

Delivering world-class
structure and support
to our customers

Bridge Operational Excellence Case Study

On Time In Full (OTIF) Workshop



Manufacturing Excellence

Agenda

- What is OTIF?
- Results from case study examples:
 - Case study and summary results
 - OTIF pilot program
 - Best Practice - Significant Issues / Fast Response Process & Accountability Boards aligned
 - FIFO & Lead Time Reduction
- How to make OTIF sustainable
- Factory Simulation

Workshop Purpose

- Introduce OTIF
- Align understanding of requirements
- Review current experience
- How do we Improve current performance / embed ?
- Define / clarify roles and responsibilities



OTIF – A Window into the Process !!

1. If we were going to change our current performance we need to measure it at a micro level, hour by hour, shift by shift !
2. Visualize it – The voice of the process speaks loudest !
3. We need to action the right issues – data driven !
4. We need to prioritize resources – they're limited !
5. One Team, One Direction, focused on removing the barriers to success – continually !

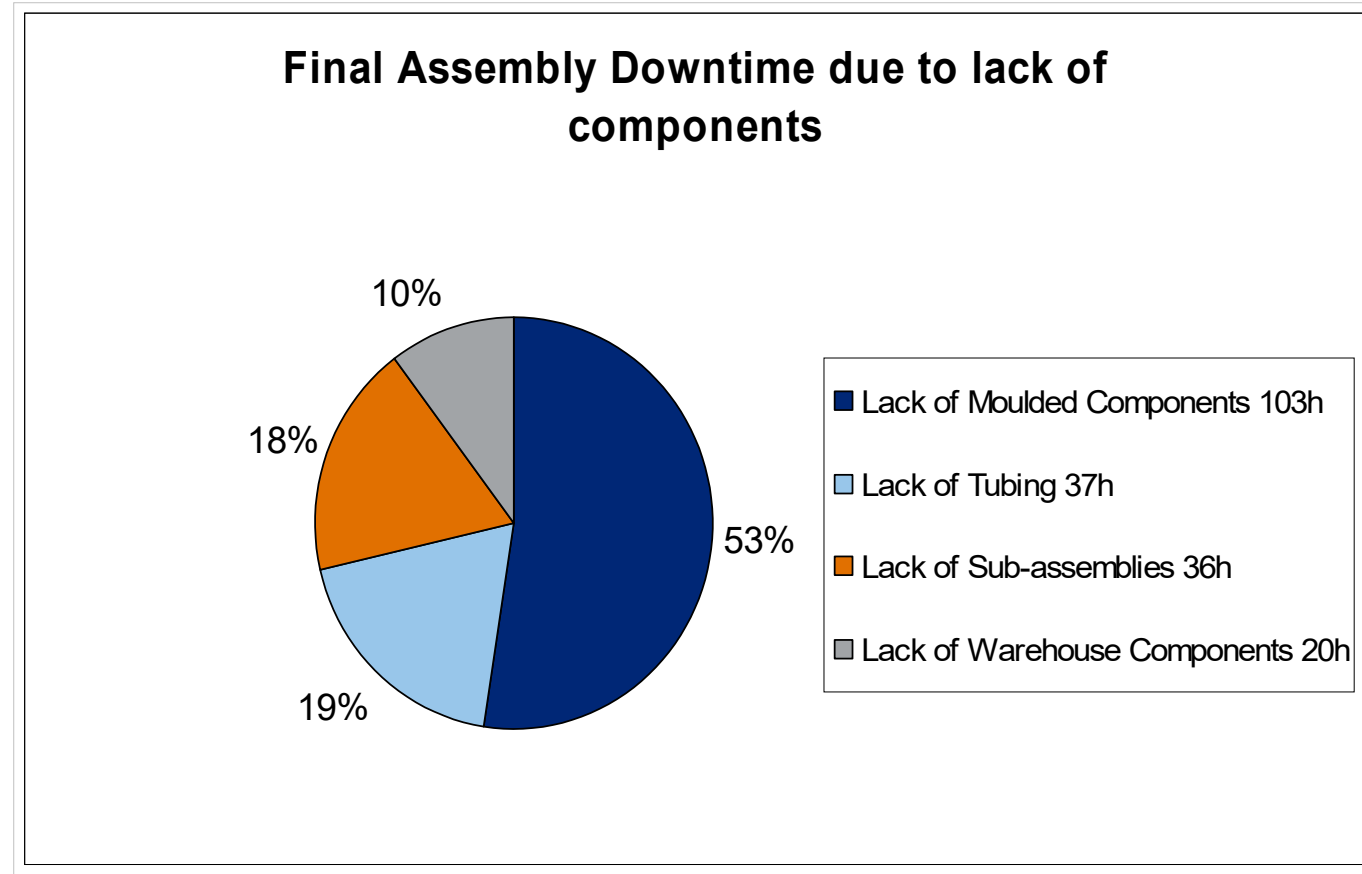
6. Continually reducing variation delivering a more stable and predictable manufacturing process !

