Kaizen workshop

Successful
Future
Innovation
Solutions

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Total Cycle Time improvement

Tianjin, China 2011

Key Message

Output

– Review current state and analyze gaps in Total Cycle Time „TCT”

– Identify barriers in TCT reduction

– Generate ideas to mitigate barriers in our processes

Agenda

Subject	Leader	Time
1) How we will do it?	KHS	10:30 – 11:35
2) Review and Map current state and define Ideal	OYA	10:35 – 11:30
3) Gap Analyzes referring to Improve TCT	ALZ	13:00 – 13:30
4) Idea generation to Improve TCT	JHA	13:30 – 14:00
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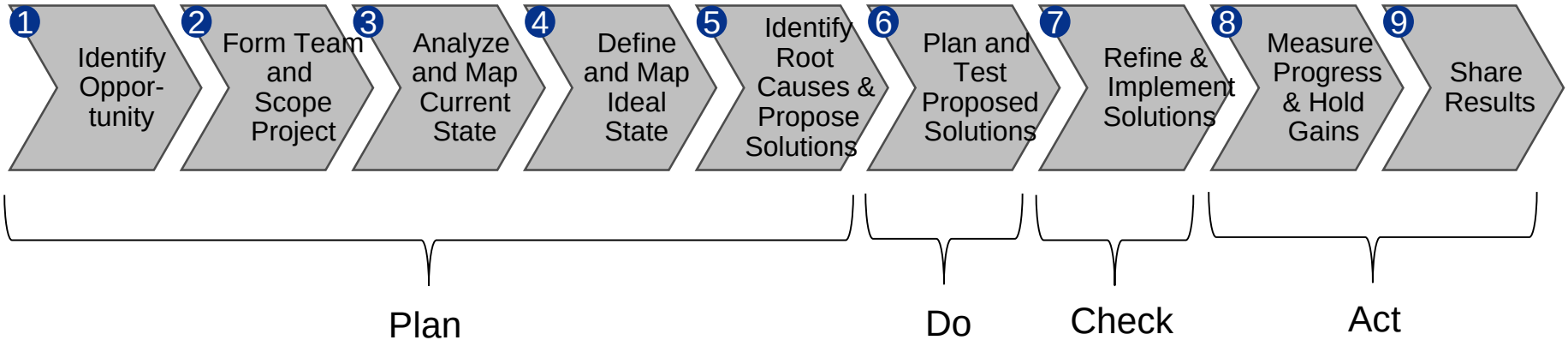
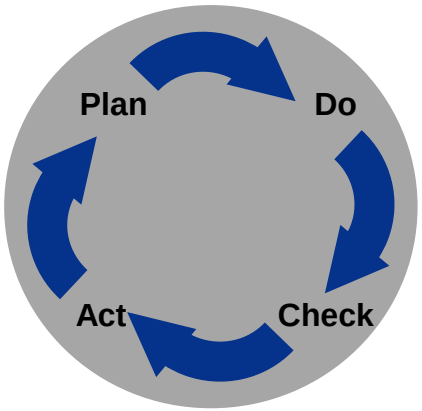
How we will do it?

