

LEAN SUMMIT CZECHOSLOVAKIA

BeExcellent

Value Stream Transformation Lean Awards 2022

ORGANIZED BY



I. Background

Why Did We Choose This Topic?

Basic Information About Project



1) Portfolio was produced in batch production

WASTES: High WIP, difficult handling between operations, no continuous production

2) Portfolio was produced on different location in our shopfloor

WASTES: Long transport distance, big amount of handling steps, 4 production plans (based on location)

3) Push Control of Production

WASTES: High WIP, 4 production's plans (based on location)

4) High Fluctuation of Quality

WASTES: Unstable process of production (many factors, which influence quality)



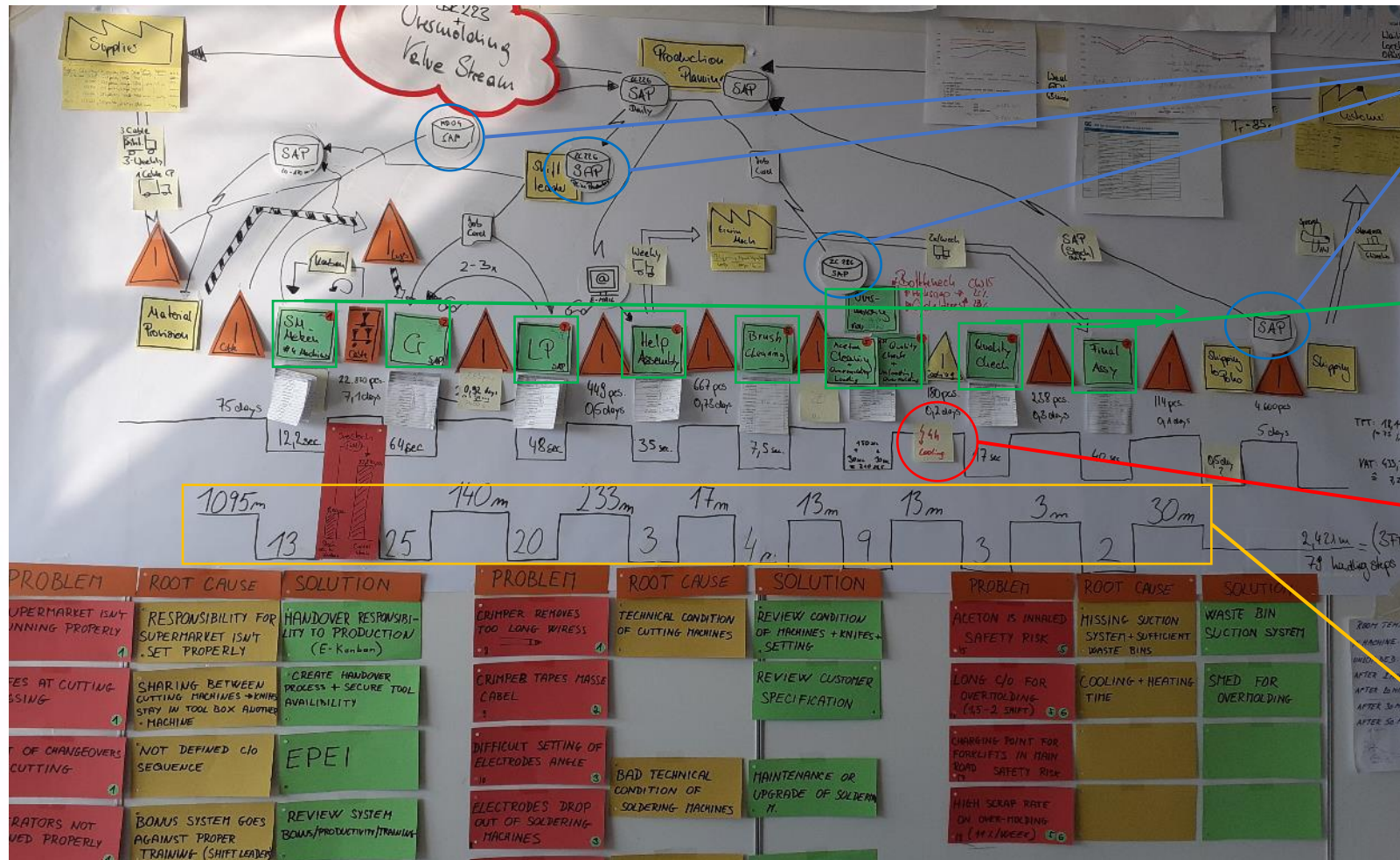
Pictures of Products (2 variants)

Main reason to make this change was production concept change
„ From Batch Production To Value Stream Production“

