Ottobock Manufacturing Bulgaria Ltd.

Ottobock is a world leader in prosthetics, orthosis and bioinnovative technology, with more than 100 years of history.

Bebionic

Exopulse

C-brace

C-leg

- Blagoevgrad – 2020г.
  Employees: 446
- Sofia – 2023г.
  Employees: 60

Globally: 10 000+

“Our mission is to make people more mobile”

Exopulse – Mollii Suit

Exopulse Mollii Suit

Innovative solution for spasticity management

- State-of-the-art assistive device
- Helps manage spasticity and improve mobility
- Uses gentle electrical stimulation
- Non-invasive and comfortable for daily use
- Supports individuals with neurological conditions

5S and Kaizen project presentation Q2 2026

Project:	**Exopulse Production System**
Leader:	**Dimitar Babulev (Senior Lean Expert)**
Team members:	**Slavi Mitov (PE), Elena Manolova (PE), Valeri Nikolov (PE), Petar Naydenov (TL), Georgi Petrov (QE), Velina Andonova (Training Coordinator), Mariya Mihova(Production Manager), Radoslav Bogdanov(Lean Expert), Miroslava Sabinova (Head of Global Design Transfer Management)**
Project coach:	**Todor Neychev (Lean BG consult)**
Champion:	**Lothar Koch (Plant Manager)**
Field of activity:	**Exopulse Value Stream – Production System Stabilization**
Location / Factory:	**Blagoevgrad, Ottobock**
Completion date:	**30.06.2026**

1. Problem selection

High level definition of the problem:

- Following the product release in February, the Exopulse value stream failed to ramp up as planned and entered a production deadlock.
- The production system is currently unable to deliver stable and scalable output in line with business expectations.

Problem:

- Production output remains at 30–35 pcs/week, far below the planned ramp-up target of 180 pcs/week, with no observed progress.
- The resulting gap of over 80% limits the ability to meet customer demand and puts industrialization at risk.

Connection to the strategy plan:

- First locally developed value stream in the plant.
- Class II medical device requiring stable and scalable production.
- Strategic priority at COO level – critical for successful industrialization.

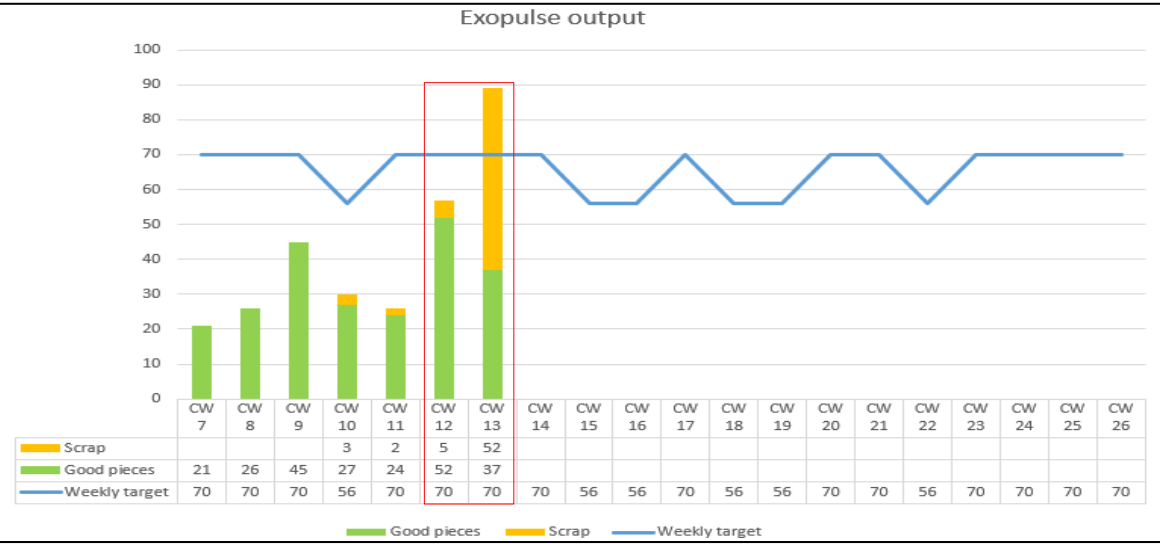
Project scope:

- Develop visual management (Focus Board)
- Implementation of quality control tools
- Establish skill development system
- Balance production flow and workload

2. Target setting

Ramp-up revealed critical system gaps:

- Lack of operational control in the production system
- Lack of alignment between planned and actual output
- Unstable and inconsistent production performance
- Reactive instead of proactive management
- Low & unstable FPY



	CW 7	CW 8	CW 9	CW 10	CW 11	CW 12	CW 13	CW 14	CW 15	CW 16	CW 17	CW 18	CW 19	CW 20	CW 21	CW 22	CW 23	CW 24	CW 25	CW 26
Scrap				3	2	5	52													
Good pieces	21	26	45	27	24	52	37													
Weekly target	70	70	70	56	70	70	70	70	56	56	70	56	56	70	70	56	70	70	70	70

Target:

- Establish a stable and controlled production system
- Achieve 70 pcs/week stable output
- Deliver €52K monthly operational impact

KPI	UNIT	BASELINE	TARGET
Output per week	**pc**	**30-35**	**70**
FPY	%	50	75
5S level	%	39	65
PERIOD		**March 2026**	**June 2026**

Operational stability must be system-driven

Current State:

- Reactive management
- Lack of standardized coordination
- Escalation-driven problem solving
- Unstable operations

System-driven transformation

Target State:

- Visual management and performance tracking
- Standardized daily management routines
- Clear team ownership and accountability
- Stable and sustainable operations

Next step: Implement structured daily management routines

3. Team building

Participants

Name	Function	available
Slavi, Elena M., Valeri	PE	Fulltime
Petar	TL Exopulse	Fulltime
Georgi	Q. Eng.	Fulltime
Dimitar, Radoslav	Lean	Fulltime
Anton	TL Welding	Fulltime
Velina	Training	Fulltime
n.n. or Azim	Tooling	On demand
n.n.	Maintenance	On demand
Miroslava	Op. Inspect.	On demand

A cross-functional team was formed to ensure clear ownership and enable structured ramp-up

Operational stability required cross-functional ownership

Workshop Agenda 31.3.-3.4.2026 ottobock.

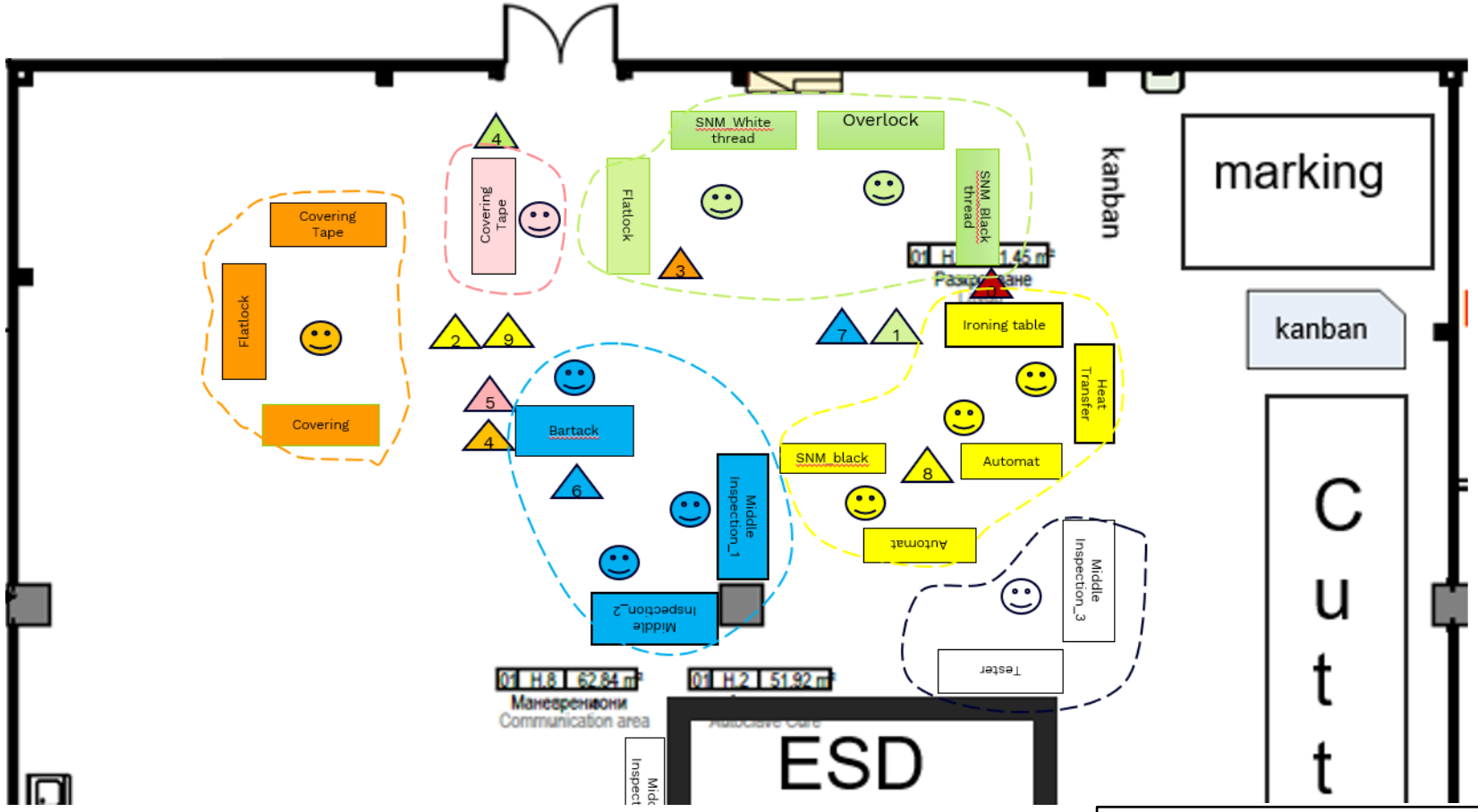
	Prep Phase – ideally start around 4 weeks upfront Powerworkshop	Setup WS-groups, standard work evaluation, training area setup, FPY-acting	Run TL daily mngt., Focus Board frames finish, training area mngt., fixing Pareto to CIP	Finetune Focus Board, fix flow standards, finish training standards, define poka yoke actions per WS, action plan	Run Daily Management, finalize focus and training board incl. standards, fix action plan, summarize results	Follow Up
		31.3.	1.4.	2.4.	3.4.	
07:00	• Define Preparation day contents • Setup preparation tasklist and continuously fill in/update tasks • Invite management and predefine goals and expectations of management – at least 4 weeks upfront workshop • Collection of data, measurements – ongoing until workshop • Fix participants of PWS • Invite for daily review presentations and for final presentation • Run weekly 1h-prep-meetings upfront workshop to see preparation status	Agenda, introduction to WS	Daily Setup, fix daily sprint goals	Daily Setup, fix daily sprint goals	Daily Setup, fix daily goals	• Weekly status Feedback • Implementat. of actions out of task list • Measurement of workshop KPIs - on SF-Board • Daily management in area • Stabilization • Follow up on value stream workshop strategy of area
08:00		Setup WS-Groups, daily sprint goals	Observe, update balancing, standards, measure time/WS; Finetune frames with content owners, fix data source and fix standard; FPY pareto topics: Op, Training, PE, Tooling, R&D; Create and visually apply standards on progress in CIP area	Test and guide updated standards at workst., execute process confirm.; Daily mngt, audit of TL, end with completely executed and approved DM-Plan; Apply FPY-findings, trials on Poka Yoka, machine optimizations, operator qualification	Finalize open standards and install in Line and on Focus board. Apply 5S-Audit in all area and measure 5S-status; Daily mngt. of TL, end with completely executed DM-Plan; Detail open findings on Training area. Guide stabilization of top-failures and measure impr. KPI	
09:00		KAIZEN collection focus flow, standards validity and application check; Check B – concept and define/fit up delta of frames incl. Q; Training area and standards setup – purpose, required standards, visualization				
10:00						
11:00		Document findings, List KAIZENs, define improvements, quick fix standards	Document findings, List further KAIZENs, update action list collection	Document findings, List further KAIZENs, update action list collection	Point out 5S-measures; Summarize status: KPIs, actions, next steps	
12:00						
13:00		Observe, KAIZENs, track throughput and leveling, list KAIZENs; Work out Focus B, agenda, roles, Application standard; Implement quick wins and prepare for direct use on following day	Pull system focus – visualizat. standards; update all frame with real data, test run agenda; Develop/adapt FPY-strategy to improve based on findings of each WS group	best practice workstation incl. all standards + 5S Audit; Update frames of Focus B., prepare focus round; reflect results on KPIs, run re-trials. Update results in Focus B., CIP-area, etc.	Move all open tasks/measures to action plan in each group; Final crosscheck of action plan, feedback and debriefing of Workshopteam	
14:00						
15:00		Daily focus round	Daily focus round	Daily focus round	Daily focus round	
16:00		Workshop Daily: status actions, daily goals, summarize KPIs, next steps	Workshop Daily: status actions, daily goals, summarize KPIs, next steps	Workshop Daily: status actions, daily goals, summarize KPIs, next steps	WS-End; Final presentation: 7.4., 16.30	
17:00						
18:00						
19:00						

(small) theory part; documentation; Analysis, observation, solution finding; Pause

** the agenda is always considered as draft, adaptation will be required within the week depending on the state of implementation and progress.*
*** Focus Board rounds run always at 7:45 and 15:30*
**** WS-Groups are: Gr. 1 → Process flow stabilization; Gr. 2 → Mastering Focus Board and SFM; Gr. 3 → Training area and FPY-quality*

4. Current state analysis

Establishing the facts (Genchi genbutsu):

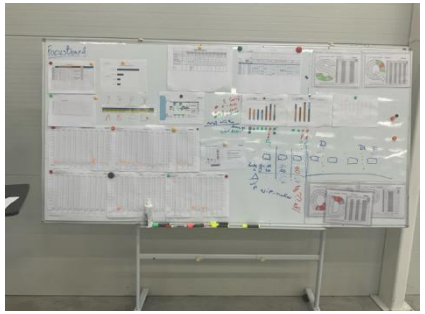


Стъпка	Операция	Зона	Буфер	План/ Време
1	Overlock / Овърлок	Green		01:25
2	SNM Black / Права черен конец	Green		07:09
3	Overlock / Овърлок	Green	B1	02:01
4	Ironing Table / Гладене	Yellow	B2	01:06
5	Covering / Покривна	Orange	B3	02:33
6	Flatlock / Съединяване	Green		10:28
7	SNM White / Права бял конец	Green		07:46
8	SNM Black / Права черен конец	Green		11:17
9	Overlock / Овърлок	Green		01:24
10	SNM Black / Права черен конец	Green	B4	04:20
11	Flatlock / Съединяване	Orange	HOB	08:19
12	Covering Tape / Покривна с лента	Pink	B5	24:07
13	Bartack / Понт	Blue	B6	15:47
14	Middle_Inspection 1 / Проверка №1	Blue	B7	31:23
15	Ironing Table / Гладене	Yellow		16:39
16	Heat Transfer / Термотрансфер	Yellow	B8	07:04
17	Automat / Автомат	Yellow		18:14
18	SNM Black / Права черен конец	Yellow	B9	03:31
19	Flatlock / Съединяване	Orange		12:04
20	Covering Tape / Покривна с лента	Orange		08:50
21	Covering / Покривна	Orange	B10	03:28
22	Bartack / Понт	Blue	B11	06:24
23	Middle_Inspection 2 / Проверка №2	Blue	B12	07:13
24	Ironing Table / Гладене	Yellow		04:20
25	Heat Transfer / Термотрансфер	Yellow	B13	02:02
26	Automat	Yellow	B14	06:39
27	Middle_inspection 3 / Инспекция №3	White	OUT	20:58

- **Process deviations from Value Stream design**
- **Standards not reflecting shopfloor reality**
- **Lack of operational control**