By using Kaizen process which is part of Lean



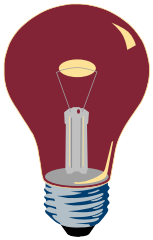


: Process Steps : Critical Facilitation Activities

Identify Opportunity, Form Team and Scope Project

1 Identify Opportunity

Good overall cycle time a positive trend in the production



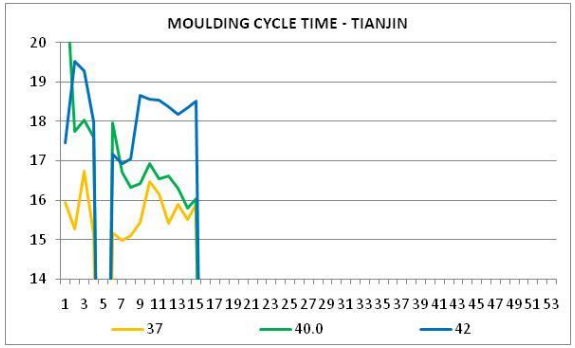
Global/Plant Initiatives

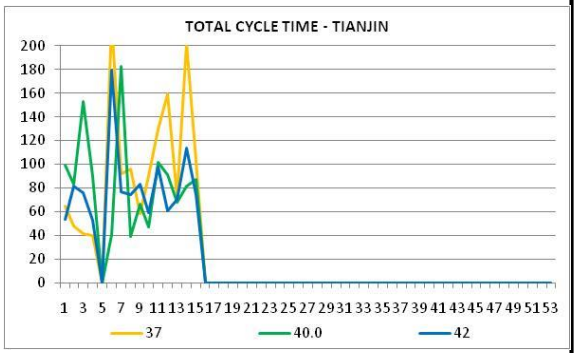
Value Stream Maps, Projects or other Kaizens

Employee Suggestions / Kaizen facilitator suggestions

Leadership Requests

	Moulding Cycle Time				Overall Cycle Time				WIP per mould			
PLANT	2010.CW29-2010.CW53	2011.CW01-2011.CW13	2011.CW14-2011.CW15	Target	2010.CW29-2010.CW53	2011.CW01-2011.CW13	2011.CW14-2011.CW15	Target	2010.CW29-2010.CW53	2011.CW01-2011.CW13	2011.CW14-2011.CW15	Target
Tianjin	18,53	17,37	17,24	X	152,09	88,76	105,93	Y	6,8	3	4,1	Z





2 Form Team and Scope Project

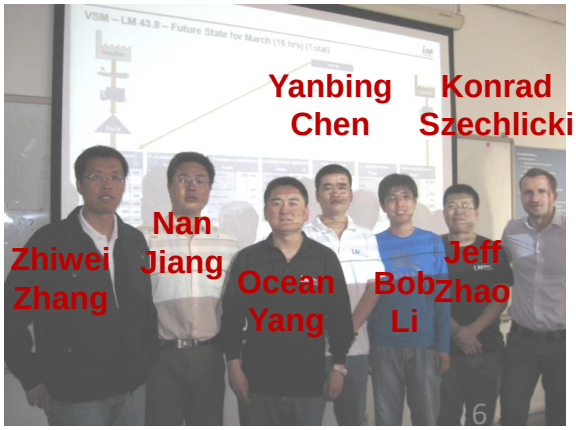
Improve Total Cycle Time

Kaizen Team Leader

- Coordinates all logistics for workshop
- Communicates to participants before and after workshop
- Motivates team to achieve goals
- Assigns participants to tasks and organizes team for presentations
- Serves as main link to sponsor and champion

Kaizen Team Members

- Actively participates in team tasks
- Brings various skills and expertise to the team
- Encourages the input and acceptance of outcomes with their peer employees
- Takes ownership to challenge status quo and to implement their specific tasks
- Practices consensus decision making



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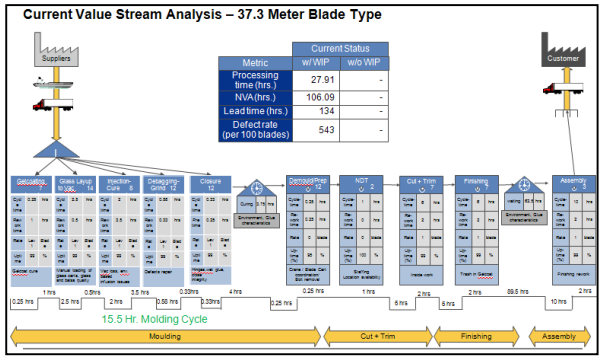
Review and Map current state and define Ideal

