

productionOS — User Manual

Status: v0.528 · 13/10/2026 · Screenshots from the demo tenant **Nordwerk / Werk 1 / Fertigung**

productionOS is a manufacturing execution system: routings describe how an item is made; orders are exploded from them, scheduled and released; at the Shopfloor Terminal operators perform setup, processing, inspection and handover; the analyses show costs, dates, quality and traceability. This manual follows exactly this path.

It consists of three user interfaces:

Interface	Purpose	nonprod	local
Main frontend	Master data, planning, order processing, analyses	https://dev.productionos.eu	http://localhost:8181
Shopfloor Terminal	Confirmation at the machine, touch-operated, employee ID + PIN	https://werker.dev.productionos.eu	http://localhost:8002
Plan Editor	Create and change routings graphically	https://plan.dev.productionos.eu	http://localhost:8003

The manual is also available **online** under `/handbuch/` of the main frontend (<https://dev.productionos.eu/handbuch/>), with search and table of contents. The **?** button in the header of the main frontend and the terminal opens it at the chapter for the view currently open.

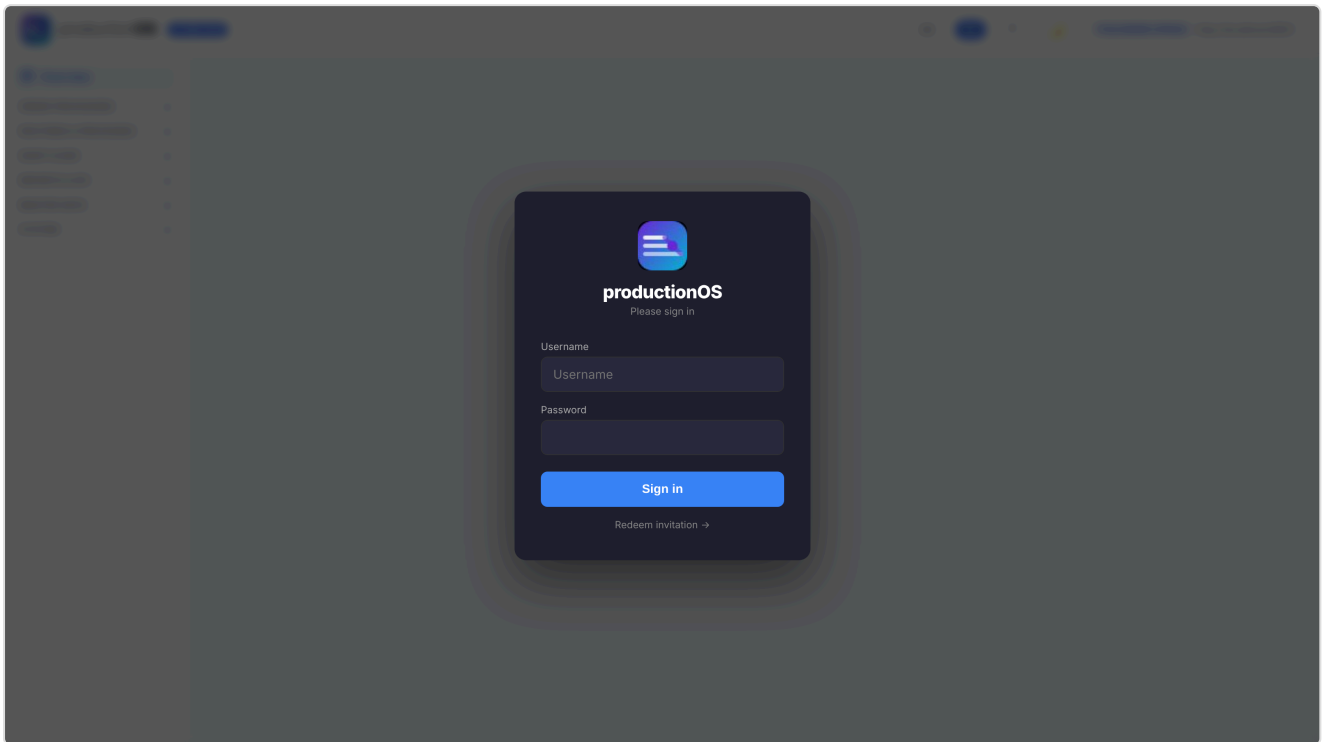
The screenshots are captured, not drawn: a script drives through the user interface and takes a picture of every step. The case behind them is the hydraulic block **HB-100** of the demo tenant: three production stages (Gehäuse GH-200 (housing), Ventilschieber VS-310 (valve spool), Montage (assembly)), nine machines, two raw materials, two purchased parts — explainable in one sentence and still multi-level.

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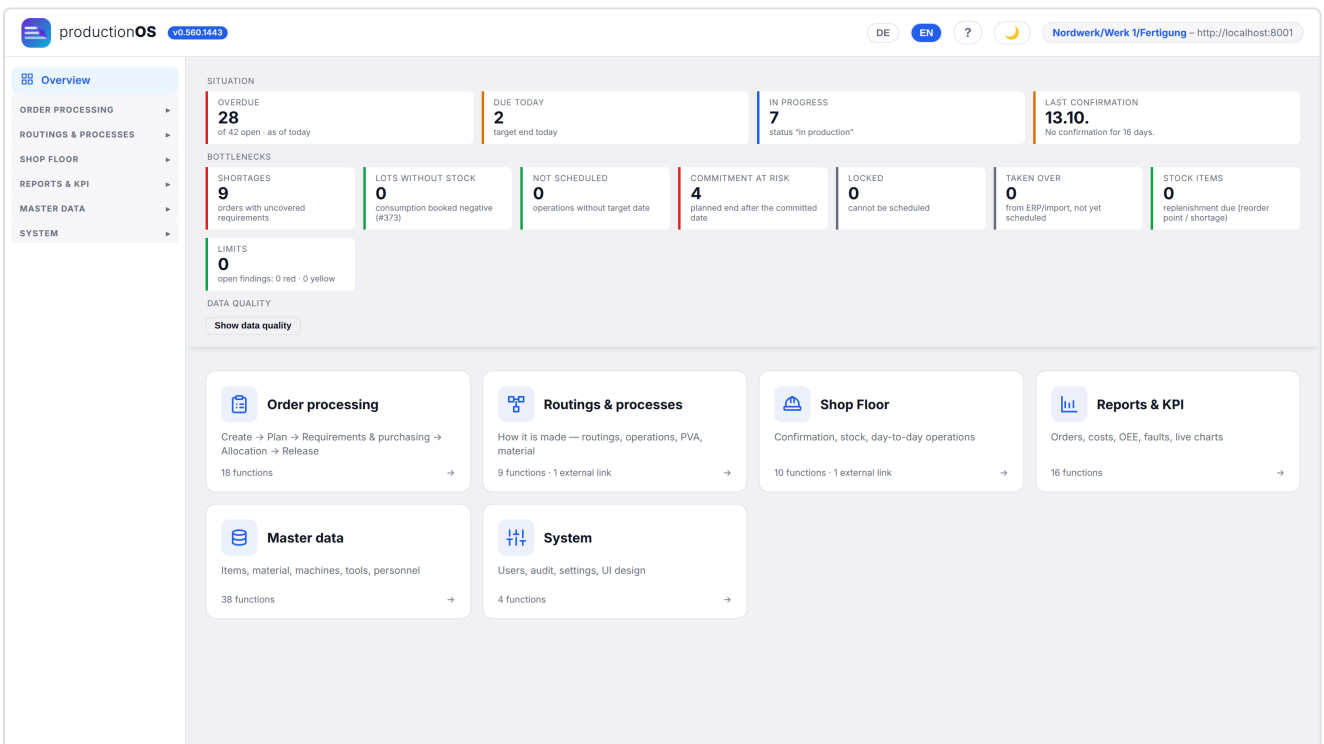
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Getting started — sign-in, tenant, navigation



Signing in to the main frontend takes a user name and password. An account belongs to exactly one **tenant** (area / plant / department); anyone working in several departments switches between them under *Settings* → *Switch tenant*. All data is separated per tenant — in the database as well, not only in the user interface.



The home page shows the **situation**: how many orders are running, what is due today, what is overdue or locked, which deliveries are outstanding, and the latest confirmation. The six tiles below are the areas of the navigation:

Area	Content
Order processing	Create → Plan in → Requirements & purchasing → Allocation → Release (with shift supervisor), plus dates, Gantt, archive, guided workflows
Routings & processes	Routing, alternatives, matrix, co-products, process instruction, inspection plans, material consumption, Plan Editor
Shop Floor	Open terminal, confirmations, input/output bookings, stock, batches, serial numbers
Reports & KPI	Status, plan/actual, costs, performance summary, traceability, OEE, disruptions, control charts, scrap
Master data	Items, material, machines, tools, personnel (master, calendar, skills, wage groups), calendar, shifts, units, codes
System	Users (role and additional roles), audit log, UI design, settings (tenant, terminal devices, API access, operating model, order numbers)

Language. All three user interfaces are available in German and English; the **DE / EN** switch is in the header and applies to the user's own account. Server messages also come in the selected language. Stored data (descriptions, remarks) stays as it was entered.

User interface per tenant. Under *System → UI design* it is possible to define which fields a form shows per role (switch *Simple / Full*), what terms are called, which guided workflows exist and how a terminal is laid out per device or machine group. How this works is described in [Part 8](#).

Every list has a search at the top and a button for creating on the right. In the order dialogs, links lead onwards (e.g. from the production plan to the requirements list), and **Back** returns to the place one came from.

Part 1 — Master data

Master data is what everything else builds on. The demo tenant has set it up the way a new tenant would: first units, calendars and shifts, then machines, material and items, and finally the routings.

1.1 Items

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DE EN ? Nordwerk/Werk 1/Fertigung - http://localhost:8001

Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Item master

ARTIKEL_S - Nordwerk / Werk 1 / Fertigung

Guided creation Calculate all planned costs + New item

Item no. or description... Group... Load

Items 4 Groups 2 Total 4

4 items - showing 4

ITEM NO.	DESCRIPTION	GROUP	UNIT	PLANNED COSTS	Edit	Hub	Passport	
GH-200	Gehäuse HB-100, bearbeitet	HALBZ	St	218.08 EUR	Edit	Hub	Passport	
HB-100	Hydraulikblock HB-100 kpl.	FERTIG	St	372.05 EUR	Edit	Hub	Passport	
KSS-EMU	Kühlschmierstoff-Emulsion 5 %	HALBZ	kg	8.01 EUR	Edit	Hub	Passport	
VS-310	Ventilschieber Ø16 gehärtet	HALBZ	St	69.90 EUR	Edit	Hub	Passport	

An item is what is produced — end product or semi-finished product. The list shows group, unit and the **planned costs per piece**, which are calculated from the routing (*Calculate all planned costs*). For each item, the edit dialog has tabs for master, prices, storage, dimensions, product passport and external procurement; *Info* opens the preliminary costing, *Passport* the product passport ([Part 6](#)).

Semi-finished products (here GH-200 and VS-310) are items of their own with their own routing. That they go into HB-100 is not recorded on the item but in the **material consumption** of the routing of HB-100 ([2.3](#)).

1.2 Material

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Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Material master

MAT_S - Nordwerk / Werk 1 / Fertigung

+ New material

Mat. no. or description...

Filter group...

Load

Materials

7

Groups

2

With supplier

7

7 materials · showing 7

MAT. NO.	GROUP	DESCRIPTION	UNIT	SUPPLIER	PURCHASE PRICE	INSPECTION PLAN
ALU-6082	ROH	Alu-Blockmaterial 6082 T6, 120×80	kg	LM-NORD	6.40 EUR / kg	create
BIOZID	ROH	Biozid-Zusatz KSS	kg	CHEM-NW	24.50 EUR / kg	create
DS-40	KAUF	Dichtsatz DS-40 (NBR)	St	DICHT-24	11.20 EUR / St	create
KSS-KONZ	ROH	KSS-Konzentrat mineralölfrei	kg	CHEM-NW	7.90 EUR / kg	create
RST-16	ROH	Rundstahl 16MnCr5 Ø18 h9	kg	STAHL-HB	2.85 EUR / kg	create
SCHR-M8	KAUF	Zylinderschraube M8×40 12.9	St	DICHT-24	0.38 EUR / St	create
WASSER-VE	ROH	VE-Wasser (vollentsalzt)	kg	CHEM-NW	0.02 EUR / kg	create

Material is what is purchased and consumed: raw material (ALU-6082, RST-16) and purchased parts (Dichtsatz (seal kit), Schrauben (screws)). The list shows group, unit, supplier, purchase price and the column **Inspection plan**: an inspection plan on a material is the **goods receipt inspection**. It is created here (*Edit* → *Goods receipt inspection* or *create* in the column) or under *Plans* → *Inspection plans*; goods receipt later asks for it (3.6).

The unit of a material in the routing is a **ratio** — “kg per St” —, not a bare unit. The denominator carries the reference quantity, and the requirements calculation needs it (2.3).

1.3 Machines

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Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Machine master

MASCH_S - Nordwerk / Werk 1 / Fertigung

+ New machine

Machine no. or description...

Filter group...

Load

Machines

10

Groups

9

Production

10

Non-prod.

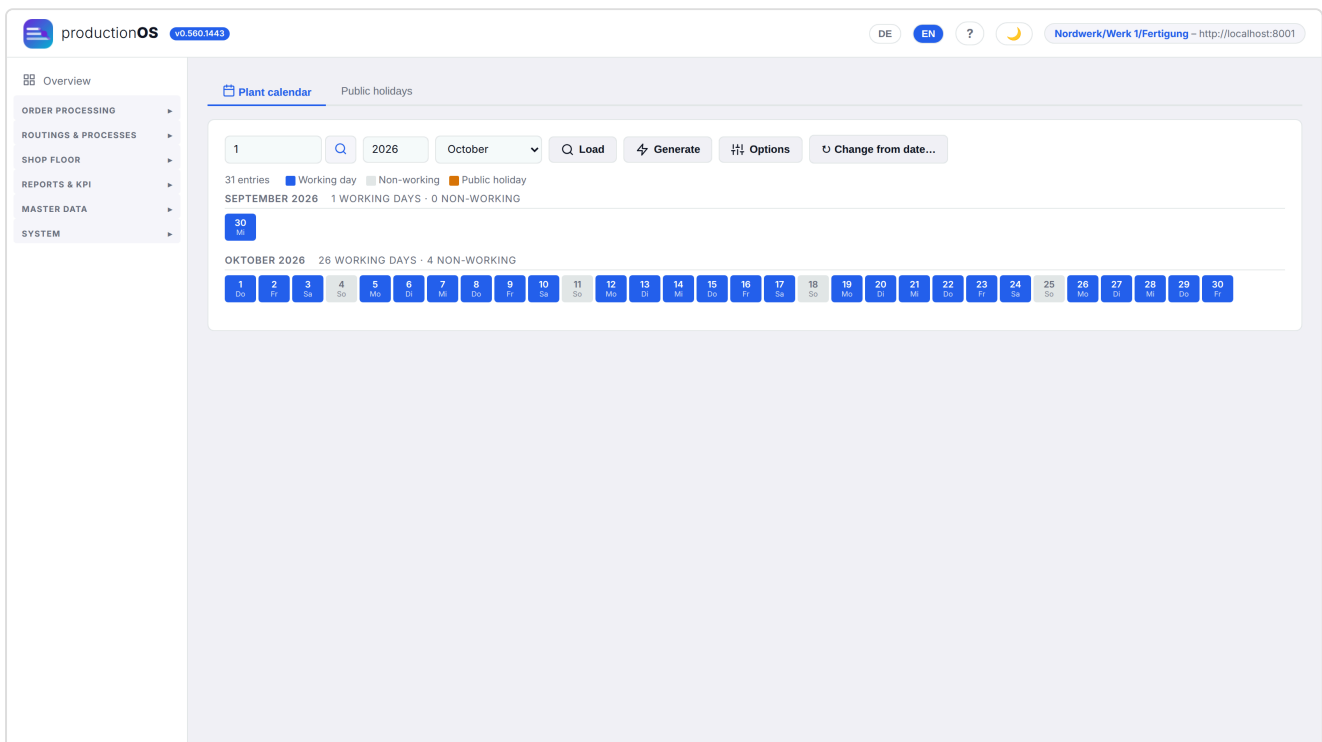
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DESCRIPTION	MACHINE NO.	GROUP	CAP.	COST CTR.	NP
5-Achs-BAZ DMG DMU 50	BAZ-01	FRAESEN	1 St	4100	P
5-Achs-BAZ DMG DMU 50	BAZ-02	FRAESEN	1 St	4100	P
Bandsäge Behringer HBP	SAEG-01	SAEGEN	1 St	4100	P
CNC-Drehmaschine Index G200	DREH-01	DREHEN	1 St	4100	P
Dichtheitsprüfstand ATEQ F620	PRUEF-01	PRUEFEN	1 St	4300	P
Emulsionsmischer 200 I	MISCH-01	MISCHEN	1 St	4500	P
Montageplatz Hydraulik	MONT-01	MONTAGE	1 St	4200	P
Reinigungsanlage Mafac	WASCH-01	WASCHEN	1 St	4100	P
Rundscheifmaschine Studer	SCHL-01	SCHLEIFEN	1 St	4100	P
Verpackungsplatz	VERP-01	VERSAND	1 St	4400	P

Per machine: group, cost centre, hourly rate, calendar. *Details* shows utilisation and machine loading, *Calendar* the machine-specific working days, *Maintenance plan* the planned downtimes. Which machine can perform which operation is recorded in the matrix *Operation* ↔ *machine* and in the alternatives of the routing ([2.6](#)).

Two flags on the machine state whether **setup** and **teardown** take any time at all. They are the default for all operations on this machine; the operation can override them (*from machine / yes / no*). When switched off, that portion is missing from scheduling, Gantt and costs. The *Skills* tab records which skills the personnel at this machine need if the operation itself requires none ([1.5](#)).

1.4 Plant calendar and shift models



The plant calendar states for each day whether work takes place and with which shift model. *Generate* creates a year (Mon–Fri with the standard model); public holidays come in via the *Public holidays* tab (import by federal state). Individual days can be switched — in the demo tenant, Saturdays with an early shift are working days, as is common for a contract manufacturer under deadline pressure.

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Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Shift models SCHICHT_MODEL - Times per shift period

+ New model + Add item Load

2SCHICHT 960 min/day 2 shifts + Item Model

POS.	START	END	DURATION	CODE	DESCRIPTION
1	06:00	14:00	480 min	F	Frühschicht
2	14:00	22:00	480 min	S	Spätschicht

FRUEH 480 min/day 1 shift + Item Model

POS.	START	END	DURATION	CODE	DESCRIPTION
1	06:00	14:00	480 min	F	Frühschicht

SPAET 480 min/day 1 shift + Item Model

POS.	START	END	DURATION	CODE	DESCRIPTION
1	14:00	22:00	480 min	S	Spätschicht

A shift model consists of positions with start and end (here early 06–14, late 14–22). Scheduling calculates only within these times; the daily capacity of a machine is the sum of its shifts. Machines without a calendar of their own follow the plant calendar.

1.5 Personnel: skills, calendar, wage groups

Since v0.516, personnel is a **resource** like a machine: scheduling can move an operation if nobody with the required skill is present (3.12). This requires four kinds of master data.

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DE EN ? Nordwerk/Werk 1/Fertigung - http://localhost:8001

Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Personnel

PER_S - Nordwerk / Werk 1 / Fertigung + New person

Employee ID, name or first name

5 employees

EMPLOYEE ID

101

102

103

104

105

Edit person

EMPLOYEE ID * NAME * FIRST NAME SHORT NAME

101 Brandt Katrin KBRAN

GROUP Cost ctr. no. Wage group DEFAULT SHIFT MODEL

FERT 4100 L5 FRUEH (1 x shifts)

CO2 FACTOR CO2 FACTOR PER CO2 SOURCE / YEAR JOINED

Hour (kg CO2e/h) UBA 2025 (Pendeln) tt.mm.jjjj

LEFT ACTIVE REMARK

tt.mm.jjjj J - Active

SKILLS

☒ BOHR BOHREN/GEWINDE ☒ CNC CNC-PROGRAMMIERUNG ☐ DICHT DICHTHEITSPRÜFUNG ☐ DREH DREHEN

☐ ENTG ENTGRATEN/WASCHEN ☒ FRAES FRÄSEN ☐ MISCH MISCHEN / ANSATZ ☐ MONT HYDRAULIKMONTAGE

☐ QS PRÜFMITTELBEFÄHIGT ☒ SAEG SÄGEN ☐ SCHL RUNDSCHEIFEN ☐ STAPL FLURFÖRDERZEUG-BERECHTIGUNG

☐ VERP VERPACKEN ☒ ZERSP ZERSPANUNGSMECHANIKER/IN

Skills from the "Qualifications" catalogue — operations and machines require them; scheduling plans with them (#89).

Cancel Save

Personnel master. Per person the employee ID and PIN for the terminal, wage group, **default shift model** (here FRUEH 06:00–14:00) and the **skills** as a multiple selection from the catalogue — any number per person.

Personnel qualifications

Search...

14 entries

CODE	DESCRIPTION	LEVEL		
BOHR	Bohren/Gewinde	—		
CNC	CNC-Programmierung	—		
DICHT	Dichtheitsprüfung	—		
DREH	Drehen	—		
ENTG	Entgraten/Waschen	—		
FRAES	Fräsen	—		
MISCH	Mischen / Ansatz	—		
MONT	Hydraulikmontage	—		
QS	Prüfmittelbefähigt	—		
SAEG	Sägen	—		
SCHL	Rundscheifen	—		
STAPL	Flurförderzeug-Berechtigung	—		
VERP	Verpacken	—		
ZERSP	Zerspanungsmechaniker/in	—		

Qualifications (skills). The catalogue from which persons and requirements draw their skills — activities (milling, hydraulic assembly), abilities (CNC programming, qualified for inspection equipment) and certificates (industrial truck). *Create from operation catalog* creates one skill with the same code per operation. This is the simplest way to start: a skill with the code of the operation then automatically counts as a requirement for processing, and the only thing left to maintain is who can perform which operation.