II. Current Conditions

Product Family „Erwin Mach“ (Overmolding)

Description of Situation – Main Problems



4 Production's Plans
Problem: WIP

Not Balanced Production Process
Problem: Low Production Efficiency

High Scrap Rate On Overmolding
Problem: Sources Inefficiency

High Transport Between Operations
Problem: Low Productivity

II. Current Conditions

Flow, Takt, Pull & Zero-Defects – Transformation

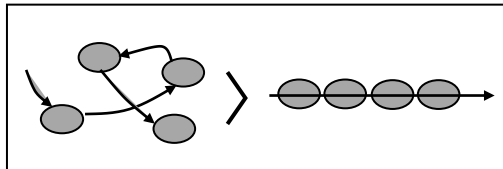
Process For Change



Best **quality**, lowest **cost**, shortest **lead time** and highest **employee motivation**

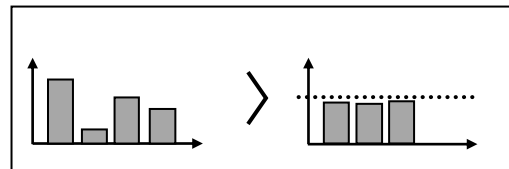
Just-In-Time-System (6R)

Flow-Principle



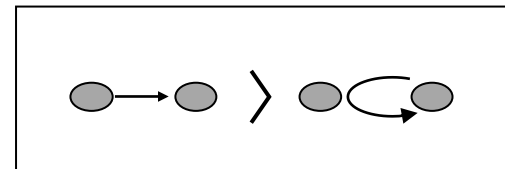
Keep the material constantly moving

Takt-Principle



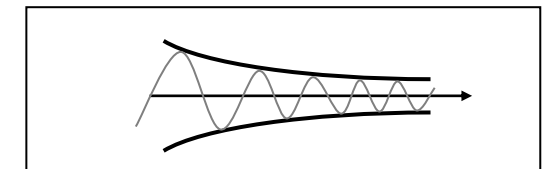
Align production speed to customer tact

Pull-Principle



Produce only what the customer needs

Zero-Defects-Principle



Visualization and elimination of defects

Target

Approach

- Value stream oriented layout
- Produce minimal batch sizes

- Balancing of capacity demand and work content
- Balanced production (ABC-Cluster)

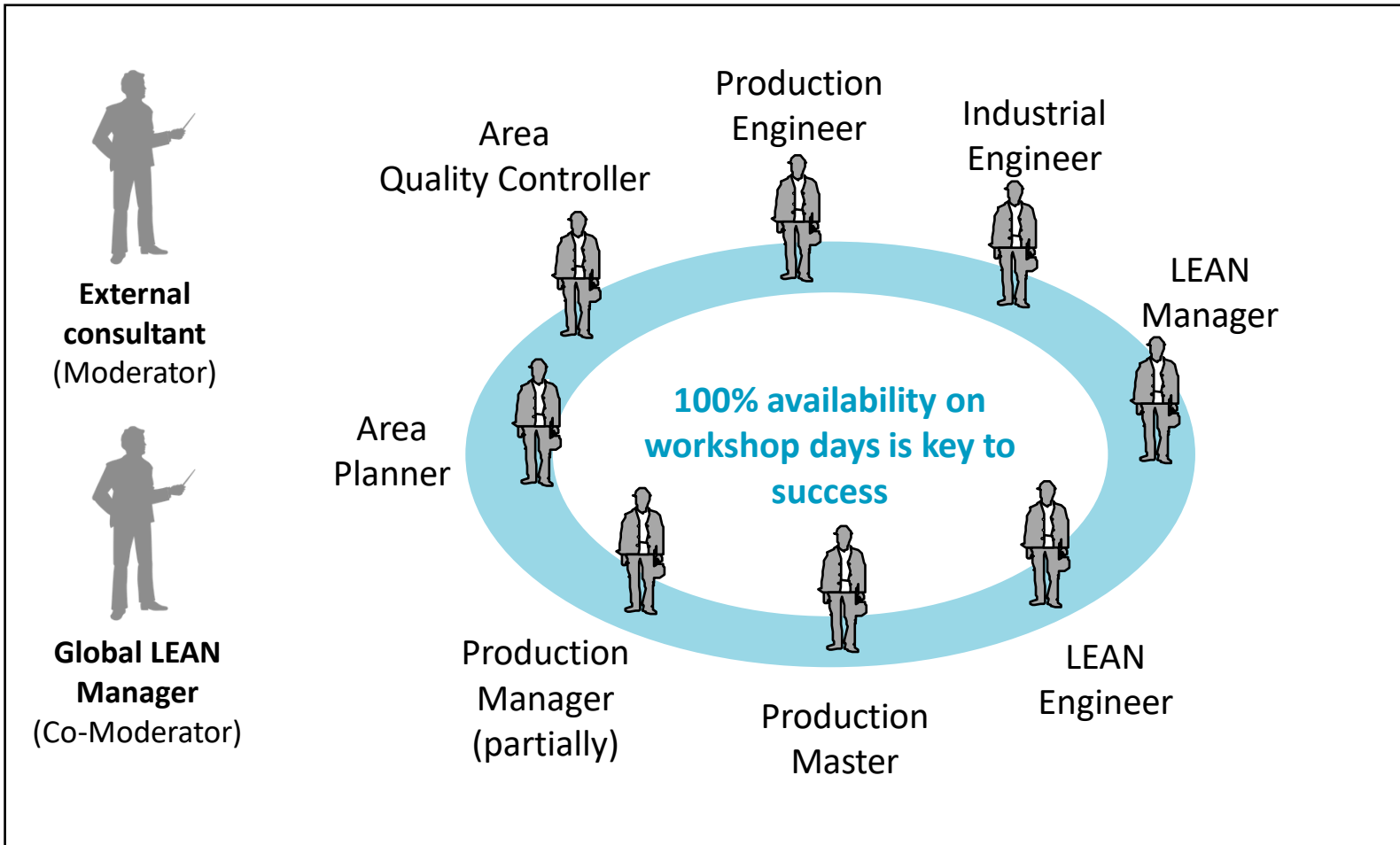
- Replenish parts which are consumed
- High Runner in supermarket, Low runner M-t-O (Make to Order)