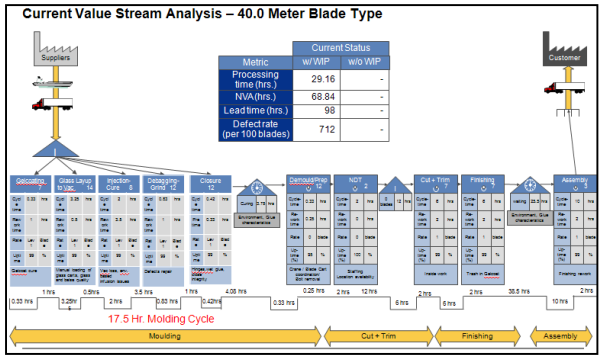
3 Analyze and Map Current State

Current Value Stream Analysis – 37.3



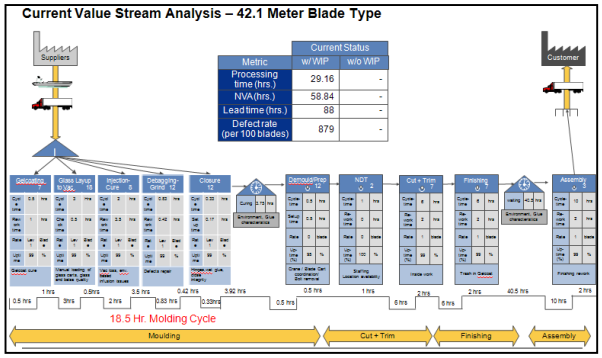
Moulding: 15,5 hrs; Total: 101 hrs

Current Value Stream Analysis – 40.0



Moulding: 17,5 hrs; Total: 88 hrs

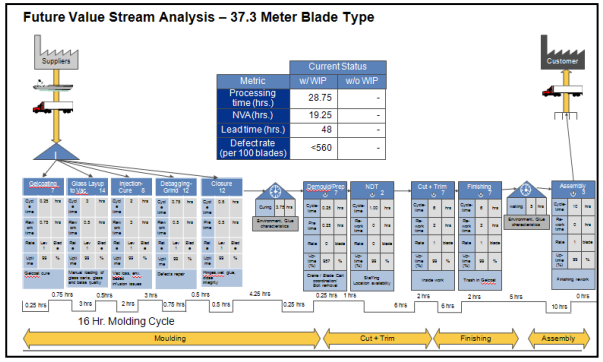
Current Value Stream Analysis – 42.1



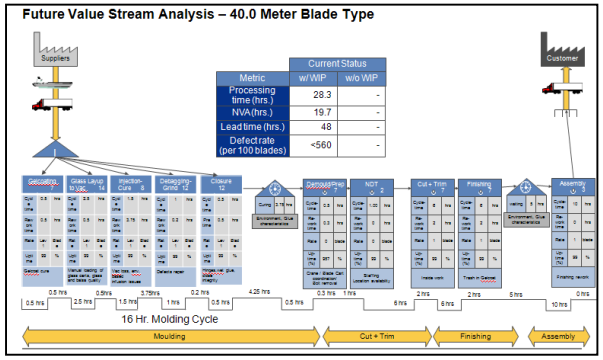
Moulding: 18,5 hrs; Total: 97 hrs

4 Define and Map Ideal State

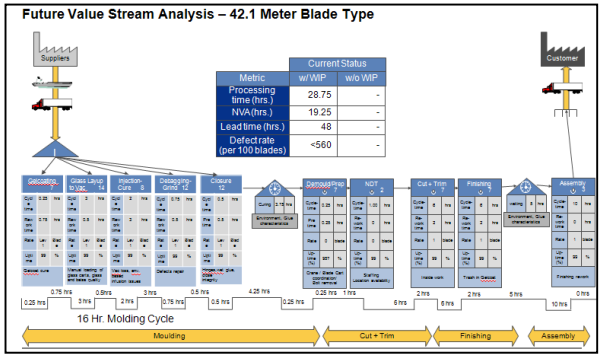
Future Value Stream Analysis – 37.3



Future Value Stream Analysis – 40.0



Future Value Stream Analysis – 42.1



Moulding: 16 hrs; NDT + Transportation: 8 hrs; C&G: 8 hrs; Finish: 8hrs; Assembly: 8hrs

