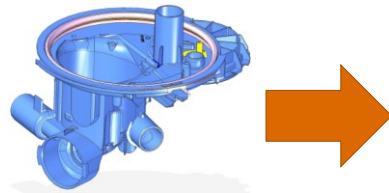


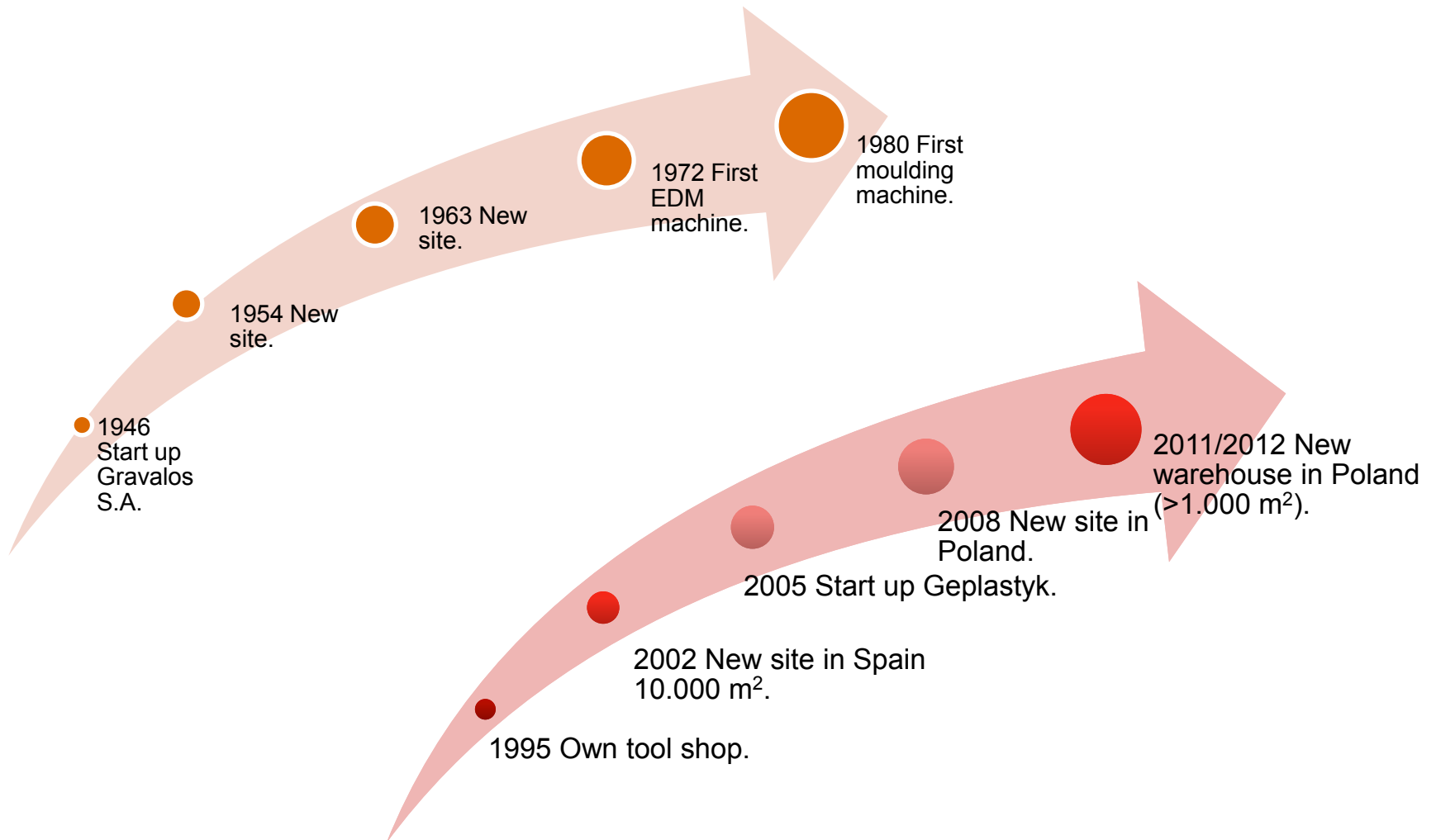
GRÁVALOS S.A.-GEPLASTYK Polska Sp. z o.o.