- Daily deviation mgmt. over all hierarchies (Shop floor mgmt.)
- Process Standardization

II. Current Conditions

The Workshop Core Team Includes 10 People

Workshop Team

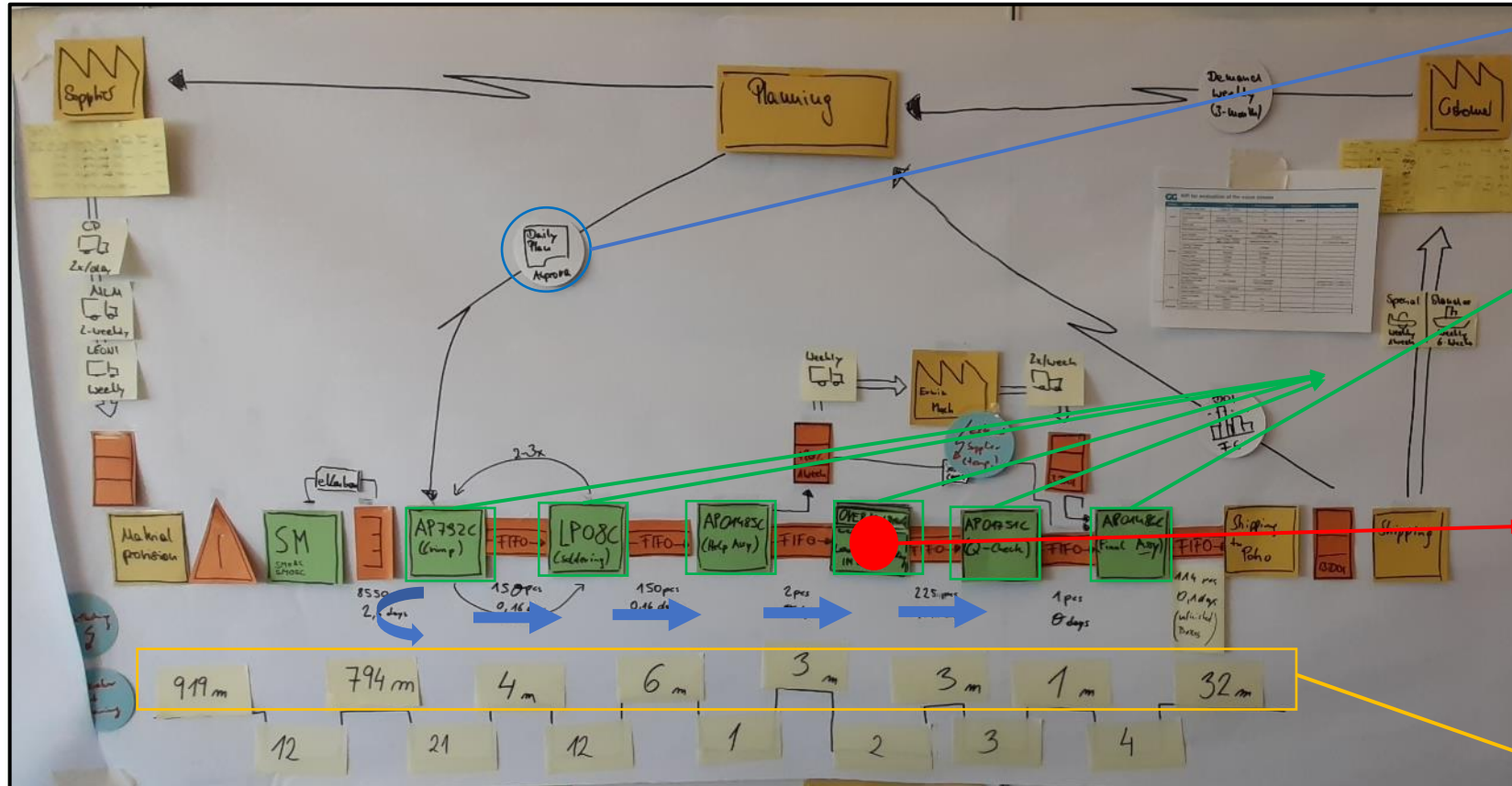


- Moderators**
- External: 2 days on site
 - Global LEAN: 5 days on site
- Workshop Team**
- 3 days per week (at least 7 hours per day)
 - No changing participants
 - Blocked Workshop room
- Reason of Team Collection**
- Multi-functionality (problems are taken from all perspectives)
 - Each area is supported by specialists
 - Team decision (no space for alibism)

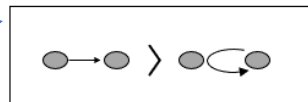
III. Goals / Targets

Value Stream Concept – Overmolding

Value Stream Design – New VSM With All Principles

