Production order planning and release

Process Definition Document (PDD): template and worked example

Example company (fictional): Brandweg Components GmbH, a maker of hydraulic valve blocks in Heilbronn, Germany (about 320 employees, make-to-stock and make-to-order mix).

Document control

Field	Value
Process name	Production order planning and release
Process owner	[Name, role]
Prepared by	[Name]
Reviewed by	[Names of the people who do the work]
Approved by	[Name, date]
Version	1.0 (as-is)
Status	Draft

How to use this template

This is a complete process definition document (PDD) for production order planning and release, also called the MRP to shop floor process, production scheduling procedure or work order release. It describes how a fictional machining company turns demand into planned orders, checks materials and capacity, schedules the work and releases the order with its documents and materials to the shop floor.

Use it as a starting point. Replace the company details, keep the sections, and walk through each step with the planners, buyers and supervisors who live with the schedule every day. Most plants change the planning horizon, the release rules and the way shortages are escalated. The structure stays the same.

- Replace the company, products and systems with yours. If you use an APS or a planning board instead of Excel, name it in steps 6 to 8 and in the weekly review.
- Set your own planning horizon and the number of days before start when planned orders become production orders (step 9). Plants with long lead times often convert later and keep more flexibility.
- Define what a ready order means for you in step 14. Typical items are material, tooling, programme, gauges, drawings and a free machine, and the list changes by product family.
- Check the percentages with real data from your ERP. The share of orders that fail the release check and the share that are rescheduled usually show where the process leaks.
- Add your own rules for rush orders and for who may override the frozen week. These are the most disputed decisions in most plants.
- Walk through the steps with a supervisor on the night shift. Their release time and shortage handling often differ from what the planners describe.

1. Purpose and scope

This procedure describes how Brandweg Components plans, schedules and releases production orders. It gives planning, purchasing, the warehouse and the shop floor one shared description of who does what, so that an order only reaches a machine when its materials, documents and capacity are in place, and so that shortages and reschedules are handled in a known way instead of by phone calls on the shop floor.

In scope

- Demand review and the weekly MRP run
- Conversion of planned orders into production orders
- Material availability and capacity checks
- Finite scheduling of work centres
- Kitting, document issue and release of the order to the shop floor
- Shortages and reschedules after release

Out of scope

- Sales forecasting and the sales and operations planning meeting
- Purchase order placement and supplier management, except expediting a shortage
- Quality inspection and non-conformances
- Shop floor reporting and order close-out after production

2. Process at a glance

Item	Description
Trigger	The weekly MRP run produces planned orders, or a confirmed customer order needs a production order.
Starts when	The demand planner reviews the demand and forecast before the MRP run.
Ends when	The production supervisor releases the order and the operator confirms that the kit and documents are complete at the work centre.
Inputs	Customer orders and forecast, Stock and open purchase orders, Bills of material and routings, Work centre calendars and capacity, Drawings and work instructions
Outputs	Scheduled production order, Material reservation and picked kit, Order document pack, Confirmed delivery date for sales, Reschedule record when the plan changes
Volume	About 1,900 production orders a year, roughly 40 released each week; about 25% are rescheduled at least once after release
Working hours	Planning runs Monday to Friday, 07:00 to 16:00. The shop floor runs three shifts, Monday 06:00 to Saturday 06:00. Release is done by the day shift supervisor, with a rule that anything for the night shift is released by 14:00.

3. Roles and responsibilities

Role	Responsibilities
Demand Planner	Reviews customer orders and the forecast, corrects obvious errors before the MRP run and confirms delivery dates to the sales desk.
Production Planner	Runs MRP, reviews proposals, checks capacity, schedules the work centres, converts planned orders to production orders and issues the document pack.
Materials Planner	Checks material availability per order, reserves stock, chases shortages with purchasing and tells the planner what is late.
Buyer	Expedites or places purchase orders for shortages and agrees new delivery dates with suppliers.
Warehouse Operator	Picks the kit for each order, stages it at the work centre and books the issue in the ERP.
Production Supervisor	Checks that an order is ready, releases it, sequences it with the shift and handles shortages at the line.
Production Manager	Decides on overtime, subcontracting and priority conflicts, and reviews the schedule at the weekly meeting.
Shop Floor Operator	Receives the released order, checks the kit and documents against the routing and reports what is missing.
Supplier (external)	Delivers raw material and bought-in parts and confirms or changes delivery dates when asked.