4. Current state analysis

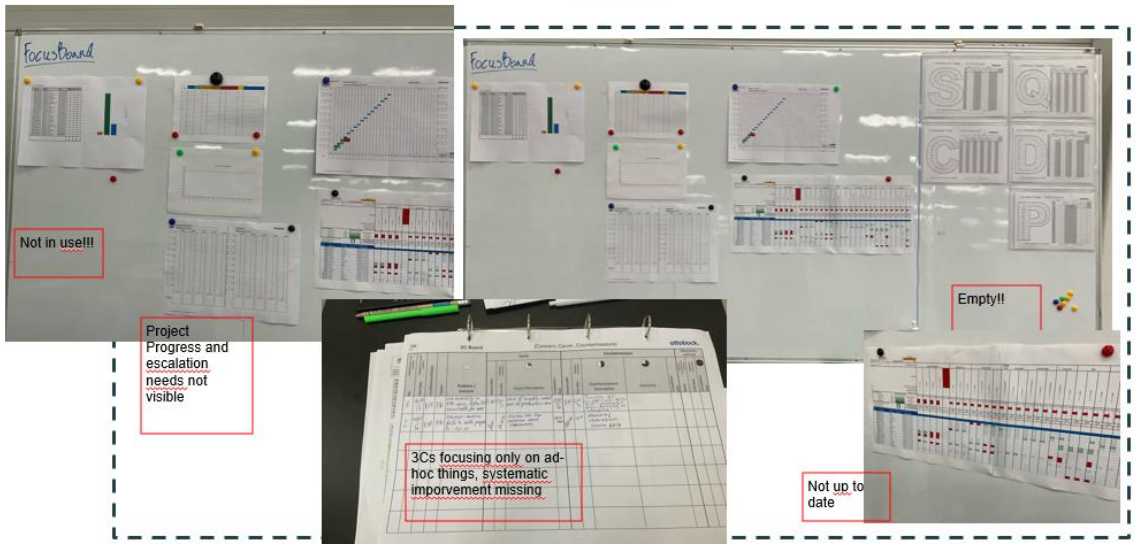
Establishing the facts (Genchi genbutsu):



- Unstable material flow
- Reactive coordination instead of planned execution
- Inconsistent process execution across operators
- Lack of visible process control and performance tracking

4. Current state analysis

Establishing the facts (Genchi genbutsu):



January:

- Basic framework defined
- Initial recommendations available
- Limited and inconsistent usage

March:

- Increased activity and information
- More frequent updates
- Still lacking standardization and structure

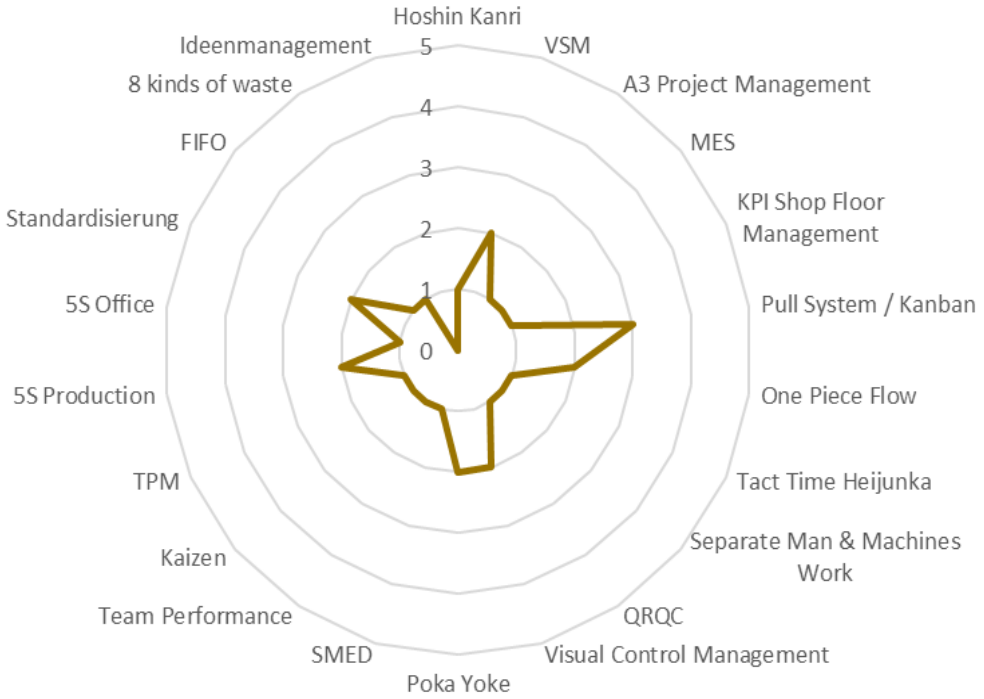
Vissual management evolved, but lacks structured operational behavior!

4. Current state analysis

Lean assessment confirms low operational management maturity

	Total	1,4
1	Hoshin Kanri	1
2	VSM	2
3	A3 Project Management	1
4	MES	1
5	KPI Shop Floor Management	1
6	Pull System / Kanban	3
7	One Piece Flow	2
8	Tact Time Heijunka	1
9	Separate Man & Machines Work	1
10	QRQC	1
11	Visual Control Management	2
12	Poka Yoke	2
13	SMED	1
14	Team Performance	1
15	Kaizen	1
16	TPM	1
17	5S Production	2
18	5S Office	1
19	Standardisierung	2
20	FIFO	1
21	8 kinds of waste	1
22	Ideenmanagement	NV

Exopulse



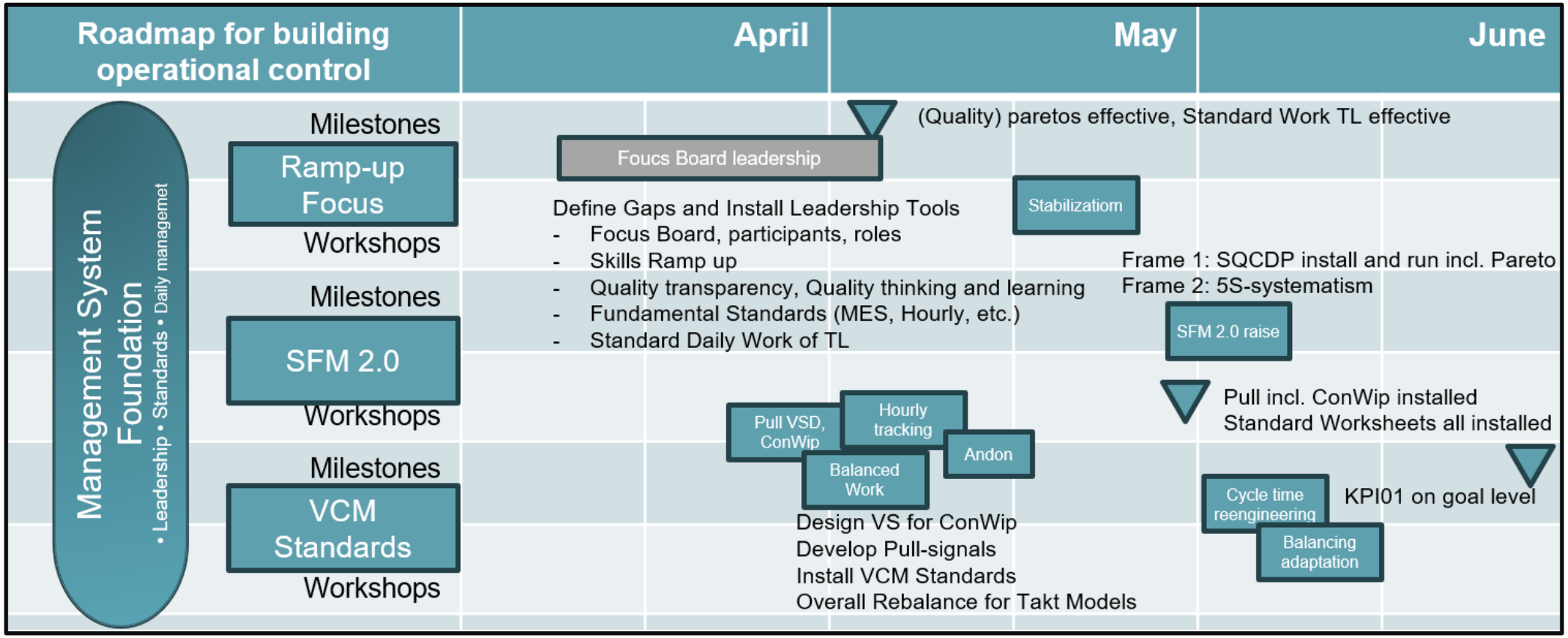
Overall maturity level: 1-2

Key gaps:

- Lack of structured shop floor management
- Weak visual management and performance tracking
- Limited standardization of processes
- Inconsistent execution across operators and processes

Conclusion: Significant gaps in operational management require a structured system-driven approach!

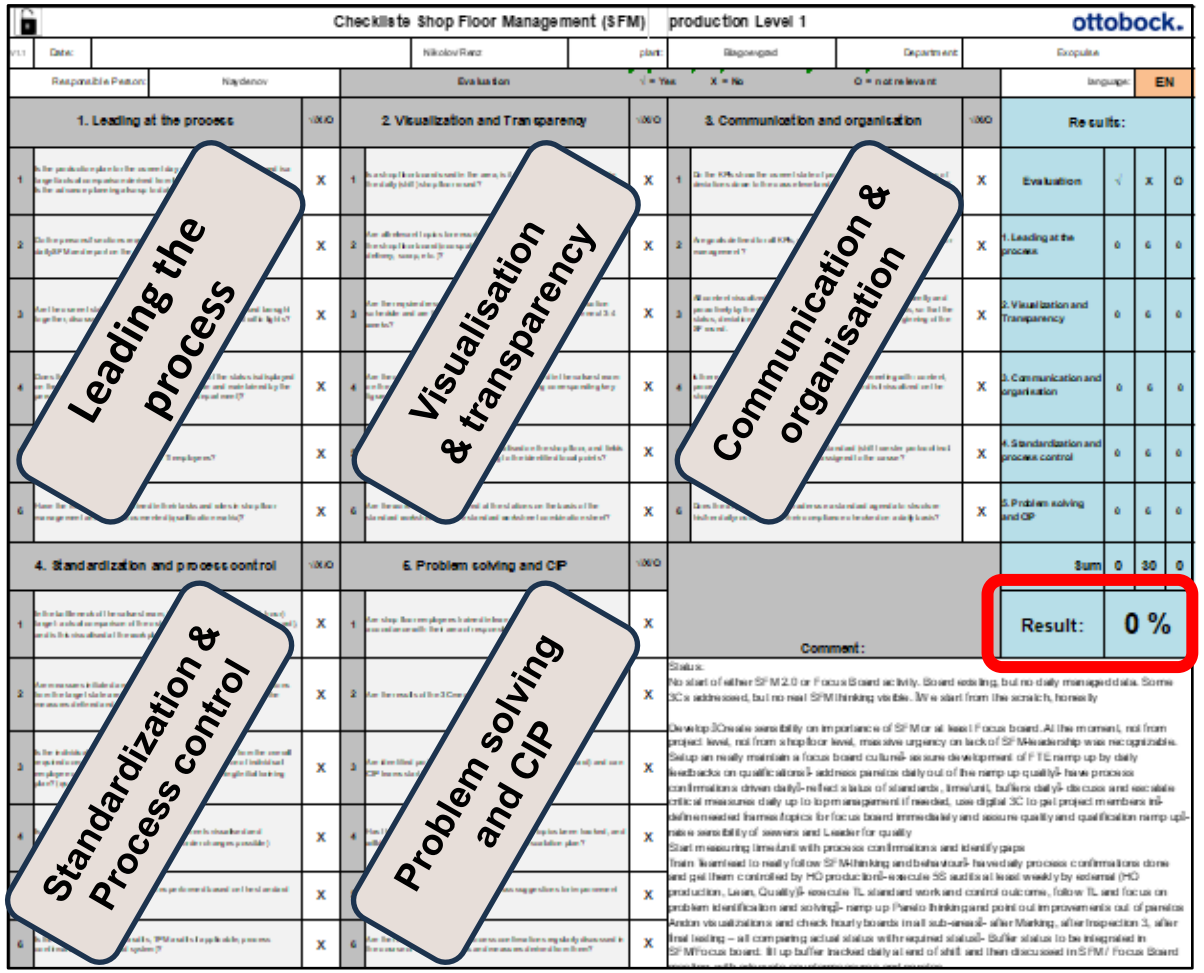
5. Project plan



The roadmap was intentionally sequenced to first stabilize leadership routines and operational visibility before introducing advanced flow and productivity controls

6. Root cause analysis

Lean assessment



Root cause

Leadership routines

- no preparation before shift
- no structured end-of-day review
- escalation happened too late

Operational visibility

- deviations hidden during the shift
- no active buffer management
- no real-time performance response

Standard execution

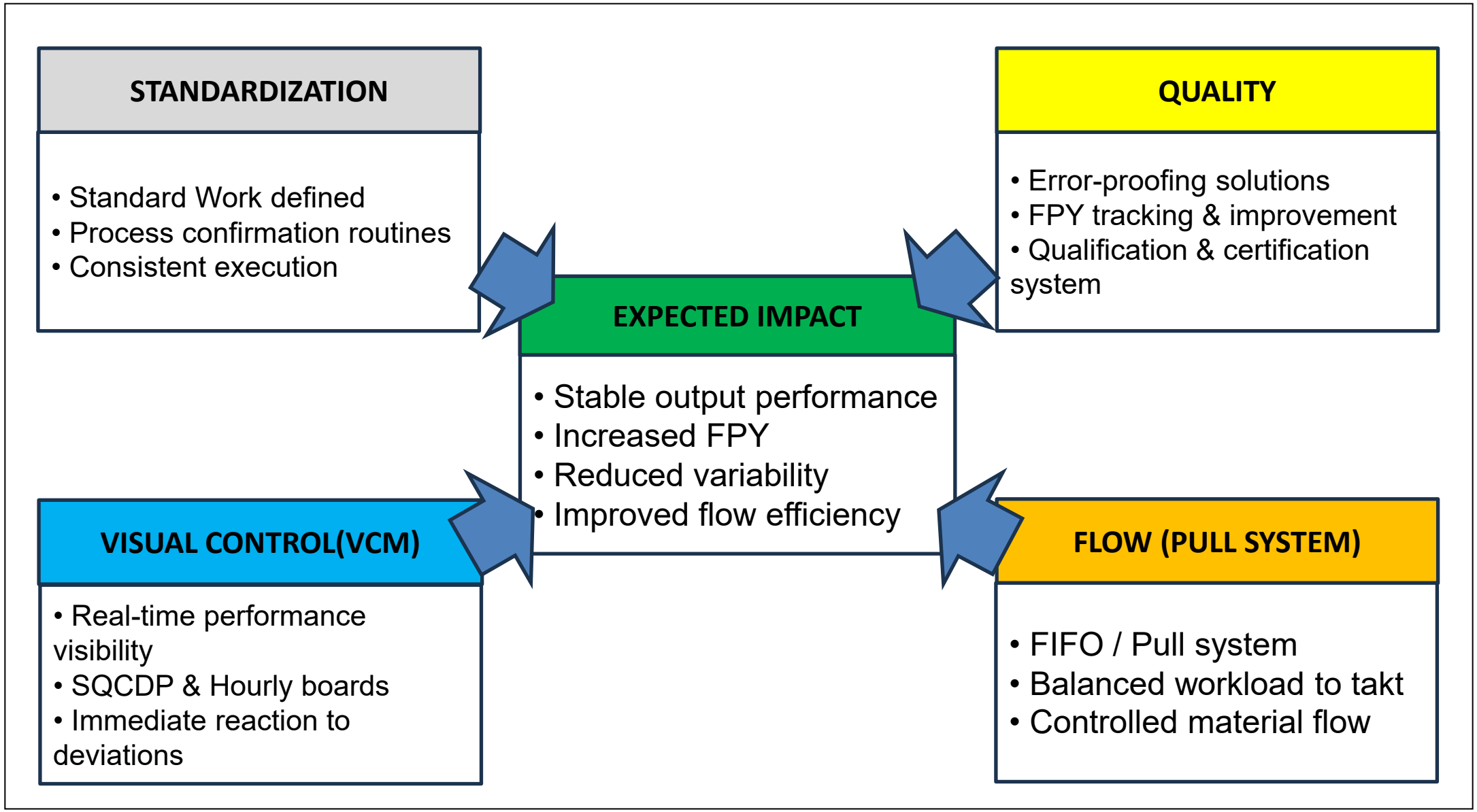
- standards disconnected from process reality
- balancing not adapted to manpower changes
- process confirmations missing