Personnel calendar

Oktober 2026

Shift model and status per person and day. Green = available (scheduling plans with it), orange = absent, grey = off. Select persons on the left or tap a cell, choose period and status, "Set".

FROM: 01.10.2026 TO: 01.10.2026 STATUS: — REMARK: e.g. holiday

PERSON	1 T	2 F	3 S	4 S	5 M	6 T	7 W	8 T	9 F	10 S	11 S	12 M	13 T	14 W	15 T	16 F	17 S	18 S	19 M	20 T	21 W	22 T	23 F	24 S	25 S	26 M	27 T	28 W	29 T	30 F	31 S
☐ Brandt Katrin 101 FRUEH - BOHR, CNC, FRAES, SAEG, ZERSP	2SCH	2SCH	2SCH	FREI	2SCH	2SCH	2SCH	2SCH	2SCH	2SCH	FREI	2SCH	FRUE	FRUE	FRUE	FRUE	FRUE	FREI	FRUE	FRUE	FRUE	FRUE	FRUE	FRUE	FREI	URL	URL	URL	FRUE	FRUE	FRUE
☐ Hoffmann Rene 105 SPAET - ENTG, MISCH, MONT, STAPL, VERP													SPAET	SPAET	SPAET	SPAET	SPAET	FREI	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET
☐ Lindqvist Mika 103 FRUEH - DICHT, MONT, QS, VERP													FRUE	FRUE	FRUE	FRUE	FRUE	FREI	FRUE	FRUE	FRUE	FRUE	FRUE	FRUE	FREI	FRUE	FRUE	FRUE	FRUE	FRUE	FRUE
☐ Okonkwo Daniel 102 FRUEH - BOHR, DREH, ENTG, FRAES, SCHL													FRUE	FRUE	FRUE	FRUE	FRUE	FREI	FRUE	FRUE	FRUE	FRUE	FRUE	FRUE	FREI	FRUE	FRUE	FRUE	FRUE	FRUE	FRUE
☐ Sabri Yasmin 104 SPAET - DREH, FRAES, QS, SAEG, SCHL													SPAET	SPAET	SPAET	SPAET	SPAET	FREI	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET	SPAET	FREI	SPAET	SPAET	SPAET	SPAET	SPAET

☐ available ☐ absent (status) ☐ off empty = plant calendar + default shift

Personnel calendar. Per person and day: shift model and status (available, holiday, sick, training, time off in lieu). *Create from plant calendar* fills a period from the plant calendar and the person's default shift model; after that only the deviations are maintained. Several persons and days can be selected together and given a status (in the screenshot, holiday in the week from 26/10). *Import (ERP)* takes over attendance from an ERP — as an ISA-95 file (B2MML, PersonnelCapability) or as CSV `per_nr;typ;von;bis;grund;schichtmodell`. A preview comes first; nothing is written until *Take over*; days maintained by hand remain untouched. Without an entry in the personnel calendar, the plant calendar applies with the default shift model; without either, the person counts as **not available** — scheduling does not plan with personnel that does not exist.

CODE	DESCRIPTION	RATE	UNIT	VALID FROM
L3	Helfer/in	38.50	EUR / h	—
L4	Facharbeiter/in	42.00	EUR / h	—
L5	Facharbeiter/in mit Programmierung	48.50	EUR / h	—
L6	Einrichter/in	55.00	EUR / h	—

Wage groups. Code, description and **rate** in EUR/h, with “valid from”. The wage group is recorded on the person and per phase on the operation; the personnel costs are calculated with the rate (5.1). Codes that are used somewhere but have no rate yet are shown by the form as buttons for creating them. A wage group is a cost attribute, not a planning criterion — anyone wanting to plan by it creates a skill.

1.6 Units, inspection characteristics, defect types, tools

No screenshot, because these are simple lists — but each has a role in the process:

Master data	Role
Units	St, kg, min, EUR / h ... — the active selection can be restricted per tenant; units with the integer flag round to whole pieces when distributing across lines
Characteristics (setup/inspection)	the master from which process instruction and inspection plan draw their characteristics (description, unit, specification values)

Under *Settings* → *Operating model* there are six switches with which a tenant defines how the system works at certain points. They apply per area / plant / department.

Switch	Default	Meaning
Purchasing	internal	<i>internal</i> : the <i>Purchase shortages</i> button creates a purchase order in productionOS. <i>ERP</i> : the requirement is reported and exported as CSV to an ERP
Personnel assignment is a release condition	off	<i>on</i> : no release as long as a skill requirement of an operation is not covered by assigned persons (without a requirement: without any assignment at all). <i>off</i> : the assignment is a suggestion
Allow partial allocation	on	<i>on</i> : in case of a shortfall, what is available is allocated (after confirmation). <i>off</i> : allocation is aborted
Personnel in scheduling	off	<i>off</i> : scheduling knows no personnel. <i>check</i> : planning is done without personnel, but the run reports per operation which skill is missing — the way to start while skills and calendars are still incomplete. <i>plan</i> : if personnel with the skill is missing, the operation moves to the next gap in which machine and personnel are free (3.12)
Calculate labour costs	off	<i>on</i> : planned and actual costs contain personnel as a separate column (5.1)
Tighten chain after moving to free slots	on	in backward scheduling, an operation moves forward to an earlier slot when its machine is occupied. <i>on</i> : its successors are pulled in behind it, and the buffer lies at the end before the commitment. <i>off</i> : the successors stay at their latest date, and the buffer lies within the chain (as in the legacy system)

Alongside these are *Terminal devices* ([4.1](#)), *API access* (keys for external systems) and *Order numbers* (the number pattern, e.g. {JJ}{MM}-{NR:3} for primary and {UR}-{SEK:2} for sub-orders).

Part 2 — Routings and processes

2.1 The routing

The screenshot shows the 'productionOS' interface with the 'Routings' section selected. The routing is for item 'GH-200' and consists of 4 operations. The table below lists the operations:

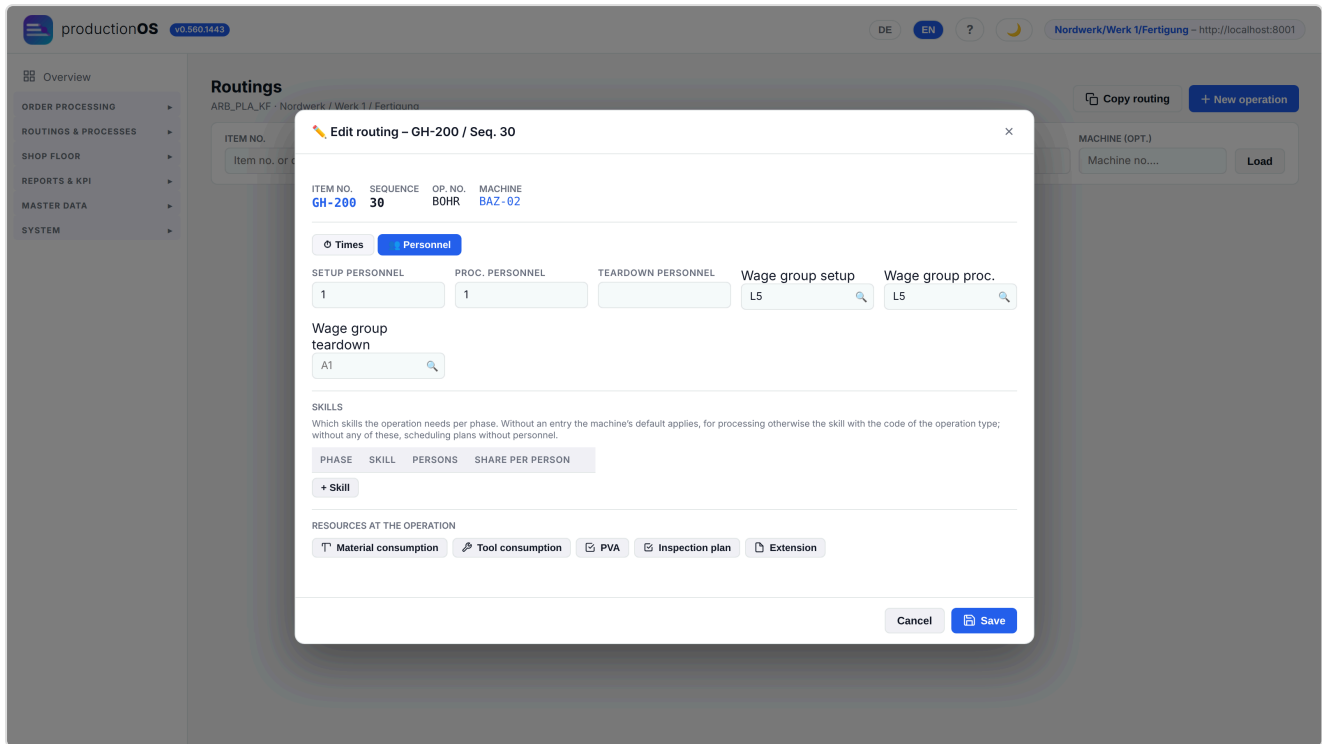
SEQ.	LINE	UNIT	OP. NO.	MACHINE	SETUP	PROC.	TIME BASIS	TEARDOWN	DELAY	FACT.
10	St	SAEG	SAEG-01	15	3	min / St	—	—		
20	St	FRAES	BAZ-01	45	22	min / St	—	—		
30	St	BOHR	BAZ-02	30	12	min / St	—	—		
40	St	ENTG	WASCH-01	10	4	min / St	—	—		

Below the table is a 'FLOW DIAGRAM' showing the sequence of operations as a series of colored boxes connected by arrows: SAEG (blue) → FRAES (purple) → BOHR (green) → ENTG (orange). Each box includes the operation name, machine code, and time per unit.

A routing is the sequence of operations of an item — here for the housing: sawing → milling → drilling/threading → deburring. For each sequence it lists machine, setup time, processing time per unit, teardown time, delay, the column **Line** (parallel lines, [2.6](#)) and the P/A flag. The flow below shows the chain with machines and times as a diagram.

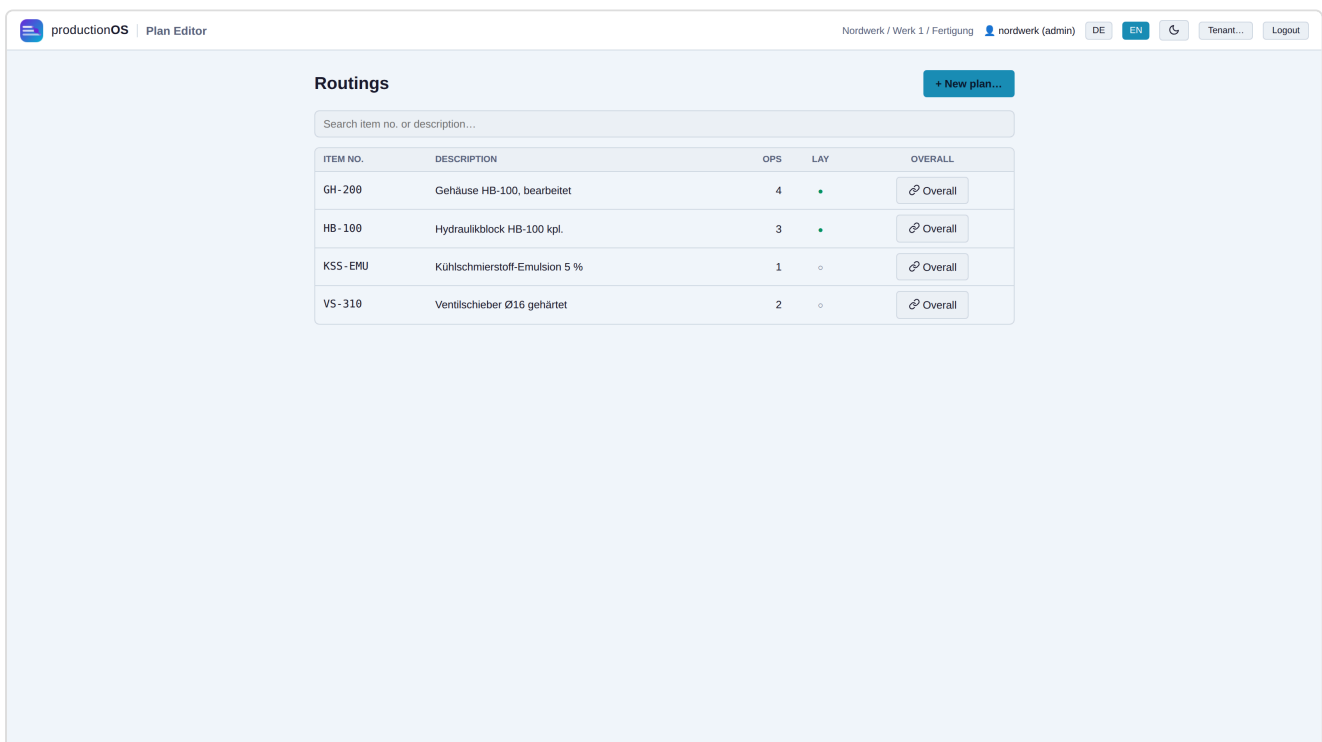
The routing is the template; the order receives its **copy** during the explosion ([3.4](#)). A later change to the routing does not change running orders — what was instructed remains traceable.

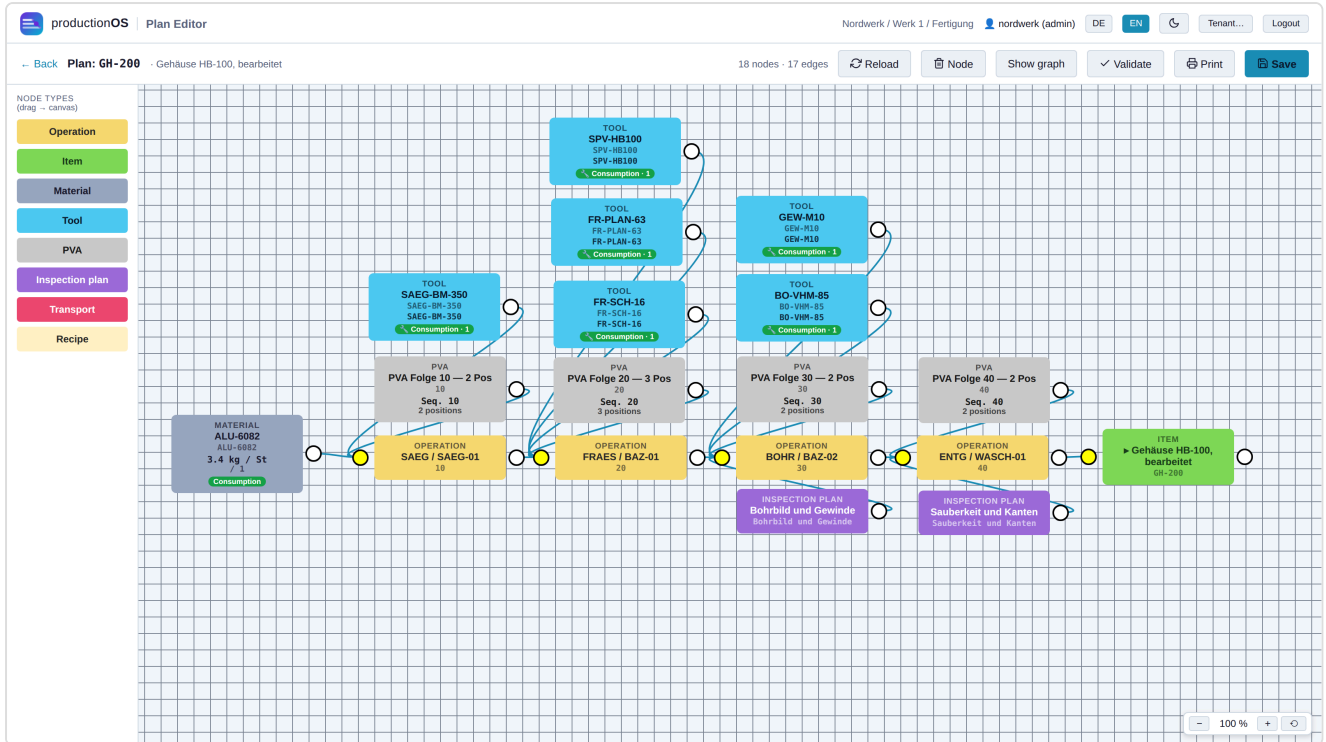
Copy routing creates the routing of an existing item for a new item, including material consumption, instruction and inspection plan.



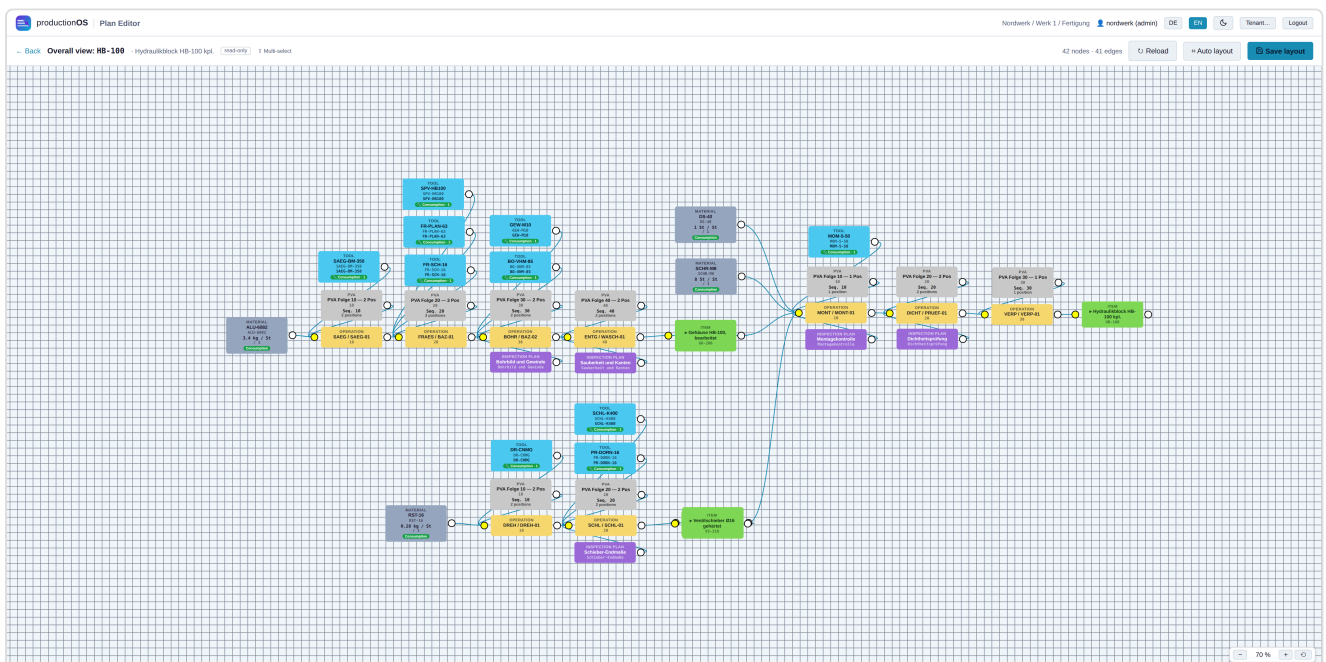
The **Personnel** tab of an operation holds, per phase (setup, processing, teardown), the number of persons, the **wage group** and the **skills**: which skill, how many persons, with which share per person (0.5 = one person tends two machines at once). An empty list is the normal case: then the machine's default applies, and if that is missing too, the skill with the code of the operation. In the screenshot drilling has no entry of its own, and BAZ-02 has no default — so the skill BOHR is required. The same list appears in the operation dialogue of the Plan Editor.

2.2 Plan Editor





The Plan Editor shows the same routing as a graph. The node types carry the colours of the legend on the left: **Operation** (yellow) with its machine, **Item** (green) as output, **Material** (grey) and **Tool** (turquoise) as inputs, **PVA** (light grey) and **Inspection plan** (violet) per operation, plus **Transport** (red) for the resources an operation needs for transport — containers, pallets, mesh boxes from the container master — and **Recipe** (cream) for mixes with proportions. Nodes can be dragged, connected and edited; *Validate* checks whether every operation has a machine and the chain is closed; *Save* writes to the same tables as the form — there is one routing, not two. *Print* outputs the plan as a notice for the shop floor on one sheet of A4 landscape: at the top plan, description, tenant and date, below it the whole drawing, scaled to the page. In the print dialogue the sheet can also be saved as a PDF.



The **Overall view** of an end product shows all levels together: the routing of the hydraulic block with the incoming routings of the housing and the valve spool. This shows where a semi-finished product goes in and everything that happens before it.

2.3 Material consumption

productionOS v0.5601443

DE EN ? Nordwerk/Werk 1/Fertigung - http://localhost:8001

Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Material consumption (MAT_EIN) Recipe: which material is consumed at which operation

GH-200 Seq. (opt.) Mat. no. (opt.) Load + New consumption

All Ops. 10 - SAEG 20 - FRAES 30 - BOHR 40 - ENTG

ITEM NO.	SEQ.	TYPE	POS.	MATERIAL	DESCRIPTION	QTY (PLAN)	UNIT	SHARE %	TOL. ±	VARIANTS	ALTERNATIVE
GH-200	10	P	1	ALU-6082	—	3.4	kg / St	—	—	—	
GH-200	10	W	1	SAEG-BM-350	—	1	St / St	—	—	—	
GH-200	20	W	2	FR-SCH-16	—	1	St / St	—	—	—	
GH-200	20	W	3	FR-PLAN-63	—	1	St / St	—	—	—	
GH-200	20	W	4	SPV-HB100	—	1	St / St	—	—	—	
GH-200	30	W	5	BO-VHM-85	—	1	St / St	—	—	—	
GH-200	30	W	6	GEW-M10	—	1	St / St	—	—	—	

Material consumption states for each operation what goes in: material (type M), tool (W) or packaging (V), with quantity and unit as a ratio ("3.4 kg / St"). Semi-finished products of an end product are also listed here — GH-200 and VS-310 as inputs to the assembly of HB-100 —, not in a separate bill of materials alongside. The requirements calculation ([3.6](#)) multiplies the quantity of the operation by this factor.