4. Systems

- SAP Business One: demand, MRP, production orders, reservations and stock
- Excel: finite capacity sheet for the three bottleneck work centres, kept by the planner
- Document server: drawings, routings and work instructions as PDF
- Label printer and printed order travellers
- Email and phone for supplier and sales communication

5. Process map

Process diagram goes here

Draw one lane per role from section 3, the steps from section 6 in order, and a diamond for each decision in section 7.

6. Procedure, step by step

#	Step	Who	What happens	System	Output
1	Review demand and forecast	Demand Planner	On Monday morning, checks new customer orders, changed dates and the forecast for the next 12 weeks, and corrects duplicates and wrong quantities. It takes about 60 minutes.	SAP Business One	Clean demand for the MRP run
2	Run MRP	Production Planner	Runs the planning wizard for all make items with a 12 week horizon, using current stock, open purchase orders and the bills of material. It runs for about 20 minutes.	SAP Business One	Planned production orders and purchase proposals
3	Review MRP proposals	Production Planner	Goes through the proposals line by line: merges small orders into one run, removes proposals for obsolete items and sets lot sizes by hand where the system value is wrong. About 15% of proposals are changed. It takes 2 to 3 hours.	SAP Business One	Reviewed planned orders
4	Check material availability	Materials Planner	For orders due in the next 3 weeks, compares the bill of material with stock and incoming deliveries and marks each order green, amber or red. It takes about 90 minutes a week.	SAP Business One	Availability status per order
5	Expedite or order shortages	Buyer	For red and amber orders, asks the supplier to bring the delivery forward or places a new purchase order. About 20% of orders need action here. Supplier replies take 1 to	SAP Business One, email	Confirmed delivery date or new purchase order

#	Step	Who	What happens	System	Output
			3 days.		
6	Check capacity	Production Planner	Loads the planned orders onto the work centre hours in the capacity sheet, week by week, for the turning, milling and honing centres. It takes about 60 minutes.	Excel capacity sheet	Load per work centre and week
7	Resolve overload	Production Manager	If a work centre is loaded above 95% in a week (about 1 week in 4), decides between overtime, a weekend shift, subcontracting or moving orders. The decision usually takes place at the Tuesday meeting.	Excel capacity sheet	Overload decision
8	Schedule the orders	Production Planner	Sets start and finish dates per order by working backwards from the due date, sequences orders to reduce setup changes and enters the dates in the ERP. It takes 1 to 2 hours.	Excel capacity sheet, SAP Business One	Scheduled planned orders
9	Convert to production orders	Production Planner	Converts planned orders starting within the next 10 working days into production orders with status Planned. Orders further out stay as proposals.	SAP Business One	Production orders, status Planned
10	Confirm the delivery date	Demand Planner	For make-to-order demand, tells the sales desk the confirmed date based on the schedule. If the date is later than the customer asked for (about 18% of orders), tells sales what can be done and by when.	SAP Business One, email	Delivery date to the sales desk
11	Reserve the materials	Materials Planner	Reserves stock against each production order so that the same bar stock or part is not promised twice. Reservations that cannot be met are flagged for the buyer.	SAP Business One	Material reservations
12	Prepare the document pack	Production Planner	Prints the traveller, routing, current drawing revision and work instructions for the order. Checks the drawing revision against the bill of material. It takes about 10 minutes per order.	Document server, printer	Order document pack
13	Pick and stage the kit	Warehouse Operator	Picks the materials listed on the order two working days before the start, labels the box and books the issue. If something is missing, the operator records it on the pick list and tells the materials planner the same day.	SAP Business One	Kit staged at the work centre, or shortage noted
14	Check release readiness	Production Supervisor	The day before the start, checks that the kit, tooling, programme and document pack are complete and that the work centre is free. About 12% of orders fail this check, most often for a missing insert or an old drawing revision.	SAP Business One, shop floor	Ready or not ready decision
15	Release the order	Production Supervisor	Sets the production order to Released and hands the pack to the shift. For night shift orders this must be done by 14:00.	SAP Business One	Released production order
16	Receive and check the order	Shop Floor Operator	Checks the kit and documents against the routing before starting the first operation. If a part, tool or document is missing, stops and calls the supervisor. It takes about 10 minutes.	Traveller, work centre	Order started, or shortage reported
17	Handle a shortage at the line	Production Supervisor	When something is missing after release, decides together with the materials planner whether to wait, substitute, run a partial quantity or swap in the next order. About 10% of released orders reach this step.	Phone, SAP Business One	Shortage decision