Production of high quality technical parts

For automotive, home appliances, and consumer electronics industry

Company EVOLUTION



Production Equipment for serving our customers



Moulding



Stamping



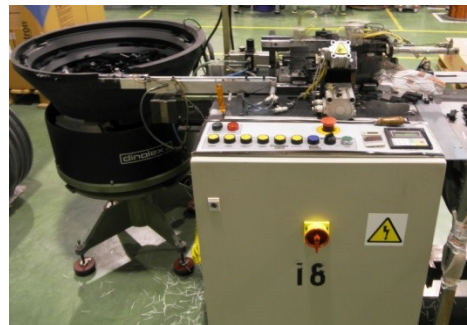
Ultrasonic welding



Quality control



Robotics



Automatic Assembly lines



Ink printing

Product and Situation at the start of 1° MTM project

When ?

Situation that determined the introduction of MTM in our plant

- producing 500-600 thousand units/year, working in two 8-hrs shifts
- Very good on quality and delivery
- Too high on price
- Limited on capacity



Client's suggested solution to the problems:

- To reduce the cost must relocate the production to Poland
- To increase the capacity rationalize the production process with MTM

MTM standard times – “AS IS”

Element List Edit View Extras Maintenance Help

Search mode: Simple search - Normal

Data area: User data [20]

Class: Example Letter box [BSP1]

Code: Example Letter box [BSP1]

Index: Variant:

Description: Example Letter box [BSP1]

Result: 1717 Elements found

Code index variant

Code	index	variant
CSLP.BKL...5		Unpack letter box (
CSLS.B...5		Lock up letter box
CSMV.BKL4...5		Drive in dowel and
CSMV.BKL4...5	ZUO	Drive in dowel and
CSPM.BKL...5		Measure and mark
CSRB...3...5		Clean 3 drill holes w
CSRB...4...5		Clean 4 drill holes w
CSZB.BKL4...5	FOR	Drilling on 4 places
CSZB.BKL4...5	VAR	Drilling on 4 places
CSZB.BKL4905		Drill 4 holes (PT 70)
CSZB.BKL4905		Drill 4 holes
DSMV.BKL...5		Assemble letter box
DSMV.BKL...5	ABS	Assemble letter box
DSMV.BKL...5	ABS FAK	Assemble letter box
DSMV.BKL...5	ABS IAD	Assemble letter box
DSMV.BKL...5	LU	Assemble letter box
DSMV.BKL0...5		Assemble letter box

Header Structure Tree Times TD tree Detail Value added Safety at work Variables Additional objects Assignment-Evaluation References Documents Pict1 Text1 Journal

Code: CSMV.BKL...5 Index: Variant:

Description: Assemble letter box, small, lightweighted with 4 drill holes

Type: Production [E] Status: Released for tester [3]

Content: Unpack, Hole gauging and marking, Drilling, put in Dowel, screwing on letter box, closing up letter box

End:

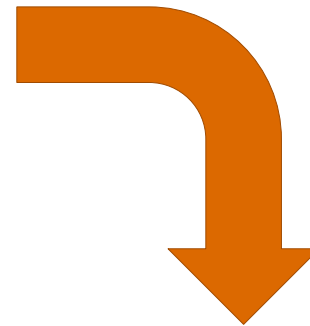
Restriction:

Value add:

No.	Description	Code	Index	Variant	Sec. factor	Q x F	tg	tg total	trg	trg total	total	Vt
1	Unpack letter box (small, lightweighte	CSLP.BKL...5				1*1,0	740,00	740,00	0,00	0,00	740,00	100%
2	Measure and mark drill holes	CSPM.BKL...5				1*1,0	815,00	815,00	0,00	0,00	815,00	100%
3	Drill 4 holes	CSZB.BKL4905				1*1,0	625,00	625,00	0,00	0,00	625,00	100%
4	Clean 4 drill holes with besom	CSRB...4...5				1*1,0	710,00	710,00	0,00	0,00	710,00	100%
5	Drive in dowel and fix letter box	CSMV.BKL4...5				1*1,0	2.525,00	2.525,00	0,00	0,00	2.525,00	100%
6	Lock up letter box	CSLS.B...5				1*1,0	185,00	185,00	0,00	0,00	185,00	100%
7							0,00	0,00	0,00	0,00	0,00	
8	Alternatives for Line 3						0,00	0,00	0,00	0,00	0,00	
9	Drill 4 holes	CSZB.BKL4...5		FORMEL		0*1,0	625,00	0,00	0,00	0,00	0,00	
10	Drill 4 holes	CSZB.BKL4...5		VARIABLE		0*1,0	625,00	0,00	0,00	0,00	0,00	
							0,00	0,00	0,00	0,00	0,00	
								5.600,00		0,00	5.600,00	