Performance management

- output reviewed too late
- productivity not connected to staffing
- FPY learning loop not integrated

"Operational instability was driven by missing management routines and lack of real-time control"

6. Root cause analysis



7. Implementation of solution

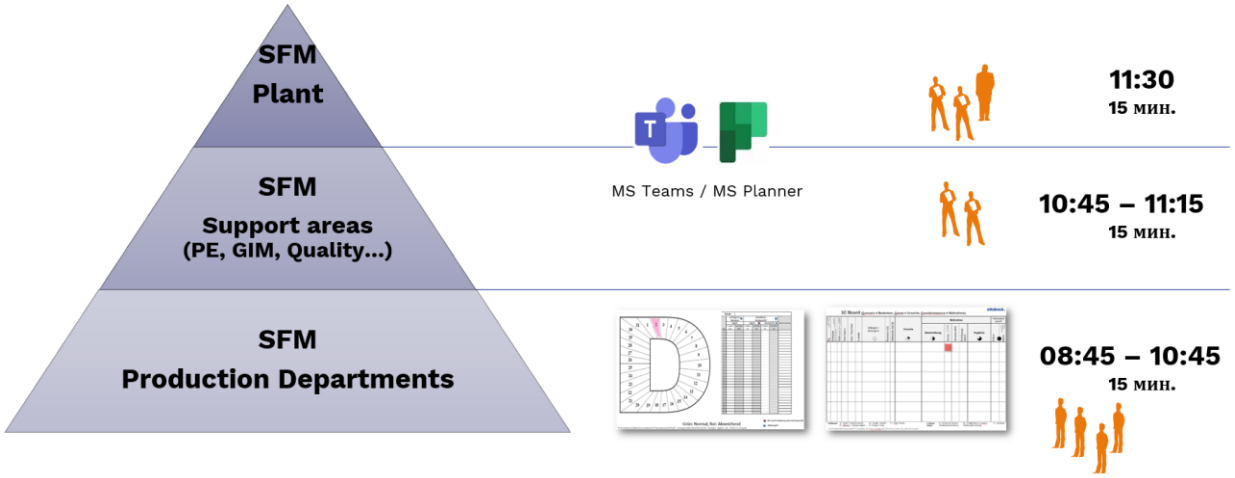
№	ПЪРВОПРИЧИНА	ПРОТИВОДЕЙСТВИЕ	ОТГОВОРНИК	ДАТА	ПОЯСНЕНИЯ	СТАТУС
1	Липса на подготовка преди смяна	**Въвеждане на start-of-shift meeting**	TL / Supervisor	CW15/2026	Преглед на балансирането, SQCDP показателите и 3C действията	**Изпълнено**
2	Липса на структурирано приключване на смяна	**End-of-shift review**	TL	CW15/2026	Обсъждане на изпълнение, проблеми и действия	**Изпълнено**
3	Късна ескалация на проблеми	**Дефиниране на escalation стандарт**	Production Manager	CW17/2026	Ясни правила за реакция при отклонения	**Изпълнено**
4	Липса на фокус върху ключовите оперативни показатели	**Преработване на Focus Board**	Lean / TL	CW15/2026	Единна система за управление на представяне, стабилност и развитие на процеса	**Изпълнено**
5	Липса на реакция в реално време	**Hourly tracking система**	TL / Operators	CW18/2026	Почасов контрол на output и отклонения	**Изпълнено**
6	Липса на контрол на буферите	**Visual buffer management (FIFO/WIP)**	Industrial Eng.	CW19/2026	Дефиниране на min/max WIP и поток	**Изпълнено**
7	Недостатъчна прозрачност на операторските компетенции	**Въвеждане на система за квалификации**	Training coordinator / Engineering / Production Manager	CW23/2026	Обучение, оценяване, сертифициране и управление чрез Skill Matrix	**Изпълнено**
8	Липса на стандартизация	**Разработване на Standard Work**	Engineering	CW23/2026	Дефиниране на оптимален начин на работа	**Изпълнено**
9	Несъответствие на стандарти с реалността	**Process confirmation (Gemba checks)**	Team Leader	CW24/2026	Всекидневна проверка на изпълнение на стандартите	**Изпълнено**
10	Небалансирано натоварване	**Балансиране спрямо такт и manpower**	Industrial Eng.	CW24/2026	Оптимизация на натоварването между операторите	**Изпълнено**
11	Дефекти и вариации в процеса	**Poka Yoke решения**	Quality / Engineering	CW23/2026	Предотвратяване на грешки и подобрение на FPY	**Изпълнено**
12	Липса на FPY контрол	**Въвеждане на FPY KPI & Pareto анализ**	Quality	CW15/2026	Проследяване на дефекти и корективни действия	**Изпълнено**
13	Неструктуриран поток	**Въвеждане на Pull система (ConWIP, FIFO)**	Lean / Engineering	CW20/2026	Свързване на процесите чрез pull flow	**Изпълнено**
14	Липса на синхронизация на процеса	**Балансиране на линията (Line balancing)**	Industrial Eng.	CW21/2026	Изравняване на натоварването спрямо такт	**Изпълнено**
15	Липса на системно управление	**Въвеждане на SFM 2.0 (Daily management)**	Lean	CW22/2026	Структурирано управление чрез рутинни срещи и KPI	**Изпълнено**

7. Implementation of solution

Building daily operational control

Cascade Blagoevgrad and Sofia

ottobock.



BEFORE:

10:30 SQCDP Meeting

- Too late reaction
- Problems already occurred
- Reactive management
- No preparation before shift

AFTER:

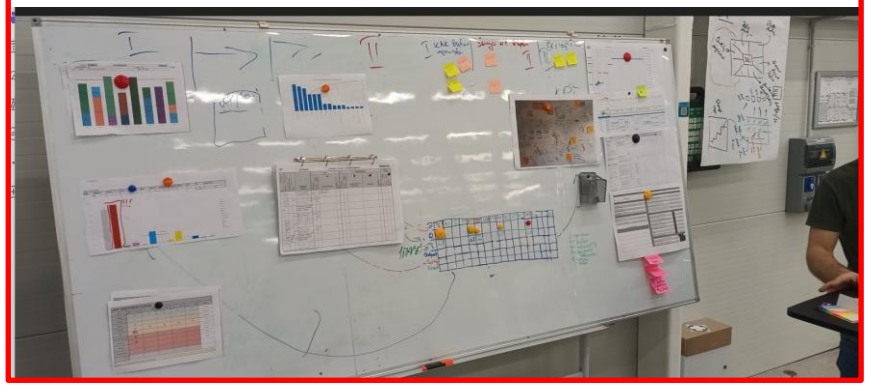
07:45 SQCDP:
Reflect yesterday → Save today → Escalate risks early

16:00 end-of-day reflection:
Review execution → Close actions → Prepare tomorrow

- Proactive daily management
- Problems identified during shift
- Escalation before output loss
- Preparation before operators arrive
- Structured follow-up at end of day
- Continuous management presence throughout the day

7. Implementation of solution

BEFORE **Building daily operational control** **AFTER**



Performance Balancing Operators Buffers SQCDP	Stability Pareto's Materials Tasks Kanban 3C Agendas	Capability A3 FTE ramp-up Trainings Skill Matrix Daily Management Process Confirmation

7. Implementation of solution

Establishing reliable process times for operational control

Jacket - По Routing карта

Operation №	Operation	Time (min in decimals)	New times (min in decimals)
1	Overlock	125	180
2	SNM Black	709	770
3	Overlock	201	240
4	Ironing	106	321
5	Covering	233	351
6	Flatlock	1028	1343
7	SNM White	746	435
8	SNM Black	1117	511
9	Overlock	124	59
10	SNM Black	420	701
11	Flatlock	819	802
12	Covering tape	2407	1846
13	Bartack	1547	1060
14	Middle inspection 1	3123	3405
15	Ironing	1639	1624
16	Heat transfer	704	660
17	Automat	1814	1448
18	SNM Black	331	409
19	Flatlock	1204	998
20	Covering tape	850	518
21	Covering	328	443
22	Bartack	624	724
23	Middle inspection 2	713	
24	Ironing	420	577
25	Heat transfer	202	293
26	Automat	639	699
27	Middle inspection 3	2058	3117

Difference: +0,07%

Impact:

- Actual process times validated through re-measurement
- Reliable foundation for balancing and capacity planning
- Hidden bottlenecks identified
- Improved decision-making based on real data

Pants - По карта

Operation №	Operation	Time (min in decimals)	New times (min in decimals)
1	SNM Black	328	701
2	Overlock	137	166
3	Ironing	105	252
4	SNM White	210	219
5	Flatlock	917	1457
6	Heat transfer	400	482
7	Covering Tape	3336	2144
8	Bartack	801	1117
9	Middle inspection 1	3706	3552
10	Ironing	2500	2032
11	Heat transfer	500	678
12	SNM White	1742	2550
13	Автомат	2524	1551
14	SNM Black	1322	1319
15	Overlock	223	224
16	SNM Black		601
16	Flatlock	658	692
17	Ironing	2450	623
18	Heat transfer	556	230
19	SNM Black	754	1217
20	Covering	700	778
21	Bartack	114	587
22	Middle inspection 3	2924	4449

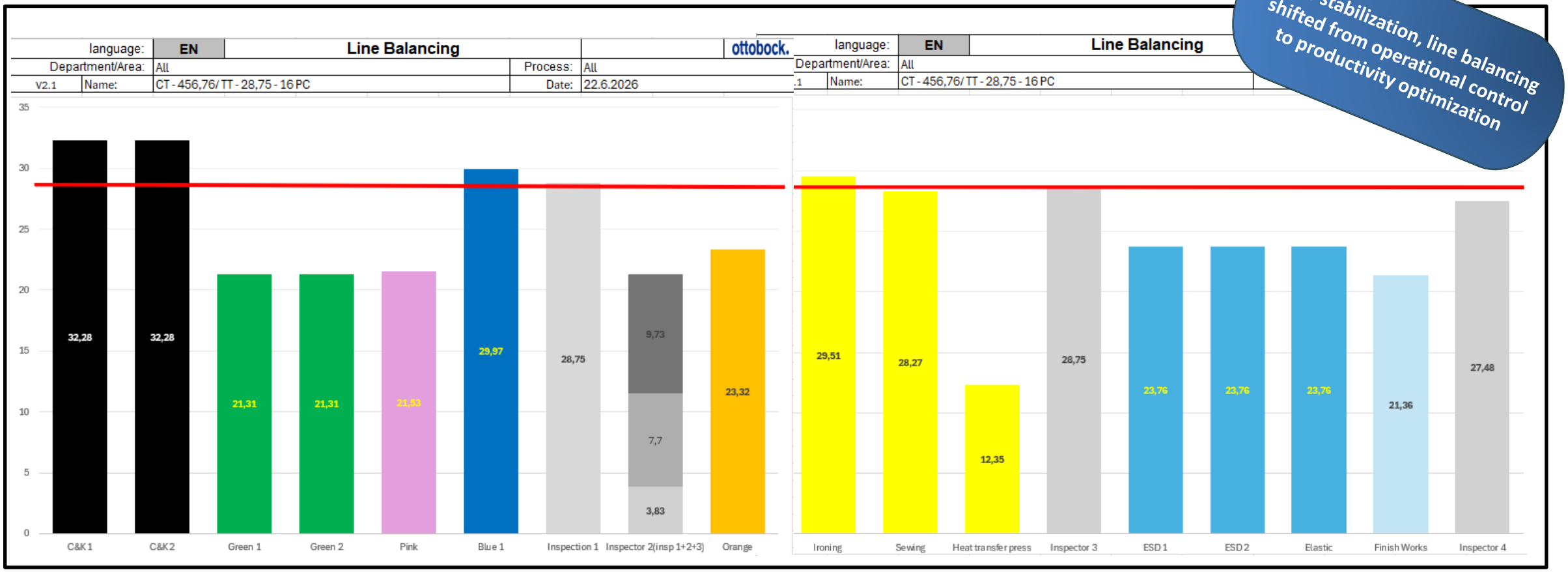
Difference: -3,9%

7. Implementation of solution

Using line balancing to build operational control and improve productivity

Line balance chart

After stabilization, line balancing shifted from operational control to productivity optimization

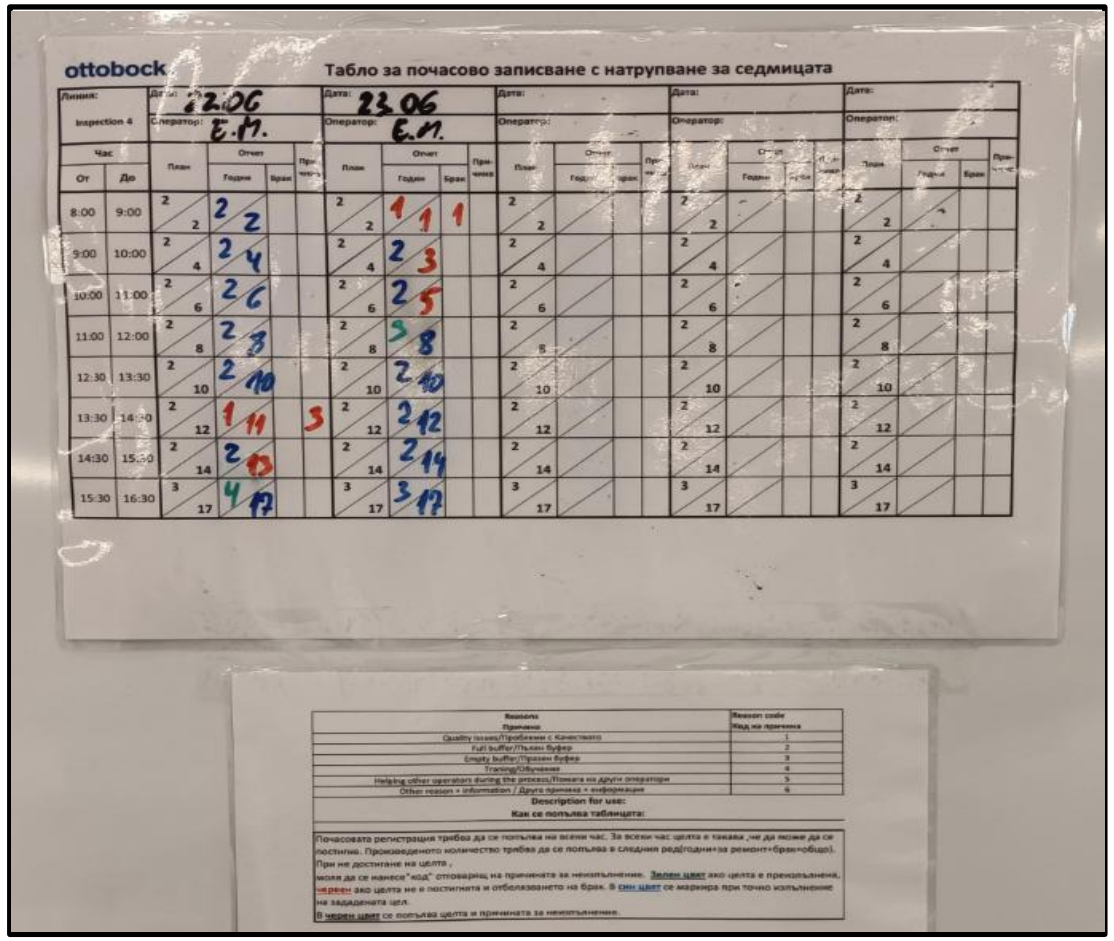


Stable operations created the foundation for productivity optimization

7. Implementation of solution

Implementation of daily operational control tools

Hourly boards installed on critical positions



Productivity checks per area during the shift

Area	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time		
Green	А	15,75	Б	18,73	В	27,02	Г	7,5	Д	9,94	време	400
Брой цикли	10	157,5	9	168,6	9	243,2	10	75	11	109,3	8	
Брой оператори	2	Налични		1,91	Нужни							
Време(виж таблица от дясно)	400											
Производителност	94%	реална		95%	нужна		-1%	разлика				