Tools are managed **factor-based** (one milling cutter per operation, not per piece) and are not reserved; inspection equipment counts as tools, not material.

2.4 Process instruction (PVA)

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Overview

ORDER PROCESSING

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SYSTEM

PVA – process instruction

Setup characteristics + tolerances per operation position, with multi-line instruction text

Item

Seq.

Search

GH-200

Q

Seq.

Characteristic/description

Q Load

9 entries

ITEM NO.	SEQ.	POS	OP.	MACHINE	CHARACTERISTIC	DESCRIPTION	STANDARD VALUE	UNIT	TOLERANCE	
GH-200	10	1	SAEG	SAEG-01	V_SCHNITT	Schnittgeschwindigkeit	80	m/min	70 ... 90	
GH-200	10	2	SAEG	SAEG-01	Vorschubkraft	Vorschubkraft	1500	N	1300 ... 1700	
GH-200	20	1	FRAES	BAZ-01	Spindeldrehzahl	Spindeldrehzahl	4500	1/min	4300 ... 4700	
GH-200	20	2	FRAES	BAZ-01	Bahnvorschub	Bahnvorschub	1200	mm/min	1100 ... 1300	
GH-200	20	3	FRAES	BAZ-01	Kühlmitteldruck	Kühlmitteldruck	40	bar	35 ... 45	
GH-200	30	1	BOHR	BAZ-02	Bohrdrehzahl	Bohrdrehzahl	2800	1/min	2650 ... 2950	
GH-200	30	2	BOHR	BAZ-02	Bohrtiefe	Bohrtiefe	46	mm	45.8 ... 46.2	
GH-200	40	1	ENTG	WASCH-01	T_BECKEN	Beckentemperatur	55	°C	50 ... 60	
GH-200	40	2	ENTG	WASCH-01	Waschdauer	Waschdauer	8	min	7 ... 9	

The process instruction (Prozess-Verfahrens-Anweisung, PVA) states how an operation is to be set up: cutting speed, feed rate, torque, test pressure — with standard value and tolerance. Three forms occur: two-sided (standard value with range), one-sided ($< 0,25 \text{ mm/s}$) and pure instruction (text without a number). At the terminal the instruction appears between material and START (4.4).

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Overview

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Characteristics per operation

PVA (setup characteristics) + inspection plan (inspection characteristics) per operation · characteristic from master data

GH-200

Q Load

Characteristic master data

Seq. 10 SAEG · SAEG-01 2 setup · 0 inspection

SETUP CHARACTERISTICS (PVA) + Setup characteristic

POS	SETUP CHARACTERISTIC	DESCRIPTION	STANDARD VALUE	UNIT	LIMITS	
1	V_SCHNITT	Schnittgeschwindigkeit	80	m/min	70 ... 90	
2	Vorschubkraft	Vorschubkraft	1500	N	1300 ... 1700	

INSPECTION CHARACTERISTICS (INSPECTION PLAN) + Create inspection plan

No inspection plan for this operation

Seq. 20 FRAES · BAZ-01 3 setup · 0 inspection

SETUP CHARACTERISTICS (PVA) + Setup characteristic

POS	SETUP CHARACTERISTIC	DESCRIPTION	STANDARD VALUE	UNIT	LIMITS	
1	Spindeldrehzahl	Spindeldrehzahl	4500	1/min	4300 ... 4700	
2	Bahnvorschub	Bahnvorschub	1200	mm/min	1100 ... 1300	
3	Kühlmitteldruck	Kühlmitteldruck	40	bar	35 ... 45	

INSPECTION CHARACTERISTICS (INSPECTION PLAN) + Create inspection plan

No inspection plan for this operation

Seq. 30 BOHR · BAZ-02 2 setup · 3 inspection

SETUP CHARACTERISTICS (PVA) + Setup characteristic

POS	SETUP CHARACTERISTIC	DESCRIPTION	STANDARD VALUE	UNIT	LIMITS	
-----	----------------------	-------------	----------------	------	--------	--

Characteristics per operation combines process instruction and inspection plan per sequence — the view in which an operation is maintained completely.

2.5 Inspection plans

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Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Inspection plans PPL_KORF / PPL_POS - per operation on the machine and/or in the lab

GH-200 Q Load + Inspection plan (Op.) or Material no.... (goods receipt) Q Load + Inspection plan (goods receipt)

Seq. 30 BOHR · BAZ-02 Machine Bohrbild und Gewinde + Characteristic Inspection plan

POS	INSPECTION CHARACTERISTIC	TARGET	LSL	USL	UNIT	N	AQL	FREQUENCY	INSP. EQUIPMENT	CERT.	DEF. CL.
1	BOHR85	8.5	8.5	8.58	mm	—	—	SST	Innenmessschraube	—	—
2	GEW-M10	—	—	—	—	—	—	100	Gewindelehndorn	—	—
3	GRAT	—	—	—	—	—	—	100	Sichtprüfung	—	—

Seq. 40 ENTG · WASCH-01 Machine Sauberkeit und Kanten + Characteristic Inspection plan

POS	INSPECTION CHARACTERISTIC	TARGET	LSL	USL	UNIT	N	AQL	FREQUENCY	INSP. EQUIPMENT	CERT.	DEF. CL.
1	SCHMUTZ	8	0	15	mg	—	—	SCHI	Filterwaage	—	—
2	SICHT	—	—	—	—	—	—	100	Sichtprüfung	—	—

An inspection plan belongs to the operation (sequence 30 drilling: bore 8.5 H7 with LSL 8.50 / USL 8.58, thread M10, burr) and lists for each characteristic the target value, limits, frequency and inspection equipment. Two recording modes, decided by the characteristic itself: a characteristic with the unit **BEURT** (assessment) is **counted** (scratch yes/no, n of m defective), all others are **measured**. At the terminal the matching form opens automatically ([4.8](#)).

Inspection plans on the **material** are goods receipt inspections ([1.2](#)).

2.6 Alternatives and parallel lines

An operation can run on more than one machine. Two flags distinguish how:

Flag	Meaning	Scheduling
A — alternative	either one machine or the other	the machine loading check picks one; at the terminal the siblings disappear as soon as one has been started
P — parallel line	both lines process at the same time, the quantity is split	default: all lines active, quantity by throughput (the faster line gets more); per order the distribution can be changed under <i>Routing alternatives</i> , down to 0 on a line (= line off)

The distribution by throughput is calculated across the whole P block (sum of the processing times per line, like resistors in parallel) and rounds via the unit table: pieces to whole pieces, kilograms not. Planning in again resets a manual distribution.

2.7 Co-products and by-product quantities

An operation can produce more than its item: samples, a by-product, waste. Such **outputs** are maintained on the producing operation, with two settings:

Setting	Choice	Meaning
Output type	A — branch-off	is taken from the processed quantity; the operation has to process correspondingly more
	N — by-product	arises in addition; the quantity of the operation stays the same
Quantity rule	P — proportional	K per G: 1 kg per 100 kg
	S — stepped	K per started G: 2 pieces per started 1,000 pieces
	F — fixed	K per order, independent of the quantity
	A — per mix	K per mix (mix quantity of the operation)

K is the **quantity per**, G the **base quantity**. K counts in the unit of the output item, G in the unit of the producing operation. Previously a factor ("1003") stood here, whose reciprocals, together with the quantity ratio, had to add up to 1; this calculation no longer applies. One states **what** arises and **how much per how much**. Outputs from the legacy system without a rule are shown in the list with the old factor ("1 per 1003 (old factor)").

Where outputs are maintained. *Routings & processes* → *Co-products / outputs*: enter the header item (the item whose operation produces the output), *Load*. For each output the list shows the producing operation, the output item with its own operation, the quantity rule as a sentence and the output type. The same settings are found in the **Plan Editor** on the output node; both ways write to the same table. A semi-finished product that the operation **consumes** does not belong here — that is material consumption ([2.3](#)).

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Overview

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Co-products / outputs (ARB_PLA_PS)

What an operation produces in addition: co-product, sample, waste — semi-finished product inputs are kept in material consumption (#345)

Artikel 8

Seq. KF (op)

PS Item no. (opt.)

Load

Create output

2 outputs

KF ITEM NO.	KF SEQ.	KF OP.	POS.	→ PS ITEM NO.	PS SEQ.	PS OP.	QUANTITY RULE	I/O	PROC. TIME PS	VALIDITY
Artikel 8	100	montieren	1	Endprüfung	50	pruefen	2 per started 1.000 St	Branch-off	10 min / St	
Artikel 8	100	montieren	2	Rücklagemuster	50	etikettieren	1 per started 1.000 St	Branch-off	1 min / St	

Prerequisites. The output item (sample, by-product) is created in the item master and has its own routing with at least one operation — that is where it is processed and confirmed (e.g. "pruefen" (inspect), "entsorgen" (dispose)); this operation determines machine and times of the

output. The producing operation has a unit (a new operation takes it over from the item); without a unit the rule reads "1 per 100" instead of "1 kg per 100 kg".

Creating.

1. Load the header item, *Create output*.
2. **From seq. (KF)**: the sequence of the producing operation.
3. Select the **Output item**; leave **Seq. in sub-routing** empty if the

first operation of the output item is meant.

1. Enter **Output type**, **Quantity rule**, **Quantity per (K)** and — for P and S —

Base quantity (G).

1. Check the **Preview**: it shows the sentence and what arises at 10, 100, 1,000 and 5,000, with the same calculation as the order explosion (rounded up for pieces).

1. *Create*.

The screenshot shows the 'productionOS' interface with a sidebar menu on the left containing 'Overview', 'ORDER PROCESSING', 'ROUTINGS & PROCESSES', 'SHOP FLOOR', 'REPORTS & KPI', 'MASTER DATA', and 'SYSTEM'. The main area displays 'Co-products / outputs (ARB_PLA_PS)' with a search bar and buttons for 'Seq. KF (op)', 'PS item no. (opt.)', 'Load', and 'Create output'. A modal dialog titled '+ Create output - Artikel 8' is open, showing the following fields:

- FROM SEQ. (KF)**: 100
- OUTPUT ITEM**: Rücklagemuster
- SEQ. IN SUB-ROUTING**: empty = first
- OUTPUT TYPE**: A - branch-off (from the pr)
- QUANTITY RULE**: S - stepped: K per started
- QUANTITY PER (K)**: 1
- BASE QUANTITY (G)**: 1000
- PREVIEW**: 1 per started 1.000
at 10 → 1 · at 100 → 1 · at 1000 → 1 · at 5000 → 5

Buttons for 'Cancel' and 'Create' are at the bottom right of the dialog.

In the create dialogue the preview lacks the unit of the producing operation; in the edit dialogue it is shown. When an order is planned in, the report lists the by-product quantities per output; on the order the operation of the output appears with its quantity, and its final confirmation creates the lot of the output item.

Branch-off or by-product. The output type decides whether the output is part of the processed quantity. Order for 100 kg, output 1 kg per 100 kg:

Output type	producing operation processes	passes on	output
A — branch-off	101 kg	100 kg	1 kg
N — by-product	100 kg	100 kg	1 kg in addition

- **Branch-off**, when the output is taken **from** the product:

samples, retained samples, part of the mix. The material consumption of the operation grows accordingly (at 0.6 / 0.4 kg per kg: 60.6 + 40.4 kg); the mass balance adds up.

- **By-product**, when something arises **alongside** the product:

solvent recovery, waste, chips. The quantity of the operation stays the same.

This also applies to the **last operation** of a routing. Exception: routings taken over from the legacy system whose last operation carries its own quantity ratio $\neq 1$ continue to calculate as they did there. Several branch-offs on one operation add up.

The four quantity rules.

Rule	Sentence	Order 100	Order 1,000	Order 1,500
P proportional, K = 1, G = 100	1 per 100	1	10	15
S stepped, K = 2, G = 1,000	2 per started 1,000	2	2	4
F fixed, K = 3	3 per order	3	3	3
A per mix, K = 1, mix quantity 400	1 per mix	1	3	4

- **P** for quantities that grow with the order (recovery, offcuts).
- **S** for samples and test pieces per lot size: "per started 1,000"

means from the first piece of a new thousand.

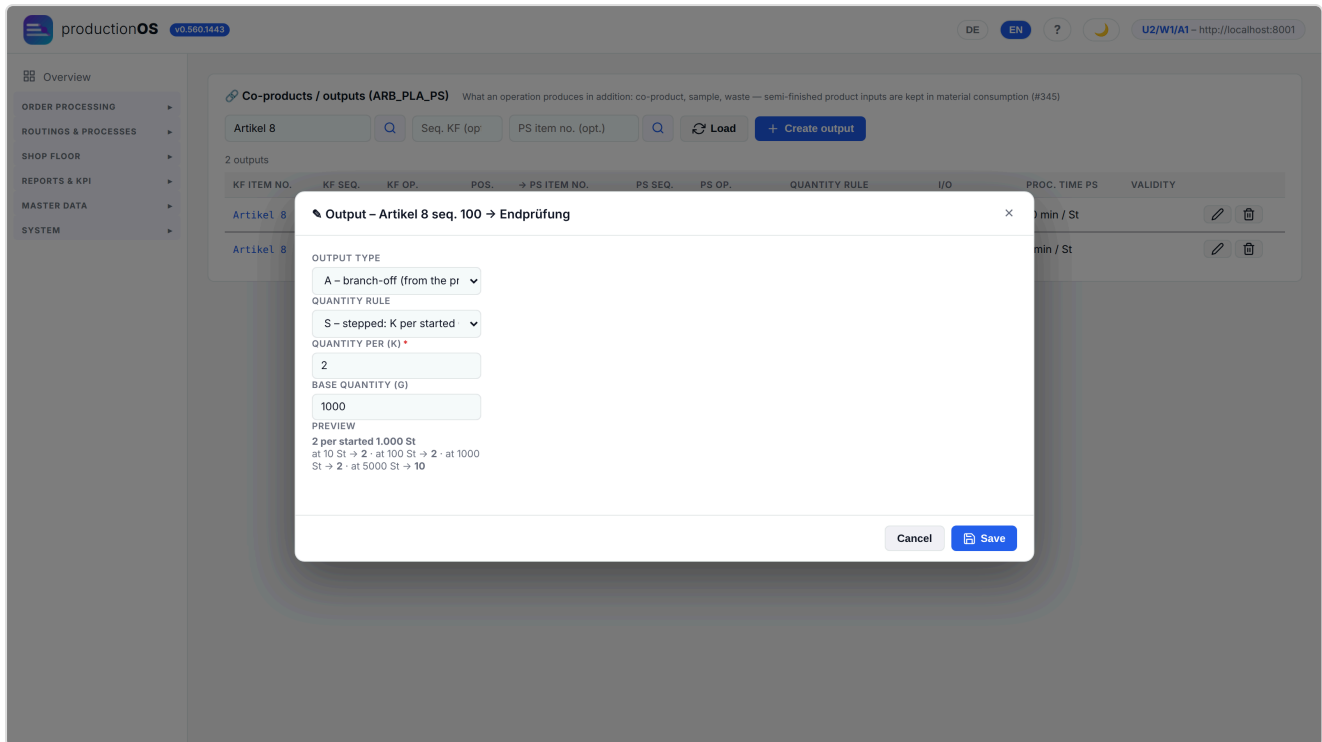
- **F** for a fixed number per order (first article samples, retained sample per lot).
- **A** for quantities per batch of a mixer; the mix quantity is set on the

producing operation ([2.8](#)), if it is missing, A acts like F.

For piece units the result is rounded up: 0.3 samples become 1 sample.

Example item 8: samples as a branch-off. Routing 50 montieren (assemble) → 100 montieren → 150 Verpacken (pack); on operation 100 two branch-offs:

Output	Output type	Rule	K	G
Rücklagemuster (retained sample)	A	S	1	1,000
Endprüfung (final inspection)	A	S	2	1,000



An order for 100 St: montieren (sequence 100) processes **103 St**, Verpacken 100 St, plus 1 retained sample and 2 final inspection samples. At 1,500 St it is 1,506 St (2 retained samples + 4 final inspection samples). In the legacy system the same statement was expressed as quantity ratio 1.003 and factors 1003 / 501.5 — which held exactly for a lot of 1,000.

Example mix: by-product quantity during mixing. An item with one operation "mischen" (mix), material 0.6 + 0.4 kg per kg; per 100 kg of mix, 1 kg of by-product is to arise, which is confirmed in its own operation "entsorgen" (dispose).

Setting on the output	mischen	by-product
N, P, K = 1, G = 10	100 kg	10 kg — "1 per 10" is 10 %, not 1 %
N, P, K = 1, G = 100	100 kg	1 kg in addition
A, P, K = 1, G = 100	101 kg	1 kg from the mix

Which of the last two rows applies is a business question: is the output **part of the mix** (branch-off, the mixer mixes 101 kg) or **does it arise in addition** (by-product)? In the example it is part of the mix — so a branch-off, 1 per 100.

2.8 Recipes — mixes with proportions

Not everything is sawn and milled. An emulsion, a paint, an electrode paste is made by **mixing**: several components in one mix, each with a **proportion in percent**, 100 % in total. The example of the demo tenant is the coolant emulsion **KSS-EMU** (VE-Wasser (demineralised water) 93 %, concentrate 5 %, biocide 2 %), mixed in the emulsion mixer MISCH-01.

Three things make up a recipe:

Element	Where it is held	Meaning
---------	------------------	---------

Components with proportion	material consumption of the operation (proz)	a recipe is consumption with a percentage — not a type of its own. Quantity and unit ("kg / kg") are derived from it, not a second statement
Mix quantity	routing of the operation	the upper limit of one mixing run (here 100 kg, the mixer holds 200 l). An order for 250 kg becomes three mixes : 100, 100 and 50
Tolerance	per component (tol_proz , percentage points)	permitted deviation of the actual proportion; empty means not evaluated. There is no business rule for a default, so there is no default either

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Overview

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Material consumption (MAT_EIN)

Recipe: which material is consumed at which operation

All Ops.

10 - MISCH

ITEM NO.	SEQ.	TYPE	POS.	MATERIAL	DESCRIPTION	QTY (PLAN)	UNIT	SHARE %	TOL. ±	VARIANTS	ALTERNATIVE
KSS-EMU	10	P	1	WASSER-VE	VE-Wasser	0.93	kg / kg	93	1	—	
KSS-EMU	10	P	2	KSS-KONZ	KSS-Konzentrat	0.05	kg / kg	5	0.5	—	
KSS-EMU	10	P	3	B10ZID	Biozid	0.02	kg / kg	2	0.3	—	

In the *Material consumption* form the components appear as rows with proportion and tolerance — the same table as for any other material. The rule for this: **each material only once per operation**, either directly with a quantity or as a recipe component with a proportion, never both. Material *alongside* a recipe (water in litres for a kg mix) remains possible; it then runs individually and not into the scale total.