Examples of OTIF application

Bloodline Manufacture :

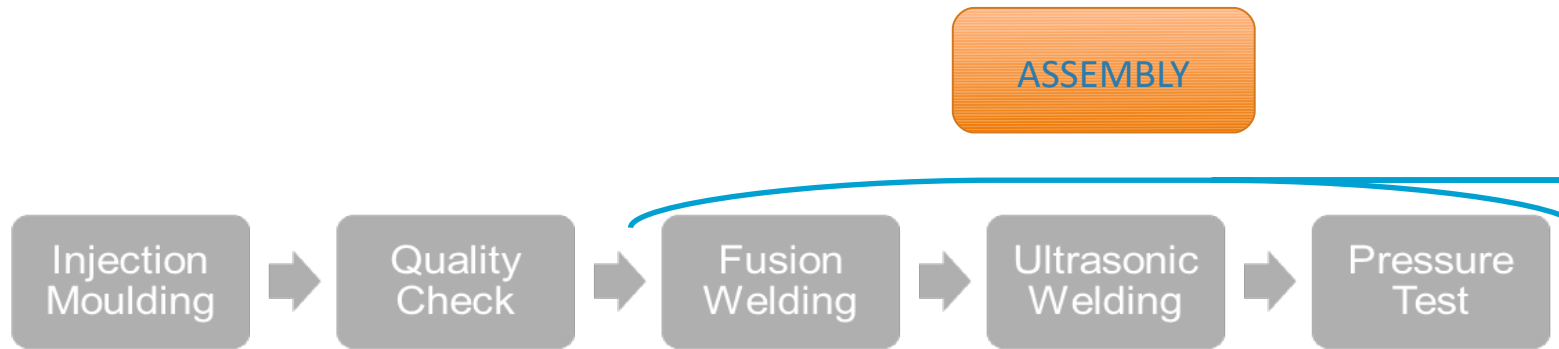
Significant downtime and back orders within the bloodline finally assembly process due to lack of components from Mould and Extrusion areas.

Challenge was to produce enough components and tubing to assemble 326k / wk from 260k



Downtime Final Assembly; due to lack of components in week 21-26 (2013)

Current State before OTIF Example; Cartridge Lines



REQUIRED

Plant Standard							
Line number	Sec Hour	Cycle Time	Shots Hour	Cavities	Efficiency	pcs day	pcs week
1-6	3600	18.5	194.59	2	90%	8,406	54,642
						Total Weekly output:	327,853
ACTUAL							
Current State							
Line number	Sec Hour	Cycle Time	Shots Hour	Cavities	Efficiency	pcs day	pcs week
1-6	3600	18.8	191.49	2	73%	6,710	43,614
						Total Weekly output:	261,682

