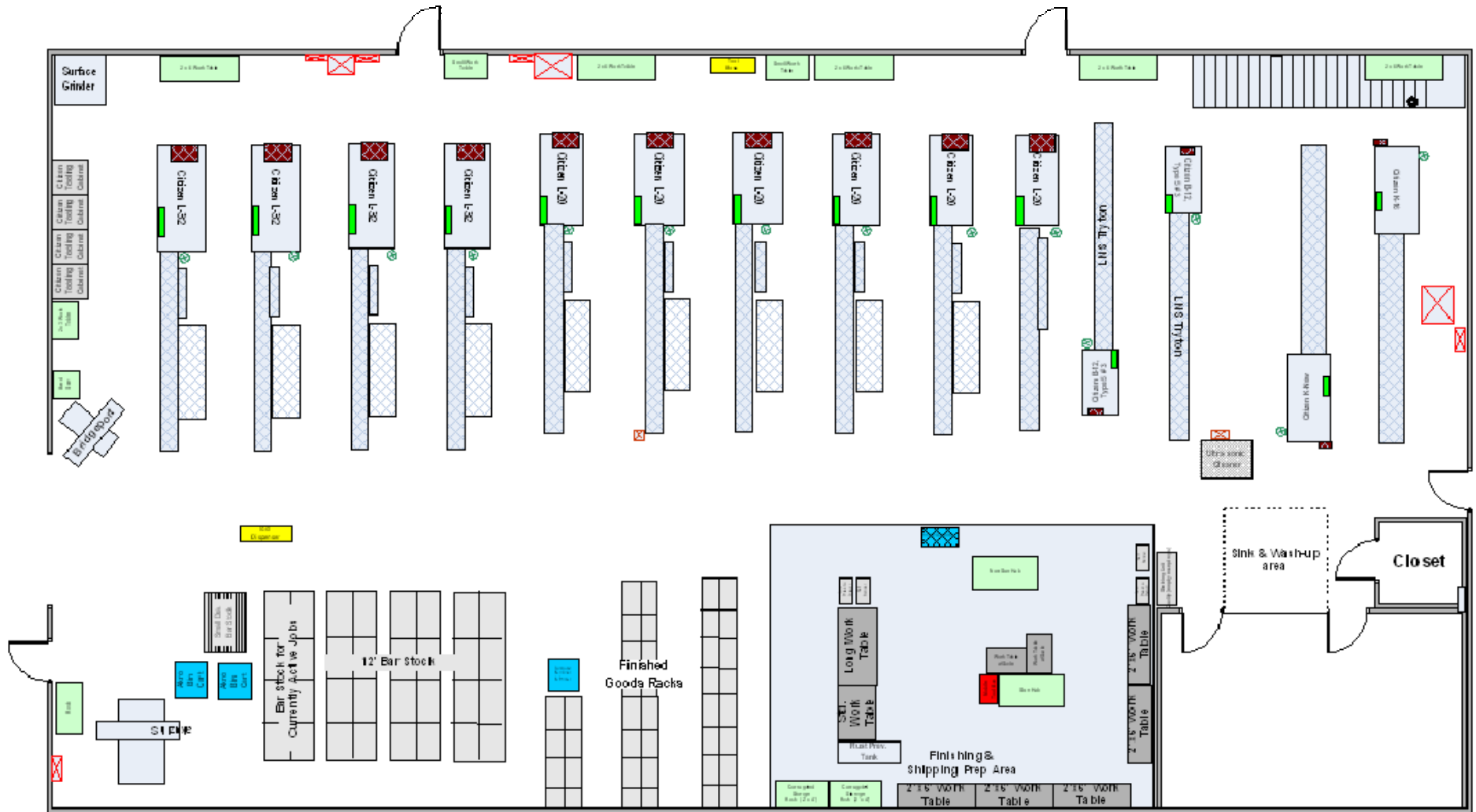
## Shop Redesign

- As part of the LEAN Journey the shop was evaluated for inefficiencies and redesigned to accommodate improved job process flow and new machines.
- Bryco Machine is spread across two buildings (Bryco I and Bryco II) totaling approximately 15,000 sq feet