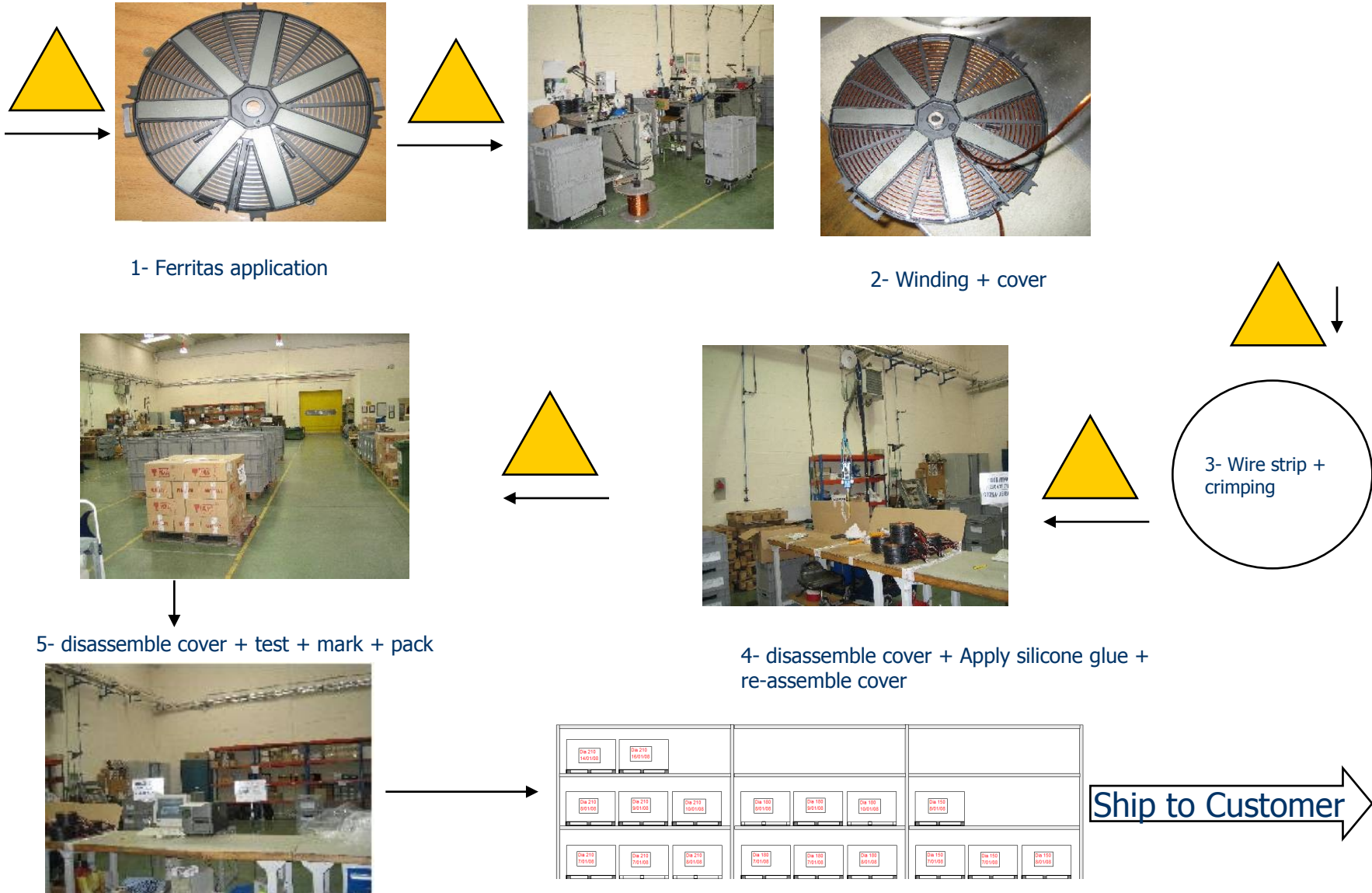
Header Structure Tree Times TD tree Detail Value added Safety at work Variables Additional objects Assignment-Evaluation References Documents Pict1 Text1 Journal