Area	Cycles	Time	Cycles	Time
Pink	А	23,2	Б	16,7
Брой цикли	10	231,5	12	200,4
Брой оператори	1,5	Налични	1,0	Нужни
Време(виж таблица от дясно)	400			
Производителност	72%	реална	65%	нужна
	7%	разлика		

Area	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time
Orange	А	8,4	Б	7,0	В	17,7	Г	7,2	Д	2,9
Брой цикли	12	100,8	11	76,7	10	177,3	11	79,5	10	29,3
Брой оператори	1,5	Налични		1,0	Нужни					
Време(виж таблица от дясно)	400									
Производителност	77%	реална		68%	нужна		9%	разлика		

Area	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time
Blue	А	5,9	Б	21,0	В	13,0	Г	6,4	Д	9,5
Брой цикли	10	58,7	10	210,1	10	130,4	10	64	10	95,4
Брой оператори	2	Налични		1,3	Нужни		41			
Време(виж таблица от дясно)	400									
Производителност	70%	реална		66%	нужна		4%	разлика		

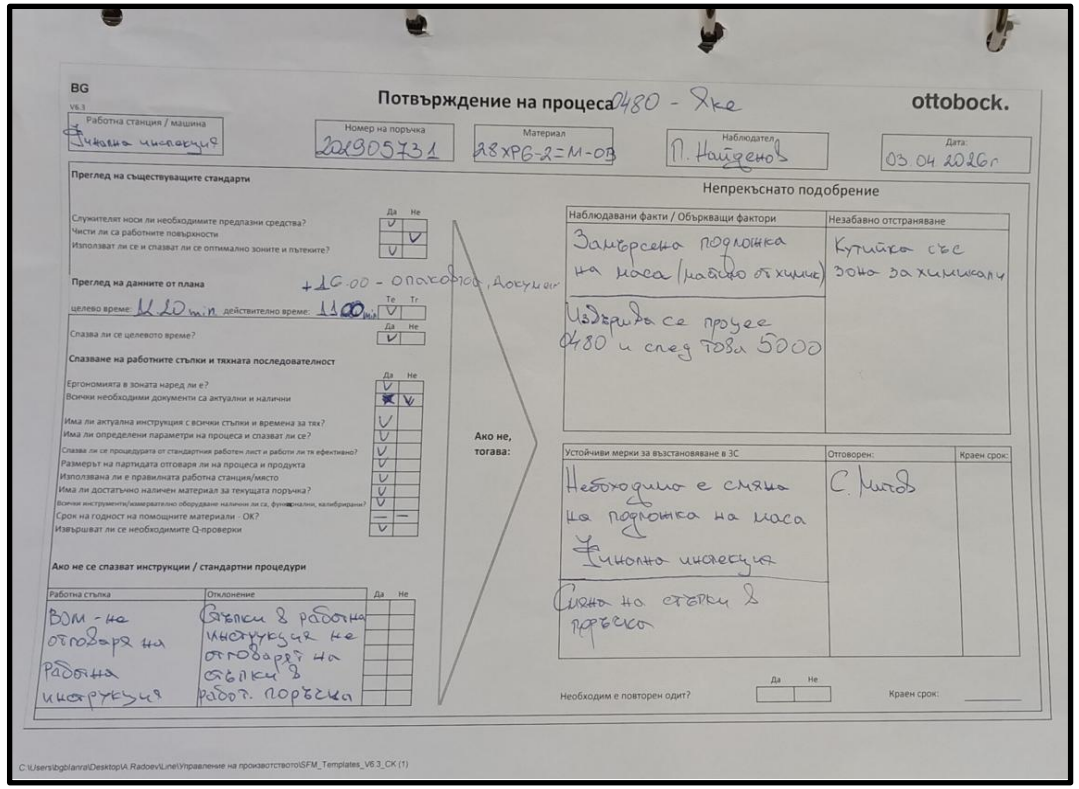
Area	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time
Yellow Ironing	А	10,7	Б	29,3	В	4,8	Г	2,7	Д	7,6	Е	20,3	Ж	2,7
Брой цикли	10	106,8	12	351,6	9	43,4	10	27,2	10	76,3	8	163	11	29,5
Брой оператори	2	Налични		1,8	Нужни									
Време(виж таблица от дясно)	400													
Производителност	76%	реална		91%	нужна		-16%	разлика						

Area	Cycles	Time	Cycles	Time	Cycles	Time	Cycles	Time
Yellow Machining	А	12,2	Б	16,8	В	6,4	Г	17,6
Брой цикли	10	121,7	10	167,5	10	63,5	9	158,0
Брой оператори	2	Налични		1,2	Нужни			
Време(виж таблица от дясно)	400							
Производителност	64%	реална		61%	нужна		2%	разлика

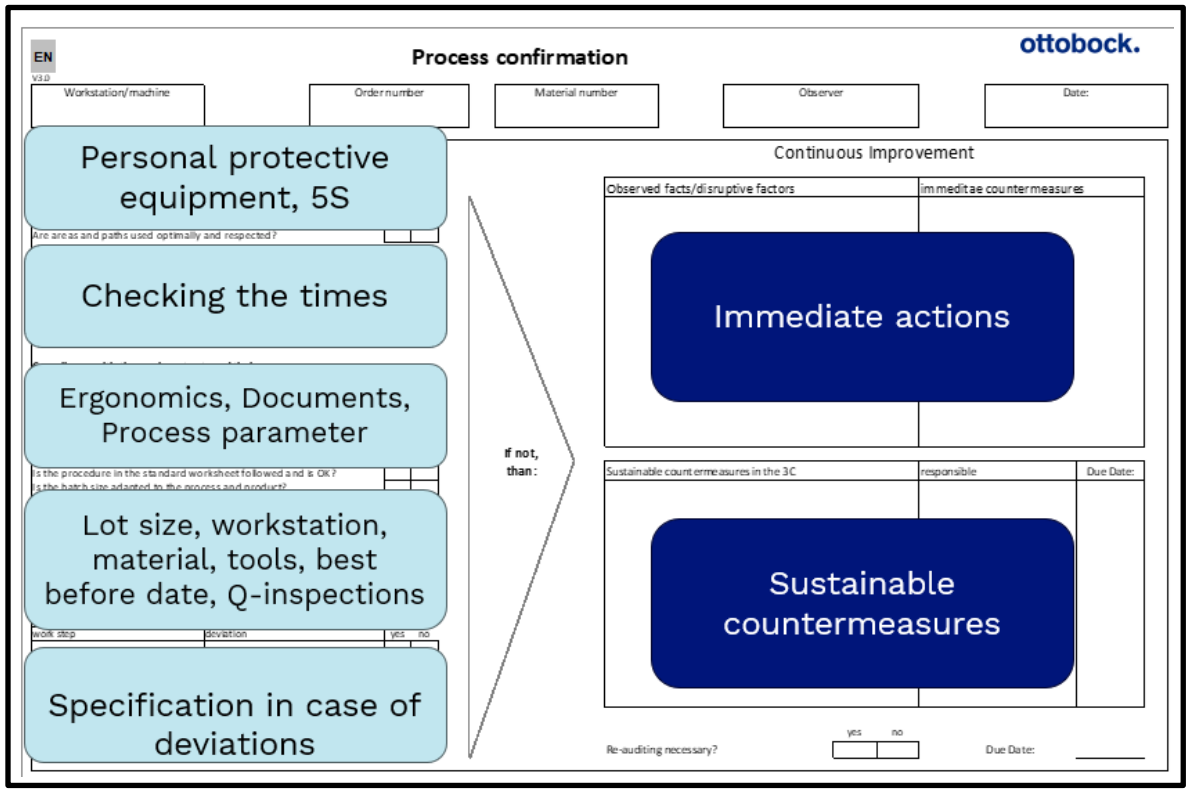
7. Implementation of solution

Establishing process confirmation and structured problem solving

Examples of findings and corrective actions



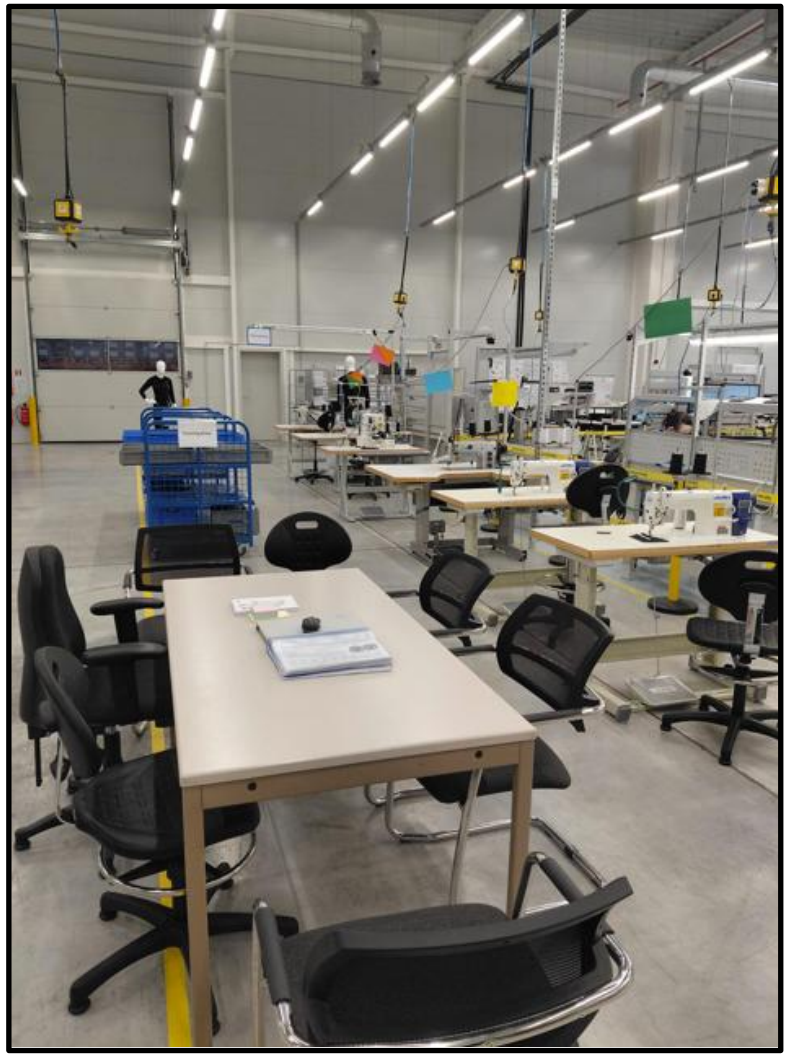
Process confirmations



Result: Deviations are identified, analyzed, and converted into immediate and sustainable countermeasures

7. Implementation of solution

Capability stabilization through structured qualification system



Training area – real simulation

Introduction of training path

Theory and practical evaluation

- Dedicated training environment established to support structured capability ramp-up
- Operators certified prior to assignment on critical production processes
- Re-qualification systematically driven by FPY performance and defect trend analysis

7. Implementation of solution

Capability stabilization through structured qualification system

Training Visual Matrix

Operator	Area	Level	Time Slot	DAY 1 – Module 1	DAY 2 – Module 1	DAY 3 – Module 2	DAY 4 – Module 2	DAY 5 – Module 3	DAY 6 – Module 3	DAY 7 – Module 4	DAY 8 – Module 4	DAY 9 – Module 4	DAY 10 – Evaluation
Denitsa Stoyanova	Cutting	Level 1	TS1 08:00-09:00	☑ Onboarding / safety / PPE / 5S	☑ Tool / machine setup	☐ Setup verification	◐ Basic cutting techniques	◐ Repeat cutting operations	☐ Inspection and defect detection	◐ Defect documentation	☑ Test samples	☐ Real part run in takt	☑ Theoretical test (>=75%)
			TS2 09:15-11:00	☑ Documents and cutting WI	☑ Blade/tool condition check	☑ Practice under supervision	☑ Pattern / contour accuracy	☑ Edge quality check	☑ Dimensional control	◐ 100% inspection after step	☑ Repeat process 6 times	☑ No critical defects	☐ Practical exam (>=75%)
			TS3 11:30-13:30	☑ Material identification	☑ Material positioning	◐ Safe handling during cutting	☑ Tolerance control	☐ Self-check during work	☐ Wrong cut / mismatch recognition	◐ Containment basics	☑ Visual control	☑ Independent inspection	☐ Final inspection
			TS4 14:00-16:30	☑ Basic tool / machine introduction	☑ Guided first-piece check	◐ Trainer feedback	◐ Part identification	◐ Coach corrections	◐ Material damage recognition	◐ Corrective action basics	◐ Prepare for evaluation	☐ Checklist completion	☐ Coach / supervisor approval
Katalina Kostadinova	Quality Inspection	Level 2	TS1 08:00-09:00	☑ Quick refresh: standards / WI updates	☑ Troubleshoot measurement issues	☐ Run inspection routine independently	◐ Repeat inspections with minimal supervision	☐ Independent sample run	◐ Advanced defect classification	◐ 100% inspection on first order	☐ Independent full inspection cycle	☐ Checklist and QC point confirmation	☑ Critical points test (>=90%)
			TS2 09:15-11:00	☑ Independent station setup	☐ Independent acceptance decision	◐ Tolerance control in takt	◐ Handle borderline cases	☐ Peer/trainer review	◐ Root-cause thinking	☐ Self-audit against WI	☐ 6 repetitions in takt	☐ Abnormality handling	☑ Practical exam (>=90%)
			TS3 11:30-13:30	☑ Measurement tool calibration check	☑ Traceability confirmation	◐ Serial/product/order control	◐ Escalate uncertain findings	◐ Sustain decision consistency	◐ Containment and recheck decision	◐ Stable defect capture over sequence	☐ No critical misses over run	☐ Coach observation only	☐ Consistent correct decisions in takt
			TS4 14:00-16:30	☑ First-piece self-verification	◐ Coach confirmation	☑ Documentation during routine	◐ Reduced-support shift routine	◐ Documentation completeness	☐ Escalation communication	☐ Trainer challenge cases	☐ Independent final record package	☐ Prepare for confirmation	☐ Coach / supervisor confirmation
Ivanka Shumantova	Sewing	Level 1	TS1 08:00-09:00	☑ Onboarding / safety / ESD basics	☑ Hand positioning / needle safety / pedal stop	☑ Upper/lower thread tension settings	☑ Seams following part contour	☑ Label control: serial / product / order	◐ Defect recognition per defect catalogue	◐ 100% inspection after each step	◐ Real part practice	☑ Repeat operation 6 times start-to-finish	☑ Theoretical test (>=75%)
			TS2 09:15-11:00	☑ Documents and work order / checklists	☑ 5S at workstation	☑ Stitch length setting	☑ Seam distances / reserves	☑ Repeat main seams on samples	◐ Incorrect / broken stitch row	◐ Documenting defects when needed	◐ Execute technological operations / nodes	☐ Takt time compliance	☐ Practical exam (>=75%)
			TS3 11:30-13:30	☑ WI and additional documentation	☑ Correct thread selection	☑ Machine setup verification	☑ Seam start/end requirements	☑ Self-check during work	☑ Incorrectly assembled parts	◐ Manual process checks	◐ Follow all WI requirements	☑ No critical defects	☐ Final visual inspection
			TS4 14:00-16:30	☑ Product and material introduction	☑ Needle selection and compatibility	☑ Guided machine practice	☑ Tolerance according to WI	☑ Coach corrections and feedback	☑ Improper seam cleaning / OK-NOK	◐ Machine process checks	◐ 100% visual control after execution	☐ Checklist completion / QC points	☐ Coach / PE / supervisor approval
Nevena Georgieva	Sewing	Level 1	TS1 08:00-09:00	☑ Onboarding / safety / ESD basics	☑ Hand positioning / needle safety / pedal stop	☑ Upper/lower thread tension settings	☑ Seams following part contour	☑ Label control: serial / product / order	◐ Defect recognition per defect catalogue	◐ 100% inspection after each step	☑ Real part practice	◐ Repeat operation 6 times start-to-finish	☑ Theoretical test (>=75%)
			TS2 09:15-11:00	☑ Documents and work order / checklists	☑ 5S at workstation	☑ Stitch length setting	☑ Seam distances / reserves	☑ Repeat main seams on samples	◐ Incorrect / broken stitch row	◐ Documenting defects when needed	☑ Execute technological operations / nodes	☐ Takt time compliance	☐ Practical exam (>=75%)
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			TS4 14:00-16:30	☑ Product and material introduction	☑ Needle selection and compatibility	☑ Guided machine practice	☑ Tolerance according to WI	☑ Coach corrections and feedback	◐ Improper seam cleaning / OK-NOK	◐ Machine process checks	◐ 100% visual control after execution	☐ Checklist completion / QC points	☐ Coach / PE / supervisor approval

10 days full-time training program

ottobock.