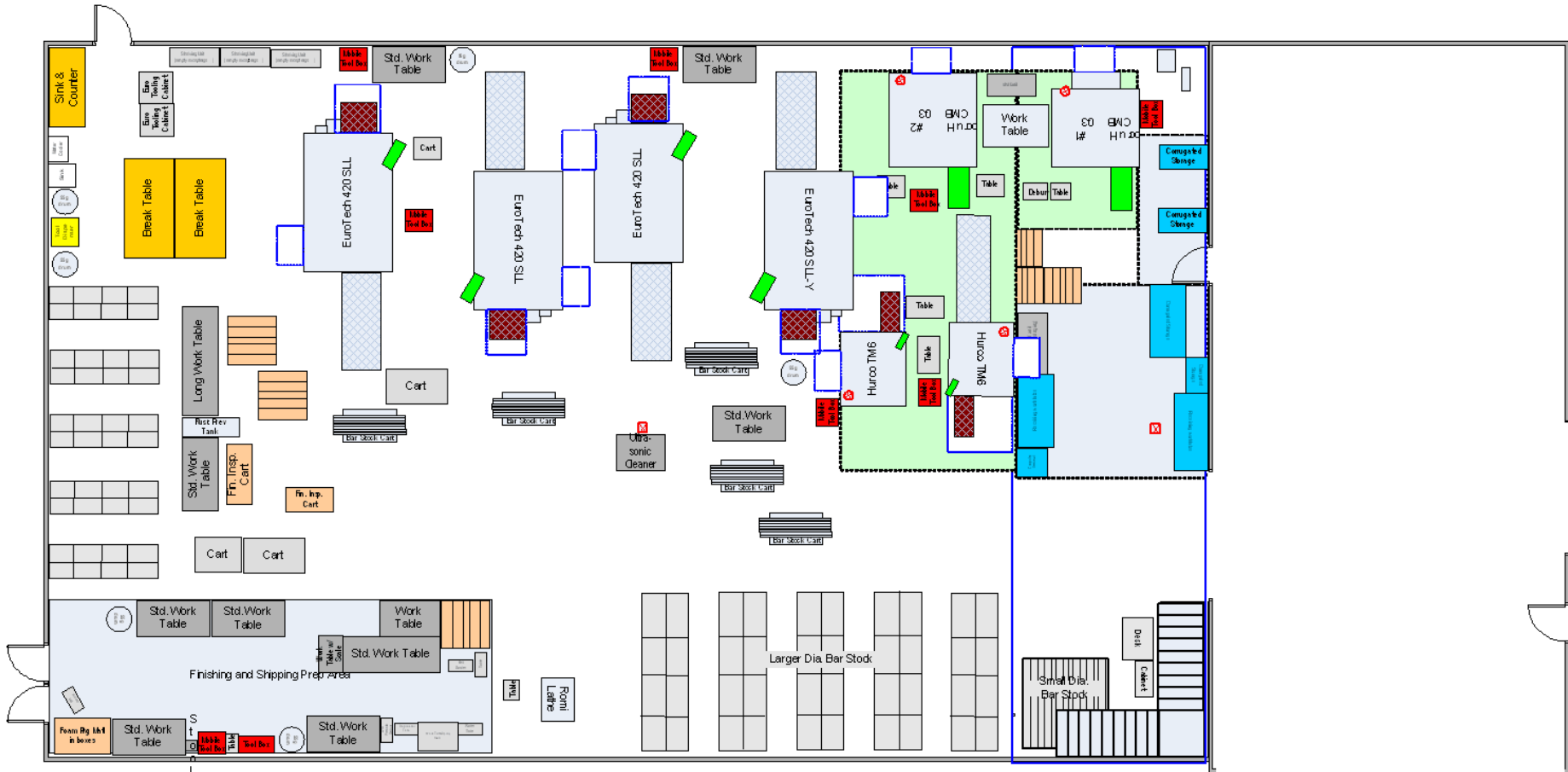
# Bryco I - Before



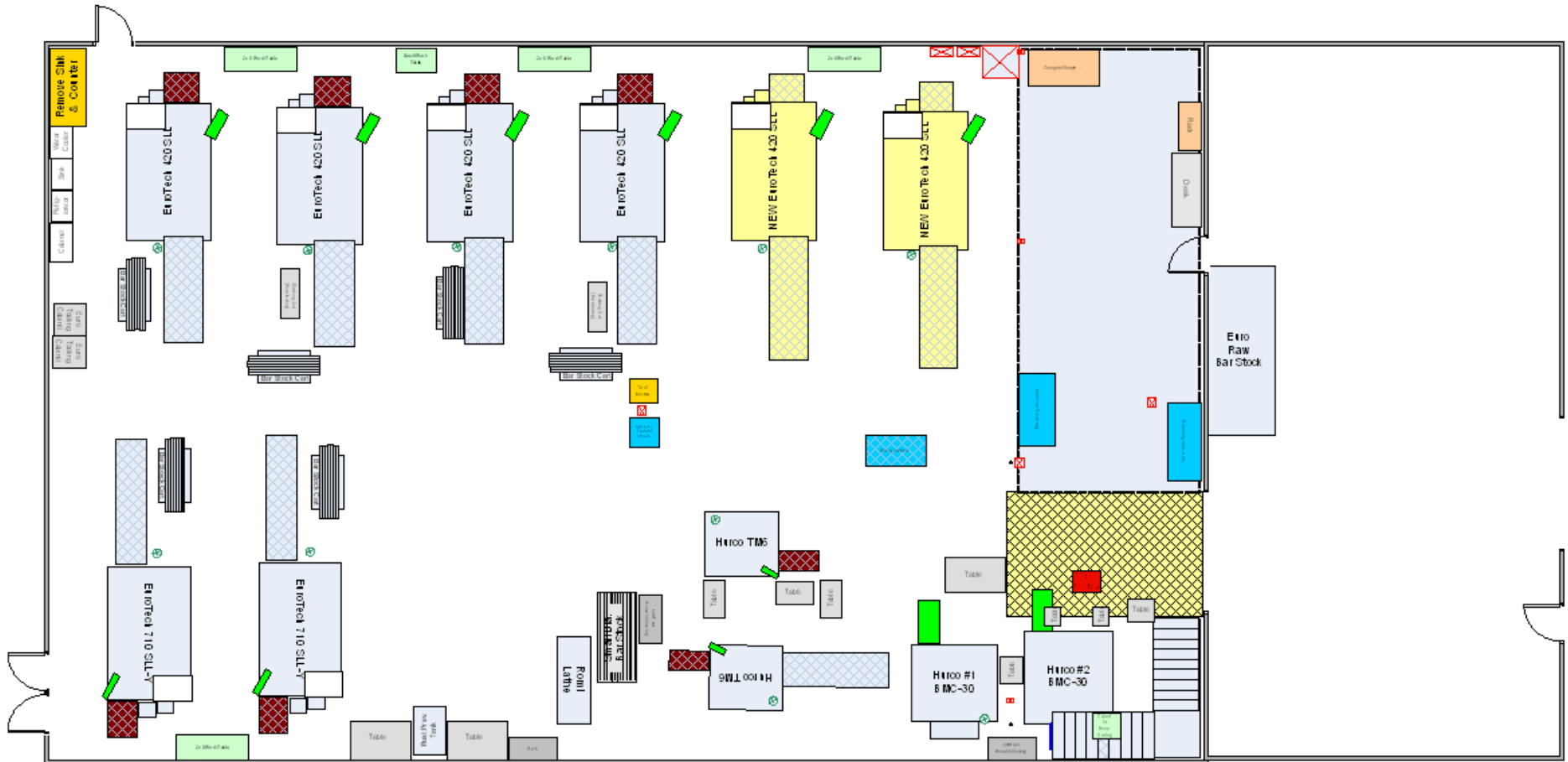
# Bryco I - After



# Bryco II - Before



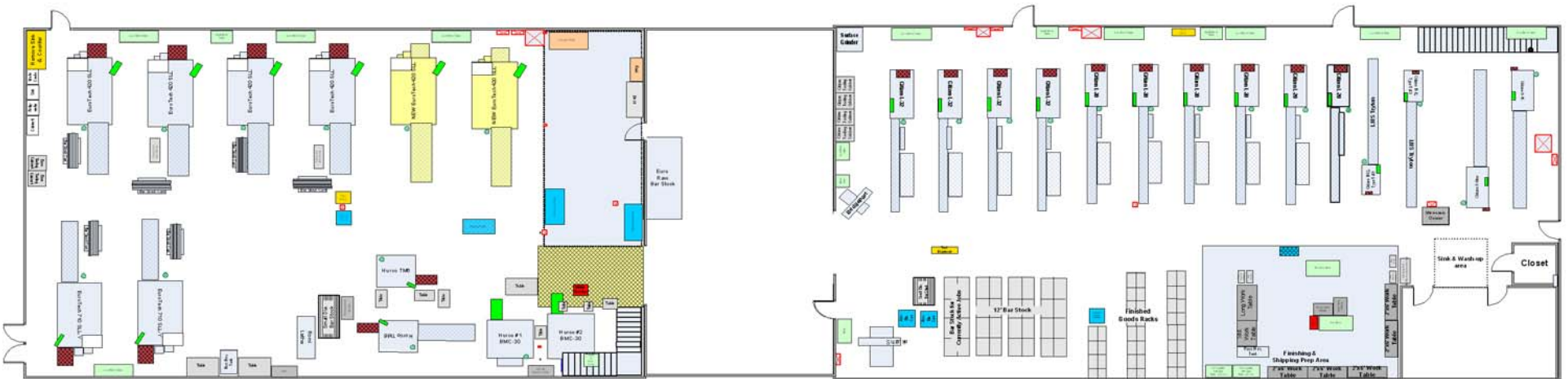
# Bryco II - After



# Before



# After



# Kaizen Blitz

- The 5S Approach
  - ▶ Set-up carts
  - ▶ Inspection Stations
  - ▶ Shop Organization and Cleanliness

## 5S

- ✓ Sort
- ✓ Standardize
- ✓ Set-in-place
- ✓ Shine
- ✓ Sustain



## Set-up Carts

- Standardized tooling needed for set-ups



## Inspection Station

- Standardized the gauging required to measure the many different parts that are produced at Bryco Machine.