Database ASA MTM 20 en-US MTM-UAS 0,0 MIN 0,00 TMU

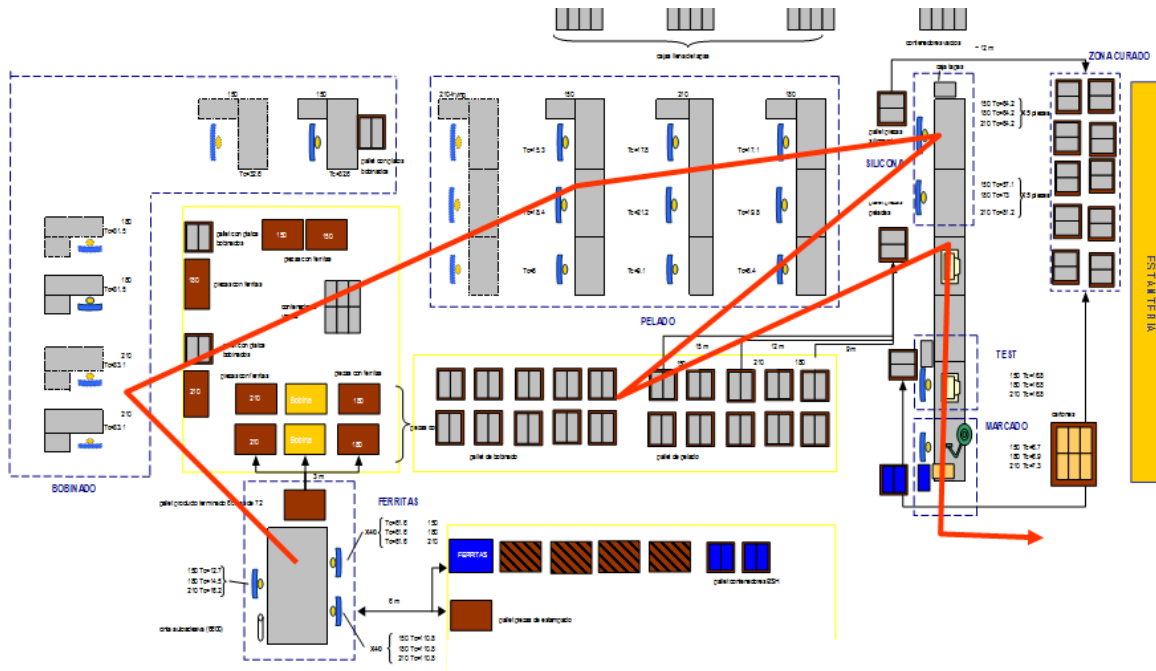


AS IS MTM Results				
Model	Ø150 sec	Ø180 sec	Ø210 sec	Avg sec
Magnets	34.3	40.4	46.4	40.3
Winding	32.6	31.5	33.1	32.4
Crimping	52.91	55.43	57.59	55.3
Silicone	20.298	23.478	25.118	23.0
Test	16.8	16.8	16.8	16.8
Marking	4.32	4.32	4.32	4.3
Total	161.2	171.9	183.3	172.1