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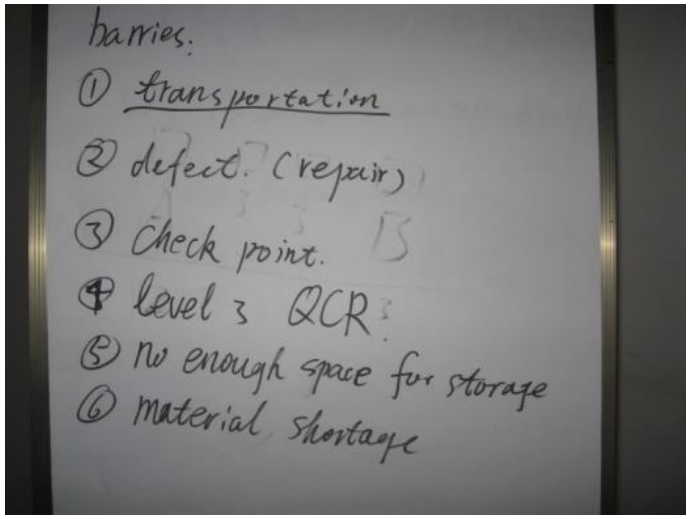
Gap Analyzes referring to Improve TCT

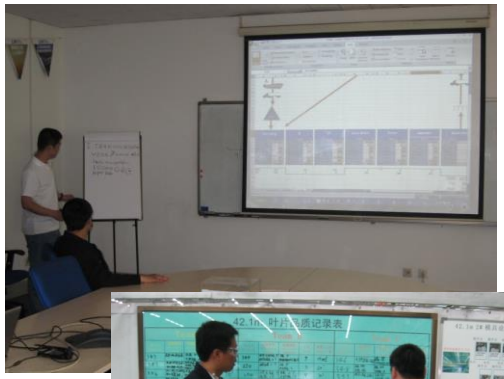
5

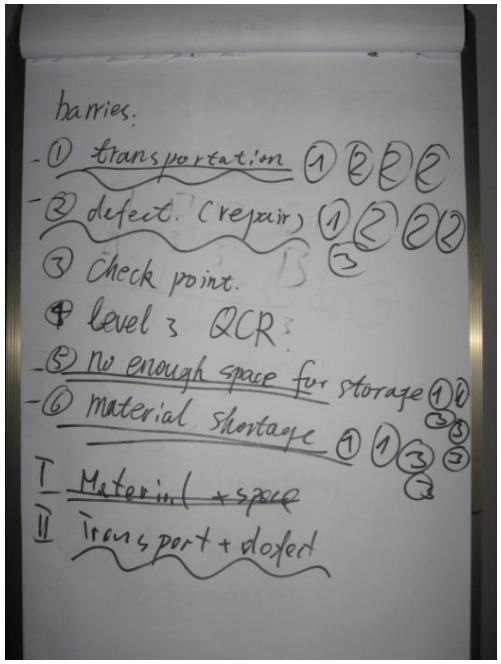
Identify Root Causes

Moulding is on the right track

Biggest Gap is in the Post Moulding







Identifed Bariers

- Transportation time
- Defects and repair time
- Waiting time on check points
- Waiting for disposition on QCR level 3
- Not enough space for blade storage
- Materials not on time

Pareto rule

20%
of bariers

Will give us
80%
Cycle Time reduction

Highest impact

80% CT reduction

- Not enough space for bledes
- Materials not on time
- Transportation time
- Defects and repair time

20% CT reduction

- Waiting for disposition on QCR level 3
- Waiting time on check points

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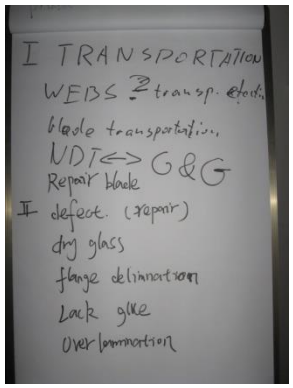
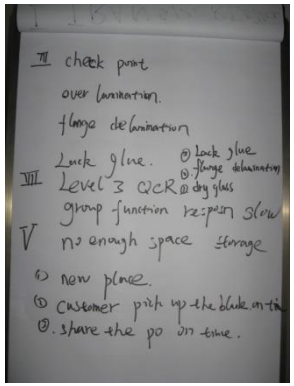
Idea generation to Improve TCT