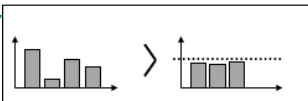


Pull-Principle



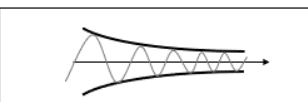
1 Production Plan
Benefits:
 WIP Reduction
 Production Control

Takt-Principle



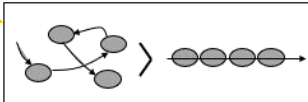
Balanced Operations
Benefits:
 Workforce Efficiency
 Production based on Customer Demand (Takt)

Zero-Defects-Principle



Production Stability
Benefits:
 Lower Scrap Rate
 Production Efficiency

Flow-Principle

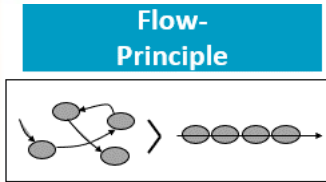


Less Transport
Benefits:
 No Extra Handling
 Workforce Efficiency

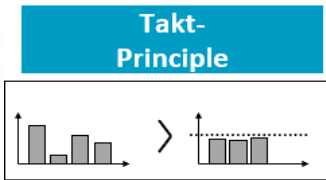
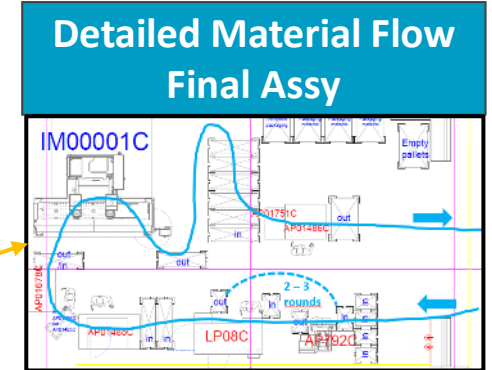
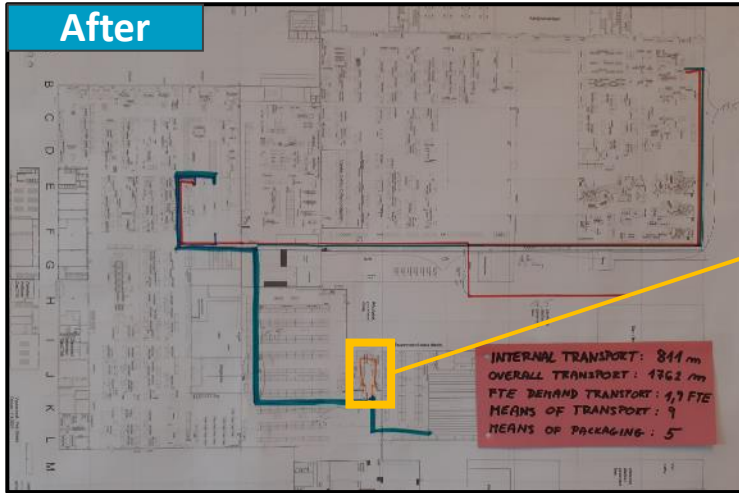
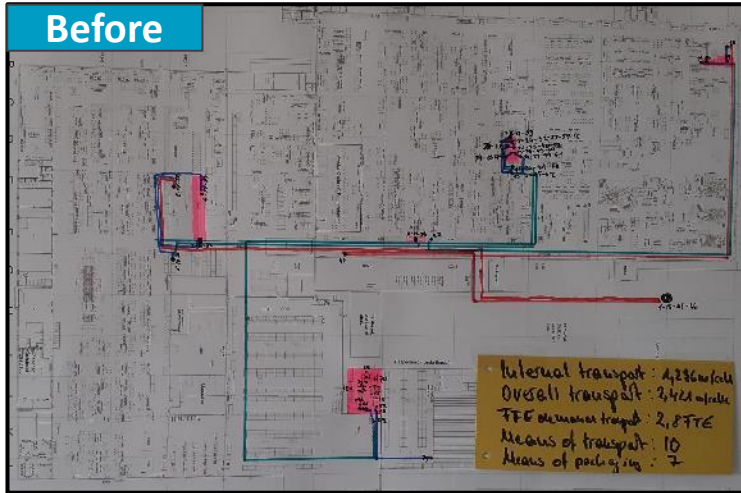
IV. Analyses