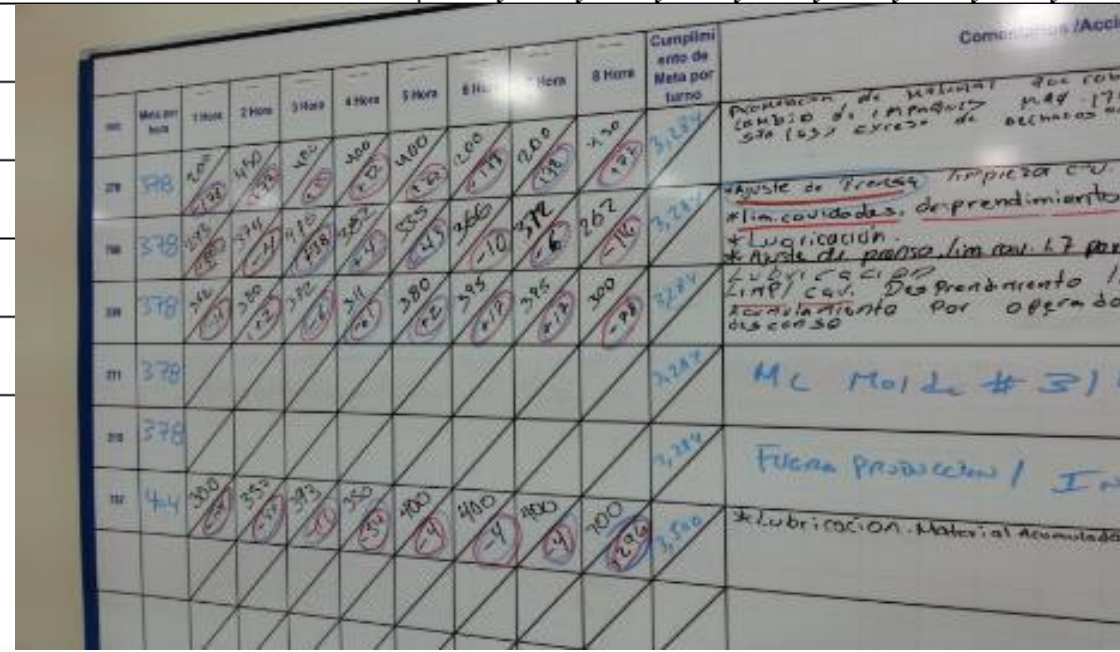


OTIF (On Time In Full)


~Visual Management System implemented in 3 areas

1. Mould Area Cartridge Line
2. Extrusion Area


Turno __ (Mañana/Tarde/Noche)																				
m/c	Meta por hora	1 Hora	2 Hora	3 Hora	4 Hora	5 Hora	6 Hora	7 Hora	8 Hora	Cumplimiento de Meta	Comentarios /Acciones por Hora	Status de Orden	Total Lun	Total Martes	Total Mier	Total Juev	Total Vier	Total Sab	Total Dom	Total Semana
270		/	/	/	/	/	/	/	/				/	/	/	/	/	/	/	/
766		/	/	/	/	/	/	/	/				/	/	/	/	/	/	/	/
239		/	/	/	/	/	/	/	/				/	/	/	/	/	/	/	/
271		/	/	/	/	/	/	/	/				/	/	/	/	/	/	/	/
215		/	/	/	/	/	/	/	/				/	/	/	/	/	/	/	/
767		/	/	/	/	/	/	/	/				/	/	/	/	/	/	/	/




OTIF Board
Cartridge Line



OTIF Board
Extrusion



OTIF Board Final
Assembly



Example Final Assembly Area Boards

DTF Ensemble Final: Banaris

Noms de Parts	Lot		Mensure		NOM		Date	Quantite	TOTAL
	Lot	Rate	Mensure	Avance	Verne	Subst			
110008306	0	0	3700						
115511			10572						
117614	0	0	3900	3900					
112908	17526	17526	17526	17526			36098		
110008298	1235	4590	4447				5673		
103401	2620		0	0					
117570	10572	10572	0	0					
101025	1445	2225	1444	1444					
109536	0	0	1490						
106283			15010						

OTIF Overall Impact

- Initiating a focused approach from the site
- Continuous Improvement driven approach
- Daily reviews with all relevant support functions / departments
- Engagement from all shop floor at every level
- Focus on losses and yield
- Information visual for all Areas