# Inspection Station



# Sales Order Import Program

- Automated labor intensive, manual order entry process
  - ▶ Hand copied data from customer web page
  - ▶ Cross referenced information against updated inventory report
  - ▶ Manually picked (in system) parts from inventory
  - ▶ Created pack lists for three separate delivery locations



# Sales Order Import Program

Data Loaded: 04:04 PM		BRYCO MACHINE INC												Reports	Refresh	Back	
Full Screen View																	Enter Bulk Shipme
Part #	Rev	Fac	Expedite	PastDue Qty	Age	Current Qty	Age	Week+1 Qty	Age	Week+2 Qty	Age	Week+3 Qty	Age	Total on Order	Total Shipped	Shipments	Last Ship
▶ 124001	C	01	0	468	0	0	0	0	0	0	0	0	0	468	468	1	9/26/0
▶ 124003	C	01	0	0	0	0	0	0	0	0	0	0	0	936	0	0	
▶ 124102	G	01	0	0	0	0	0	0	0	0	0	0	0	330	0	0	
▶ 125151H	H	01	0	0	0	0	0	36	0	0	0	0	0	36	0	0	
▶ 125177F	D	01	0	0	0	0	0	51	4	51	1	0	0	119	85	2	9/30/0
▶ 126005	M	01	0	0	0	0	0	100	14	100	1	0	0	400	100	1	9/29/0
▶ 127015F11	-	01	0	0	0	0	0	64	5	0	0	0	0	192	0	0	
▶ 127020F11	A1	01	0	0	0	0	0	120	0	0	0	0	0	240	0	0	
▶ 127510F50	B	01	0	0	0	68	4	0	0	0	0	0	0	68	68	1	9/29/0
▶ 128001	T	01	0	72	4	0	0	0	0	0	0	0	0	216	0	0	
▶ 128003	H2	01	0	0	0	0	0	48	1	0	0	0	0	48	48	1	9/29/0
▶ 128004	M	01	0	36	5	72	1	0	0	0	0	72	1	360	0	0	
▶ 128035	B	01	0	72	2	0	0	36	2	0	0	0	0	108	108	1	9/29/0
▶ 128100	F	01	0	0	0	60	0	240	1	0	0	0	0	900	0	0	
▶ 128200	H	01	0	0	0	100	7	0	0	0	0	0	0	0	0	0	9/29/0