#	Step	Who	What happens	System	Output
18	Reschedule the order	Production Planner	Moves the order, updates the dates and the capacity sheet and tells the demand planner if a customer date is affected. Reschedules are limited to the following 5 days without manager approval.	SAP Business One, Excel capacity sheet	Updated schedule
19	Review the schedule weekly	Production Manager	At the Friday meeting, reviews late orders, reschedules, open shortages and the load for the next 2 weeks, and freezes the next week's schedule.	SAP Business One, Excel capacity sheet	Frozen schedule for the next week

7. Decision points and business rules

- Is the proposal still valid and in the right lot size? No: change or delete it (step 3).
- Is the material available for the due date? No: the buyer expedites or orders it (steps 4 and 5).
- Is any work centre loaded above 95% in the week? Yes: the manager decides on overtime, subcontracting or moving orders (step 7).
- Is the confirmed date later than the customer date? Yes: tell the sales desk with options (step 10).
- Is the order ready: kit, tooling, programme and documents complete? No: do not release it (step 14).
- Is the order for the night shift? Yes: release it by 14:00 (step 15).
- Is something missing after release? Yes: wait, substitute, run a partial quantity or swap in the next order (step 17).
- Does the reschedule fall outside the next 5 days? Yes: the production manager approves it (step 18).

8. Exceptions

- Rush order from a key customer (about 6% of orders): the production manager inserts it ahead of the schedule and the planner reworks the affected dates the same day.
- Drawing revised after release (about 3%): the supervisor stops the order, the planner replaces the pack and the quality engineer decides about parts already made.
- Machine breakdown: maintenance gives an estimated repair time, and the planner moves the orders on that centre to other machines where the routing allows it.
- Supplier delivers late and the order is already staged for the night shift: the supervisor releases a different order and the late one is rescheduled.
- Customer cancels or changes the quantity after release (about 4%): the demand planner informs the planner, the supervisor stops or reduces the order and the materials are returned to stock.

9. Controls

- An order can only be released when its status is Planned and its materials are reserved, so unreleased orders cannot be booked against.
- Segregation of duties: the planner who schedules the order does not release it. The supervisor releases.
- Drawing revision on the pack is checked against the bill of material before release.
- Reschedules beyond 5 days and any overtime need the approval of the production manager.
- The schedule for the next week is frozen at the Friday meeting. Changes inside the frozen week are logged with a reason.
- Material issues are booked in the ERP, so stock and work in progress match what is on the floor.

10. Known issues today

- Capacity is planned in Excel next to the ERP, so the two disagree whenever someone edits one and not the other.
- Material availability is checked once a week, so a late delivery is often found only at kitting.
- Drawing revisions are checked by hand, and old revisions still reach the floor.
- Shortages found at the line are solved by phone, and nobody records why the order was late.
- Sales hears about moved delivery dates after the customer has already asked.

11. RACI matrix

R = responsible (does the work), A = accountable (owns the outcome), C = consulted, I = informed.

Activity	Demand Planner	Prod Planner	Materials Planner	Prod Supervisor	Prod Manager
Review demand and run MRP	R	A/R	I		
Check material availability and chase shortages	I	A	R		
Check capacity and resolve overload		R		C	A
Schedule and convert to production orders	I	A/R	C	C	
Confirm delivery date to sales	A/R	C			I
Reserve and pick the kit		I	A/R	C	
Prepare documents and release the order		R		A/R	
Handle shortages after release	I	C	R	A/R	I
Reschedule and freeze the weekly plan	I	R	I	C	A

12. KPIs

KPI	Definition	Target
Schedule adherence	Share of production orders that start on the scheduled start date, measured weekly.	[set]
Orders released with complete kit	Share of released orders where the operator found the kit and documents complete at the first check. Today about 90%.	[set]
Reschedules per 100 orders	Number of date changes after release divided by orders released, times 100. Today about 25.	[set]
On-time delivery to the promised date	Share of make-to-order shipments that leave on or before the date confirmed to the customer.	[set]
Planned order to release lead time	Average working days between converting a planned order and releasing the production order.	[set]
Shortages found after release	Production orders with a missing material, tool or document at the line, as a share of released orders.	[set]

13. Revision history

Version	Date	Author	Change
1.0	[date]	[name]	First as-is version

Free template from processfix.ai. You may copy and adapt it. The company in the example is fictional.