Mould Area; Cartridge Lines



O T I F Celdas/Automaticas : Turno A1 / B1

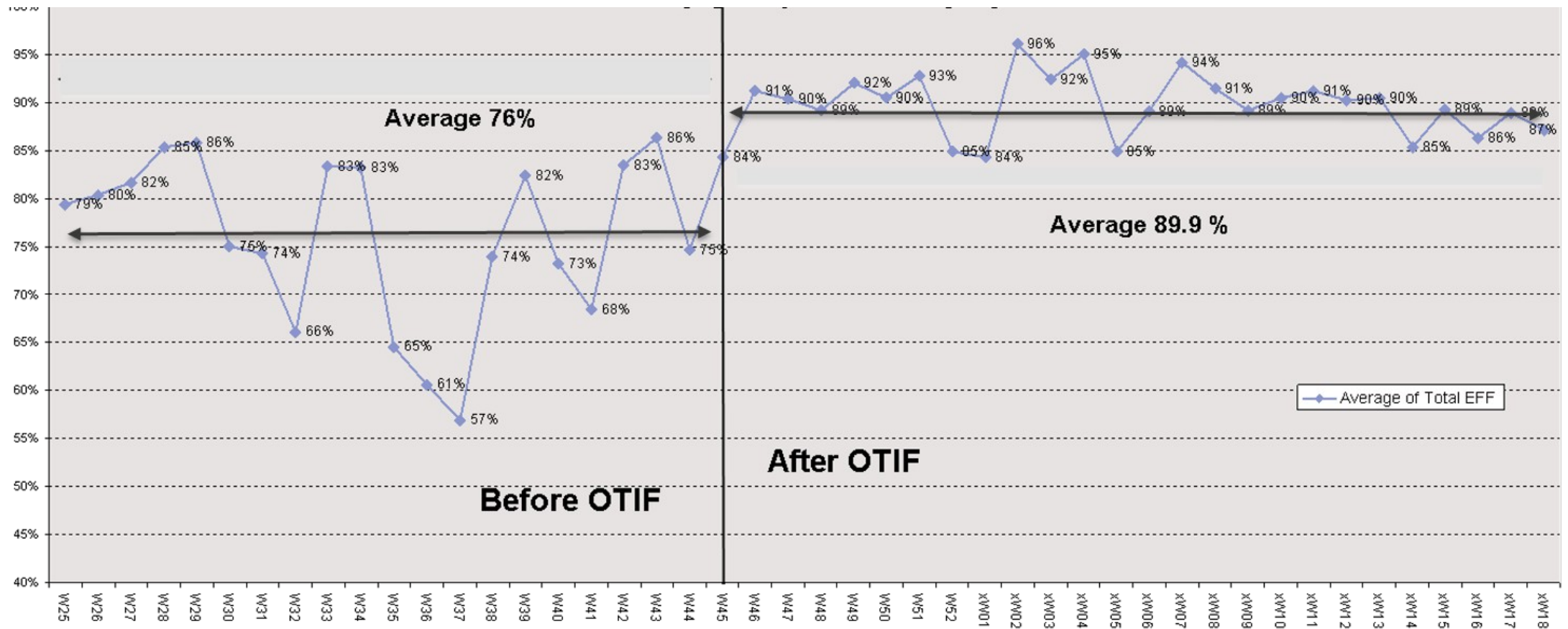
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OTIF Impact on Efficiency