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Overview

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Routing

ARB_PLA_KF - Nordwerk / Werk 1 / Fertigung

Copy routing + New operation

ITEM NO. KSS-EMU MACHINE (OPT.) Machine no.... Load

1 operations · 1 items

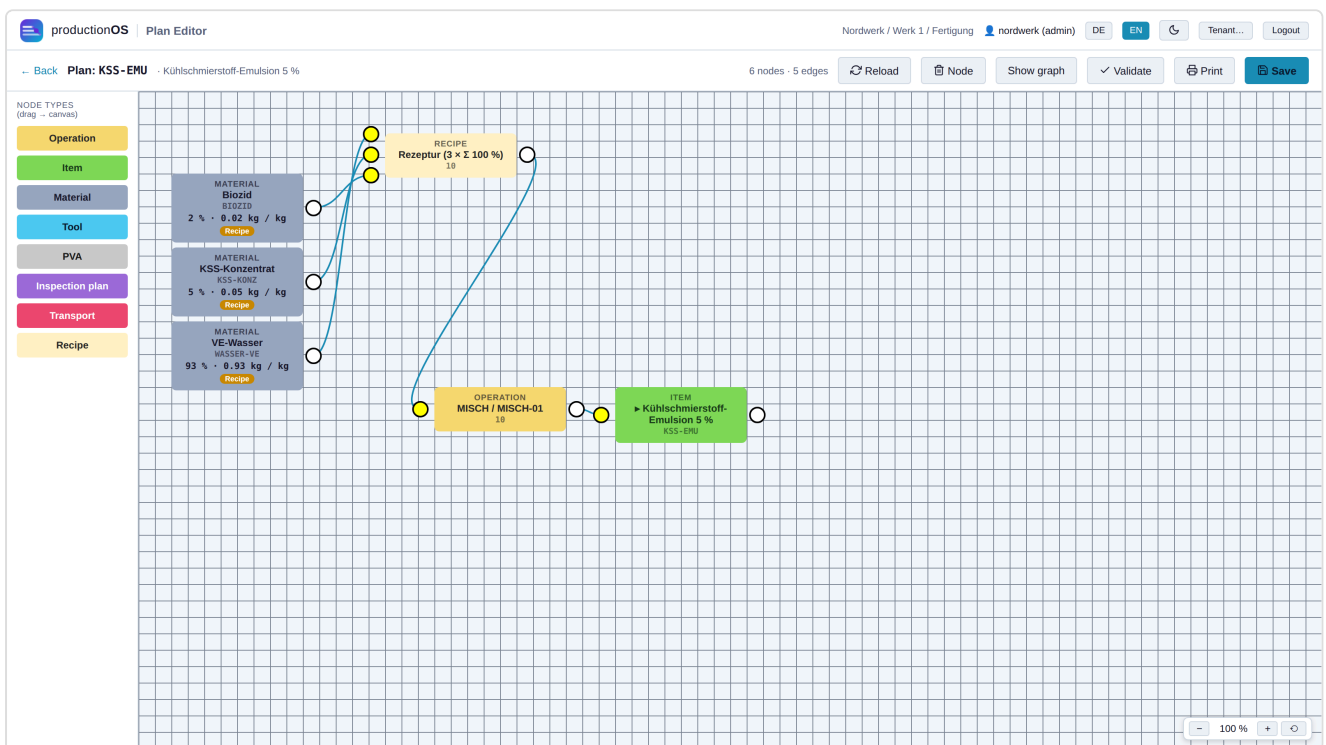
KSS-EMU 1 operation Delete routing

SEQ.	LINE	UNIT	OP. NO.	MACHINE	SETUP	PROC.	TIME BASIS	TEARDOWN	DELAY	FACT.
10		kg	MISCH	MISCH-01	10	0.15	min / kg	—	—	

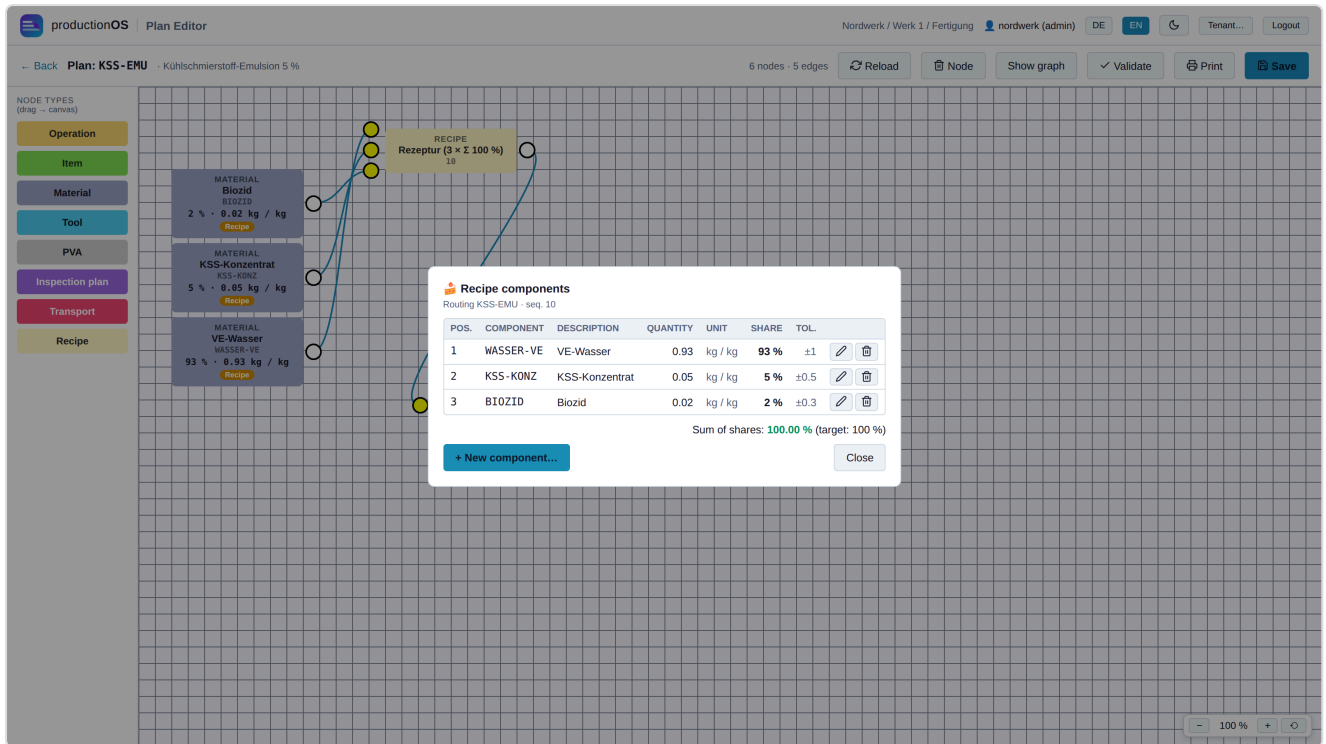
FLOW DIAGRAM

Seq. 10

MISCH MISCH-01 0.15 min / kg



In the Plan Editor the recipe is a node of its own (cream) on the operation, with the components as material nodes in front of it; the node shows the number and mix quantity ("3 × 100 kg"). A double-click opens the component list:



Here components are created and proportions and tolerances maintained; the sum of the proportions is checked against 100 % and turns red if it does not match.

The screenshot shows the 'productionOS Production plan (order)' view. The main table displays the production plan for order A2610-023, showing the sequence of operations and the materials consumed. The table includes columns for sequence, operation, machine, quantity, target start, target end, status, and duration.

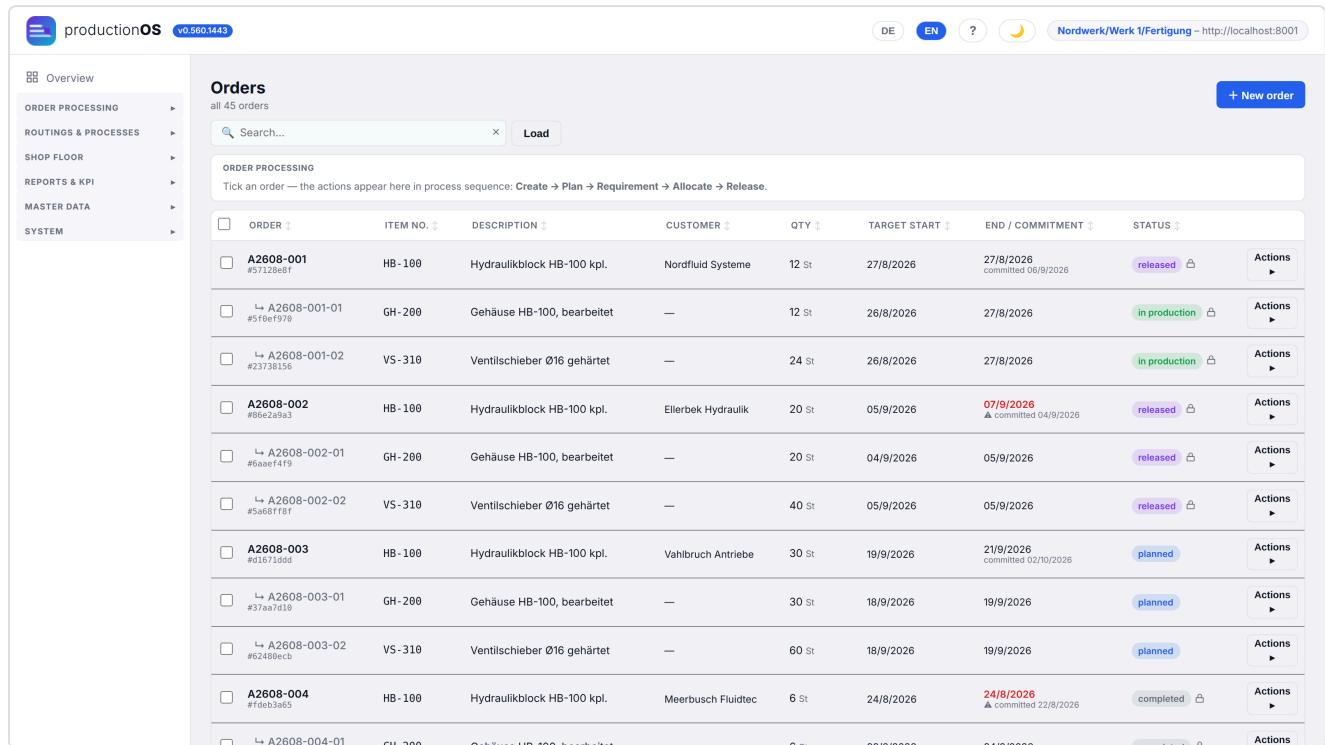
SEQ.	OPERATION	MACHINE	QTY	TARGET START	TARGET END	STATUS	DURATION
10	MISCH	MISCH-01	250 kg	30/10 21:12	30/10 22:00	planned	37.5 min +10 setup Summary Chain
	M BIOZID Biozid-Zusatz KSS		5 kg	5 allocated		covered	30/10
	M KSS-KONZ KSS-Konzentrat mineralölfrei		12.5 kg	12.5 allocated		covered	30/10
	M WASSER-VE VE-Wasser (vollentsalzt)		232.5 kg	232.5 allocated		covered	30/10

In the order, the requirements calculation applies each component's proportion to the order quantity (232.5 kg water, 12.5 kg concentrate, 5 kg biocide for 250 kg) and checks coverage as for any material. What becomes of it at the terminal is described in [4.12](#).

Part 3 — Order processing

The path of an order: **create** → **plan** → **cover requirements** → **schedule and load** → **allocate** → **release** → **execute** → **complete**. The *Order processing* bar above the order list carries exactly these actions.

3.1 Order list



ORDER	ITEM NO.	DESCRIPTION	CUSTOMER	QTY	TARGET START	END / COMMITMENT	STATUS	Actions
☐ A2608-001 #5732868f	HB-100	Hydraulikblock HB-100 kpl.	Nordfluid Systeme	12 St	27/8/2026	27/8/2026 committed 06/9/2026	released	Actions
☐ ↳ A2608-001-01 #5f0ef978	GH-200	Gehäuse HB-100, bearbeitet	—	12 St	26/8/2026	27/8/2026	in production	Actions
☐ ↳ A2608-001-02 #23738156	VS-310	Ventilschieber Ø16 gehärtet	—	24 St	26/8/2026	27/8/2026	in production	Actions
☐ A2608-002 #86e2a9a3	HB-100	Hydraulikblock HB-100 kpl.	Eilerbek Hydraulik	20 St	05/9/2026	07/9/2026 ▲ committed 04/9/2026	released	Actions
☐ ↳ A2608-002-01 #6a9ef4f9	GH-200	Gehäuse HB-100, bearbeitet	—	20 St	04/9/2026	05/9/2026	released	Actions
☐ ↳ A2608-002-02 #5a68ff8f	VS-310	Ventilschieber Ø16 gehärtet	—	40 St	05/9/2026	05/9/2026	released	Actions
☐ A2608-003 #d1671d6d	HB-100	Hydraulikblock HB-100 kpl.	Vahlbruch Antriebe	30 St	19/9/2026	21/9/2026 committed 02/10/2026	planned	Actions
☐ ↳ A2608-003-01 #37aa7d19	GH-200	Gehäuse HB-100, bearbeitet	—	30 St	18/9/2026	19/9/2026	planned	Actions
☐ ↳ A2608-003-02 #62480ecb	VS-310	Ventilschieber Ø16 gehärtet	—	60 St	18/9/2026	19/9/2026	planned	Actions
☐ A2608-004 #fdeb3a65	HB-100	Hydraulikblock HB-100 kpl.	Meerbusch Fluidtec	6 St	24/8/2026	24/8/2026 ▲ committed 22/8/2026	completed	Actions
☐ ↳ A2608-004-01	GH-200	Gehäuse HB-100, bearbeitet	—	6 St	22/8/2026	24/8/2026	completed	Actions

Primary orders are at the top, their sub-orders indented below them (A2610-013 → A2610-013-01 Gehäuse (housing), A2610-013-02 Ventilschieber (valve spool)). Per row: item, customer, quantity, target start, end and commitment, status. An overdue date is red; an order without release shows as *planned*. *Actions* on each row lead to Edit, Plan, Requirements list, Schedule, Release, Archive; multiple selection via the check boxes on the left acts on the bar at the top.

What the status values mean — and why there are two status concepts — is explained in [Part 9](#).

3.2 Creating an order

New order

ORDER NO. ** A2610-023

ITEM NO. ** P100

Suggestion from number pattern — completed when the item is selected, can be overwritten.

Master Quantities Dates Chain

ITEM DESC. Description

CUSTOMER Short code

Supplier no. LIEF001

SUPPLIER ORDER NO.

PRIORITY (FROM 4) 4

STATUS New

END FLAG —

ITEM FLAG K

ROM FLAG —

POS. NO.

Cancel Create

An order needs an item, a quantity and a date; the system assigns the number from the number pattern (*suggest*). Customer, priority and supplier no. are optional. Four tabs: *Master*, *Quantities*, *Dates*, *Chain* (the sub-orders, as soon as they have been created).

3.3 Dates: target, plan, commitment

Order - A2610-020

Order no. A2610-020 Item HB-100

Master Quantities **Dates** Chain

TARGETS (SCHEDULING ANCHOR)

TARGET START tt.mm.jjjj

START TIME 06:00

PLANNED DATES (CALCULATED)

PLANNED START 10.11.2026

TIME 20:40

TARGET END (LATEST END) 11.11.2026

END TIME 14:00

PLANNED END 11.11.2026

TIME 14:00

COMMITTED DATE (CUSTOMER) 25.11.2026

COMMITMENT TIME 14:00

Result of the last scheduling run. Actual dates are on the operations.

Backwards from target end (otherwise commitment), forwards from target start. The system never writes the commitment; without a time, 22:00 applies.

Cancel Save

Three pairs of dates that say three different things:

Field	Who writes it	Meaning
-------	---------------	---------

Targets (target start / target end)	the planner	the anchor of scheduling. Backward scheduling starts from the target end, forward scheduling from the target start. No scheduling run overwrites these fields
Planned dates (calculated)	scheduling	the result of the last run: when the first operation starts and the last one is finished . Read-only
Commitment (commitment end)	the planner	the date committed to the customer. The system never writes it; if there is no target end, the commitment serves as the anchor

There are no actual dates here — they are on the operations as soon as the terminal supplies them. Without a time of day, an end means the end of the day, 22:00.

What is measured against the commitment and the target end is the **end of processing** of the last operation (processing including transition). Its teardown may lie after it — the product is already finished then; the machine stays loaded in the Gantt until the end of the teardown.

If there is no end date at all, scheduling calculates **forward from now** and says so in the report — it does not abort, because many orders are created without a date.

3.4 Planning in

The screenshot shows the 'Plan' modal in the productionOS interface. It details the scheduling for three orders in a chain:

- A2610-021** · HB-100 · 30 St: 3 operations, scheduled 24/11/2026 → 25/11/2026. 2 material requirements, 2 sub-orders.
- A2610-021-03** · GH-200 · 30 St: 4 operations, scheduled 14/11/2026 → 16/11/2026. 1 material requirement, 0 semi-finished requirements, 6 tools, 0 sub-orders. Notes include machine occupancy and staff availability.
- A2610-021-04** · VS-310 · 60 St: 2 operations, scheduled 23/11/2026 → 24/11/2026. 1 material requirement, 0 semi-finished requirements, 3 tools, 0 sub-orders. Notes include machine occupancy and staff availability.

A section titled 'Why is the end there? (A2610-021)' provides further scheduling context: 'Scheduled backwards from the target end Start 14/11 09:15, end 25/11 14:00 (lead time 268.8 h, of which waiting for calendar 248 h, machine loading 0 h). Commitment 08/12 14:00 met, buffer 312 h. Target end 25/11 14:00 met.'

At the bottom, a table lists the order details:

ORDER	ITEM	SEQ.	OPERATION	MACHINE	PERIOD	WAITING TIME	WHY
-------	------	------	-----------	---------	--------	--------------	-----

Plan is one action over the whole chain: **explode** the routing (each order gets its own copy of the operations), create a **sub-order** for each semi-finished item (or use stock if it is sufficient), calculate the **requirements**, **schedule** everything. The report states for each order what happened: how many operations were scheduled, which dates were met, which shortages are open, and — if a date could not be met — why.

In the image: the order for 30 blocks needs 30 housings and 60 valve spools; both sub-orders are scheduled backward from the requirement date of the assembly. A sub-order takes its quantity from stock if an earlier order produced more than was needed — then none is

created. If the tenant plans with personnel (operating model), the report additionally names which operations had to wait for personnel (orange: “no staff with skill ... available”) and where they moved as a result.

Planning a running order again is possible, but it is a change (3.11): what has already been confirmed stays; what was planned is recalculated.

3.5 Production plan and date explanation

productionOS

DEEN?

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Overview

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Production plan (order)

Operations in sequence, below them material, semi-finished products and tools per operation - whole order group

A2610-020 · 9 operations · 16 consumptions · 2 semi-finished products without coverage

Allocate consumption

Purchase shortages

Schedule explanation

Gantt

To order list

A2610-020

Q Load

A2610-020 HB-100 Hydraulikblock HB-100 kpl. 20 St

freigegeben

10/11 20:40 → 11/11 14:00 · Commitment 25/11

State

SEQ.	OPERATION	MACHINE	QTY	TARGET START	TARGET END	STATUS	DURATION
10	MONT	MONT-01	20 St	10/11 20:40	11/11 11:00	planned	360 min + 20 setup Summary Chain
	H GH-200 Gehäuse HB-100, bearbeitet		20 St	0 stock		20 short Create sub-order	10/11
	H VS-310 Ventilschieber Ø16 gehärtet		40 St	0 stock		40 short Create sub-order	10/11
	M DS-40 Dichtsatz DS-40 (NBR)		20 St	20 allocated		covered	10/11
	M SCHR-M8 Zylinderschraube M8×40 12.9		160 St	160 allocated		covered	10/11
	W MOM-5-50		1 St				
20	DICHT	PRUEF-01	20 St	11/11 10:50	11/11 13:00	planned	120 min + 10 setup Summary Chain
30	VERP	VERP-01	20 St	11/11 12:55	11/11 14:00	planned	60 min + 5 setup Summary Chain

A2610-020-01 GH-200 Gehäuse HB-100, bearbeitet 20 St

freigegeben

06/11 12:45 → 07/11 10:40

State

SEQ.	OPERATION	MACHINE	QTY	TARGET START	TARGET END	STATUS	DURATION
10	SAEG	SAEG-01	20 St	06/11 12:45	06/11 14:00	planned	60 min + 15 setup Summary Chain
	M ALU-6082 Alu-Blockmaterial 6082 T6, 120×80		68 kg	68 allocated		covered	06/11
	W SAEG-BM-350		1 St				
20	FRAES	BAZ-01	20 St	06/11 13:15	06/11 21:20	planned	440 min + 45 setup Summary Chain
	W FR-SCH-16		1 St				
	W FR-PLAN-63		1 St				

The production plan is the view of **one** order with everything that belongs to it: the header with commitment, target and planned end, below it per operation machine, quantity, target start and end, status and duration, plus the inputs — material with *covered* / *short*, semi-finished items with their sub-order or *from stock*, tools. If something is missing, *short* leads directly to the purchase dialogue; a semi-finished item without coverage gets *Create sub-order*. The line row of a P block shows the share and whether a line is switched off.

productionOS

EN

Nordwerk/Werk 1/Fertigung

Overview

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Production plan (order)

A2610-020

A2610-020 - 9 operations - 16 consumptions - 2 semi-finished products without coverage

Allocate consumption

Purchase shortages

Schedule explanation

Gantt

To order list

Why is the end there? (A2610-020)

Scheduled backwards from the target end

Start 06/11 12:45, end 11/11 14:00 (lead time 121.2 h, of which waiting for calendar 112 h, machine loading 9.3 h)

Bottleneck: machine MONT-01 at MONT — 9.3 h waiting due to A2610-012

Commitment 25/11 14:00 met, buffer 336 h.

Target end 11/11 14:00 met.

ORDER	ITEM	SEQ.	OPERATION	MACHINE	PERIOD	WAITING TIME	WHY
A2610-020-01	GH-200	10	SAEG	SAEG-01	06/11 12:45 → 06/11 14:00	—	directly after anchor
A2610-020-01	GH-200	20	FRAES	BAZ-01	06/11 13:15 → 06/11 21:20	—	directly after predecessor seq. 10
A2610-020-01	GH-200	30	BOHR	BAZ-02	06/11 20:50 → 07/11 09:20	—	directly after predecessor seq. 20
A2610-020-01	GH-200	40	ENTG	WASCH-01	07/11 09:10 → 07/11 10:40	—	directly after predecessor seq. 30
A2610-020-02	VS-310	10	DREH	DREH-01	10/11 13:35 → 10/11 18:00	96.8 h	56 h calendar - 40.8 h buffer (backward: latest date)
A2610-020-02	VS-310	20	SCHL	SCHL-01	10/11 17:40 → 10/11 20:40	—	directly after predecessor seq. 10
A2610-020	HB-100	10	MONT	MONT-01	10/11 20:40 → 11/11 11:00	103.9 h	56 h calendar - 9.3 h occupied by A2610-012 - 38.6 h buffer (backward: latest date) Bottleneck
A2610-020	HB-100	20	DICHT	PRUEF-01	11/11 10:50 → 11/11 13:00	—	directly after predecessor seq. 10
A2610-020	HB-100	30	VERP	VERP-01	11/11 12:55 → 11/11 14:00	—	directly after predecessor seq. 20

A2610-020 HB-100 Hydraulikblock HB-100 kpl. 20 St

freigegeben

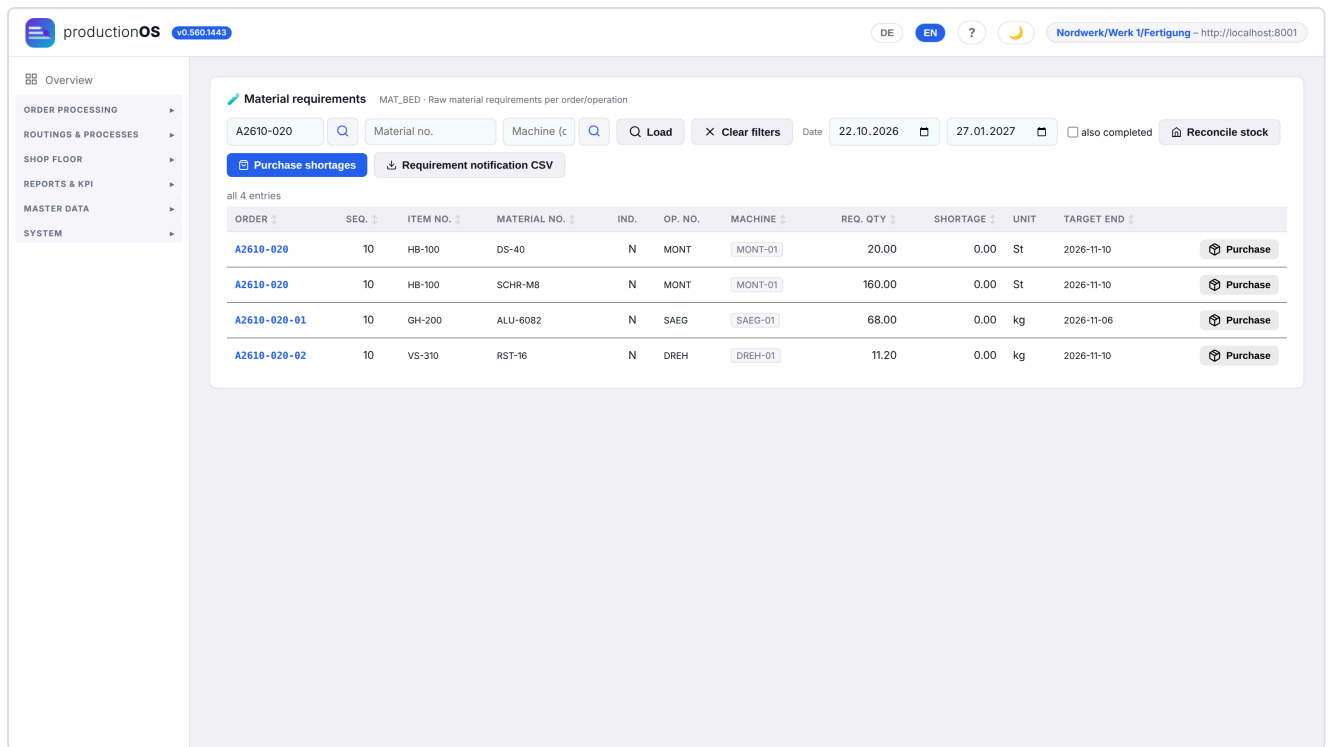
10/11 20:40 → 11/11 14:00 - Commitment 25/11