Критерии за практически изпит

Машина/продукт:	Exopulse 9.5 Jacket/Pant_Middle Inspection
Изготвил:	Георги Пе
Съгласувал:	Мария Ми
Одобрил:	Елена Ма
Дата:	20.04.202

Идентификация на ключови дефекти по п… качеството

1. Неправилно прикачен шлиц на долен ляв цип

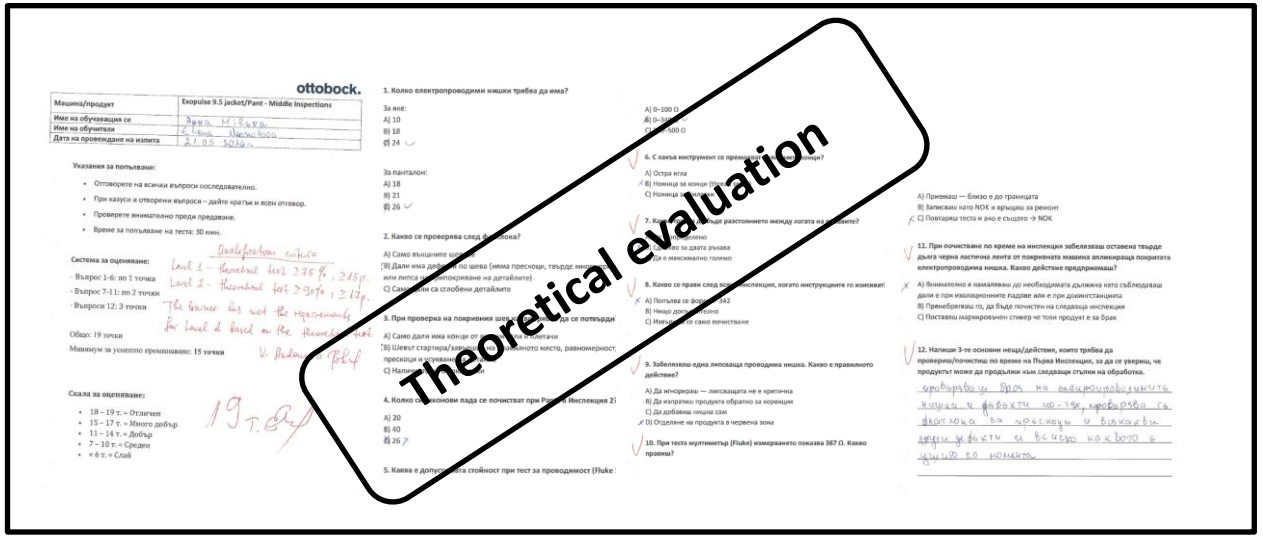
Критерии за квалификация:

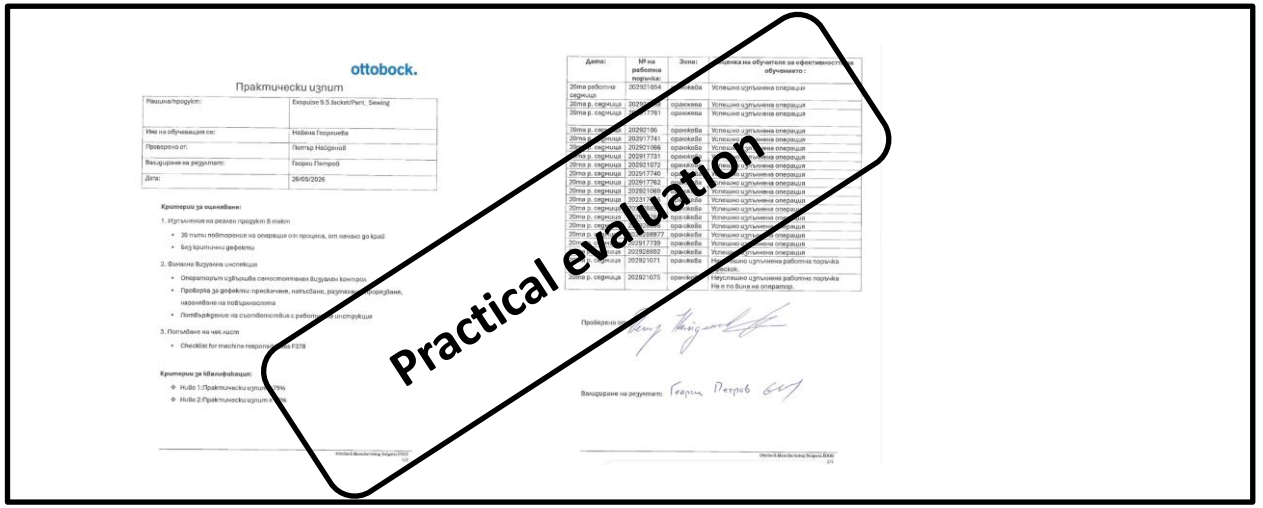
Practical exam requirements

- **Structured qualification path for each critical operation**
- **Standardized training program combining theory and practice**
- **Clear practical assessment criteria for operator certification**
- **Alignment with production and quality standards**

7. Implementation of solution

Capability stabilization through structured qualification system





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Exopulse 9.5 – Training & Qualification Report

Written tests overview – Training area

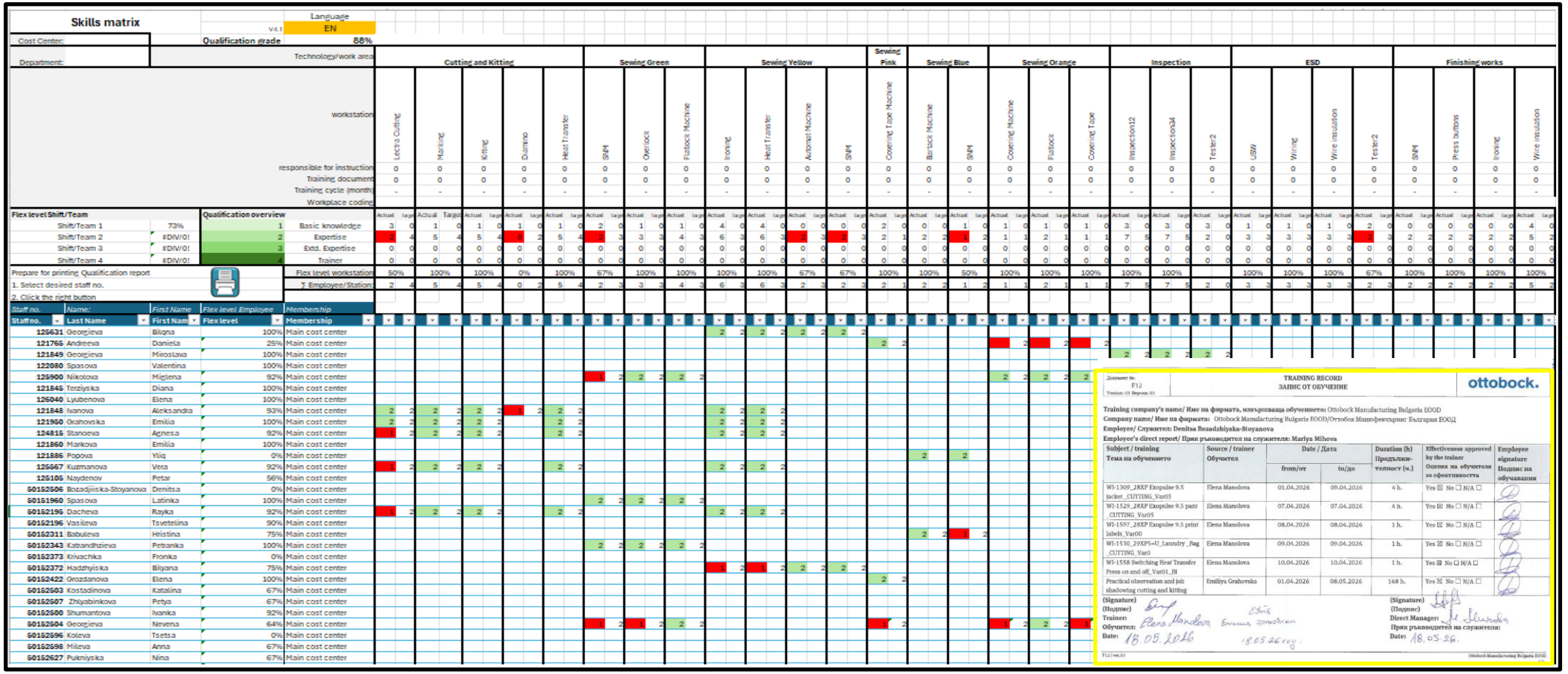
№	Date	Name	Process step	Start date in Exopulse	Test results	Min. test scores to pass	Retraining needed	Skill Matrix Level
1.	14.04.26	Katalina Kostadinova	Middle inspection (1,2,3)	01.04.2026	19 p./19 p.	Min. 15 p.	No	2
2.	14.04.26	Petya Zhlyabinkova	Middle inspection (1,2,3)	01.04.2026	17 p./19 p.	Min. 15 p.	No	2
3.	17.04.26 22.04.26	Denitsa Stoyanova	Cutting&Kitting	01.04.2026	20 p./29 p. 28 p./29 p.	Min. 22 p.	Yes, failed passed	2
4.	17.04.26 22.04.26	Ivanka Shumantova	Sewing	01.04.2026	15 p./29 p. 27 p./29 p.	Min. 22 p.	Yes, failed passed	2
5.	17.04.26 22.04.26	Nevena Georgieva	Sewing	01.04.2026	19 p. /29 p. 27 p./29 p.	Min. 22 p.	Yes, failed passed	2
6.	17.04.26 22.04.26	Aneliya Vlahova	Sewing	01.04.2026	19 p./29 p. 26 p./29 p.	Min. 22 p.	Yes, failed passed	2
7.	14.05.26	Daniela Georgieva	Sewing	17.04.2026	25 p./29 p.	Min. 22 p.	No, passed	1-2
8.	14.05.26	Kameliya Nizamova	Sewing	17.04.2026	26 p./29 p.	Min. 22 p.	No, passed	2
9.	14.05.26	Keva Krumova	Sewing	20.04.2026	24 p./29 p.	Min. 22 p.	No, passed	1
10.	20.05.26	Diyana Gandrina	Sewing	04.05.2026	24 p. /29 p.	Min. 22 p.	No, passed	1
11.	20.05.26 21.05.26	Zhivka Galabova	Sewing	04.05.2026	19 p. /29 p. 24 p. /29 p.	Min. 22 p. Min. 22 p.	Yes. Failed passed	1
12.	21.05.26	Nina Pukniyska	Inspection	04.05.2026	17,5 p./19 p.	Min. 15 p.	passed	2
13.	21.05.26	Anna Mileva	Inspection	04.05.2026	19 p. /19 p.	Min. 15 p.	passed	2
14.	21.05.26	Tsetsa Koleva	Inspection	04.05.2026	19 p. /19 p.	Min. 15 p.	passed	2

- Qualification results systematically tracked per operator
- Failed evaluations trigger targeted re-training and skill development actions
- Certification status directly linked to skill matrix and deployment decisions

7. Implementation of solution

Capability stabilization through structured qualification system

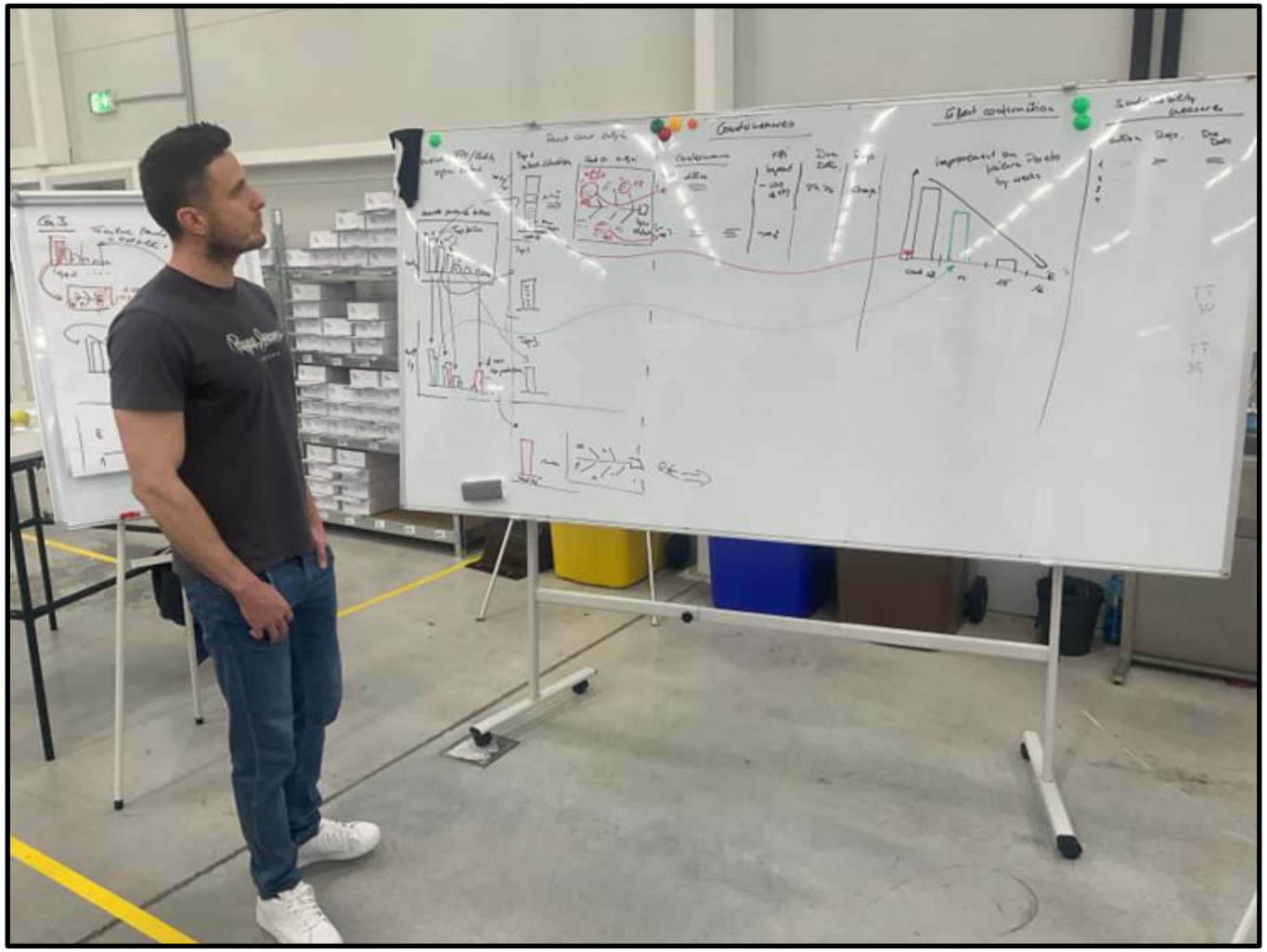
Training → Evaluation → Certification → Record → Skill Matrix → Deployment