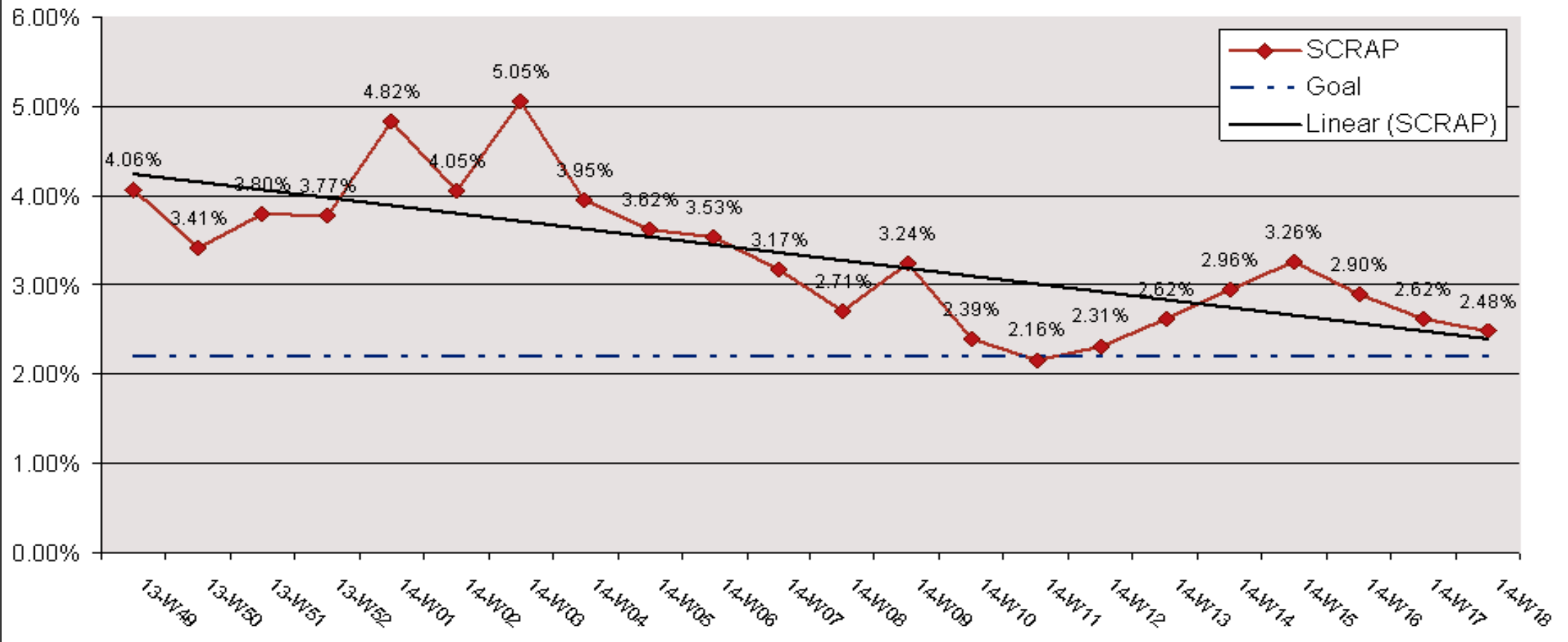
~Final Assembly Area

Final Assembly Group Efficiency per week



OTIF Scrap Reduction Impact ~ Mould Area Cartridge Lines

CARTRIDGE SCRAP



Improvement Summary

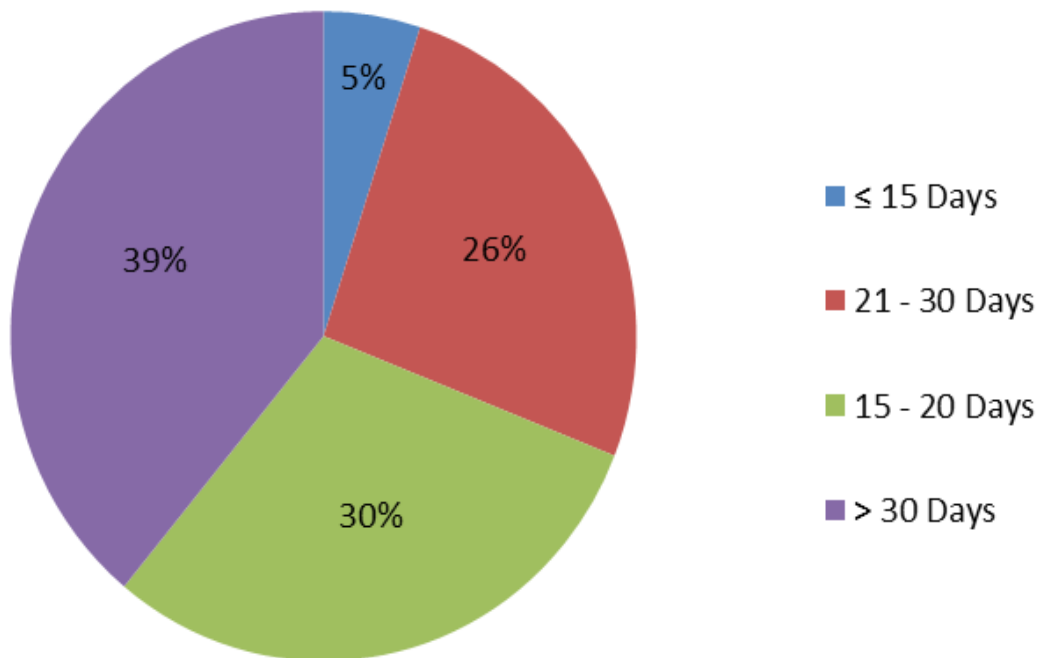
- OEE Improvement of 14% and increasing !!!
- Negated the need for a new Mold Tool and Machine
- Removed embedded weekend (Sat and Sun) and overtime shifts
- Increased uptime in mold area due to spare tool and machine (from 6 to 5 reqd.)
- OTIF created a window into each individual tool and machine combination allowing selection of most efficient combination (tools varied in age and design)

Technical Service.