State

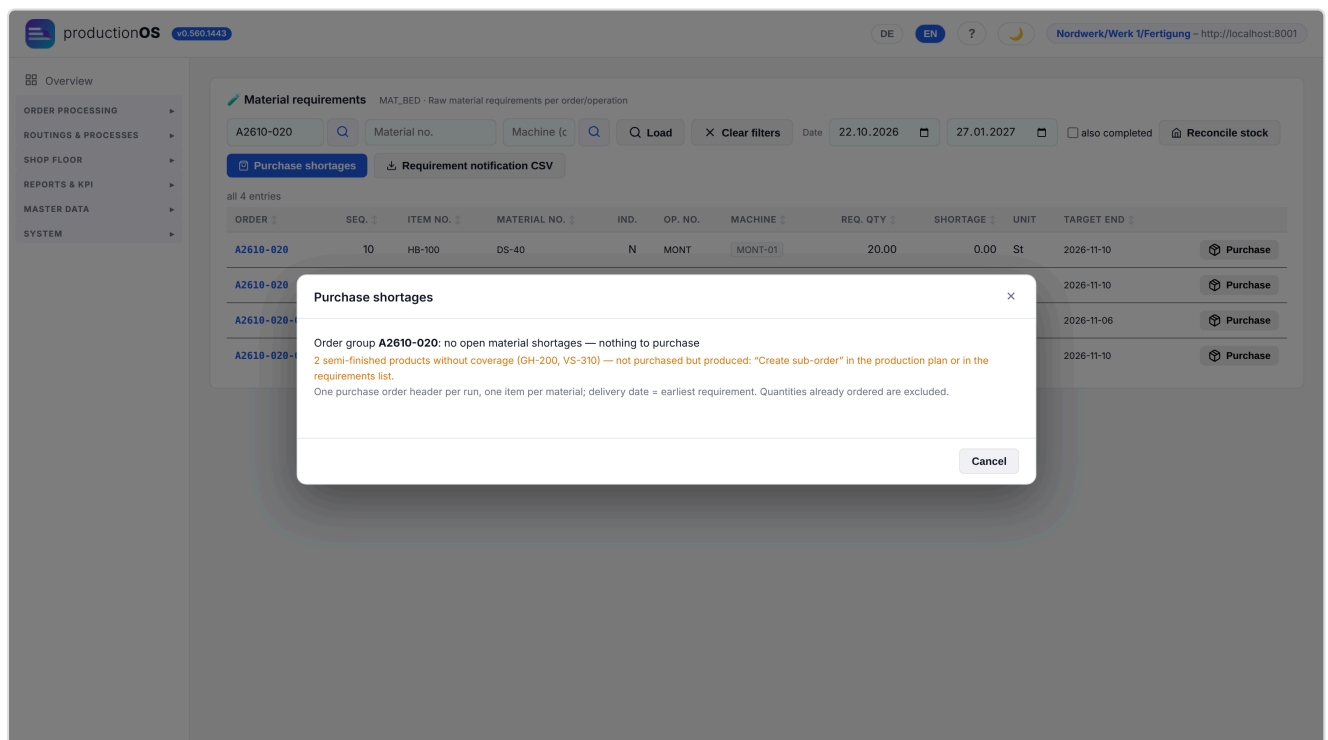
SEQ.	OPERATION	MACHINE	QTY	TARGET START	TARGET END	STATUS	DURATION
10	MONT	MONT-01	20 St	10/11 20:40	11/11 11:00	planned	360 min +20 setup Summary Chain
	H GH-200 Gehäuse HB-100, bearbeitet		20 St	0 stock		20 short Create sub-order Stock reserved by other orders (A2608-001, A2608-002, A2608-003)	10/11
	H VS-310 Ventilschieber Ø16 gehärtet		40 St	0 stock		40 short Create sub-order	10/11

Schedule explanation answers the question “why is the end there?”: from which anchor and in which direction the calculation ran, which calendar applied, where waiting time arose and where from. For each operation it states whether it lies directly after its predecessor, whether it overlaps with it, whether it **moved because of an occupied machine** (and because of which order), whether its predecessor moved, and whether a remainder is **buffer** (backward scheduling) or unexplained. If a successor lies before its predecessor, this is named as a sequence violation. If an operation waited for personnel, this is shown as a separate share (“2.0 h no staff with skill CNC available”).

3.6 Material requirements, shortages, purchasing



Material requirements lists per order and operation what is needed, what the stock covers and what is **short**. The requirement arises during planning from operation quantity × consumption factor (with the denominator of the unit). *Reconcile stock* recalculates the shortage against the available lot stock.



Purchase shortages opens a dialogue with one row per material shortage (in the image everything is covered — then it says so). The **quantity per item can be changed** (if the material has a smallest delivery unit, it is rounded up to whole delivery units and both are shown): 0 skips the item, an overdelivery becomes free stock after goods receipt, an

underdelivery remains as an open shortage and can be ordered again later. Semi-finished items without coverage are listed separately in the header — they are not purchased but produced.

What the button then does is determined by the *Purchasing* switch in the operating model: *internal* creates one purchase order per supplier under *Purchase orders*, with goods receipt and — if the material has an inspection plan — goods receipt inspection under *Goods receipt & inspection*; *ERP* reports the requirement and exports it as CSV. Goods receipt books a lot (*bes_rom*) with supplier, batch and quantity — the start of the traceability chain.

Stock items (MRP) is the path for items that are produced to stock: a stock order without customer reference, triggered from the stock.

3.7 Scheduling and machine loading

Scheduling can also be started on its own: order, anchor date and time, direction (backward from the target end or forward from the target start). *Recalculate* schedules only this order, *Chain* the order with all its sub-orders. The method is **greedy, not a solver**: operation by operation, observing calendars and shifts, moving away when a machine is occupied. If a date is missed, the result reports it instead of shifting silently.

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Schedule (machine)

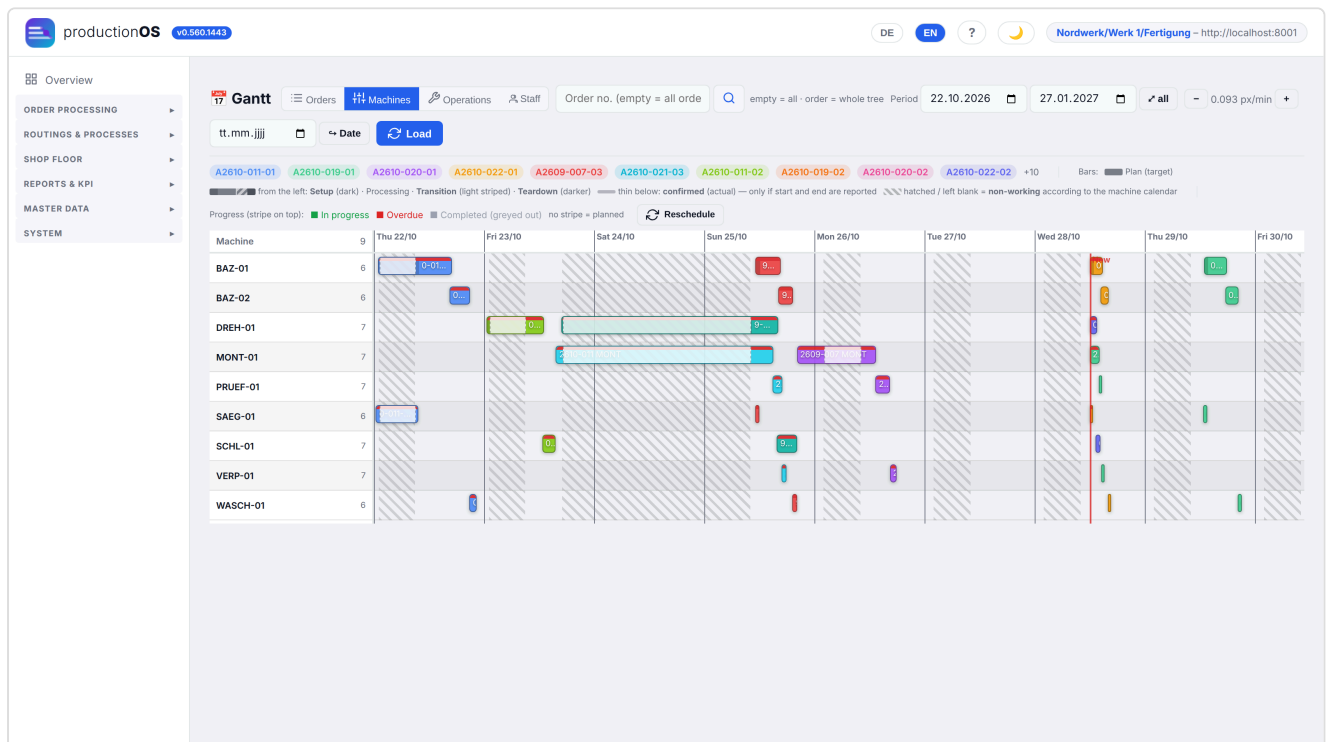
Group orders around a machine to save setup and teardown times

☐ also machines without sequence master data

"reihenfolge_wirksam = false" means: master data exist, but the new values equal the stand-alone values — the method then saves nothing.

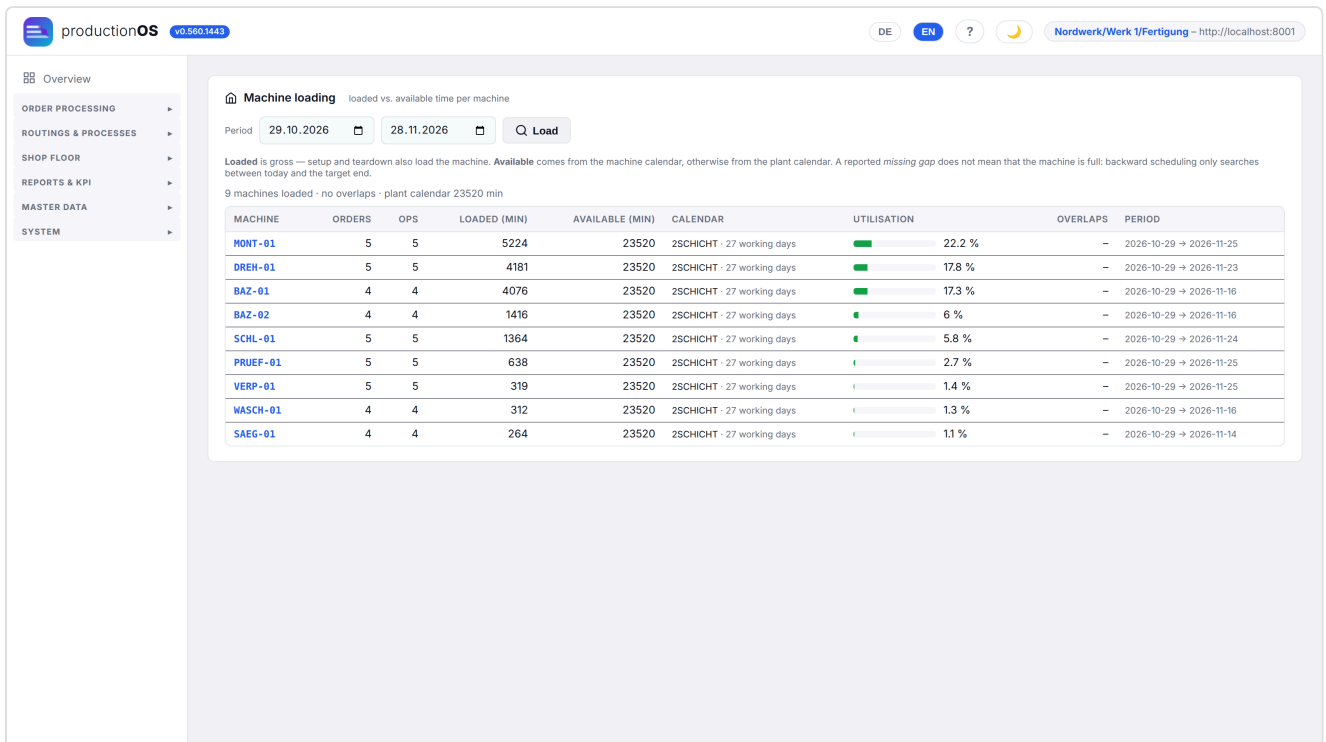
MACHINE	METHOD	SEQUENCE	OPS SCHEDULED	PERIOD	STATUS
BAZ-01 5-Achs-BAZ DMG DMU 50	synchron Only the master sequence is maintained.	2x masch_art New values = stand-alone → no saving	14 / 14 14 orders, 1 elements	2026-08-22 - 2026-11-16	— 10 operations are released or in progress — cancel the release first (#287).
BAZ-02 5-Achs-BAZ DMG DMU 50	synchron Only the master sequence is maintained.	2x masch_art New values = stand-alone → no saving	14 / 14 14 orders, 1 elements	2026-08-24 - 2026-11-16	— 10 operations are released or in progress — cancel the release first (#287).
DREH-01 CNC-Drehmaschine Index C200	synchron Only the master sequence is maintained.	1x masch_art New values = stand-alone → no saving	14 / 14 14 orders, 1 elements	2026-08-22 - 2026-11-23	— 10 operations are released or in progress — cancel the release first (#287).
MONT-01 Montageplatz Hydraulik	synchron Only the master sequence is maintained.	1x masch_art New values = stand-alone → no saving	15 / 15 15 orders, 1 elements	2026-08-24 - 2026-11-25	— 11 operations are released or in progress — cancel the release first (#287).
PRUEF-01 Dichtheitsprüfstand ATEQ F620	synchron Only the master sequence is maintained.	1x masch_art New values = stand-alone → no saving	15 / 15 15 orders, 1 elements	2026-08-24 - 2026-11-25	— 11 operations are released or in progress — cancel the release first (#287).
SAEG-01 Bandsäge Behringer HBP	synchron Only the master sequence is maintained.	1x masch_art New values = stand-alone → no saving	14 / 14 14 orders, 1 elements	2026-08-22 - 2026-11-14	— 10 operations are released or in progress — cancel the release first (#287).
SCHL-01 Rundschleifmaschine Studer	synchron Only the master sequence is maintained.	1x masch_art New values = stand-alone → no saving	14 / 14 14 orders, 1 elements	2026-08-24 - 2026-11-24	— 10 operations are released or in progress — cancel the release first (#287).
VERP-01 Verpackungsplatz	synchron Only the master sequence is maintained.	1x masch_art New values = stand-alone → no saving	15 / 15 15 orders, 1 elements	2026-08-24 - 2026-11-25	— 11 operations are released or in progress — cancel the release first (#287).
WASCH-01 Reinigungsanlage Mafac	synchron Only the master sequence is maintained.	1x masch_art New values = stand-alone → no saving	14 / 14 14 orders, 1 elements	2026-08-24 - 2026-11-16	— 10 operations are released or in progress — cancel the release first (#287).

Schedule (machine) shows per machine which orders lie there and whether the machine's master data (setup and teardown times) have changed since scheduling — then the order can be recalculated with the new values without touching the others.



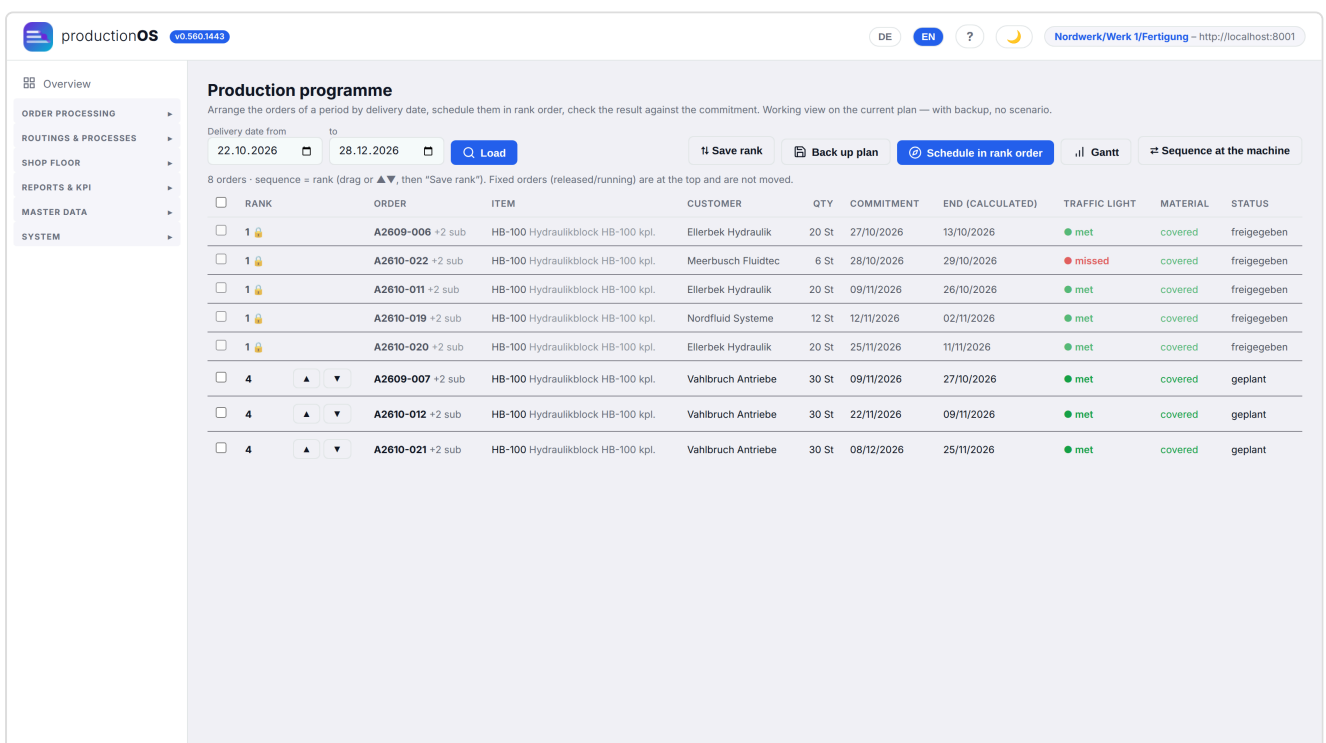
The **Gantt** shows the machine loading per machine (or per order) over time. Bars carry order and sequence; alternatives and parallel lines are marked, alternatives not chosen are dimmed. A bar is the gross window of the operation and shows its shares from the left: **setup** (dark), processing (order colour), **transition** (light stripes, the delay time) and **teardown** (darker) — true to scale, as scheduling places them; if setup or teardown is switched off by a flag, that

share is missing. The hover names each phase with weekday, date and time as well as the minutes of the four shares and their sum. The order row has a handle for **moving** the whole order — dragging operations individually is deliberately not possible, because the chain belongs together. The fourth view **Staff** shows the loading per person ([3.12](#)).



Machine loading calculates per machine capacity against loading in the period and names overloads. The loading check during planning uses the same figures: an operation only moves away if there really is no room there, and only in the direction in which the calculation runs.

3.8 Production programme



The production programme ranks the orders of a period by **rank** — the position in which they compete for capacity. Dragging changes the rank, *Schedule in rank order* reschedules all of them in this position; the traffic light shows whether the commitment is met afterwards.

3.9 Allocation and release

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Raw material consumption (PPS)

PPS_ROM_EI - raw material consumption per order/operation

Order

Order no.

Material

Mat. no.

Supplier

Suppl. no.

Load

Allocate

309 entries

ORDER	SEQ.	POS.	MATERIAL	ITEM	LOT	MACHINE	ON HAND	ALLOCATED	ACTUAL	Δ	UNIT	
A2608-001	10	1	DS-40	HB-100	WE-2610-23/0/0	MONT-01	194	12	—	—	St	
A2608-001	10	2	SCHR-M8	HB-100	WE-2610-24/0/0	MONT-01	1952	96	—	—	St	
A2608-001-01	10	1	ALU-6082	GH-200	WE-2610-21/0/0	SAEG-01	300	40.8	—	—	kg	
A2608-001-02	10	1	RST-16	VS-310	WE-2610-22/0/0	DREH-01	146.64	6.72	—	—	kg	
A2608-002	10	1	DS-40	HB-100	WE-2610-23/0/0	MONT-01	194	20	—	—	St	
A2608-002	10	2	SCHR-M8	HB-100	WE-2610-24/0/0	MONT-01	1952	160	—	—	St	
A2608-002-01	10	1	ALU-6082	GH-200	WE-2610-21/0/0	SAEG-01	300	68	—	—	kg	
A2608-002-02	10	1	RST-16	VS-310	WE-2610-22/0/0	DREH-01	146.64	11.2	—	—	kg	
A2608-003	10	1	DS-40	HB-100	WE-2610-23/0/0	MONT-01	194	30	—	—	St	
A2608-003	10	2	SCHR-M8	HB-100	WE-2610-24/0/0	MONT-01	1952	240	—	—	St	
A2608-003-01	10	1	ALU-6082	GH-200	WE-2610-21/0/0	SAEG-01	300	102	—	—	kg	
A2608-003-02	10	1	RST-16	VS-310	WE-2610-22/0/0	DREH-01	146.64	16.8	—	—	kg	
A2609-005	10	1	DS-40	HB-100	WE-2610-23/0/0	MONT-01	194	12	—	—	St	
A2609-005	10	2	SCHR-M8	HB-100	WE-2610-24/0/0	MONT-01	1952	96	—	—	St	

Allocation assigns concrete lots to the requirement: which lot of which material which operation gets (raw material consumption for material, part consumption for semi-finished items). The default is FIFO over the available lots; in case of undercoverage the *partial allocation* switch decides. The allocation is a specification for the terminal, not a lock — what is actually consumed there is recorded by the operator when booking (4.6). At the start of setup it is refreshed once more for the sequence.