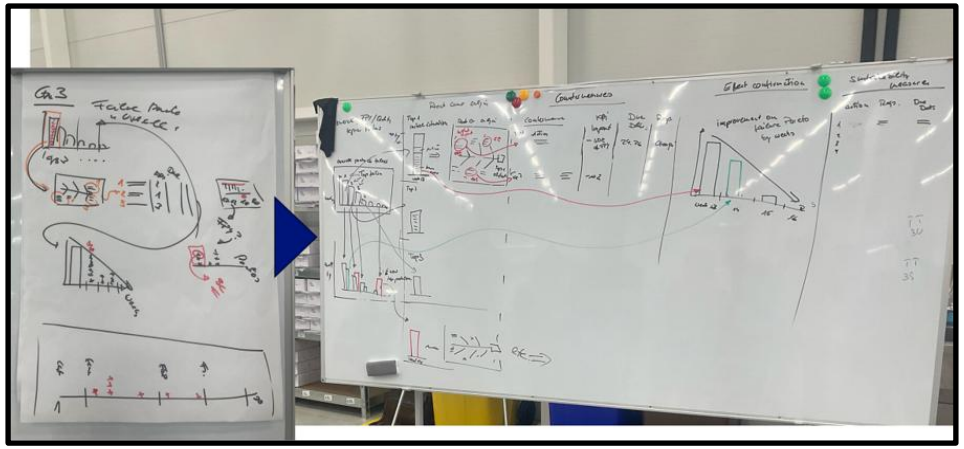
All trainings are formalized, tracked, and reflected in the skill matrix, ensuring controlled deployment and workforce flexibility

7. Implementation of solution

Root Cause & Problem Solving (whiteboard)

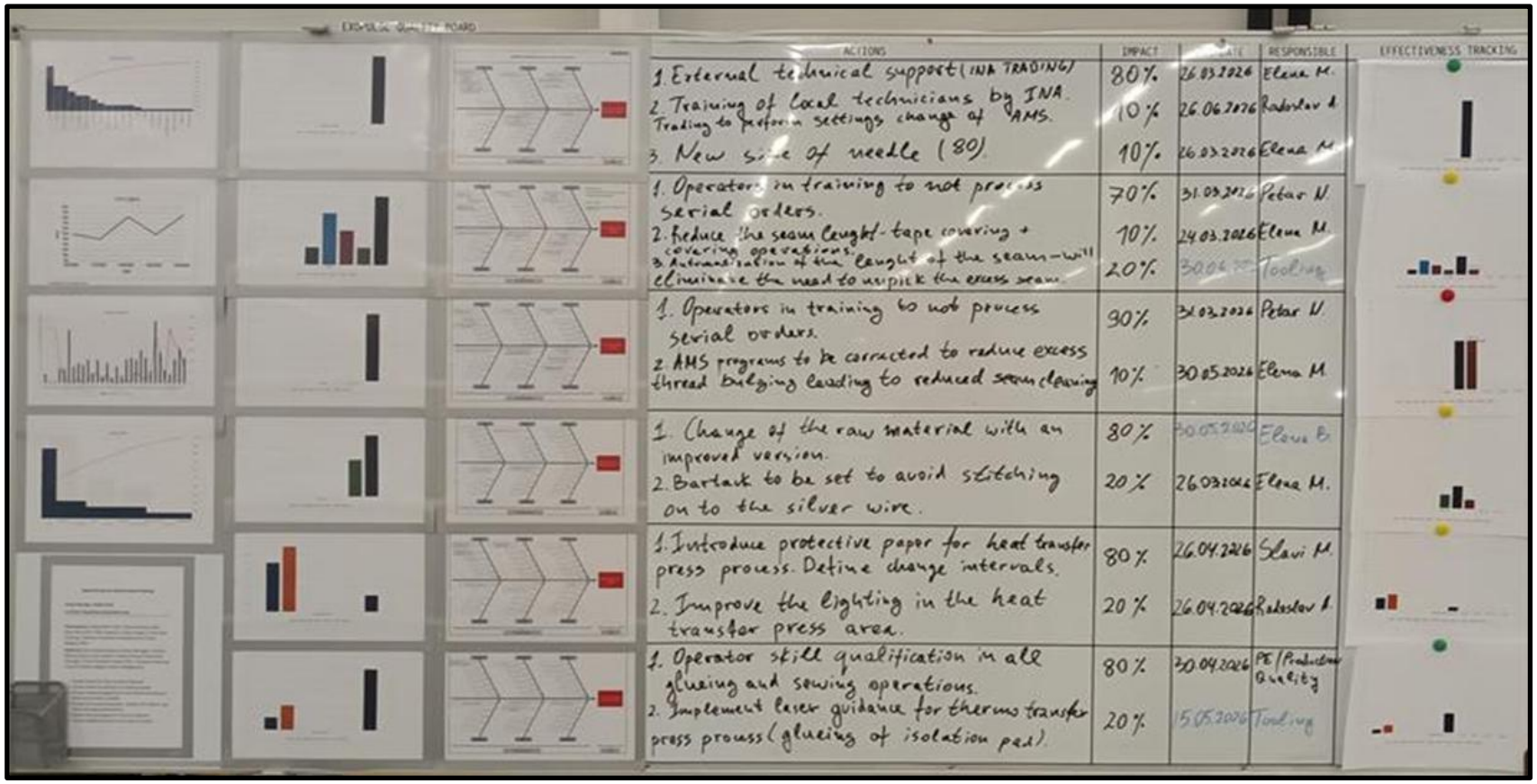


- Structured problem-solving approach applied to identify root causes of quality losses
- Cross-functional collaboration ensured comprehensive analysis and alignment
- Pareto analysis prioritized the main drivers of FPY losses
- Targeted improvement actions defined based on root cause insights



7. Implementation of solution

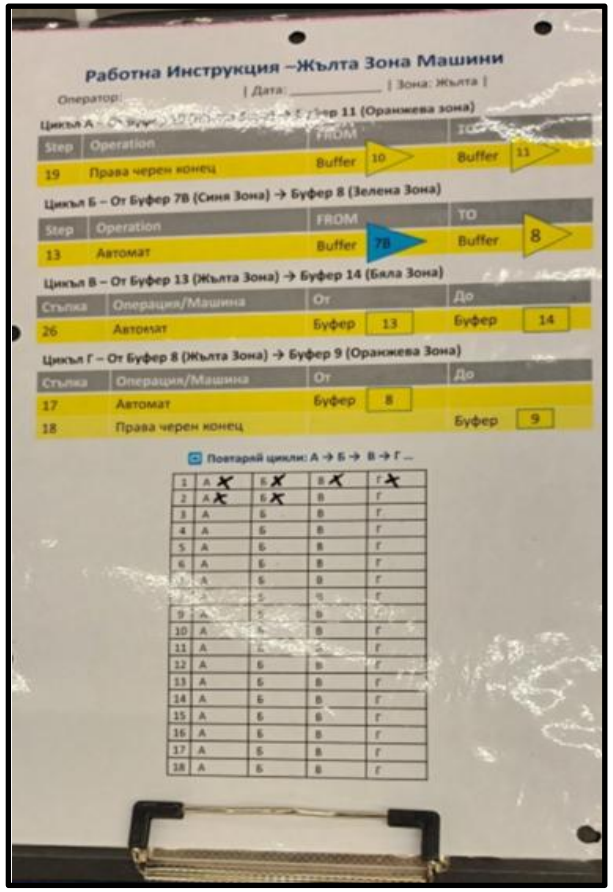
Implementation of quality control tools to improve First Pass Yield (FPY)



- Weekly quality review process established and led by quality engineering
- Key FPY loss drivers prioritized using Pareto analysis
- Corrective actions systematically tracked for effectiveness and sustainability
- FPY improved through structured prioritization of key losses and systematic follow-up of corrective actions

7. Implementation of solution

Reducing flow interruptions through visual sequencing control – Pull system

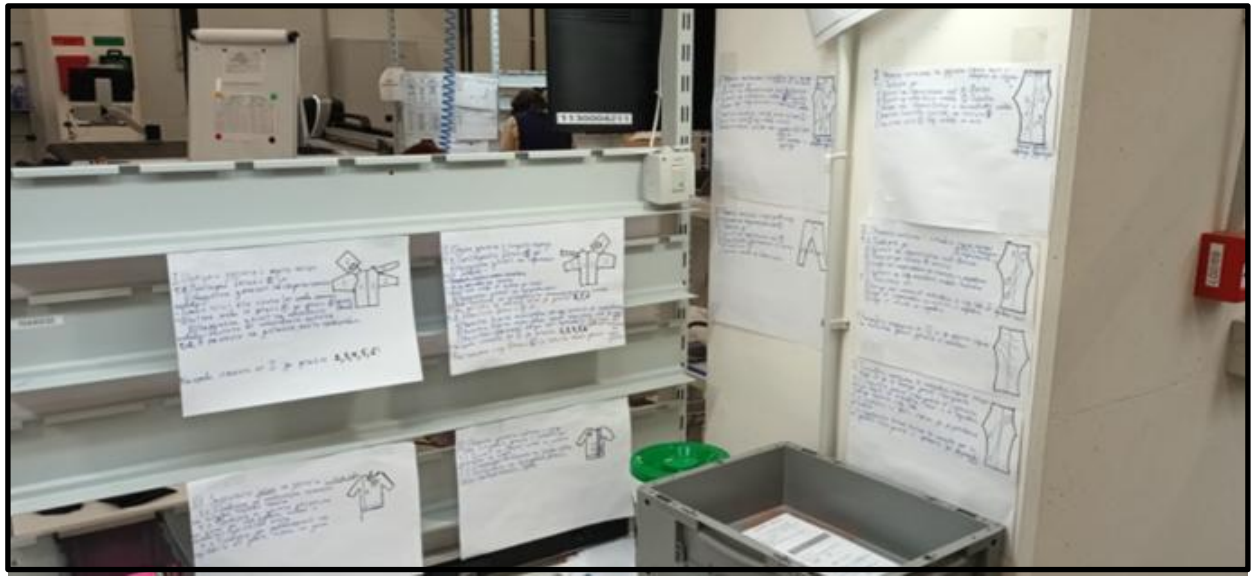


- Buffer handling logic visualized directly at the point of use
- Unclear operator decisions replaced by standardized sequencing rules
- Operator flow clarified to reduce waiting time and confusion
- Visual sequencing instructions installed directly on buffers

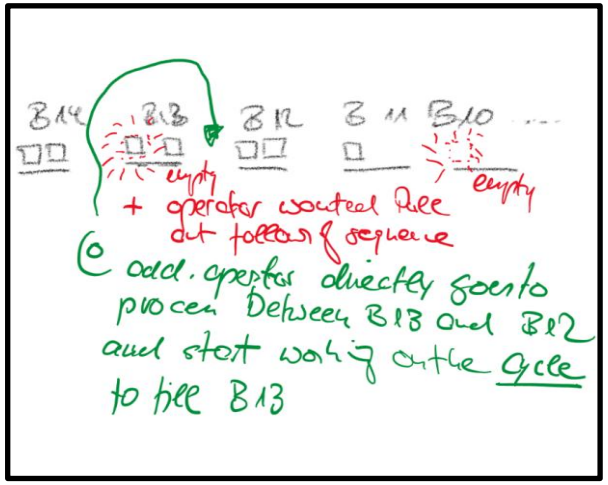
Result:
Flow stabilized through pull-based sequencing, reducing interruptions, waiting time, and operator uncertainty

7. Implementation of solution

Engineering-driven process stabilization through real-time flow analysis



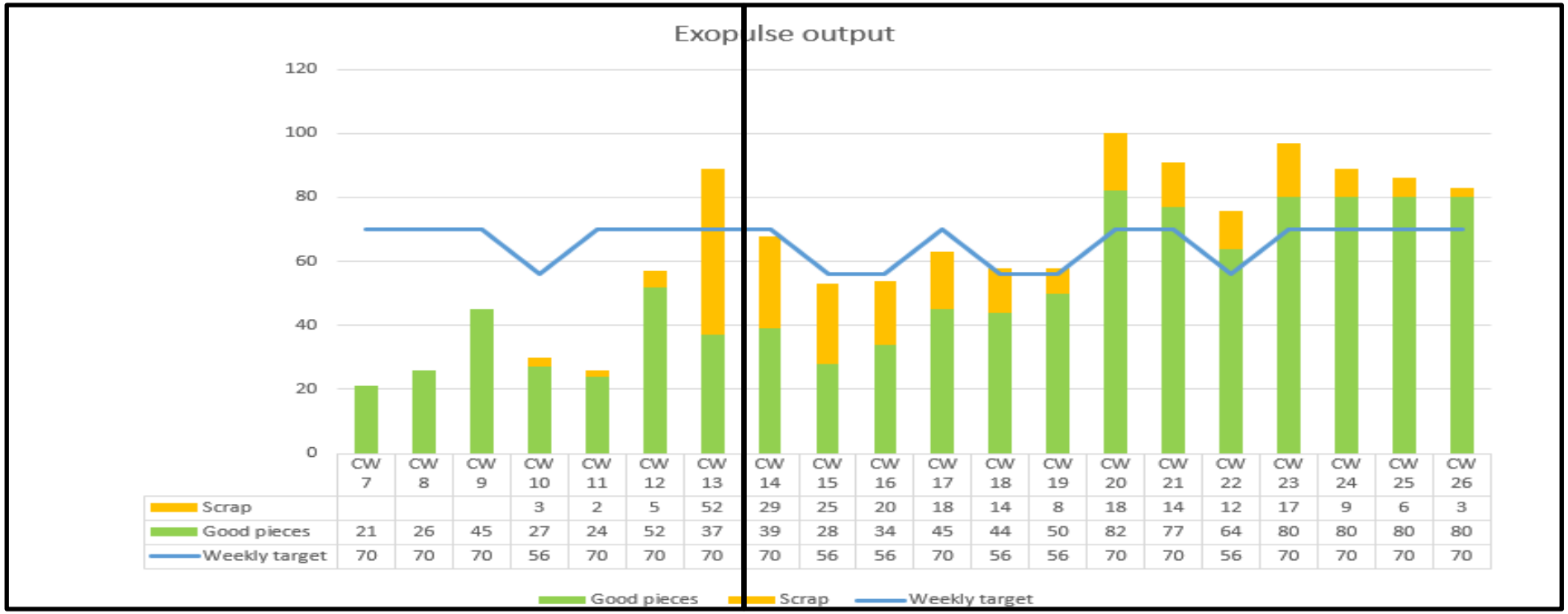
- Real process flow tracked directly at the point of execution
- Bottlenecks and waiting time patterns identified and visualized
- Inspection activities standardized across operators
- Engineering and team leaders jointly analyzed and eliminated flow disruptions