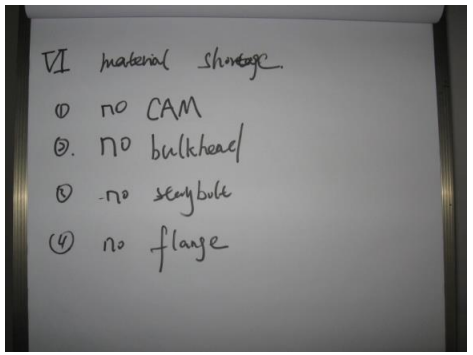
5

& Propose Solutions





BRAINSTORMING



Transportation time

- Webs transport. effecting blade transp.
- Biggest gap is between Moulding and C&G
- Too long repairs times in C&G

Involve Ocean for motion modification

Defects and repair time

- Dry Glass
- Flange delamination
- Missing glue
- Overlamination required

Involve PE and QC by CAPA

Waiting time on check points

~~- Flange delamination~~
~~- Missing glue~~
~~- Overlamination~~

~~**Low impact on Cycle Time**~~

Waiting for QCR level 3 disp.

~~Waiting for group function respond~~
~~- Flange delamination~~
~~- Missing glue~~
~~- Overlamination~~

~~**Low impact on Cycle Time**~~

Missing space, blade storage

- Customer need to pick up blades faster
- New place can mitigate this issue
- 3 layer cradle increas storage capacity
- On line sharing with seals order in the plant