Release sets the order from *planned* to *released* and reserves material (withdrawal lines). Only released orders can be started by the terminal. Under *Personnel/order* people can be assigned by hand per operation; with personnel in scheduling, scheduling proposes them and the shift supervisor confirms (3.12). Whether covered personnel is a condition for release is set by the operating model.

3.10 Status overview

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Overview

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Order status overview

AUF - AUF_AL - ABE

A2610-022

Load

Clear

AUF - order header (3)

ORDER NO.	ITEM	DESCRIPTION	QTY	TARGET START	TARGET END	STATUS
A2610-022-01	GH-200	Gehäuse HB-100, bearbeitet	6 St	—	29/10/2026	released
A2610-022-02	VS-310	Ventilschieber Ø16 gehärtet	12 St	—	29/10/2026	released
A2610-022	HB-100	Hydraulikblock HB-100 kpl.	6 St	—	27/10/2026	released

AUF_AL - scheduled operations (9 in 3 orders)

Show in Gantt

SEQ.	OPERATION	MACHINE	TARGET START	TARGET END	ACTUAL START	ACTUAL END	DURATION
▶ Primary A2610-022 - HB-100 (3 ops)							
10	MONT	MONT-01	2026-10-29 07:56	2026-10-29 10:04	—	—	108 min
20	DICHT	PRUEF-01	2026-10-29 09:54	2026-10-29 10:40	—	—	36 min
30	VERP	VERP-01	2026-10-29 10:35	2026-10-29 10:58	—	—	18 min
↔ Sub-order A2610-022-01 - GH-200 (4 ops)							
10	SAEG	SAEG-01	2026-10-29 07:56	2026-10-29 08:29	—	—	18 min
20	FRAES	BAZ-01	2026-10-29 07:56	2026-10-29 10:53	—	—	132 min
30	BOHR	BAZ-02	2026-10-29 10:23	2026-10-29 12:05	—	—	72 min
40	ENTG	WASCH-01	2026-10-29 11:55	2026-10-29 12:29	—	—	24 min
↔ Sub-order A2610-022-02 - VS-310 (2 ops)							
10	DREH	DREH-01	2026-10-29 07:56	2026-10-29 09:33	—	—	72 min
20	SCHL	SCHL-01	2026-10-29 09:13	2026-10-29 10:21	—	—	48 min

Consumption allocation 4 rows, 2 shortages

To allocation

The status overview shows the order header with its sub-orders and all operations with target and actual times in one table — the view for the question “where is the order right now?”. Green is started, with actual end finished; *Show in Gantt* jumps to the machine loading.

3.11 Changes to running orders

As soon as an order has been released or started, changes are a **change to a running order**, and the system treats them as one interlocking system:

Change	Where	What happens
Change quantity	Actions → Change	operations without confirmation are recalculated; started ones keep their quantity, the rest goes into a remake request
Change date	Dates tab / Gantt handle	new target, new scheduling of the open operations; the chain stays together
Swap machine	Schedule (machine) / Routing alternatives	only within the alternatives of the plan; setup time and costs follow the new machine
Change line distribution	Routing alternatives	share per line, down to 0 (line off)
Move around the machine	Gantt	the order moves behind the order that has the machine
Lock	status menu	<i>locked</i> : the terminal no longer starts anything, what is running may finish
Remake	Shop Floor → Create remake / from the terminal	a new order for the shortfall, the planner confirms

The **priority** of an order acts as a lock against moving away: an order with high priority does not move away in favour of a lower one. What has already been confirmed stays in place with every change. Via **Archive** in the order list one can choose whether only the planning disappears or also confirmations and stock bookings. The view **Order archive** shows both kinds of finished order: orders with the status *completed* (they are still in the order list) and orders whose planning was deleted but whose confirmations are retained. The *Origin* column distinguishes them, the filter above it shows only one of the two.

3.12 Staff deployment: scheduling with personnel, shift supervisor

If *Personnel in scheduling* is set to **plan** in the operating model, scheduling looks for each operation not only for a free machine but also for people who

- have the required **skill** ([2.1](#)),
- are present for the whole window according to the **personnel calendar**,
- are not already scheduled elsewhere in that window (up to a

loading share of 1.0).

If there are none, the operation moves into the next gap in which machine and personnel are free — just as with an occupied machine. Planning is done per phase and per shift section: an operation across the early and late shift gets two people one after the other if nobody works both shifts. If simply **nobody** has the skill, the operation is not moved but reported. The selected people are then shown on the operation as **pre-assigned (G)**. The selection follows a fixed rule so that a second run gives the same result: first whoever has the skill and is least loaded, in case of a tie whoever is already assigned to the order.

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Shift supervisor

29.10.2026 whole day Load Confirm all planned Reassign

Scheduling pre-assigns persons with the required skill (P). Confirmed assignments (C) survive every rescheduling. Swapping is only possible with persons who have the skill and are available and not fully booked in the segment.

Staff per shift (plan / actual)

SHIFT	HOURS	COSTS (EUR)	CO2 (KG CO2E)
Shift 1 06:00–14:00	8.8 / 2.1	409.25 / 99.43	0.00 / 0.00

TIME	ORDER	OPERATION	MACHINE	REQUIREMENT	STAFF
07:56–10:04	A2610-022 HB-100	MONT (10)	MONT-01	MONT - Processing	P Lindqvist Mika 103 Processing 08:16–10:04 ✓ t ₁ □
07:56–08:29	A2610-022-01 GH-200	SAEG (10)	SAEG-01	SAEG - Processing	P Brandt Katrin 101 Processing 08:11–08:29 ✓ t ₁ □
07:56–10:53	A2610-022-01 GH-200	FRAES (20)	BAZ-01	CNC - Processing	P Brandt Katrin 101 Processing 08:41–10:53 ✓ t ₁ □
07:56–09:33	A2610-022-02 VS-310	DREH (10)	DREH-01	DREH - Processing	P Okonkwo Daniel 102 Processing 08:21–09:33 ✓ t ₁ □
09:13–10:21	A2610-022-02 VS-310	SCHL (20)	SCHL-01	SCHL - Processing	P Okonkwo Daniel 102 Processing 09:33–10:21 ✓ t ₁ □
09:54–10:40	A2610-022 HB-100	DICHT (20)	PRUEF-01	DICHT - Processing	P Lindqvist Mika 103 Processing 10:04–10:40 ✓ t ₁ □
10:23–12:05	A2610-022-01 GH-200	BOHR (30)	BAZ-02	BOHR - Processing	P Okonkwo Daniel 102 Processing 10:53–12:05 ✓ t ₁ □
10:35–10:58	A2610-022 HB-100	VERP (30)	VERP-01	VERP - Processing	P Lindqvist Mika 103 Processing 10:40–10:58 ✓ t ₁ □
11:55–12:29	A2610-022-01 GH-200	ENTG (40)	WASCH-01	ENTG - Processing	P Okonkwo Daniel 102 Processing 12:05–12:29 ✓ t ₁ □

Staff of the day

Brandt Katrin 101

ANW – anwesen

The **Shift supervisor** view (*Order processing* → 5 · *Release*) shows one day, in full or per shift:

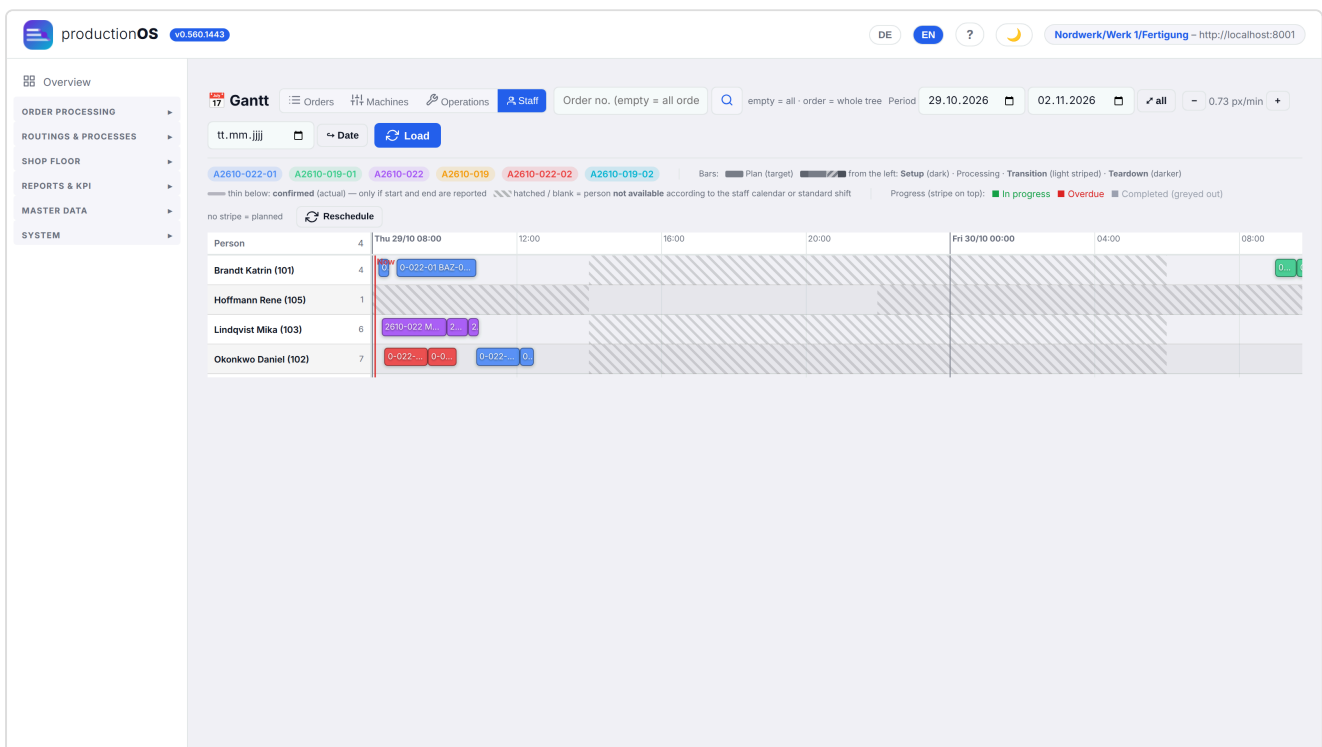
- at the top the **shortages** — skills for which hours are uncovered;
- below that **staff per shift** with hours, costs and CO2, each as

plan / actual;

- then per operation time, machine, the requirement (green covered, red uncovered) and the pre-assigned people.

Each row is **confirmed** (✓), **swapped** (only for people with the skill who are present and free in that section) or **removed**. *Confirm all planned* handles the normal case in one click. A confirmed assignment (B) survives every later rescheduling; if it is nevertheless lost, the report says so. If someone calls in sick, this is entered in the personnel calendar, and *Reassign* plans the shift without this person. What was actually worked at the terminal is shown as a thin actual line below the planned loading.

In the image the overdue order A2610-013 is covered today — milling on BAZ-01 requires CNC (specification of the machine), the others the skill of their operation. The rows marked red belong to the older order A2609-006: it was scheduled before the tenant planned with personnel, and therefore has nobody pre-assigned.



For this the **Gantt** has a fourth view **Staff**: one row per person, bars are the scheduled sections (✓ when confirmed), hatched is when the person is not present according to the personnel calendar. The red line is *now*.

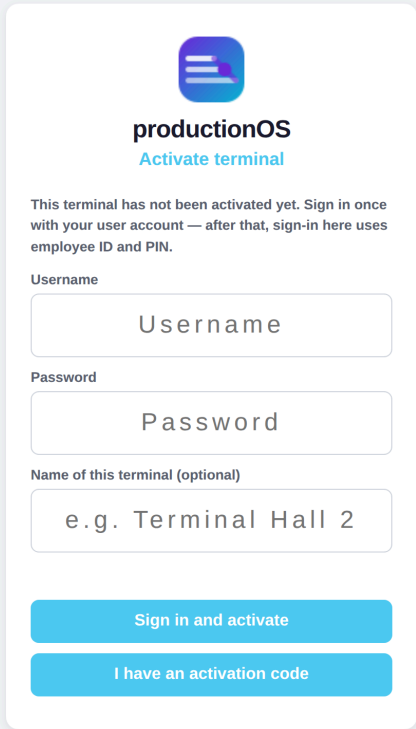
Shift supervisor is an **additional role**, not a main role of its own: an operator with this additional role (*System* → *Users*) sees the *Shift* screen at the terminal with the same actions (4.13).

Part 4 — Execution at the Shopfloor Terminal

The terminal is built for tablet, IPC or phone: large buttons, an on-screen number pad, no keyboard needed. It knows two levels — first the **device** is bound to the tenant once, then the **person** signs in with employee ID and PIN, every shift.

The layout is the same on every screen: at the top a fixed header with tenant, person, language **DE / EN**, the **font size step A / A+ / A++** (remembered per device) and the light/dark switch; below it the navigation in the centre with large buttons (*Orders, Mine, Shift, Machine, Log out*); at the bottom of the operation a fixed **footer** with the actions that are currently allowed — **STOP** on the left, the main action in the centre, *Continue* on the right, downtime, measurement and warnings smaller beside them.

4.1 Activating a device



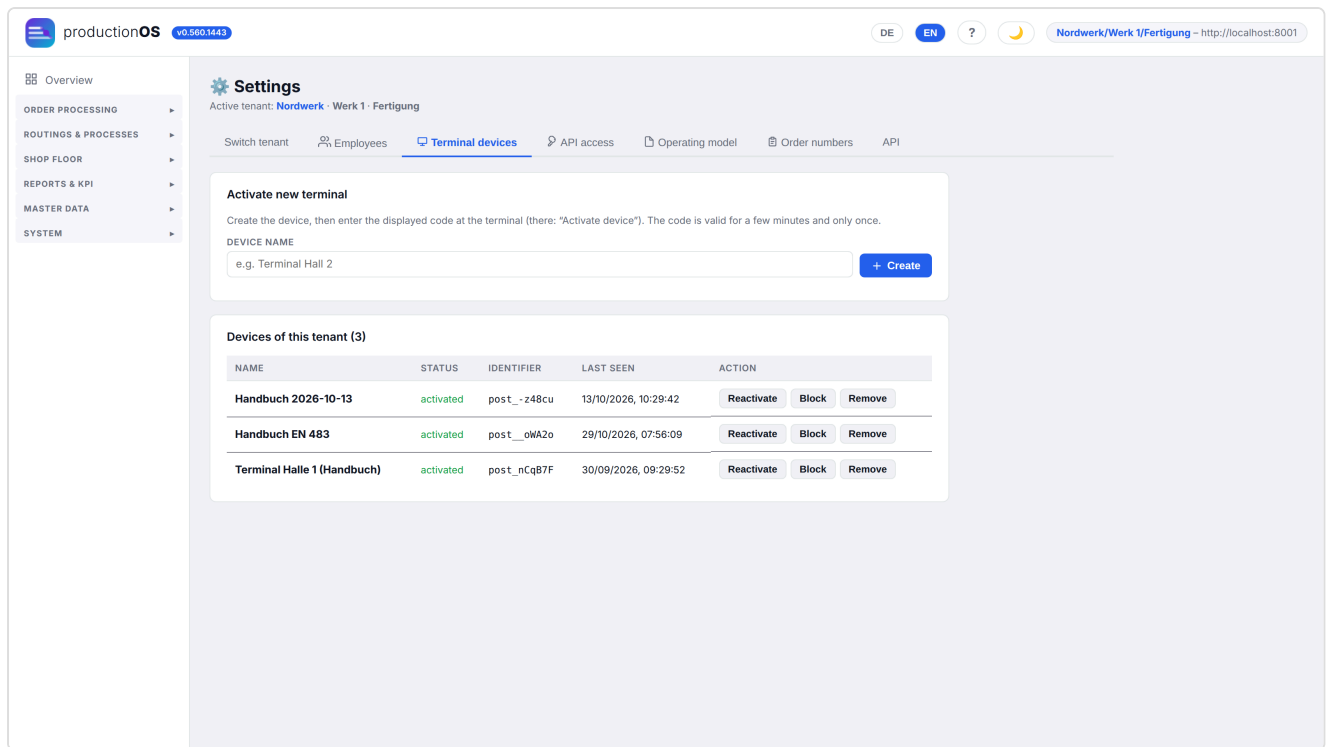
A fresh terminal immediately shows *Activate terminal*. Two ways:

- **With one's own user account:** user name, password, optionally a

name for the device, *Sign in and activate*. From now on the device is bound to the tenant of the account. No administrator role is required; no new permissions are created.

- **With an activation code:** an administrator creates a device under **Settings →*

Terminal devices* and receives a one-time code (valid for 15 minutes, usable once). At the terminal *I have an activation code*, type in the code, done.



The device list shows each device with its status (awaiting activation, activated, blocked, code expired), identifier and last sign-in. *Block* takes effect immediately — for a lost tablet; *Reactivate* generates a new code and invalidates the old token; *Remove* deletes the entry.

Why this step: employee ID and PIN are not secrets. Without device binding, someone from outside could sign in with guessed numbers, and the server would not even know in which tenant to look up the number. The activation is stored **in the browser** of the device — a different browser, a private window or a cleared history count as a new device. Changing tenant means *unregister and activate again*.

4.2 Signing in

The image shows a login interface for 'productionOS Shopfloor Terminal'. At the top is a logo consisting of three horizontal bars in blue and purple. Below the logo, the text 'productionOS' is in bold black, and 'Shopfloor Terminal' is in blue. There are two language selection buttons: 'DE' and 'EN', with 'EN' being highlighted in blue. Below this is a label 'Employee ID' and a text input field containing the number '101'. Underneath the input field is a numeric keypad with buttons for digits 1 through 9, 0, a red 'C' (clear) button, and a yellow back arrow button. At the bottom of the keypad area is a blue 'Continue' button. Below the 'Continue' button is a button with the text 'Unregister terminal (change tenant)'.

Type in the employee ID (from three digits on, the terminal checks the number and shows the name), *Continue*, PIN, *Sign in*. After five wrong PINs the number is locked for ten minutes; after ten minutes without a touch the terminal signs the person out — an operation in progress is not affected. The sign-in is valid for one shift (eight hours). Area, plant and department come from the person's personnel record, not from the device. If the person is scheduled for operations, they land after sign-in in *My operations* ([4.13](#)), otherwise at machine selection.

4.3 Machine and queue


productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung
Brandt

DE

EN

v0.560.1443

?

A

⌂

Brandt

Orders
☐ all orders
Mine
Shift
Log out

Select machine

BAZ-01

5-Achs-BAZ DMG DMU 50

FRAESEN

BAZ-02

5-Achs-BAZ DMG DMU 50

FRAESEN

SAEG-01

Bandsäge Behringer HBP

1 in progress · 10 waiting

SAEGEN

DREH-01

CNC-Drehmaschine Index G200

1 in progress · 11 waiting

DREHEN

PRUEF-01

Dichtheitsprüfstand ATEQ F620

PRUEFEN

MISCH-01

Emulsionsmischer 200 l

2 in progress

MISCHEN

MONT-01

Montageplatz Hydraulik

14 operations

MONTAGE

WASCH-01

Reinigungsanlage Mafac

2 operations

WASCHEN

SCHL-01

Rundschleifmaschine Studer

1 operations

SCHLEIFEN

VERP-01

Verpackungsplatz

VERSAND

After sign-in the person selects their **machine**; the tile shows how many operations there are in progress and how many waiting. The machine is the organising criterion of the terminal. Anyone who is scheduled also finds their operations under *Mine*.


productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung
Brandt

DE

EN

v0.560.1443

?

A

⌂

SAEG-01 – Bandsäge

Brandt

Orders

☐ all orders

Change machine

Log out

Operations

Finished

Refresh

Add order (scan/type)

A2608-001-01

IN PROGRESS

GH-200 – Gehäuse HB-100, bearbeitet
Op.: SAEG Qty: 12 St 26/08/2026 14:13 → 26/08/2026 15:04
Started: 23/08/2026 18:18

A2610-022-01

IN PROGRESS

GH-200 – Gehäuse HB-100, bearbeitet
Op.: SAEG Qty: 6 St 29/10/2026 07:56 → 29/10/2026 08:29
Started: 29/10/2026 08:04

A2608-002-01

OVERDUE

GH-200 – Gehäuse HB-100, bearbeitet
Op.: SAEG Qty: 20 St 04/09/2026 20:05 → 04/09/2026 21:20

A2608-003-01

NOT RELEASED

OVERDUE

Release by the shift supervisor is missing
GH-200 – Gehäuse HB-100, bearbeitet
Op.: SAEG Qty: 30 St 18/09/2026 07:25 → 18/09/2026 09:10

A2609-006-01

OVERDUE

GH-200 – Gehäuse HB-100, bearbeitet
Op.: SAEG Qty: 8 St 12/10/2026 14:57 → 12/10/2026 15:36

The **queue** shows what is next at this machine: the running operation at the top (green, *In progress*), then the released ones by target start, overdue ones in red, unreleased ones greyed out. An operation only appears once its predecessor is finished; with alternative machines the siblings disappear as soon as one has been chosen. An order can also be added by scan or by typing.


productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung
Brandt

DE

EN

v0.560.1443

?