Value Stream Concept – Overmolding

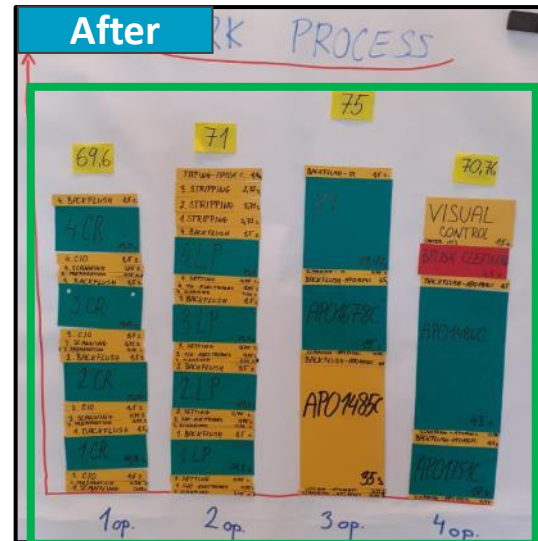
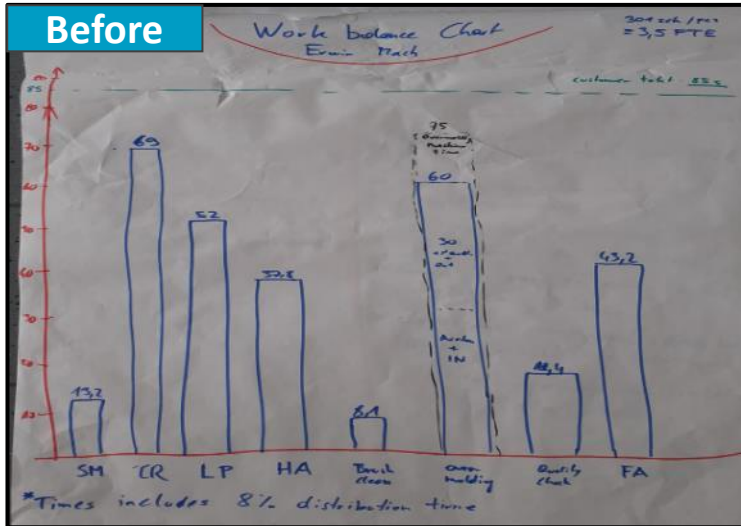
Flow & Takt Principles



BEFORE:
2421 m/cable
AFTER:
1762 m/cable
(-27%)



BEFORE:
16 FTE/ 900 cables
AFTER:
12 FTE/ 900 cables
(-25%)



- Takt pattern/shift**
- Takt #2:
150 pcs./shift
= 2 FTE
 - Takt #3:
225 pcs./shift
= 3 FTE
 - Takt #4:
300 pcs./shift
= 4 FTE