The production system at the start of the MTM project

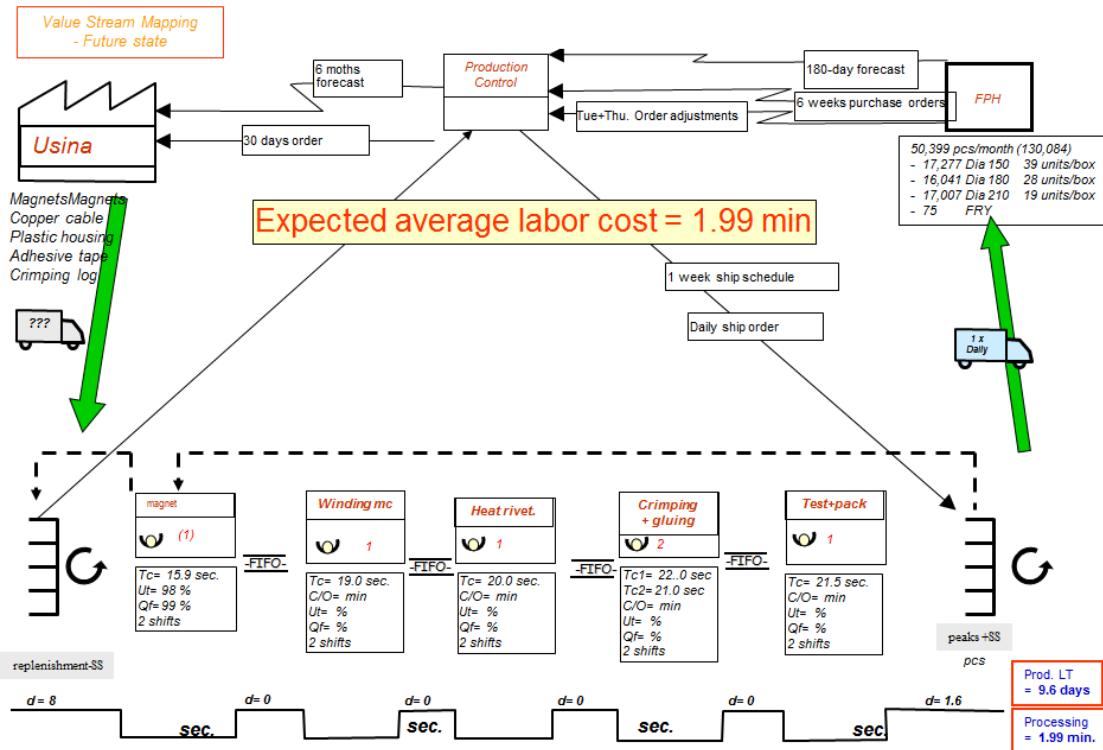


View of the situation on the basis of MTM analysis



- Actual Lead Time = 29 days
- Actual processing time = 2,9 min/piece
- Actual labour cost per piece = 6,82 min

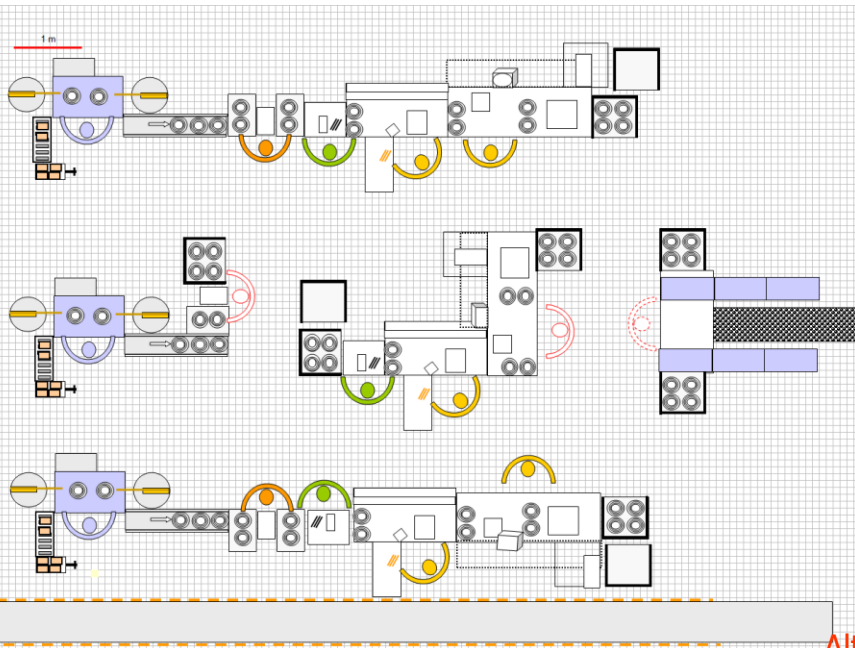
Effects of technical, layout and organizational changes suggested by MTM experts



- Change from batch processing to ONE-PIECE-FLOW
- Lead Time from 29 to 9,7 days
- processing time from 6,82 to 1,99 min/piece

Final layout and effects

		OLD	NEW
1	Labor	409 sec/unit	168.5 sec/unit
2	LT	29 days	9.6 days
3	Productivity	100%	243%
3	Quality	99%	99%
4	On-time delivery	99%	99%



Alt. 3



Conclusions

Capacity

Working positions

Layout

We avoided relocating

- The production results we have achieved from 2007, helped us overcome the great deal of skepticism and doubts that we had regarding the achievements prospected by the MTM expert.
- Even with the economic crisis of these past years our business has continued to grow almost exponentially. For this particular product, we have become the primary supplier of our client, worldwide.
- Since 2007 we have applied the know-how and the experience gained from this project on all our production with excellent results.
- Furthermore we have learned that it is possible to reduce costs in our own environment and avoid the complex problems encountered in relocating to low-labour-cost areas.