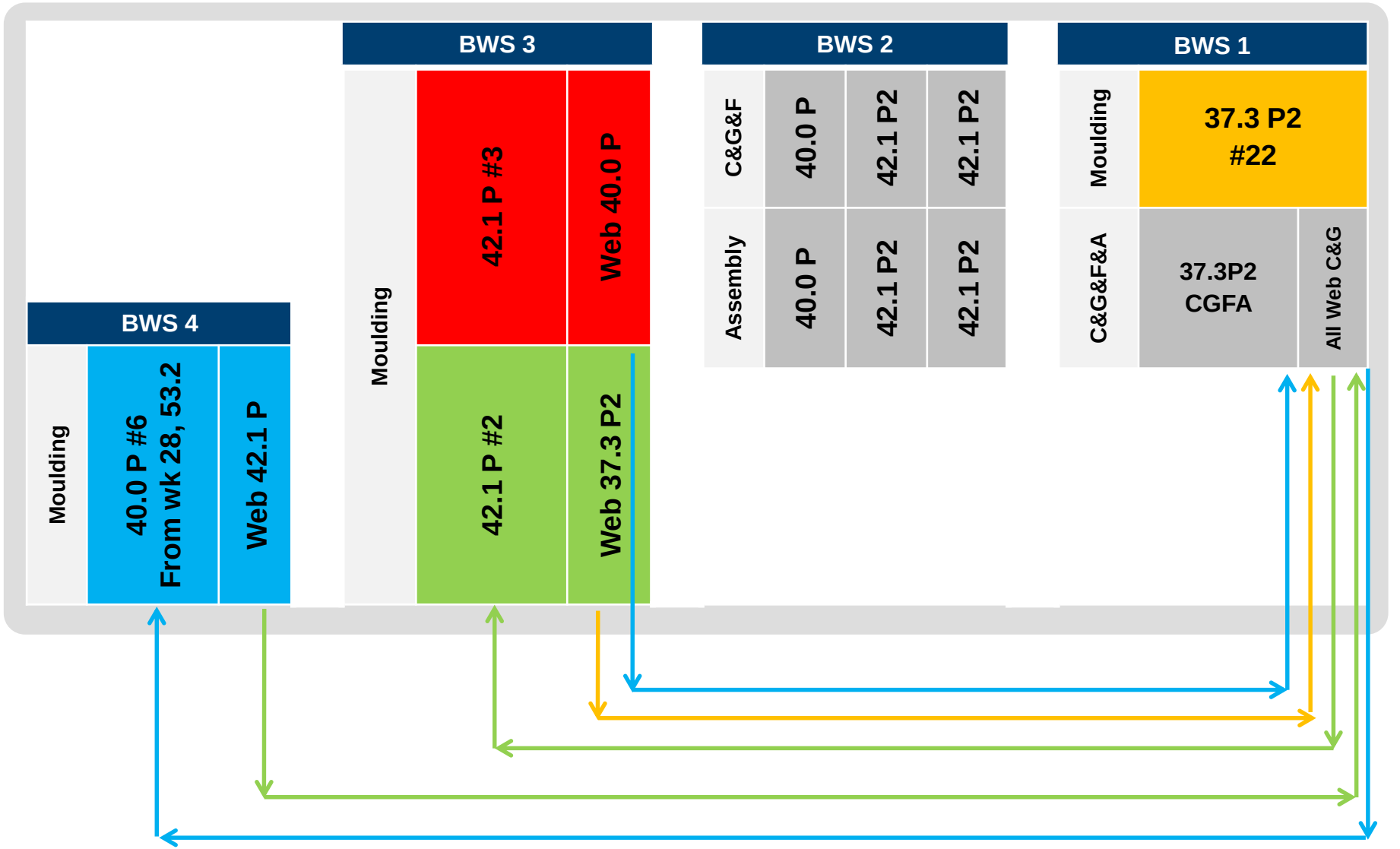
Involve Gary Xu

Materials not on time

- Missing CAM
- Missing root bulkhead
- MissingStay bolts
- Missing Flange etc.

Involve Logistic: Vincent Qin

Idea generation: Transportation time waste example



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Agree on the next steps and action log

6

Plan and Test Proposed Solutions

Activity***	Impact						PDCA
	Owner	37.3 P2	40.0 P	42.1 P2	CGFA*	Enabler**	
- Resolve webs transportation time waste	OYA	X	X	X	X	X	◯
- Eliminate quality problems by CAPA implementation	JHA / MEW	X	X	X	X	X	◯
- Initiate activities to resolve missing space, blade storage	GXU	X	X	X	X	X	◯
- Initiate activities to resolve materials not on time	VIQ	X	X	X	X	X	◯
- ...							◯
- ...							◯
- ...							◯
- ...							◯
- ...							◯

Act (On track)		**Plan (On track)**	***CGFA: Cut and Grind, Finish and Assembly** ****Cycle time and man-hours** *****Action Log**
Check (High risk)		**Do (Little risk)**	

Next steps: Monitor results

7 Refine & Implement Solutions

Experiment

- With a bias toward action, start testing proposed solutions
- Move equipment, change layouts, etc.
- Create new SWI's, templates, process maps, as needed
- Expose others to the new process and gain input
- Monitor results of new process

8 Measure Progress & Hold Gains

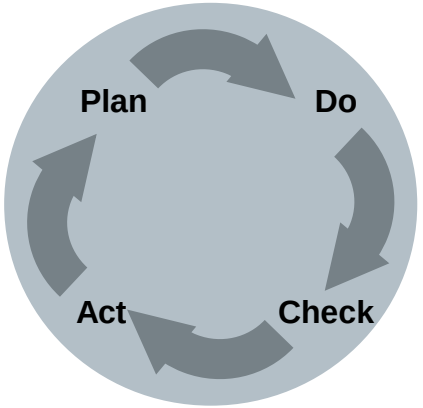
- Hold review meetings at minimum of once every 30 days
- Review action plan
- Continue to monitor implementation results
- Remove obstacles as necessary

9 Share Results

- Share results with team members, ad hoc team members, suppliers etc.
- Communicate results to organization using company newsletter, intranet, or e-mails
- Build momentum and commitment for future Kaizen sessions
- Communicate results to senior leadership

Celebrate Success

& start all over again



Thank you for your time

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