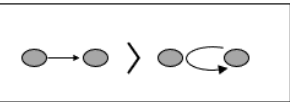
IV. Analyses

Value Stream Concept – Overmolding

Pull & Zero-Defects Principles



Pull-Principle



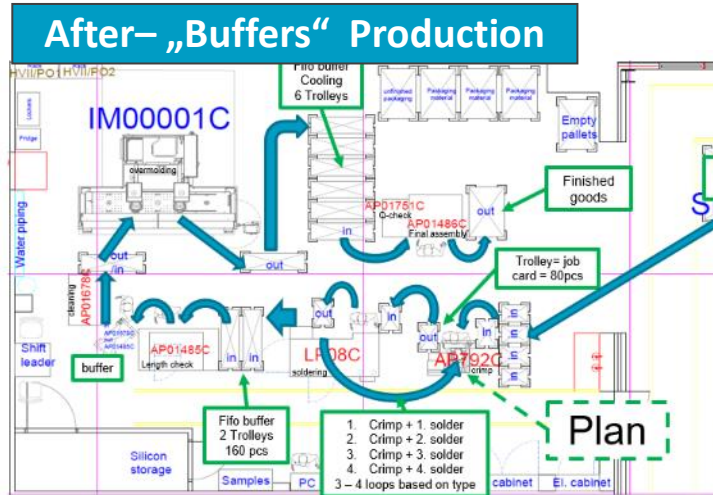
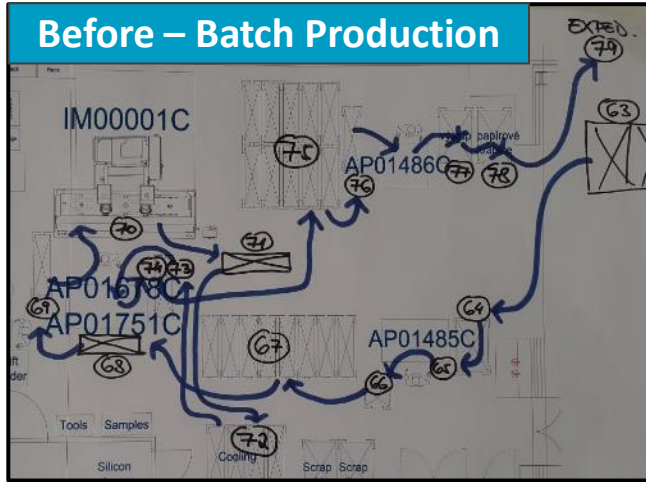
BEFORE:

WIP = 13,2 DOI

AFTER:

WIP = 4,9 DOI

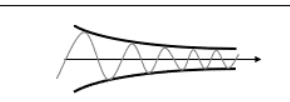
(-63%)



Production Control

- 1) KANBAN for Cutted Cables
- 2) Trolleys for Pre-Assy (exact amount)
- 3) Trolleys for Final Assy (exact amount)

Zero-Defects-Principle



BEFORE:

Scrap rate = 11%

AFTER:

Scrap rate = 3%

(-72%)

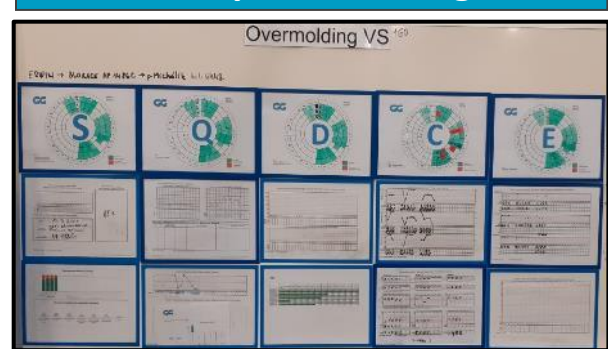
Before (Storage – Pallets /Boxes)



After (Storage – Trolleys)



SQDCE Shopfloor Management



Flow, Takt, Pull & Zero-Defects – Summary

Methods What Were Used

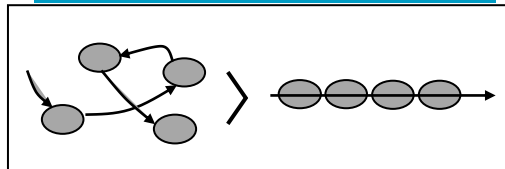


Best **quality**, lowest **cost**, shortest **lead time** and highest **employee motivation**

Just-In-Time-System (6R)

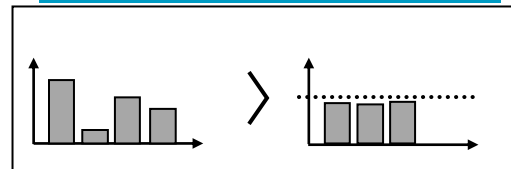
Value Stream Mapping - VSM

Flow-Principle



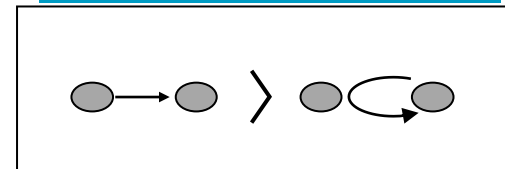
- 1) Spaghetti diagram
- 2) One-Piece-Flow
- 3) Transport means / Handling steps evaluation