# Sales Order Import Program

124001|C|01|0|468|6|0|0|0|0|0|0|0|0|0|468|0|0|  
124003|C|01|0|0|0|0|0|0|0|0|0|0|0|0|936|0|0|  
124102|G|01|0|0|0|165|6|165|2|0|0|0|0|660|330|2|9/24/08  
125151H|H|01|0|0|0|0|0|108|1|36|1|0|0|144|0|0|  
125177F|D|01|0|0|0|34|2|51|3|0|0|0|0|102|51|2|9/24/08  
126005|M|01|0|0|0|100|1|100|9|0|0|0|0|300|0|0|  
127015F11|-|01|0|0|0|0|0|0|0|0|0|0|0|128|64|1|9/22/08  
127020F11|A1|01|0|0|0|0|0|0|0|0|0|0|120|0|0|  
127510|H|01|0|0|0|0|0|0|0|0|68|59|68|68|1|9/24/08  
128001|T|01|0|0|0|144|1|0|0|0|0|0|0|216|36|1|9/24/08  
128002|H2|01|0|0|0|0|0|56|3|0|0|0|0|56|56|1|9/24/08  
128003|H2|01|0|0|0|0|0|48|7|0|0|0|0|48|48|1|9/22/08  
128004|M|01|0|0|0|0|0|0|0|72|1|0|0|288|0|0|  
128035|B|01|0|0|0|36|1|0|0|0|0|0|0|36|0|0|  
128100|F|01|0|0|0|240|1|240|1|0|0|0|0|1080|300|1|9/24/08  
128200|H|01|0|0|0|192|2|0|0|96|10|96|4|768|0|0|  
128300|H|01|0|0|0|240|1|48|1|48|15|0|0|912|288|2|9/24/08  
128301|F|01|0|0|0|0|0|0|0|48|1|0|0|48|0|0|  
128303|D|01|0|192|1|384|2|96|1|0|0|0|0|672|288|2|9/24/08  
128400K11||01|0|0|0|126|6|210|2|0|0|0|0|378|210|3|9/24/08  
128400K20|A1|01|0|0|0|0|0|0|0|42|2|0|0|126|0|0|  
128401K10|A|01|0|0|0|0|0|42|2|0|0|0|0|42|0|0|