A

⌂

Orders
Brandt

☐ all orders
Machine
Mine
Shift
Log out

All orders

Refresh

Search order or item...

MY ORDERS (7)

A2610-011-01

GH-200 – Gehäuse HB-100, bearbeitet
Qty: 20 St Start: – Ops: 0 / 4 done

assigned to me RELEASED

A2610-012-03

GH-200 – Gehäuse HB-100, bearbeitet
Qty: 30 St Start: – Ops: 0 / 4 done

assigned to me NOT RELEASED

A2610-013-01

GH-200 – Gehäuse HB-100, bearbeitet
Qty: 6 St Start: – Ops: 3 / 4 done

assigned to me RELEASED

A2610-019-01

GH-200 – Gehäuse HB-100, bearbeitet
Qty: 12 St Start: – Ops: 0 / 4 done

assigned to me RELEASED

A2610-020-01

GH-200 – Gehäuse HB-100, bearbeitet

assigned to me RELEASED

Orders shows the entire stock of orders with levels and progress — for the case where the question is not the machine but the order. At the top are **My orders** (assigned to the signed-in person), below them **More orders**, each in **processing sequence**: sub-orders before their parent order, because they are produced first.

4.4 The operation

productionOS · Shopfloor Terminal
Nordwerk / Werk 1 / Fertigung Brandt
DE EN v0.560.1443 ? A

Back SAEG-01 · Bandsäge Setup & material

Order A2610-022-01
Item GH-200 · Gehäuse HB-100, bearbeitet
Operation SAEG · Sägen
Machine SAEG-01 · Bandsäge Behringer HBP

Setup → Processing → Handover

Qty 6 St

Operation 01:08

Duration (plan)18.0 min Setup time15.0 min Target start29/10/2026 07:56 Target end29/10/2026 08:29 Actual start29/10/2026 08:04

Material addition

Scan container / batch... Book
Select material ... Batch (opt.)
Package: enter number ...
Qty Unit Book

Setup instruction (?)

STOP OUTPUT → CONTINUE TO HANDOVER TO SUCCESSOR DOWNTIME

The operation screen has a fixed header — order, item, operation, machine, the **phase bar** (Setup → Processing → Handover) and the quantity —, below it the running time and the buttons that are allowed **now**. Which ones these are is decided by the server; the terminal does not rebuild the workflow a second time, and anyone addressing the endpoint directly cannot skip a phase.

Below, in this order: planned and actual times, the material already consumed, the material addition (with scan field for container or batch), the process instruction, the inspection status per output, the **outputs** confirmed so far (identifier, produced, of which scrap — tapping opens the performance summary), the history with measured values, downtimes and handovers. The actions are in the footer.

Before the start only **START** is active. If the operation has a setup time, it begins with setup; otherwise it goes straight into processing. The start is checked against a time window around the planned date — a warning, not a block. An unreleased or locked order cannot be started.

4.5 Setup

productionOS · Shopfloor Terminal
Nordwerk / Werk 1 / Fertigung Brandt
DE EN v0.560.1443 ? A ↻

Back
BAZ-01 · 5-Achs-BAZ DMG DMU 50
Brandt

▶ Setup → Processing → Handover

SETUP

45 min planned
00:42

Order	A2610-022-01
Item	GH-200 · Gehäuse HB-100, bearbeitet
Operation	FRAES · Fräsen
Machine	BAZ-01 · 5-Achs-BAZ DMG DMU 50
Qty	6 St

Scan container / batch...
Book

TOOLS

0/3

W FR-SCH-16 · Schaftfräser Ø16 VHM 4-schneidig	1 St per St	mount
W FR-PLAN-63 · Planfräser Ø63 mit 5 WSP	1 St per St	mount
W SPV-HB100 · Spannvorrichtung Hydraulikblock	1 St per St	mount

■ STOP
→ SETUP DONE — continue to Processing
⏸ DOWNTIME

The setup screen is a checklist: the planned setup time runs, below it the **tools** of the operation (with scan field — a scanned tool is booked as mounted; if the tool is tracked individually, *Mount* asks for the **piece** and shows its tool life so far and usage against the limit), the **material** with package and batch, the **process instruction** with the target values and the **inspection**: the inspection characteristics of the operation with target, limits, inspection equipment and frequency, for viewing only — recording happens at output and in the inspection status per output. *SETUP DONE* switches to processing; *STOP* interrupts. The setup time counts towards the costs (5.1).

productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung Brandt

DE

EN

v0.560.1443

?

A

⌂

← Back

BAZ-01 · 5-Achs-BAZ DMG DMU 50

Setup & material

Order

A2610-022-01

Item

GH-200 · Gehäuse HB-100, bearbeitet

Operation

FRAES · Fräsen

Machine

BAZ-01 · 5-Achs-BAZ DMG DMU 50

▶ Setup

◉ Processing

◉ Handover

Qty

6 St

Operation 00:48

Order 01:48

Duration (plan)132.0 min

Setup time45.0 min

Target start29/10/2026 07:56

Target end29/10/2026 10:53

Actual start29/10/2026 08:05

Material addition

Scan container / batch...

Book

Select material ...

Batch (opt.)

Package: enter number ...

Qty

Unit

Book

■ STOP

→ CONTINUE TO PROCESSING

⏏ DOWNTIME

The same operation in the overview: the phase bar is on Setup, *Setup & material* at the top right leads back to the checklist.

4.6 Processing, material, downtime

During processing the time per piece and the costs run. Three things happen here:

Adding material. Select material, scan batch or package, quantity, *Book*. A scanned package is withdrawn **first**; only a remainder falls back to the oldest lot (FIFO). What was actually touched is reported back by the booking and recorded permanently — the basis of traceability. The allocation from planning is shown as a suggestion.

productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung Brandt

DE EN v0.569.1443 ? A

Back SAEG-01 · Bandsäge Setup & material

Order A2610-022-01

Item GH-200 · Gehäuse HB-100, bearbeitet

Operation SAEG · Sägen

Machine SAEG-01 · Bandsäge Behringer HBP

✓ Setup → Processing → Handover

Qty 6 St

Operation 01:14

Duration (plan) 18.0 min

Material addition

Scan container / batch...

Select material ...

Package: enter number ...

Qty

Setup instruction (?)

STOP

Actual start 29/10/2026 08:04

Book

Book

DOVER TO

DOWNTIME

DOWNTIME

Reason is optional — several reasons possible

☐ MAT Materialmangel

☐ PERS Personalmangel

☐ QS Qualitätsprüfung / Sperre

☐ RUEST Rüsten / Werkzeugwechsel

☐ STOER Technische Störung

☐ WART Geplante Wartung

Note (optional)

Cancel No reason Book downtime

Downtime. *DOWNTIME* stops the clock and asks for the reason (material shortage, staff shortage, quality inspection, setup, breakdown, maintenance — from the downtime groups), optionally with a remark; *No reason* is possible, the reason can be added later in the history. A downtime with a reason appears in the OEE analysis per reason; without a reason it counts as loss without explanation.

Interim status. *OUTPUT* records finished outputs while processing continues ([4.7](#)); *STOP* ends the work provisionally (partial confirmation) — work continues later with *RESUME* in the same phase; *CONTINUE TO HANDOVER* completes processing.

Before processing can be completed, material must have been booked or a take-over from the predecessor must have taken place, if the operation has a material requirement — otherwise there would be output without input.

Removing. A mounted tool piece adds its time in use to the total tool life when removed; shots or strokes are counted at every handover. A mounted assembly with a serial number (child SN) can be removed in the same way: state the reason and choose the finding — **blocked** (default; only quality assurance releases it), **available** or **scrap**. With *blocked* and *available* the consumption at the still open operation is reversed.

4.7 Recording and inspecting output

productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung Brandt

DE

EN

v0.560.1443

?

A

⌂

← Back

A2610-022-01 · 30 BOHR · BAZ-02 · 5-Achs-BAZ DMG DMU 50 (2)

Record output (processing continues)

Qty (St)

3

Plan: 6 St

1

2

3

4

5

6

7

8

9

,

0

←

▼ Output per container (optional)

Container	Qty	Rework	Scrap
+ Container			

Remark (optional)

Remark...

Cancel

Record output

Inspection on this unit

Reference: this output — 3 characteristic(s) open

BOHR85 (mm)

GEW-M10

GRAT

OUTPUT opens the output dialogue: quantity (with number pad), *Output per container* for recording down to single-unit level, remark. If the operation has an **inspection plan**, the block **“Inspection on this unit”** with the inspection characteristics as buttons sits to the right of the quantity (on narrow devices below the quantity).

productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung Brandt

DE

EN

v0.560.1443

?

A

⌂

Back

A2610-022-01 · 30 BOHR · BAZ-02 · 5-Achs-BAZ DMG DMU 50 (2)

Record output (processing continues)

Qty (St)

3

Plan: 6 St

1

2

3

4

5

6

7

8

9

,

0

←

Output per container (optional)

Container	Qty	Rework	Scrap
+ Container			

Remark (optional)

Remark...

Cancel

Record output

Inspection on this unit

Reference: this output — 3 characteristic(s) open

BOHR85 (mm)

GEW-M10

GRAT

BOHR85 LSL 8.500 · Target 8.500 · USL 8.580

8,53

mm

Inspection equipment: Innenmessschraube · Frequency: 5ST

Apply

Cancel

Tap a characteristic, enter a value — measuring with the limits from the inspection plan, counting with inspected quantity, defective parts and defect type —, *Apply*.

productionOS · Shopfloor Terminal
Nordwerk / Werk 1 / Fertigung Brandt
DE EN v0.560.1443 ? A C

Back A2610-022-01 · 30 BOHR · BAZ-02 · 5-Achs-BAZ DMG DMU 50 (2)

Record output (processing continues)

Qty (St)

3

Plan: 6 St

1

2

3

4

5

6

7

8

9

,

0

←

Inspection on this unit

Reference: this output — 1 characteristic(s) open

BOHR85 ✓

GEW-M10 ✓

GRAT

BOHR85

8.530 mm

x

GEW-M10

1.000

x

▼ Output per container (optional)

Container	Qty	Rework	Scrap
+ Container			

Remark (optional)

Remark...

Cancel

Record output

The inspection appears in the list and can be removed again until it is sent. *Record output* books **output and inspections in one go**; the inspections are attached to exactly this output. Three rules:

- **An offer, not an obligation.** Saving also works with open characteristics; the confirmation states “n characteristic(s) open” and NOK values, nothing is locked. Lab inspections do not count as open.
- **Several containers.** From the second container on the block empties — which container was inspected cannot be stated here; the inspection then takes place per container in the inspection status.
- **All or nothing.** If an inspection fails, the output is not booked either.

From this moment every output is an **identity** with quantity and container ([Part 7](#)), a lot in the intermediate store for the successor, and a line in the handover — the successor can take over before the whole operation is finished.

4.8 Inspection status, measured value, counting inspection

productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung Brandt

DE

EN

v0.560.1443

?

A

⌂

Back

BAZ-02 · 5-Achs-BAZ DMG DMU 50 (2)

Setup & material

Order

A2610-022-01

Item

GH-200 · Gehäuse HB-100, bearbeitet

Operation

BOHR · Bohren/Gewinde

Machine

BAZ-02 · 5-Achs-BAZ DMG DMU 50

✓ Setup

▶ Processing

◉ Handover

Qty

6 St

Operation 01:24

Order 02:24

46 mm (45.8...46.2)

Actual: OK

▶ Output (1 units) — tap for the performance summary

▼ Inspection status per output — 1 open

Output 1 · 3.00 St

BOHR85 ✓

GEW-M10 ✓

GRAT

▼ Measured values (2)

Unit	Characteristic	Value	Unit	Target	LSL	USL
Einheit 1 #1	BOHR85	8.530	mm	8.500	8.500	8.580
Einheit 1 #1	GEW-M10	1.000		—	—	—

■ STOP

■ OUTPUT

→ CONTINUE TO HANDOVER TO SUCCESSOR

▬ DOWNTIME

MEASUREMENT

The **inspection status per output** shows for each output which characteristics of the inspection plan are recorded (✓, withdrawn) and which are open (tappable). It shows what is missing but does not enforce a position; every output is considered subject to inspection; the lab counts separately — the shopfloor can be finished while the lab is still running. Below that, the history of measured values and counting inspections with target and limits.

productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung Brandt

DE

EN

v0.560.1443

?

A

⌂

Back

A2610-022-01 – Measured value

Record measured value

counting

Inspection specifications (inspection plan)

BOHR85 (1)

GEW-M10 (1)

GRAT

Inspection equipment: Sichtprüfung · Frequency: 100 · Output 1

Inspection characteristic

GRAT

Serial no. (optional, scan — inspection per piece)

Scan SN: measured value is assigned to the individual piece

Measured value

Measured value

Unit

Limits (optional, absolute values)

LSL

Standard value

USL

Lower limit

Target value

Upper limit

1

2

3

4

5

6

7

8

9

,

0

←

Cancel

Save measured value

Tapping an open characteristic opens the measured value screen with the characteristic, unit, target and limits pre-filled and the reference to the output. The button *MEASUREMENT* in the operation opens the same screen without pre-filling — measured values are not tied to any phase and can be reached at any time. A value outside the limits is reported (and creates a quality event), not rejected; optionally a serial number can be scanned, then the inspection is attached to the piece.

productionOS · Shopfloor Terminal
Nordwerk / Werk 1 / Fertigung Brandt
DE EN v0.560.1443 ? A ↺

Back A2610-022-01 – Measured value

Counting inspection

measuring

Inspection specifications (inspection plan)

BOHR85 (1)
GEW-M10 (1)
GRAT

Inspection equipment: Sichtprüfung · Frequency: 100 · Output 1

Inspection characteristic

GRAT

Serial no. (optional, scan — inspection per piece)

Scan SN: measured value is assigned to the individual piece

Counting inspection (assessment)

Inspected quantity

how many parts were inspected?

Defect type	Error	defective parts
– Defect type –	Error	Parts

+ Defect type

Deviates from inspection plan (messend) — will be noted

Good quantity

inspected – defective

Total defective parts

empty = largest defect type

Cancel

Save inspection

For characteristics with the unit **BEURT** the screen switches to the **counting inspection**: inspected quantity, per defect type the number of defects and of defective parts, good quantity (calculated or entered). Switching between measuring and counting remains possible — a recording that deviates from the specification is flagged, not forbidden.

4.9 Final confirmation and handover

productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung
Brandt

DEENv0.560.1443?A↺

← BackA2610-022-01 · 10 SAEG · SAEG-01 · Bandsäge

Final confirmation

Qty (St)

6

Plan: 6 St

1

2

3

4

5

6

7

8

9

,

0

←

► Output per container (optional)

Remark (optional)

Remark...

Cancel

✓ Final confirmation

CONTINUE TO HANDOVER closes processing; in the handover phase *FINAL CONFIRMATION* appears. The dialogue asks for the quantity (pre-filled with the planned quantity) — what has already been recorded as output has been handed over; the final confirmation only writes the remainder. The server rejects more than the planned quantity, unless the overdelivery is explicitly confirmed.

productionOS · Shopfloor Terminal
Nordwerk / Werk 1 / Fertigung Brandt
DE EN v0.560.1443 ? A

Back A2610-022-01 · 10 SAEG · SAEG-01 · Bandsäge

Final confirmation

Qty (St)

6

Plan: 6 St

1 2 3
4 5 6
7 8 9
, 0 ←

Output per container (optional)

Container	Qty	Rework	Scrap
+ Container			

Remark (optional)

Remark...

Cancel ✓ Final confirmation

Output per container splits the quantity by package, with **rework** and **scrap** per line; the planned container from the plan is pre-filled. The total line points out deviations from the confirmed quantity without blocking. If the container is **tracked individually**, the field stays empty and asks for the identifier: the container itself is scanned, the system sets the type. An occupied, blocked or retired container is rejected; traceability uses the same identifier to find what is in it and what used to be in it. Each line creates a handover to the successor operation — for the last operation into stock — and a lot; the production storage costs run from the handover until the successor begins.

After the final confirmation the success message offers *View performance summary* — an offer, not a jump. Once the last operation of the last order is finished, the system completes the order and checks the events (date, quantity, quality).

4.10 Scrap and rework


productionOS · Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung
Brandt

DE EN v0.560.1443 ? A ↺

Skip A2610-022-01 – Scrap

Output 2

Good 2, bad 1 St

Scrap

1

Rework

Reported bad: 1 — fully explained

Defect type — what was the cause?

Defect type	Error	Parts	Location	Cause	Action
▼					

+ Defect type

Cause — where did the defect arise?

Not where it was noticed. Without this entry the analysis makes it look as if the scrap arose at inspection.

Operation	Machine	Scrap	Rework
Sequence	Machine		

+ Cause

Note

Notes on rework...

Save

If bad parts were confirmed, the terminal asks directly — per output:

1. **Disposition** — how many scrap, how many rework
2. **Defect type** — what caused it; if a counting inspection exists,

its defect types are suggested

1. **Cause** — *where* the defect originated: operation and machine

productionOS · Shopfloor Terminal
Nordwerk / Werk 1 / Fertigung Brandt
DE EN v0.560.1443 ? A ↺

Skip A2610-022-01 – Scrap

Output 2

Good 2, bad 1 St

Scrap

1

Rework

Reported bad: 1 — fully explained
[Defect type — what was the cause?](#)

Defect type	Error	Parts	Location	Cause	Action
Gra ▾	1				

+ Defect type

[Cause — where did the defect arise?](#)

Not where it was noticed. Without this entry the analysis makes it look as if the scrap arose at inspection.

Operation	Machine	Scrap	Rework
1	Machine		

+ Cause

Note

Notes on rework...

Save

Item 3 is the actual purpose: a defect is noticed at final inspection, but it was caused three steps earlier. Without this assignment every analysis would look as if final inspection produced the scrap. Dispositioning more than was confirmed is rejected; less remains visible as *unexplained*. *Skip* is possible — nobody is blocked at the line. Rework opens a **rework stage** at the operation, which is booked like a run of its own.

4.11 Summary, traceability, warnings, finished



productionOS

Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung

Brandt

DE

EN

v0.560.1443

?

A

⌂

Back

Performance summary · A2610-022-01 · Seq. 30

Brandt

Item GH-200 · Gehäuse HB-100, bearbeitet · BOHR · BAZ-02 · COMPLETED

Traceability

TIMES

Target 29/10/2026 10:23 → 29/10/2026 12:05

Actual 29/10/2026 08:05 → 29/10/2026 08:06

PHASE	PLAN	ACTUAL
Setup	30 min	0 min
Processing	72 min	1 min

INPUT (0)

no data

From predecessor Seq. 20 FRAES: 6 good

OUTPUT — GH-200 · GEHÄUSE HB-100, BEARBEITET

Good 5 · Scrap 1 St (plan 6)

PACKAGE	GOOD	REWORK	SCRAP	TIME
Output 1	3	0	0	29/10/2026 08:06
KLT-02	2	0	1	29/10/2026 08:06

PROCESS PARAMETERS TARGET/ACTUAL

CHARACTERISTIC	TARGET	ACTUAL	STATUS
Bohrdrehzahl	2,800.00 1/min	—	open
Bohrtiefe	46.00 mm	—	open

INSPECTION CHARACTERISTICS TARGET/ACTUAL

CHARACTERISTIC	TARGET	LSL/USL	N	MEAN	OUTSIDE
BOHR85	8.50	8.50 / 8.58	8	8.533	0
GEW-M10	—		1	1.000	0

The **performance summary** of an operation in one view: times (plan versus actual per phase), input (lots and batches), output (packages with good / rework / scrap), process parameters target-actual from the process instruction, inspection characteristics target-actual from the inspection, costs plan-actual.

productionOS · Shopfloor Terminal Nordwerk / Werk 1 / Fertigung Brandt DE EN v0.560.1443 ? A C

Back Traceability · A2610-022-01 · Seq. 30 Brandt

Scan identifier (serial number or container) ... Open unit

INPUT
From predecessor Seq. 20 FRAES (BAZ-01): 6 St good in 1 unit(s)
nothing recorded

THIS OPERATION
A2610-022-01 · Seq. 30 BOHR @ BAZ-02 · GH-200 · finished 29/10/2026 08:06 08:06
Gehäuse HB-100, bearbeitet
Quantity (plan) 6 St · actual 29/10/2026 08:05 08:05 → 29/10/2026 08:06 08:06
End product: A2610-022 · HB-100 · Meerbusch Fluidtec
Performance summary

OUTPUT

Package / unit	Good	Time	To
Output 1	3 St	29/10/2026 08:06 08:06 Katrin Brandt	→ Seq. 40 ENTG
KLT-02	2 St Scrap 1	29/10/2026 08:06 08:06 Katrin Brandt	→ Seq. 40 ENTG

Successor A2610-022-01 · Seq. 40 ENTG @ WASCH-01 · GH-200

Chain further back

Chain further forward

Traceability shows the same unit in both directions: **where from** (which lots and batches went in) and **where to** (which packages were created and who took them over). Summary and traceability refer to each other (button *Traceability* in the summary).

Traceability per unit and result after confirming

Traceability can also be started from **a single piece**. The unit has an **identifier**: the serial number, otherwise the package, otherwise the sequential number. Ways to get there:

- After *DONE* or *OUTPUT* the success message offers the button

View result. The *Reported* view shows the processed input on the left and the units just created with their identifier on the right, per unit *Traceability* and *Performance summary*; *Continue* leads where it would have gone without the view. It only appears on request, never by itself.