Takt-Principle



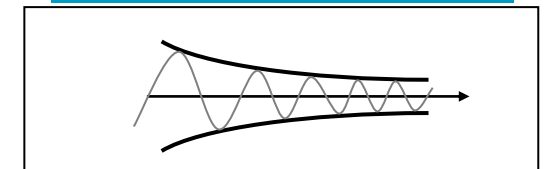
- 1) Work distribution diagrams
- 2) 7 wastes elimination
- 3) Demand Leveling (based on customer demands)
- 4) Model Mix Production

Pull-Principle



- 1) KANBAN (inc. calculation)
- 2) Batch & Buffers setting
- 3) FIFO concept
- 4) Production based on „Customer Order“

Zero-Defects-Principle



- 1) SQDCE Management
- 2) Layered Process Audits
- 3) Skill Matrix – development of employees
- 4) Team Cooperation – direct response to failure

Methods / Tools

V. Proposed Activities & VI. Plan

How To Be Successful In Project Leading?

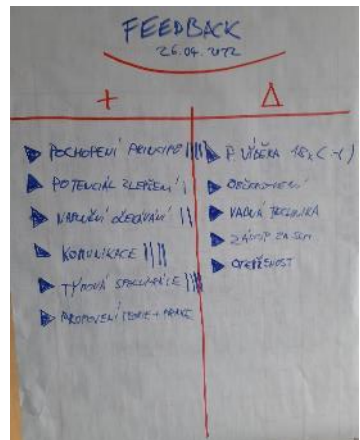
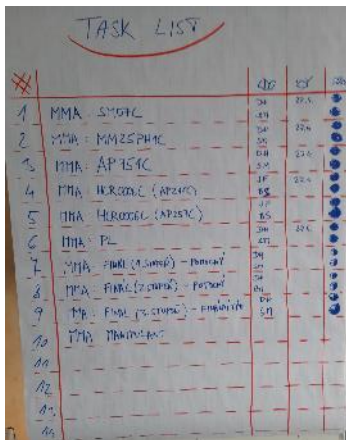
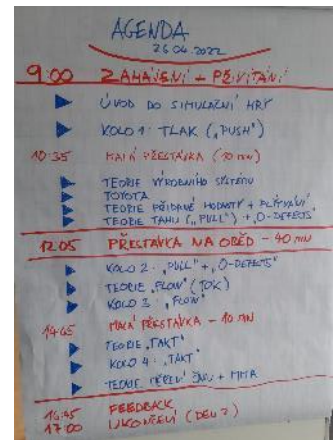
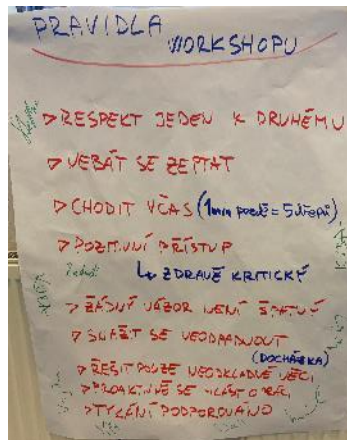
Milestones & Pillars To Ensure Good Progress



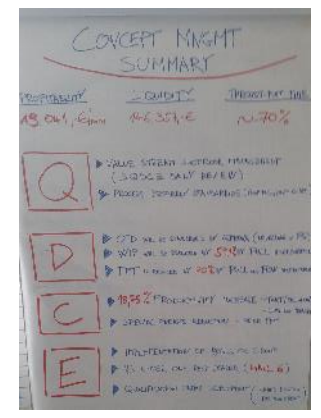
1) Clearly set scope before workshop

Workshop definition sheet: „Value stream optimization at Automotive area“			
Focus area: SM20, CU3, Pre-Assy automotive, final assembly	RACI A: Ops: F. Pec A: SCM: R. Broekl R: J. Krausova C: K. Hytrek, S. Hartmann I: All Managers	Date of creation: 21.03.12	
Separation of focus area			
Included	Excluded		
<ul style="list-style-type: none"> Geographical: Segment Unit 2 Value Stream: From material provision to finished goods area value stream Product Focus: CU3, Hirschmann (partially), pre-assy automotive incl. FA-Boards Processes: Production planning & control, production processes, internal material handling, material handover areas, changeover process, E-Kanban 	<ul style="list-style-type: none"> Other areas Material provision from warehouse and to shipping TPM, Purchasing, Engineering, Other Product Families 		
Targets of the workshop			
Quantitative		Qualitative	
<ul style="list-style-type: none"> OTD: 100% FG: <= 7 DOI WIP: <= 1 DOI Productivity +15% (>100 TEUR/a) Space consumption: -15% 	<ul style="list-style-type: none"> Throughput time: -50% Transport (m): -50% Handling steps: -50% Batch sizes: -50% 	<ul style="list-style-type: none"> Conduct global standard on value stream optimization Implementation of the GPS principles Develop workshop team and Business Units towards lean culture 	
Preparation	Responsible	Interim Presentation	Final Presentation
Committed with: ...	J. Krausova		

