FOCUSED DIAGNOSTIC · MANUFACTURING PRODUCTIVITY

Conclusion: the bottleneck is not CNC, it is the paint shop. **+35%** capacity without buying a €1.2 million line.

KEY FACTS

- In one year your lead time has grown from 4 to 9 weeks, and you already have a quote for a new CNC line. Five days of analysis showed that the line would stand idle, because work is waiting elsewhere. We recommend that the purchase decision waits for the results of the measures below.
- **Area:** manufacturing productivity
- **Scope:** 5 days over 2 weeks, 5 hours of your team's time
- **Data:** 12 months of work orders, downtime and complaints
- **Date:** 14 November 2024 · **Prepared by:** Igor Prosenik, Armes

1 Executive summary

60 → 81
sashes a day through the paint shop, which sets the capacity of the whole company

9 → 5 weeks
lead time within 10 weeks, once the backlog is cleared

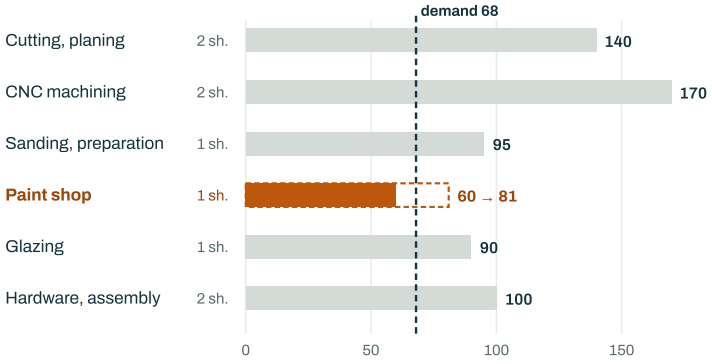
€220–330 k
EBITDA impact a year, mainly from sales now being lost

€1.2 m
investment in a CNC line that is not needed

Customers order an average of **68 sashes a day**; you make 60. The backlog grows by 8 sashes a day, so lead time has lengthened and dealers have started ordering elsewhere.

CNC runs two shifts and can do 170 sashes a day. The paint shop runs one shift and can do 60. A new CNC line would only create more sashes waiting in front of the paint shop. The paint shop measures cost €37 thousand and take four weeks. To stop the backlog from returning, we also recommend capacity- and staff-based planning (€24 thousand).

Capacity by work centre
sashes a day at current shifts; line = demand



2 What we recommend

> We set the paint shop up for **4 colour changes a day instead of 11**, remove the dust that causes 11% repainting, and add an afternoon half-shift for 6 weeks to clear the backlog. **We base planning on capacity**: the production and staff plan is built around the paint shop, and lead time comes from the plan. **We postpone the CNC line purchase** and reassess it when demand exceeds 81 sashes a day.

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3 Floor plan and the path of a sash

work centre utilisation at a demand of 68 sashes a day

A sash crosses the hall twice. The only work centre above 100% is the paint shop, with six days of work waiting in front of it.



below 70%, spare capacity · 70–100% · above 100%, bottleneck · → flow of a sash · △ stock between stages

The paint shop can do 60, customers order 68

All other work centres have spare capacity. Every sash the paint shop does not finish today is added to the backlog.

CNC is 40% utilised

The two CNC shifts work less than half of the time. This is where the people for a second paint shop shift come from, with no new hires.

The next bottleneck is glazing

Once the paint shop reaches 81 sashes, glazing, at 76% utilisation, will be the first to approach its limit. The plan must see this coming.

4 Planning: from dates to capacity

measure 7

Today

- The plan is in Excel; orders are released by date received, not by capacity and not by colour.
- Sales confirm lead times from experience, without looking at paint shop load. On-time delivery is 71%.
- The shift leader assigns people every morning. CNC has two people too many, the paint shop one too few.
- Nobody can see how much work is waiting in front of which work centre.

Proposal

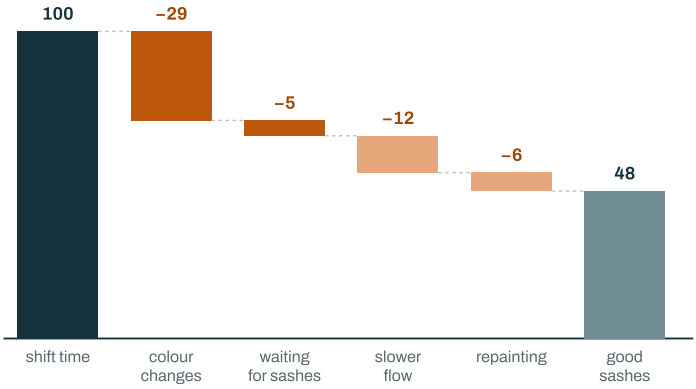
- **A production planning module in your ERP** with finite capacity by work centre. The plan is built around the paint shop: sequenced by colour, with the other work centres following it.
- **A staff plan by shift** with a skills matrix: who can paint, sand and glaze. Next week's roster based on work centre load.
- **Lead time from the plan**: when confirming an order, sales see the first free slot in the paint shop.
- If your ERP has no such module, a standalone planning tool linked to the ERP is an equivalent solution. For the first three weeks we plan by colour in the existing spreadsheet, so the module is not a precondition for first results.