# Sales Order Import Program

**Sales Orders from Import**

*Open Sales Orders from Import*

Customer PO	Customer	Order Date	Promised Date				
Line Item	Part Number	Qty	Ship Qty	Box Count	Ship to Store	On Hand Qty/ Loc.	Lot #
10887	80 H	9/22/2008	9/26/2008				
<i>Sales Order # 10259</i>							
001	124001	468	468 / 1		Main	-	
003	125151H	72	36 / 2		ELEC T	-	
005	125005	100	100 / 1		ELEC T	-	
009	128035	108	36 / 3		ELEC T	-	
011	128200	96	48 / 2		ELEC T	-	
016	128401K11	84	42 / 2		ELEC T	-	
017	128402K10	168	42 / 4		ELEC T	-	
018	129001F11	30	15 / 2		ELEC T	-	
024	230058F	56	56 / 1		Main	-	
025	230182F	42	42 / 1		Main	-	
027	230235	64	64 / 1		Main	-	
030	230316F	200	100 / 2		Main	-	
031	240058F	468	468 / 1		Main	468 @ SHO P	H
032	240051F	468	468 / 1		Main	468 @ SHO P	L
034	240308B	196	196 / 1		Main	196 @ SHO P	J
035	250234F	100	100 / 1		Main	-	
036	330013F02	144	72 / 2		ELEC T	-	
<i>Sales Order # 10260</i>							
002	125151H	72	36 / 2		ELEC T	-	
003	125177F	34	17 / 2		Tvar I	-	
005	128001	36	36 / 1		ELEC T	-	
008	128200	192	48 / 4		ELEC T	-	
009	128300	48	48 / 1		ELEC T	-	
010	128303	288	48 / 6		ELEC T	-	
011	128400K11	126	42 / 3		Tvar I	-	
012	128400K20	42	42 / 1		ELEC T	-	
013	128401K10	42	42 / 1		ELEC T	-	
014	128401K11	42	42 / 1		ELEC T	-	
016	128503	84	42 / 2		ELEC T	-	
024	230097F	36	36 / 1		Main	-	
025	230182F	84	42 / 2		Main	-	
029	230235	64	64 / 1		Main	-	
032	230315F	500	100 / 5		Main	-	

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# Sales Order Import Program

- Eliminated human error
- Reduced order fulfillment process from 15 hours per week to 15 minutes per week

## Pull / Kanban System

- Identified parts that we could run in “families”
- Minimized set-up / change-over time
- Run on a schedule dictated by us and not our customer

# Bryco Scheduling Tool

Microsoft Excel - Wkly. Schg Tool\_1.1\_Bryco .xls

File Edit View Insert Format Tools Data Window Help

Reply with Changes... End Review...

Run Sequence	Part Family	Part #	Open Order Qty	Inventory	Planned Safety Stock	Avg. Weekly Demand	Job Qty	Changeover Hours	Hours Req'd	Notes	Planned Parts per Hour	Calculated Safety Stock
1												
2												
3												
4	1A	128001	72		200	300	1,200	4	105	SS @ 1/3 of calculated	12	600
5	1A	128004	108		200	200	950	2	84	SS @ 1/3 of calculated	12	550
6	1A	128035			100	150	550	2	49	SS @ 1/3 of calculated	12	250
7	1A	125151H		108	150	200	650	2	39	SS @ 1/3 of calculated	14	400
8	1B	128403			50	100	350	4	39	SS @ 1/3 of calculated	11	150
9	1B	128404			-	50	150	2	19	SS @ 1/3 of calculated	9	100
10	1B	128406		42	50	50	200	2	22	SS @ 1/3 of calculated	11	150
11	1B	128400K10			-	3	50	2	5	SS @ 1/3 of calculated	12	
12	1B	128400K11	168		100	150	750	2	42	SS @ 1/3 of calculated	11	300
13	1B	128400K20	42		50	100	400	2	24	SS @ 1/3 of calculated	10	200
14	1B	128401K10	42			50	200	2	13	SS @ 1/3 of calculated	12	50
15	1B	128401K11			150	200	750	2	42	SS @ 1/3 of calculated	10	450
16	1B	128402K10	42		50	100	400	2	24	SS @ 1/3 of calculated	10	200
17	1B						-					
18	1B						-					
19	1B						-					
20	1B						-					
21	Total Hours Req'd									505		
22	Hours available w/ Overtime									399		
23	Hours available w/o Overtime									285		
24												

## Result of LEAN Manufacturing

- Sales have increased 68% over a two year period
- Production and business processes streamlined
- Improved employee training
- Clean, neat and organized
- Reduction of non-value added work
- Set-up times reduced by an average of 66%

## Bryco Machine News

- Look for Bryco Machine on the cover of the November issue of Modern Machine Shop Magazine – LEAN Manufacturing Article
- Please check our web site for updates  
[www.brycocnc.com](http://www.brycocnc.com)

# Thank you for your time

Bryco Machine, Inc.

[www.brycocnc.com](http://www.brycocnc.com)

708.614.1900 ext. 29

708.444.0102 fax

[dennis@brycocnc.com](mailto:dennis@brycocnc.com)