2) Rules of workshop, agenda for each day and tasks list + daily feedback



3) After each block (Analysis, Concept), results are presenting to management – for confirmation



4) During Implementation phase is set periodical meeting (weekly) where all defined points are solved and progress is checked – if not, task is escalated to management meeting (bi-weekly)

Project Erwin Mach VSM

N°	Category	Phase	Action	Information - Decisions - Actions					Comments	Status
				ID#	Who		When			
					Accountable	Responsible	Initial date	Due date		
1	Team set up	Preparation	Cardboard simulation (management)	Team	Tamas	14.05.2021			C	
2	Layout set up	Preparation	physical moving of AP01485C, AP01486C, AP01751C, AP01678C	Pavi	Straka	17.06.2021		delayed due to missing SS, new date 1.7.2021	c	
3	Layout set up	Preparation	physical moving of LP08C and AP792C	Pavi	Straka	24.06.2021		new date 1.7.2021	c	
4	Layout set up	Preparation	Finish layout proposal for LCN	Pavi	Straka	21.05.2021	31.05.2021		c	
5	Technical adjustments	Improve	Review VII for brush cleaning	MIF	Rybakova	24.05.2021		More specific description (Q-spec)	s	
6	Technical adjustments	Improve	Review VII for action cleaning	MIF	Rybakova	24.05.2021		More specific description (times, result etc.)	s	
7	Layout set up	Preparation	Buy suction for soldering machine	JAK	Spidla	10.06.2021		should arrive on 25.6.2021	c	

Summary Of Project

KPI Results – Before / Planned / After



Category	Top KPI	Before	Planned for Concept	After	Δ= Planned/After
Quality	Claims per Year (2020)	1 claim	0 claims	0 claims	0 claims
	Scrap rate (01-03/2021)	Pre-assy: 0,16%, Overmolding: 11%	Overmolding: 4%	Overmolding: 3%	+1%
Delivery	Stock finished goods/DOI	10 DOI	10 DOI (avoidance of backlog)	10 DOI	0 DOI
	Stock WIP/DOI	13,2 DOI	3,5 DOI (-72%)	4,9 DOI	-1,4 DOI
	Stock components/DOI	max: 75 DOI min: 12 DOI	~-50% Depends on material	-40%	-10%
	Throughput time	88,6 DOI	44,3 DOI	44,3 DOI	0 DOI
	Handling steps	79 steps	55 steps	55 steps	0 steps
	OTD to customers (20/21)	85,28%	>95%	97,4%	+2,4%
	Planning adherence	70%	100%	98%	-2%
	Shipping Backlog	9.386 pcs	0 pcs	0 pcs	0 pcs
Cost	Operator Productivity (pcs/operator/week)	281 pcs/op./week	375 pcs/op./week (+33%)	375 pcs/op./week	0 pcs/op./week
	Number of operator	16	12	12	0
	Express freight (20/21)	51742€	0€	0€	0€
	Cost of poor quality (claims + scrap)	300€ (claim) + 166.000€/a (scrap)	0€ (claim) + 60.363 €/a (scrap)	45.272 €/a (scrap)	+15.091 €/a (scrap)
Employees	Work accidents	0	0	0	0

VII. Follow up

Final Result

What The Project Brings To Us?



Lost Time Injuries

- Flow Oriented Layout
- 5S on Workplaces
- Better control on chemical substances



Customer Claims

- Quality check part of work content – Final Assy

Scrap Rate

- Direct Feedback to Pre-Assy (smaller batches)
- Work Content exactly distributed



Customer Backlog

- Model Mix Strategy – availability of Finished Parts on stock

Plan Adherence / Fullfilment

- Takt pattern creation based on Customer Demands



Productivity

- Output vs. Takt Pattern

Finished Goods Stock / Buffers / KANBAN

- Not exeeding of set levels of DIO (FG/WIP)



Layered Process Audits

- How the deviations are managed during morning meetings?

Skill Matrix

- Level of employees development
- Development plan (easy replacement)

+ Involved Team members can spread LEAN CULTURE in our factory!!!!!!!