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5 Where paint shop time goes

measured over 12 working days, 450 minutes per shift

Paint shop overall equipment effectiveness (OEE): 48%
share of shift time that produces a good sash



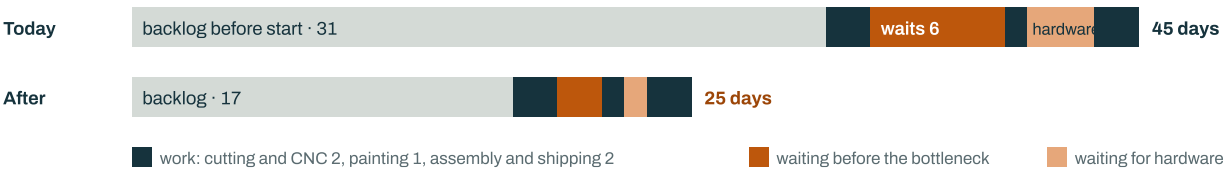
LOSS	MIN PER SHIFT	SHARE
11 colour changes of 12 minutes each: orders run by date, not by colour	132	29%
Waiting for sashes from sanding at the start of the shift	21	5%
Slower flow: manual loading onto the conveyor	54	12%
Repainting 11% of sashes because of dust in the booth	27	6%

Comparable paint shops in the window and door industry reach 65–75% OEE. Two thirds of the losses are organisational and need no equipment.

6 Where an order waits

working days from order to shipment

Lead time today is 45 days, after the measures 25 days. Only 5 days are actual work.



7 Why this happened

Planning looks at dates, not colours

Orders are released by date received. There are enough sashes of the same colour for 3–4 batches a day, but they reach the paint shop mixed.

No limit before the paint shop

CNC releases everything it can. Six days of sashes stand in front of the paint shop, taking up space and getting damaged when moved.

Investment went into the wrong step

In recent years you upgraded cutting and CNC, because that is where congestion is most visible. The paint shop is 14 years old and has no positive pressure.

Hardware once a week

Purchasing orders hardware on Mondays. Sashes painted on a Tuesday wait an average of 3 days for assembly.

8 Success measures

measured from week one

MEASURE	TODAY	TARGET WEEK 10	MEASURED BY	HOW OFTEN
Good sashes from the paint shop per shift	60	81	paint shop lead	daily
Paint shop OEE	48%	65%	production manager	daily
Repainting	11%	5%	quality control	weekly
On-time delivery to the confirmed date	71%	90%	planning	weekly
Lead time at order confirmation	9 weeks	5 weeks	sales	weekly

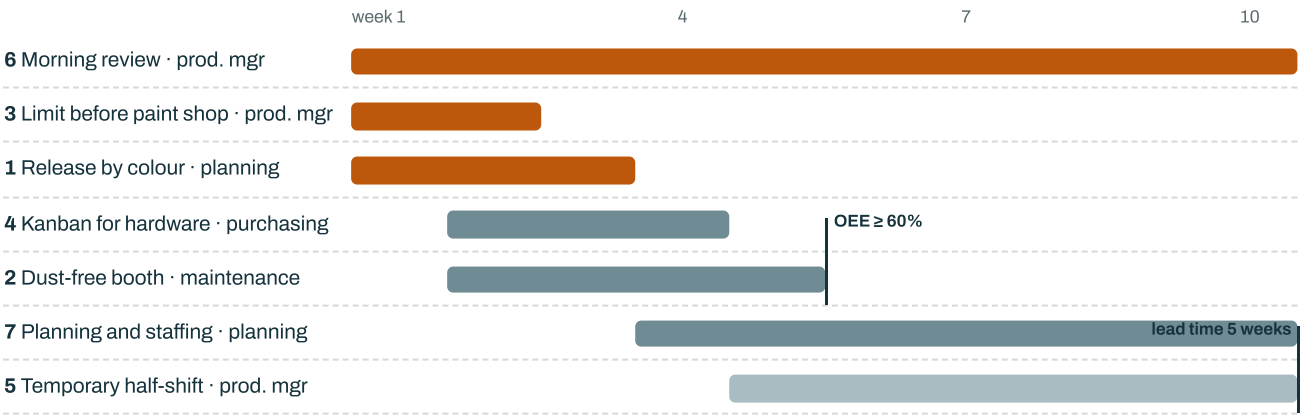
9 Measures

ranked by impact on paint shop capacity

#	MEASURE	OWNER	WEEKS	COST €K	IMPACT
1	**Release by colour**: daily paint plan in 4 colour batches, CNC follows it	planning	3	5	changes 11 → 4 a day, **+84 min** per shift
2	**Dust-free booth**: new filters, positive pressure, cleaning at end of shift	maintenance	4	18	repainting 11 → 5%
3	**Stock limit before the paint shop**: max. one day of sashes; CNC releases only when there is room	production manager	2	0	waiting 6 → 2 days, less damage
4	**Kanban for hardware**: daily delivery for the next day's assembly	purchasing	3	2	waiting for hardware 3 → 1 day
5	**Temporary half-shift** in the paint shop for 6 weeks, two painters from CNC	production manager	1	12	backlog –1,360 sashes
6	**10 minutes at the bottleneck** every morning: board with OEE, changes and scrap	production manager	1	0	losses visible the same day
7	**Production and staff planning**: finite-capacity ERP module, weekly staff plan, lead time from the plan	planning, IT	7	24	on-time delivery 71 → 90%, people where the bottleneck is
8	New CNC line	board	—	1,200	postponed, does not increase output
	Total measures 1–7			**61**	**OEE 48 → 65%, 60 → 81 sashes a day**

10 Plan for the first 10 weeks

copper: no cost, immediate



11 · NEXT STEP

Measures 1–6 you can run yourselves; for 7 we help you choose and set up the module. If you wish, we lead the first 10 weeks with your production manager.

Once the paint shop exceeds 81 sashes a day, glazing at 90 sashes will be the bottleneck. That is the time for a second shift in glazing, not for CNC. Where the diagnostic shows opportunities outside production, we propose them for Value Mapping.

Questions? Get in touch

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