8. Goal-result control

BEFORE KAIZEN

AFTER KAIZEN

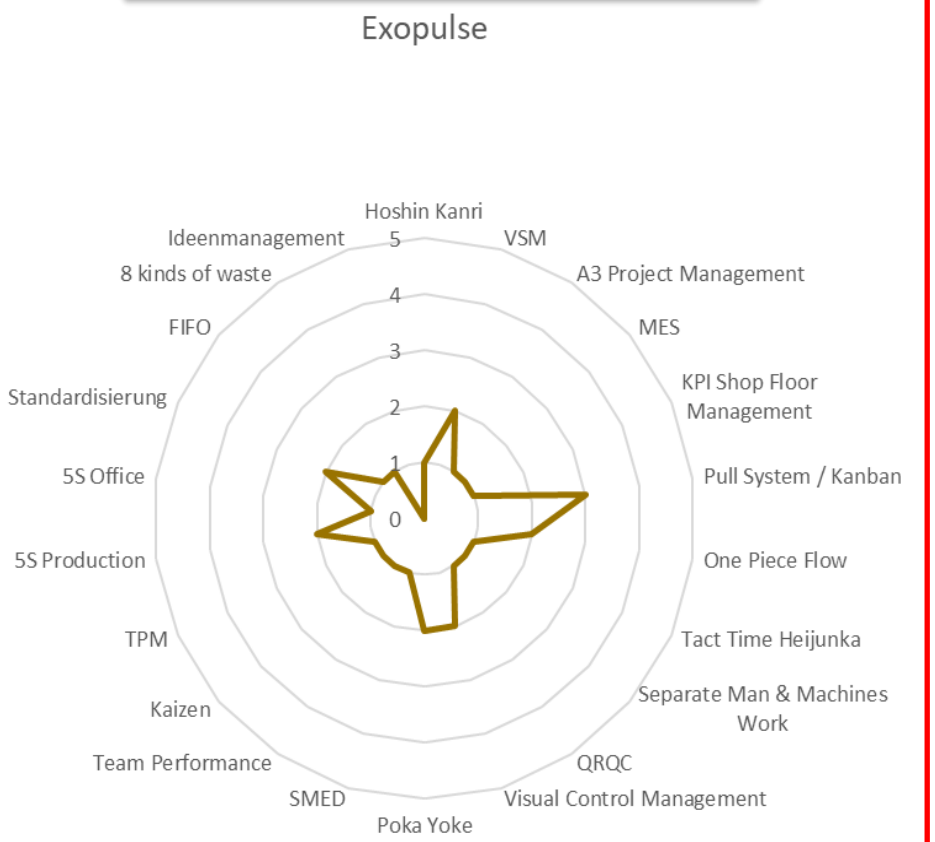


	CW 7	CW 8	CW 9	CW 10	CW 11	CW 12	CW 13	CW 14	CW 15	CW 16	CW 17	CW 18	CW 19	CW 20	CW 21	CW 22	CW 23	CW 24	CW 25	CW 26
Scrap				3	2	5	52	29	25	20	18	14	8	18	14	12	17	9	6	3
Good pieces	21	26	45	27	24	52	37	39	28	34	45	44	50	82	77	64	80	80	80	80
Weekly target	70	70	70	56	70	70	70	70	56	56	70	56	56	70	70	56	70	70	70	70

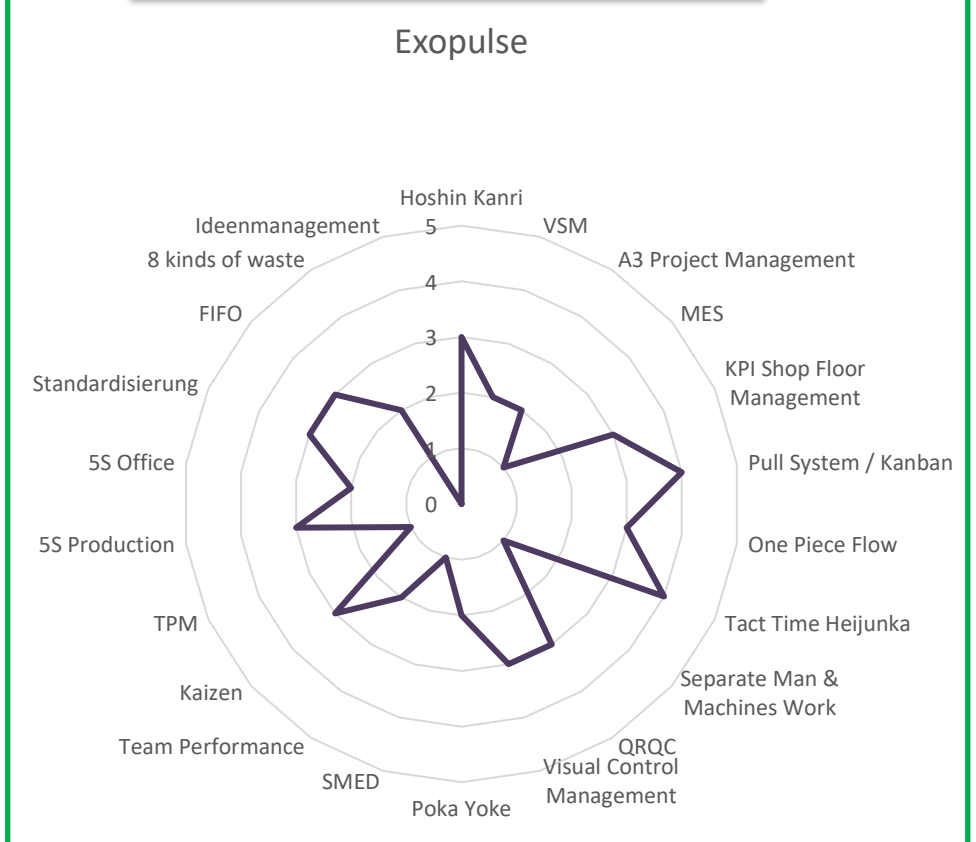
METRICS	UNIT	BASELINE	TARGET	ACTUAL	% IMPROVEMENT
Output per week	**pc**	**30-35**	70	80	129
FPY	**%**	50	75	91	82
5S audit result	**%**	39	65	73	87

8. Goal-result control

BEFORE KAIZEN



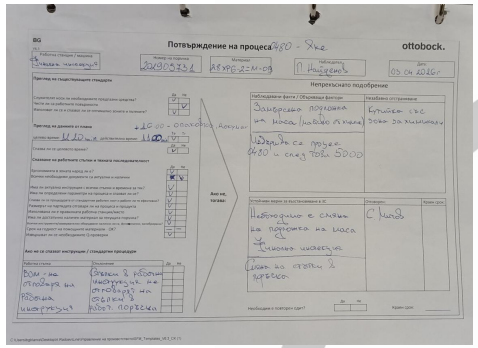
AFTER KAIZEN



- **Daily management routines established**
- **Real-time operational visibility created**
- **Stable flow**
- **Standards and staffing connected to performance**

9. Standardization

Process confirmations



Pareto diagrams

Team Leader Daily Management

Situation checks

Daily Tasks

If "No" or "NOK", assign sequential number on the sheet and enter the number incl. information in the free text field

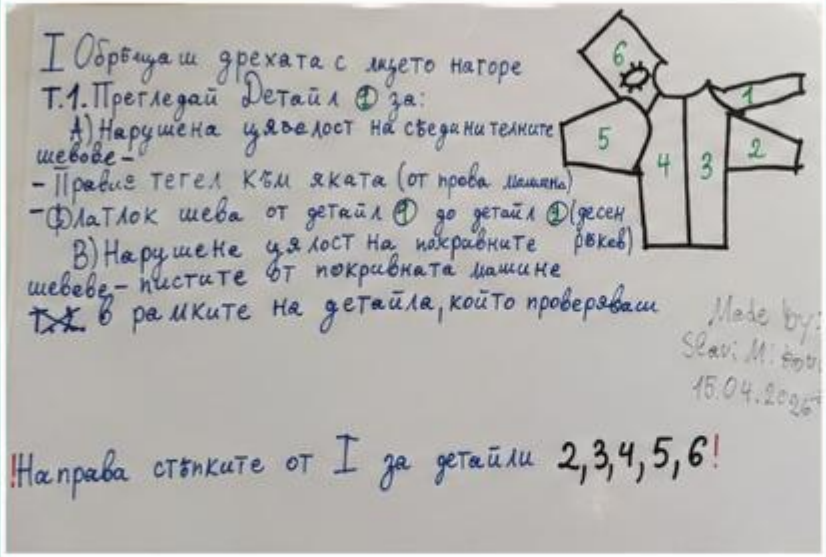
Daily Topics	Duration	Start	End	Completed
Situation check I	00:15	05:30	05:45	
Planning personnel and order situation	01:15	05:45	07:00	
Update shop floor board	00:30	07:00	07:30	
Steering of non-conforming components	00:30	07:30	08:00	
Meeting QRQC assembly	00:25	08:00	08:25	
Execution of shop floor management	00:15	08:45	09:00	
Review of bookings (coming, going, orders)	00:15	09:00	09:15	
Situation Check II	00:15	12:15	12:30	
Situation Check III	00:15	14:00	14:15	
Update planning personnel Order situation Follow-up shift / day	bis	17:30	00:15	

SFM

9. Standardization

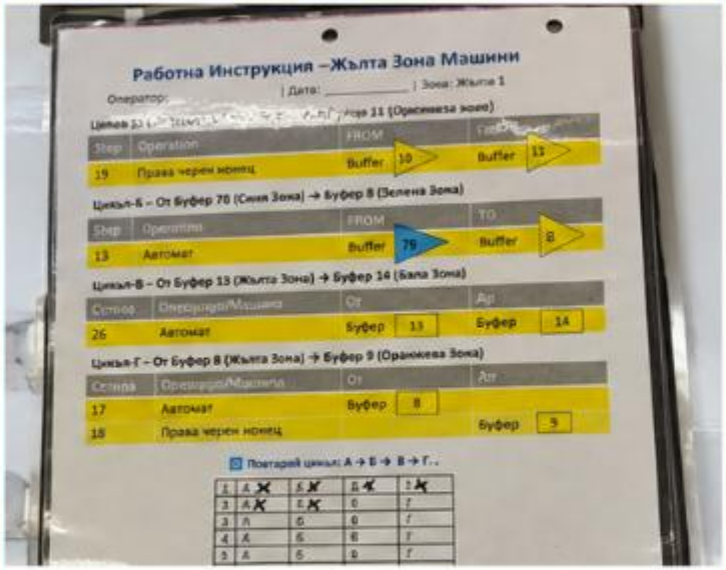
Turning improvements into standards to sustain the new way of working

1. STANDARD WORK
Created for critical operations



Clear instructions and key points defined at the point of use.

2. FLOW STANDARD
Rules standardized and visualized



Defined flow rules, buffers and handover points make the flow stable and predictable.

3. CAPABILITY STANDARD
Qualification requirements defined

People are qualified, skills are visible and the right level is ensured.

Every key improvement was converted into a standard to ensure sustainability and reproducible results.

10. Deployment

Deployment plan					
No	**Implemeted action**	**Status of deployment**			
		Is the deployment possible?	**If YES, where?**	**Responsible**	**Due date**
1	**Quality Board** (Pareto / FPY reviews)	Yes	Vienna production plant	M. Buhl	31.8.2026
2	**Qualification Manegement System**	Yes	Rest of Value Streams	L. Koch	31.12.2026
3	**Shopfloor Management 2.0**	Yes	Rest of Value Streams	M. Mihova	31.12.2026

1

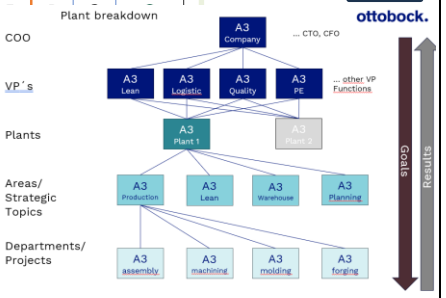
2

Action Plan

No.:	Action	Description of strategic Action expectation	Leading KPIs	Breakdown Type Cascade / Project	Responsible	Support	Due Date	2026 A	M	J	J	Status	Evaluation
	Development of Organization in terms of Training and Coaching towards Lean Thinking and Acting	Development of Lean Training Portfolio following training goals per target group. Reach out for different groups like Lean Leaders or Lean Experts. Install and develop Lean Experts at different sites.											
2		trainings as well of course.											
2.1	Skills Matrix Training - target group are all Leaders who directly lead employees (incl. HOs)												
2.1.1	integrate Measurement of Skills-KPI "P"	Develop and validate Skill Matrix KPI "P" via pilot in Exopulse, ensuring clear standards (levels & criteria) and data reliability. Based on validated results, prepare structured rollout across BLA/SOF site (direct & indirect areas) and integrate tracking into HO's monthly A3 reporting and Plant Skills development score.	skills score "P"	Cascade	D. Babulev	L. Koch	~~31.7.2026~~ 31.12.2026						
2.3	SFM 2.0 enabling												
2.3.1	facilitate "intensive SFM coaching"	transfer coaching experience from DUD coaching 11/25 into Blagoevgrad value stream, point out strenghtes and weaknesses and guide TLs and SV through all operative SFM 2.0 frames. Monthly measure SFM-Score with applied SFM Checklist out of assessments. Feedback of Score in plant A3 review	Score of SFM 2.0 score is monthly measured	Cascade	D. Babulev	M. Mihova M. Davidkov R. Bogdanov	31.12.2026						
2.3.2	measure progress and offer coaching to SFM 2.0 leaders	continuously check quality of implementation of SFM 2.0 "frames". - frame 1 SQCDP, - frame 2 Paretos, - frame 3 5S auditing, - frame 4 Teamleaders daily standard work, - frame 5 A3 reviews - frame 6 CIP board monthly define Score and hand over proposal of improvement actions to HO Production	Score of SFM 2.0 score is monthly measured	Cascade	R. Bogdanov	M. Mihova M. Davidkov	31.12.2026						

Accountable: D. Babulev
Responsible/ Core Team: Lean / Production / PE

3



11. 5 S

First Audit Score…39

Проверочен лист по 5S

Завод:		зона:				дата	
Одитор		1S	2S	3S	4S	5S	Общо - Макс. 100 т.
Общо точки		8	5	13	5	8	39
Бр. Въпроси		5	5	5	5	5	25
Средно точки		1.6	1.0	2.6	1.0	1.6	1.6

Дейности по 1S - СОРТИРАНЕ			0	1	2	3	4	Заб.
1,01	На работното място се намират само нужните **материали, НзП, и др.** Материали, които не са нужни за текущата работа са отстранени от работното място.	1						A, L, E
1,02	На работното място се намират само нужните **инотрументи, приспособления** и др.п. Инструменти, които не са нужни за текущата работа са отстранени от работното място.	2						A, E
1,03	На работното място се намира само необходимото **оборудване.** Машини, стелажи, шкафове, маси и др. които са излезли от употреба или ненужни за текущото производство са отстранени от работното пространство.	2						B, E, L
1,04	На работното място се намира само необходимата **документация** (вкл. информация по таблата). Остарели или ненужни доклади, бележки, обяви, афиши и др. са отстранени.	3						A, B, Y
1,05	В стандарта по 5S (раб. инструкция/схема и пр.) за работното място са дефинирани всички нужни предмети за мястото	0						A

Дейности по 2S - СИСТЕМНО ПОДРЕЖДАНЕ			0	1	2	3	4	Заб.
2.01	**Проходите** са ясно идентифицирани и незапречени. Изходите са ясно дефинирани и незапречени.	1						C, V
2.02	Местата **за всички предмети** - е ясно дефинирано, очертано и маркирано по разбираем начин. (*предмети по пода* - кутии, НзП, материали, колички, почистващи средства, палети за стружки и др.; *предмети по други места* - инструменти, стелажи и пр.)	1						C, H, J, K, O, P, V
2.03	Количествата за **материали, консумативи и НзП** са ясно дефинирани, очертани и надписани.	0						J
2.04	Поставени са **етикети и надписи** за материали, НЗП, машини, участъци, лавици и пр.	1						C, I
2.05	**Документите** (вкл. информация по таблата) са четливо надписани и имат ясно дефинирано място.	2						D, S

Дейности по 3S - СИЯЙНА ЧИСТОТА			0	1	2	3	4	Заб.
3.01	**Подовете** са чисти от мръсотия, прах, отпадъци, компоненти, опаковъчен материал и др. **Маркировките по пода** са в добро състояние. **Стените, преградите, колоните**, са чисти.	3						A, X, W
3.02	**Машините са чисти** от прах, масло, мръсотия и пр. (работни плотове, капаци, стойки с материали и др.)	3						N, W
3.03	Всички предмети - **работни маси, кутии, кутии, кофи, инотрументи, и др.** са чисти, не са разкъсани или повредени. Те са подредени по местата си.	1						A, B, W
3.04	**Документите** са чисти, не са повредени, и се съхраняват на местата си.	3						
3.05	**Материалите и консумативите за почистване** се съхраняват на точно определено място с подходяща маркировка и са лесно достъпни при нужда.	3						

Дейности по 4S - СТАНДАРТИЗИРАНЕ			0	1	2	3	4	Заб.
4.01	Има **график**, който показва време, честота и отговорности за почистването на машините, стелажи, работното пространство и др.	2						W
4.02	Има **график**, който показва време, честота и отговорности за отстраняване на отпадъците от производството.	1						X
4.03	Въведени са **превантивни мерки** за спазване на 5S изискванията (напр. Системи за събиране и отстраняване на отпадъци - контейнери, кутии и др..,)	2						A, C, E, H, I, K
4.04	**Резултатите от предходния одит** са поставени на адимо за целия екип място.	0						Teams Planner + 5S board
4.05	**Точките за подобрение** набелязани на предходния одит са изпълнени.	0						

Дейности по 5S - САМОДИСЦИПЛИНА			0	1	2	3	4	Заб.
5.01	Представител на **Мениджмънта** е участвал в дейностите по 5S като одитор, или в други дейности през последния 1 месец.	4						
5.02	Екипите (смените) с най-голям принос в дейностите по 5S се отличават.	0						
5.03	За дейносите по 5S се отделят достатъчно **време и ресурси** (напр. Определено дневно/седмично време за почистване, 5S лидер и др.)	2						Teams Planner
5.04	Всички оператори, лидери и началници имат задачи за изпълнение по 5S в рамките на 1 седмица.	1						
5.05	Екипа стартира **инициативи за подобрения** на работното място, които не са определени в 5S одита.	1						1S Island, Andon vis.