Current State - Workshop Background

Current State - Customer Order Fulfillment.
Dock to Dock Age Profile.

Age Profile Of Customer Orders



- Immediate Goal 80% ≤ 15 Days
- Actual 5% ≤ 15 Days

➤ Overall TAT Goal = 15 Days
➤ Actual TAT = 36.8 Days

(Worst Case +200 Days)

Workshop Attendees.

Jeanne Anstey, Neil Endley (Bridge Group), David Feltz, Carey Fitzpatrick, Delores Hansel, Peter Jarvis, Dave Lostracco, Christian Love, Kade McCoy, Tom Nicholas, Andrew Snell, Zoila Sokolinski, Bonnie Storm.

- **Purpose:**
- To introduce OTIF (On Time In Full) process to visualize internal / external customer demand progression identifying key barriers / bottlenecks.
- To continually minimize inefficiencies and improve dock to dock performance to max 15 days
- To standardize and prioritize efforts towards the most tangible results
- To ensure the 'voice of the customer' was respected throughout daily routines and efforts

OTIF & Accountability Board (Fast Response)



OTIF & Accountability Board (Fast Response)

OTIF Prototype board and process at the daily fast response meeting



Support functions present daily including Leadership

Volume Performance										Fast Response									
Release OTIF					Operational Excellence					Personnel					Quality				
Line	OTIF	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %	OTIF %
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Process Defined & Documented

- Responsibilities
- Support functions
- Frequency
- Sign Off
- Required Information on Board
- Continuous Improvements & set Targets

Roles, Responsibilities & Routines

Cell Leader	<p>Populate board with data and sign off</p> <p>Communicate current state to DM</p> <p>Escalation of issues to fast response</p>	Hourly
Dept. Mngr	<p>Review board performance and sign off</p> <p>Support / Advise</p> <p>Communicate to stakeholders status / support</p>	x2 Each Shift
Plant Mngr.	<p>Review board performance and sign off</p> <p>Ensure commitment from stakeholders</p> <p>Ensure alignment throughout</p>	x1 Each Shift
C.I. Eng	<p>Take ownership of assigned issues</p> <p>Feedback on open issues</p> <p>Provide data trend analysis and advise</p>	x1 Each Shift (FR)
Quality Eng.	<p>Take ownership of assigned issues</p> <p>Feedback on open issues</p> <p>NCMR Minor reject analysis</p>	x1 Each Shift (FR)
Logistics	<p>Take ownership of assigned issues</p> <p>Feedback on open issues</p> <p>Support customer priorities</p>	x1 Each Shift (FR)
Tech Service	<p>Take ownership of assigned issues</p> <p>Feedback on open issues</p> <p>Feedback customer 'hot list' and set priorities</p>	x1 Each Shift (FR)

Strengthen FIFO & Support Lead Time Reduction

Improved customer (internal and external) satisfaction through on time delivery and shorter lead times

- Selection of 'next job' now based on customer and age profile priority and not the shortest rework/repair time (*which previous process encouraged*)
- FIFO (*First In First Out*) process introduced



Technical Service. Next Steps.

- Note this is a 'live
- Continue to run pilot program and monitor performance.
- Record TGW's (Things Gone Wrong / Well)
- Make final improvements to process where required
- Roll out throughout all areas
- Formalize internal Customer / Supplier relationships via OTIF process
- Plan to share learning across current and other sites



How to ensure sustainability

- Stick to the process, irrelevant of visits, audits or other distractions
- Senior Management and Leaders to continually support and drive
- Give feedback – encourage positive & understand negative
- Involve the internal customers and suppliers
- Problem Solve and continuously improve
- Escalate appropriately
- etc
- etc
- etc
- etc