Second Audit Score …73

Проверочен лист по 5S

Завод:		зона:				дата	
Одитор		1S	2S	3S	4S	5S	Общо - Макс. 100 т.
Общо точки		14	15	15	15	14	73
Бр. Въпроси		5	5	5	5	5	25
Средно точки		2.8	3.0	3.0	3.0	2.8	2.9

Дейности по 1S - СОРТИРАНЕ			0	1	2	3	4	Заб.
1,01	На работното място се намират само нужните **материали, НзП, и др.** Материали, които не са нужни за текущата работа са отстранени от работното място.	3						A, L, E
1,02	На работното място се намират само нужните **инотрументи, приспособления** и др.п. Инструменти, които не са нужни за текущата работа са отстранени от работното място.	3						A, E
1,03	На работното място се намира само необходимото **оборудване.** Машини, стелажи, шкафове, маси и др. които са излезли от употреба или ненужни за текущото производство са отстранени от работното пространство.	3						B, E, L
1,04	На работното място се намира само необходимата **документация** (вкл. информация по таблата). Остарели или ненужни доклади, бележки, обяви, афиши и др. са отстранени.	3						A, B, Y
1,05	В стандарта по 5S (раб. инструкция/схема и пр.) за работното място са дефинирани всички нужни предмети за мястото	2						A

Дейности по 2S - СИСТЕМНО ПОДРЕЖДАНЕ			0	1	2	3	4	Заб.
2.01	**Проходите** са ясно идентифицирани и незапречени. Изходите са ясно дефинирани и незапречени.	3						C, V
2.02	Местата **за всички предмети** - е ясно дефинирано, очертано и маркирано по разбираем начин. (*предмети по пода* - кутии, НзП, материали, колички, почистващи средства, палети за стружки и др.; *предмети по други места* - инструменти, стелажи и пр.)	3						C, H, J, K, O, P, V
2.03	Количествата за **материали, консумативи и НзП** са ясно дефинирани, очертани и надписани.	3						J
2.04	Поставени са **етикети и надписи** за материали, НЗП, машини, участъци, лавици и пр.	3						C, I
2.05	**Документите** (вкл. информация по таблата) са четливо надписани и имат ясно дефинирано място.	3						D, S

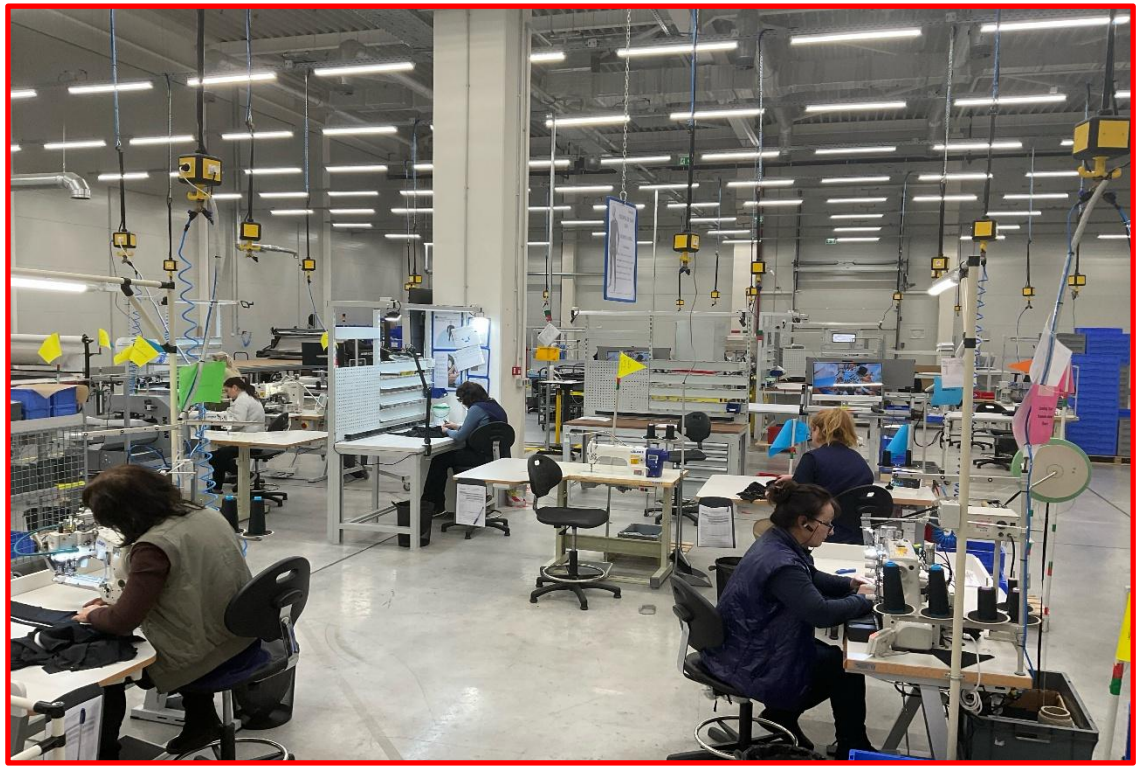
Дейности по 3S - СИЯЙНА ЧИСТОТА			0	1	2	3	4	Заб.
3.01	**Подовете** са чисти от мръсотия, прах, отпадъци, компоненти, опаковъчен материал и др. **Маркировките по пода** са в добро състояние. **Стените, преградите, колоните**, са чисти.	3						A, X, W
3.02	**Машините са чисти** от прах, масло, мръсотия и пр. (работни плотове, капаци, стойки с материали и др.)	3						N, W
3.03	Всички предмети - **работни маси, кутии, кутии, кофи, инотрументи, и др.** са чисти, не са разкъсани или повредени. Те са подредени по местата си.	3						A, B, W
3.04	**Документите** са чисти, не са повредени, и се съхраняват на местата си.	3						
3.05	**Материалите и консумативите за почистване** се съхраняват на точно определено място с подходяща маркировка и са лесно достъпни при нужда.	3						

Дейности по 4S - СТАНДАРТИЗИРАНЕ			0	1	2	3	4	Заб.
4.01	Има **график**, който показва време, честота и отговорности за почистването на машините, стелажи, работното пространство и др.	3						W
4.02	Има **график**, който показва време, честота и отговорности за отстраняване на отпадъците от производството.	3						X
4.03	Въведени са **превантивни мерки** за спазване на 5S изискванията (напр. Системи за събиране и отстраняване на отпадъци - контейнери, кутии и др..,)	3						A, C, E, H, I, K
4.04	**Резултатите от предходния одит** са поставени на адимо за целия екип място.	3						Teams Planner + 5S board
4.05	**Точките за подобрение** набелязани на предходния одит са изпълнени.	3						

Дейности по 5S - САМОДИСЦИПЛИНА			0	1	2	3	4	Заб.
5.01	Представител на **Мениджмънта** е участвал в дейностите по 5S като одитор, или в други дейности през последния 1 месец.	4						
5.02	Екипите (смените) с най-голям принос в дейностите по 5S се отличават.	0						
5.03	За дейносите по 5S се отделят достатъчно **време и ресурси** (напр. Определено дневно/седмично време за почистване, 5S лидер и др.)	4						Teams Planner
5.04	Всички оператори, лидери и началници имат задачи за изпълнение по 5S в рамките на 1 седмица.	3						
5.05	Екипа стартира **инициативи за подобрения** на работното място, които не са определени в 5S одита.	3						1S Island, Andon vis.

11. 5 S

Before

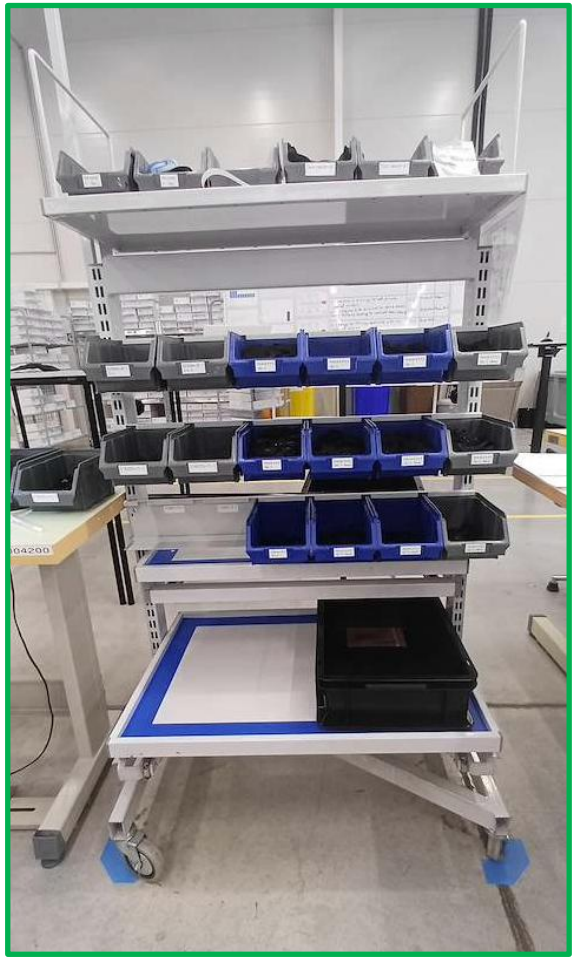


After

11. 5 S

Before

After



11. 5 S

Before

After

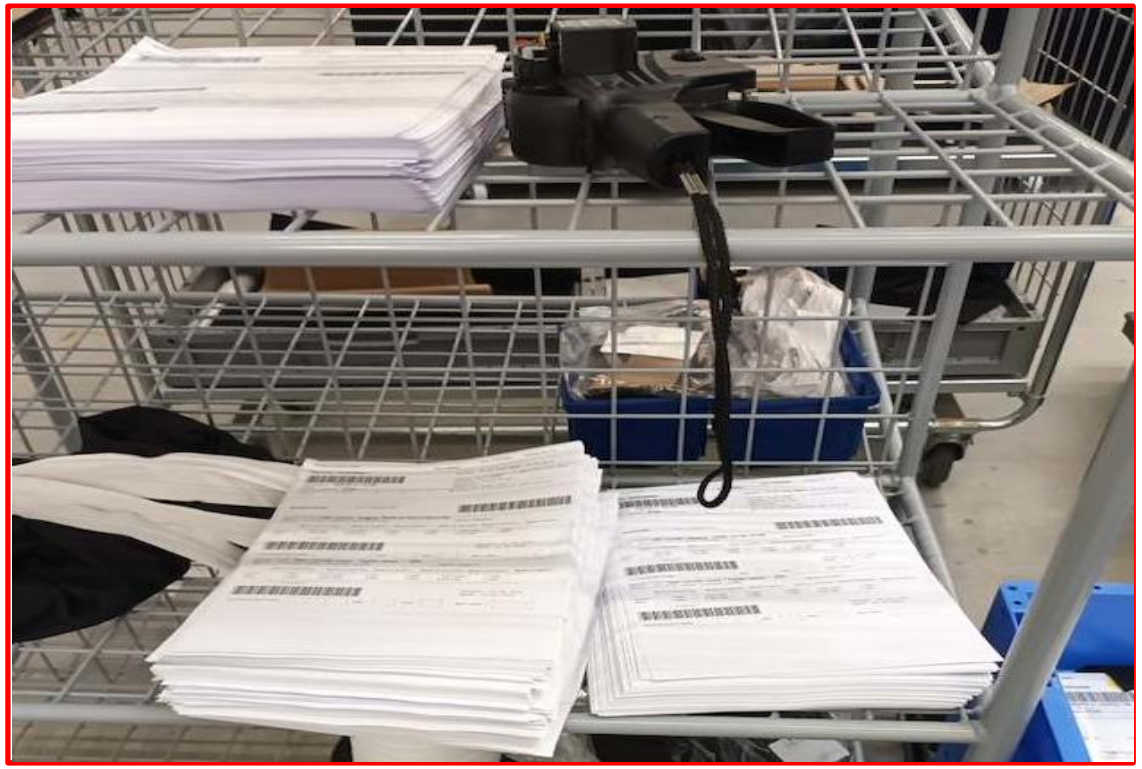
11. 5 S

Before

After

11. 5 S

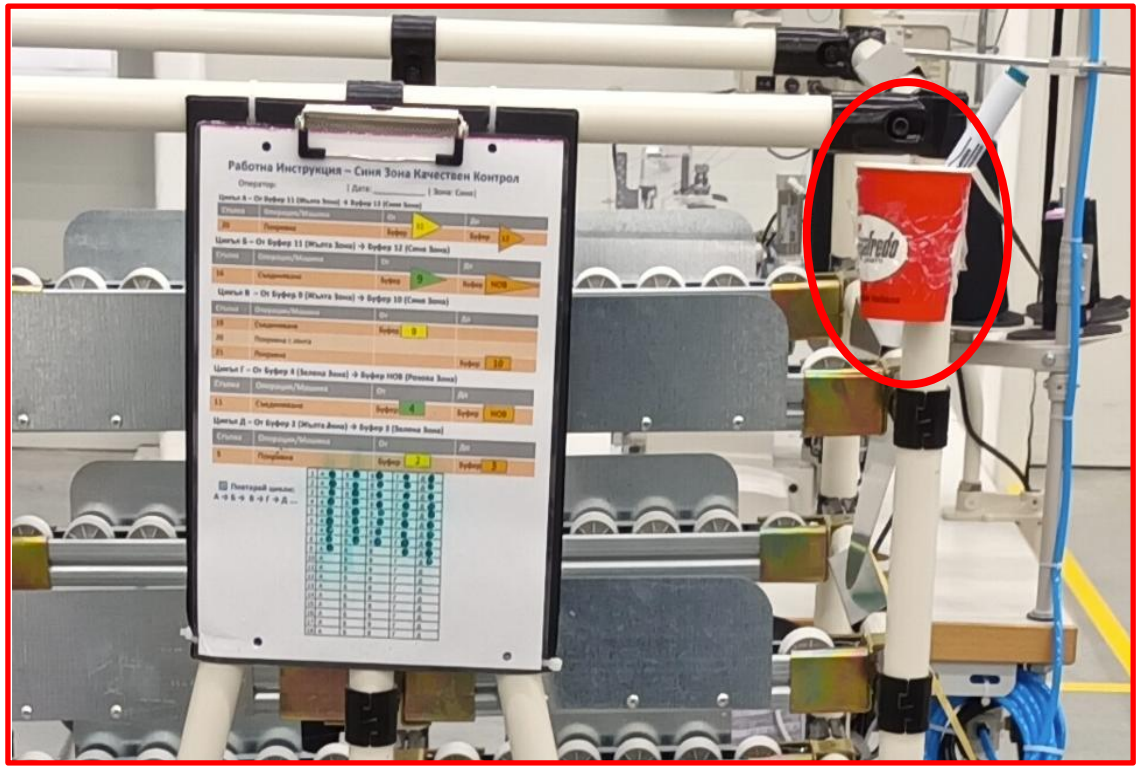
Before



After

11. 5 S

Before



After

Exopulse Mollii Suit

ottobock.

Thank you!