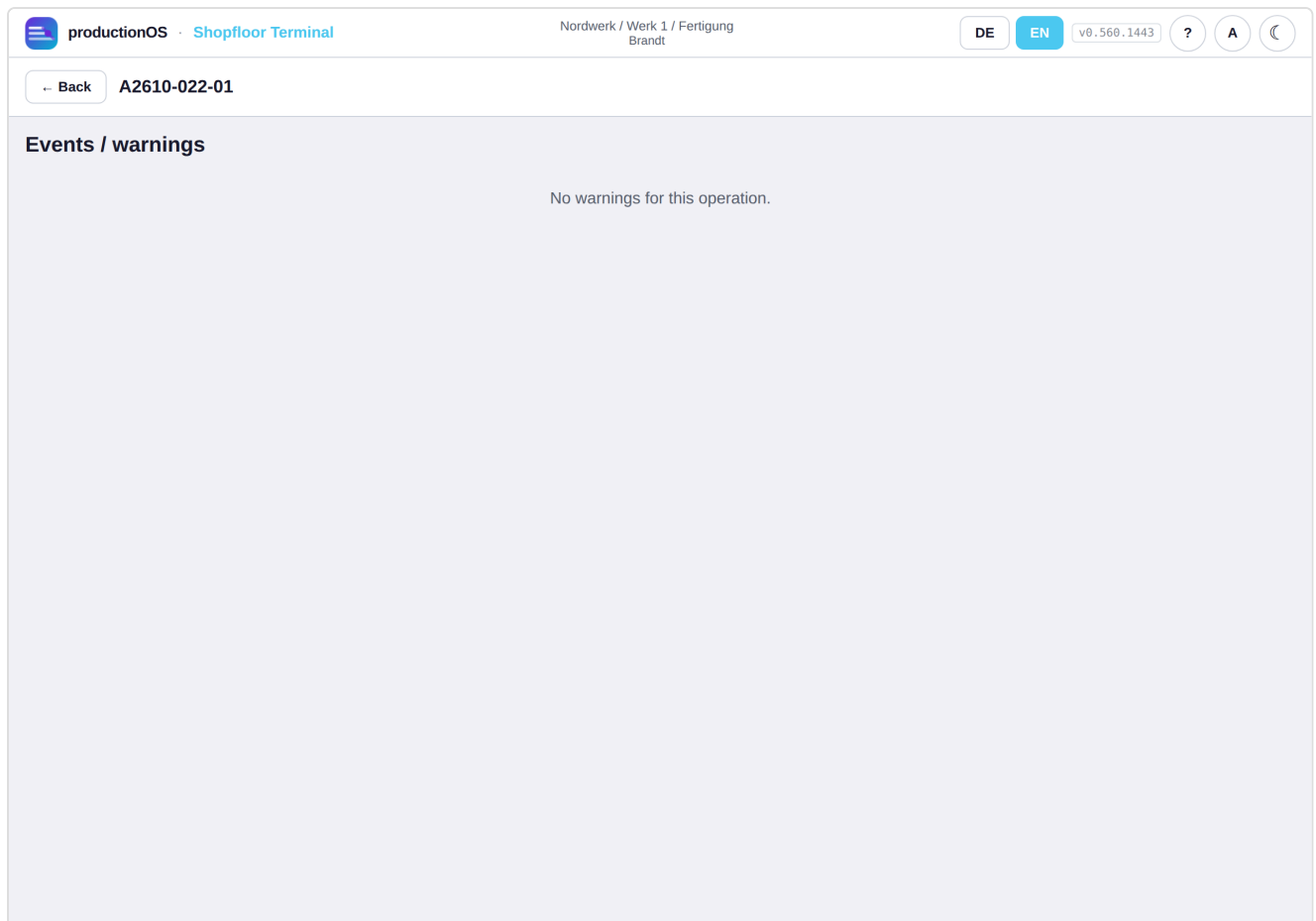
- In the operation, tap the list of confirmed units.
- In the summary, tap a package; in traceability, a line

under *To*.

- In traceability, **scan** or type in the identifier.

Traceability per unit shows **what exactly this piece is made of**: every input lot with quantity and share. *Calculated* means the quantity was distributed according to the ratio of the yield; *recorded* means it was added later in the main frontend under *Batches*. If an input came from an upstream operation, tapping leads one level back — to the unit there if the package is known, otherwise to the operation. If an operation did not consume any material (e.g.

inspection), the predecessor from which the unit emerged is shown there. The predecessor's unit is unambiguous only with the same package or if it delivered exactly one unit; otherwise the terminal shows the operation and does not claim a single unit.



Warnings collects the events of the operation — measured values outside the tolerance, start outside the time window, a duration above plan (in the screenshot: Sägen (sawing) 13 instead of 3 min per piece) — in a separate view. The button only appears when there is something to report.

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Back

BAZ-02 – 5-Achs-BAZ DMG DMU 50 (2)
Brandt

Finished operations

2 days ▾

A2610-022-01 FINISHED 2026-10-29T08:06:00

GH-200 · Gehäuse HB-100, bearbeitet · Op. BOHR (Seq. 30)

Good 5 · Scrap 1 (plan 6 St)

Setup/conditioning: 0 min / plan 30 min

Processing: 1 min / plan 72 min

Handover to successor: 0 min

Traceability

Finished lists the operations most recently given final confirmation at this machine with good and scrap quantity, times and a jump into traceability.

4.12 Weighing a mix — the recipe at the terminal

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← Back

MISCH-01 · Emulsionsmischer 200 l

Setup & material

Weigh mix

Order

A2610-023

Item

KSS-EMU · Kühlschmierstoff-Emulsion 5 %

Operation

MISCH · Mischen / Ansatz

Machine

MISCH-01 · Emulsionsmischer 200 l

✓ Setup

→

▶ Processing

→

◉ Handover

Qty

250 kg

Operation 00:16

Duration (plan)37.5 min

Setup time10.0 min

Target start30/10/2026 21:12

Target end30/10/2026 22:00

Actual start29/10/2026 08:10

Material addition

Scan container / batch...

Book

Select material ...

Batch (opt.)

Package: enter number ...

Qty

Unit

Book

No instruction plan is entered for this operation.

■ STOP

■ OUTPUT

→ CONTINUE TO HANDOVER TO SUCCESSOR

■ DOWNTIME

If the operation has a recipe with proportions, its screen carries the button **Weigh mix** at the top right. It leads into recipe execution — the counterpart to the legacy system's form, in which the recipe is copied into the order on first opening and the operator is guided through a **cumulative weighing**.

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Brandt

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-- Operation MISCH-01 · Emulsionsmischer 200 I
Brandt

Weigh mix · A2610-023

KSS-EMU · 250.000 kg in 3 mix(es) · weighed 0.000 of 250.000 · 0 completed

Mix 1

100.000 kg

open

Mix 2

100.000 kg

open

Mix 3

50.000 kg

open

Mix 1 · 100.000 kg

#	Component	Target	Scale target	Actual	Actual %	Status
1	VE-Wasser (vollentsalzt) WASSER-VE	93.000 kg 93.00 %	93.000	–	–	OPEN
2	KSS-Konzentrat mineralölfrei KSS-KONZ	5.000 kg 5.00 %	98.000	–	–	OPEN
3	Biozid-Zusatz KSS BIOZID	2.000 kg 2.00 %	100.000	–	–	OPEN

Addition 1 · VE-Wasser (vollentsalzt)

Scale target 93.000 kg

Stock 7,814.800 kg · open across all mixes 232.500

Actual quantity (kg)

Lot / package

Lot automatic (FIFO) ▼

On first opening the recipe is **frozen into the order as a specification**: one line per mix and component. Until then the recipe may change; from now on it is documented what was weighed against. At the top the mixes as cards (100 / 100 / 50 kg), below them the components of the selected mix in addition position with target, **Scale target**, actual and actual share.

Scale target is the decisive column: not “5 kg concentrate”, but “the scale shows 98 kg once the concentrate is in”. Coarse first, precise at the end, and the total must be right — that is how the person at the mixer works, and that is how the screen guides.

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-- Operation MISCH-01 · Emulsionsmischer 200 I
Brandt

Weigh mix · A2610-023

KSS-EMU · 250.000 kg in 3 mix(es) · weighed 0.000 of 250.000 · 0 completed

Mix 1
100.000 kg
open

Mix 2
100.000 kg
open

Mix 3
50.000 kg
open

Mix 1 · 100.000 kg

#	Component	Target	Scale target	Actual	Actual %	Status
1	VE-Wasser (vollentsalzt) WASSER-VE	93.000 kg 93.00 %	93.000	–	–	<input type="button" value="OPEN"/>
2	KSS-Konzentrat mineralölfrei KSS-KONZ	5.000 kg 5.00 %	98.000	–	–	<input type="button" value="OPEN"/>
3	Biozid-Zusatz KSS BIOZID	2.000 kg 2.00 %	100.000	–	–	<input type="button" value="OPEN"/>

Addition 1 · VE-Wasser (vollentsalzt)
Scale target 93.000 kg
Stock 7,814.800 kg · open across all mixes 232.500
Actual quantity (kg)

Lot / package

Tap a component, enter the actual quantity from the scale, choose a lot (the oldest first, or by scan the package that actually stands in front of the mixer), *Book addition*. Every addition is a material booking as in [4.6](#): it records the lot, books stock and costs and binds the consumption to the mix.

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Brandt

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-- Operation MISCH-01 · Emulsionsmischer 200 I
Brandt

Weigh mix · A2610-023

KSS-EMU · 250.000 kg in 3 mix(es) · weighed 97.700 of 250.000 · 0 completed

Mix 1
100.000 kg
97.700 weighed · 2 open

Mix 2
100.000 kg
open

Mix 3
50.000 kg
open

Mix 1 · 100.000 kg · 2 out of tolerance

#	Component	Target	Scale target	Actual	Actual %	Status
1	VE-Wasser (vollentsalzt) WASSER-VE	93.000 kg 93.00 %	93.000	92.600 kg	94.78 % +1.78 / ±1.00	PARTIAL
2	KSS-Konzentrat mineralölfrei KSS-KONZ	5.000 kg 5.00 %	98.000	5.100 kg	5.22 % +0.22 / ±0.50	✓
3	Biozid-Zusatz KSS BIOZID	2.000 kg 2.00 %	100.000	—	0.00 % -2.00 / ±0.30	OPEN

Addition 1 · VE-Wasser (vollentsalzt)
Scale target **93.000 kg** · 0.400 remaining
Stock 7,722.200 kg · open across all mixes 139.900
Actual quantity (kg)

Lot / package

After each addition the screen calculates the actual share back. In the screenshot 0.4 kg of water is missing (92.6 instead of 93 kg): the line is set to *partial*, the deviation is red, the header says *2 out of tolerance* — and the screen offers topping up (*0.400 remaining*). Deviations are **shown, not forbidden**: the legacy system records both, and what the operator weighed is the truth, not the specification.

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Shopfloor Terminal

Nordwerk / Werk 1 / Fertigung

Brandt

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Operation

MISCH-01 · Emulsionsmischer 200 I

Brandt

Weigh mix · A2610-023

KSS-EMU · 250.000 kg in 3 mix(es) · weighed 99.700 of 250.000 · 1 completed

Scan container / batch...

Select

Mix 1

100.000 kg

completed

Mix 2

100.000 kg

open

Mix 3

50.000 kg

open

Mix 2 · 100.000 kg

#	Component	Target	Scale target	Actual	Actual %	Status
1	VE-Wasser (vollentsalzt) WASSER-VE	93.000 kg 93.00 %	93.000	–	–	OPEN
2	KSS-Konzentrat mineralölfrei KSS-KONZ	5.000 kg 5.00 %	98.000	–	–	OPEN
3	Biozid-Zusatz KSS BIOZID	2.000 kg 2.00 %	100.000	–	–	OPEN

Addition 1 · VE-Wasser (vollentsalzt)

Scale target 93.000 kg

Stock 7,722.200 kg · open across all mixes 139.500

Actual quantity (kg)

93

Lot / package

Lot automatic (FIFO)

Book addition

Complete mix 2

Complete mix checks completeness and tolerance; if a component is missing entirely, the server asks, *anyway* is possible. The mix is then *completed* with its weighed quantity (here 99.7 kg), and the next mix is up. The stock preview per component shows whether the remainder is sufficient for all open mixes.

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Back

MISCH-01 · Emulsionsmischer 200 l

Setup & material

Weigh mix

Order

A2610-023

Item

KSS-EMU · Kühlschmierstoff-Emulsion 5 %

Operation

MISCH · Mischen / Ansatz

Machine

MISCH-01 · Emulsionsmischer 200 l

✓ Setup

→

▶ Processing

→

◉ Handover

Qty

250 kg

Operation 00:58

Duration (plan)37.5 min

Setup time10.0 min

Target start30/10/2026 21:12

Target end30/10/2026 22:00

Actual start29/10/2026 08:10

Already consumed

Type	Material	Package	Batch	Qty	Unit	
R	WASSER-VE	CHEM-NW-0/0	–	92.60	kg	Back
R	KSS-KONZ	CHEM-NW-0/0	–	5.10	kg	Back
R	BIOZID	CHEM-NW-0/0	–	2.00	kg	Back

Material addition

Scan container / batch...

Book

■ STOP

■ OUTPUT

→ CONTINUE TO HANDOVER TO SUCCESSOR

■ DOWNTIME

Report output from mix 1 leads back to the operation, which now shows the three additions under *Already consumed*, and remembers the mix as origin: *OUTPUT* then reports from this mix. The batch composition of the confirmed outputs takes **only the consumptions of this mix**, instead of distributing all open consumptions of the operation in proportion to quantity. Traceability thus shows which concentrate lot is in which package of emulsion — mix 2 went into lot 4711, not “some mix”.

4.13 My operations and the shift at the terminal

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My operations
Brandt

Orders Machine Shift Log out

My operations

Refresh

A2610-012-03 · SAEG (10)

GH-200 – Gehäuse HB-100, bearbeitet

Machine SAEG-01 – Bandsäge Behringer HBP Assignment Sat 17/10 09:30 – Sat 17/10 11:00

planned NOT RELEASED

A2610-012-03 · FRAES (20)

GH-200 – Gehäuse HB-100, bearbeitet

Machine BAZ-01 – 5-Achs-BAZ DMG DMU 50 Assignment Sat 17/10 11:00 – Mon 19/10 14:00

planned NOT RELEASED

A2610-011-01 · SAEG (10)

GH-200 – Gehäuse HB-100, bearbeitet

Machine SAEG-01 – Bandsäge Behringer HBP Assignment Fri 23/10 06:00 – Fri 23/10 06:40

planned RELEASED

A2610-011-01 · FRAES (20)

GH-200 – Gehäuse HB-100, bearbeitet

Machine BAZ-01 – 5-Achs-BAZ DMG DMU 50 Assignment Fri 23/10 06:40 – Fri 23/10 14:00

planned RELEASED

A2610-022-01 · SAEG (10)

GH-200 – Gehäuse HB-100, bearbeitet

Machine SAEG-01 – Bandsäge Behringer HBP Assignment Thu 29/10 08:11 – Thu 29/10 08:29

planned RELEASED

A2610-022-01 · FRAES (20)

GH-200 – Gehäuse HB-100, bearbeitet

Machine BAZ-01 – 5-Achs-BAZ DMG DMU 50 Assignment Thu 29/10 08:41 – Thu 29/10 10:53

planned RELEASED

Mine lists the operations for which the signed-in person is scheduled or manually assigned, open and not yet completed, in the sequence of their own deployment: order, operation, machine, deployment window and status (*running*, *overdue*). Tapping selects the machine and leads via setup into the operation. Every phase opened at the terminal carries the **employee ID** of the signed-in person — this is how the actual time per person arises for shift supervisors, personnel costs and CO2.



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Shift supervisor

Brandt

Mine

Orders

Machine

Log out

<

Thu, 29/10/2026

>

Whole day

Shift 1 06:00–14:00

Shift 2 14:00–22:00

Confirm all

Reassign

Attendance

07:56–10:04 · MONT-01

A2610-022 · MONT (10)

planned Lindqvist Mika 08:16–10:04

Confirm

Swap

Remove

MONT

07:56–08:29 · SAEG-01

A2610-022-01 · SAEG (10)

planned Brandt Katrin 08:11–08:29

Confirm

Swap

Remove

SAEG

07:56–10:53 · BAZ-01

A2610-022-01 · FRAES (20)

planned Brandt Katrin 08:41–10:53

Confirm

Swap

Remove

CNC

07:56–09:33 · DREH-01

A2610-022-02 · DREH (10)

planned Okonkwo Daniel 08:21–09:33

Confirm

Swap

Remove

DREH

09:13–10:21 · SCHL-01

A2610-022-02 · SCHL (20)

planned Okonkwo Daniel 09:33–10:21

Confirm

Swap

Remove

SCHL

Shift is visible only to people with the additional role shift supervisor (or planners and administrators). It is the same view as in the main frontend ([3.12](#)), built for touch: day forward/back, select a shift, per operation the skill requirement (green covered, red uncovered) and the reserved people with *Confirm*, *Swap* and *Remove*; in addition *Confirm all*, *Reassign* and *Attendance*, to enter a sick note directly.

Part 5 — Analysis

The analyses read what planning and the terminal have written — none of it is maintained by hand. The screenshots show order A2608-004 (6 blocks), fully produced in August, and A2610-013, which is currently running.

5.1 Costs: plan versus actual

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Planned costs – plan vs. actual
ABE_KOST - planned vs. actual

Deviation overview Cost items **Control centre**

A2608-004 Machine (op) ☐ show deleted orders too

HB-100
6 pcs · Meerbush Fluidtec

Planned total
1,103.53 EUR

Actual total
1,116.16 EUR

Δ Deviation
+12.63

CO2
no factors maintained (#388)

Seq. 10 MONT MONT-01 Cost centre 4200

ROW	QTY	DURATION	PRIMARY COSTS					SECONDARY COSTS					WIP STOCK	TOTAL
			VARIABLE	FIXED	DELAY	MATERIAL	LABOUR	VARIABLE	FIXED	DELAY	MATERIAL	LABOUR		
Planned cumulative	Σ 6	108 min	99.00	18.33	0.00	85.44	—	504.60	193.92	0.00	140.14	—	0.00	1,041.43
Actual cumulative	Σ 6	115 min	105.42	18.33	0.00	85.44	—	514.15	193.92	0.00	140.14	—	0.00	1,057.39
Planned sequence	6	108 min	99.00	18.33	0.00	85.44	—	504.60	193.92	0.00	140.14	—	0.00	1,041.43
Actual sequence	6	115 min	105.42	18.33	0.00	85.44	—	514.15	193.92	0.00	140.14	—	0.00	1,057.39

Seq. 20 DICHT PRUEF-01 Cost centre 4300

ROW	QTY	DURATION	PRIMARY COSTS					SECONDARY COSTS					WIP STOCK	TOTAL
			VARIABLE	FIXED	DELAY	MATERIAL	LABOUR	VARIABLE	FIXED	DELAY	MATERIAL	LABOUR		
Planned cumulative	Σ 12	144 min	136.20	28.67	0.00	85.44	—	504.60	193.92	0.00	140.14	—	0.00	1,088.96
Actual cumulative	Σ 12	149 min	140.55	28.67	0.00	85.44	—	514.15	193.92	0.00	140.14	—	0.00	1,102.86
Planned sequence	6	36 min	37.20	10.33	0.00	0.00	—	0.00	0.00	0.00	0.00	—	0.00	47.53
Actual sequence	6	34 min	35.13	10.33	0.00	0.00	—	0.00	0.00	0.00	0.00	—	0.00	45.47

Seq. 30 VERP VERP-01 Cost centre 4400 last operation — the cumulative row is the order total

ROW	QTY	DURATION	PRIMARY COSTS					SECONDARY COSTS					WIP STOCK	TOTAL
			VARIABLE	FIXED	DELAY	MATERIAL	LABOUR	VARIABLE	FIXED	DELAY	MATERIAL	LABOUR		

For each operation, planned and actual costs are broken down into **variable / fixed / delay / material / labour**, with primary (this order) and secondary (its sub-orders) shown separately, plus the WIP stock costs. The header line totals: planned 1,103.53 EUR, actual 1,116.16 EUR, deviation +12.63 EUR. The *Control centre* tab shows the deviation per operation, *Cost items* the individual lines.

What is included and what is not: machine costs from hourly rate × actual duration (setup counts too), material costs from the booked consumption, delay from the waiting time before the operation, storage costs from the idle time between handover and take-over. **Tools** cost their hourly rate from the tool master × usage duration × count and — as in the legacy system — are included in the material of the operation at which they are mounted; in the plan, the usage duration is setup + processing + teardown of that operation. When rolling up to higher-level items they count once per lot, like setup costs. **Not** included are overheads and a scrap surcharge. The actual calculation is triggered by the final confirmation; *Recalculate* recalculates an order.

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Nordwerk/Werk 1/Fertigung – http://localhost:8001

Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Planned costs – plan vs. actual

ABE_KOST - planned vs. actual

Deviation overview

Cost items

Control centre

A2610-022-01

Machine (op)

show deleted orders too

Load

Recalculate

GH-200

6 pcs

Planned total

901.06 EUR

Actual total

no confirmation yet

Δ Deviation

cannot be calculated

CO2 actual

0 kg CO2e (planned 0) · 0 per piece

Seq. 10

SAEG

SAEG-01

Cost centre 4100

ROW	QTY	DURATION	PRIMARY COSTS					SECONDARY COSTS					WIP STOCK	TOTAL
			VARIABLE	FIXED	DELAY	MATERIAL	LABOUR	VARIABLE	FIXED	DELAY	MATERIAL	LABOUR		
Planned cumulative	Σ 6	18 min	14.40	12.00	0.00	130.56	26.67	0.00	0.00	0.00	0.00	0.00	0.00	183.64
Actual cumulative	Σ 6	1 min	0.80	12.00	0.00	130.56	0.40	0.00	0.00	0.00	0.00	0.00	0.00	143.76
Planned sequence	6	18 min	14.40	12.00	0.00	130.56	26.67	0.00	0.00	0.00	0.00	0.00	0.00	183.64
Actual sequence	6	1 min	0.80	12.00	0.00	130.56	0.40	0.00	0.00	0.00	0.00	0.00	0.00	143.76

Seq. 20

FRAES

BAZ-01

Cost centre 4100

ROW	QTY	DURATION	PRIMARY COSTS					SECONDARY COSTS					WIP STOCK	TOTAL
			VARIABLE	FIXED	DELAY	MATERIAL	LABOUR	VARIABLE	FIXED	DELAY	MATERIAL	LABOUR		
Planned cumulative	Σ 12	150 min	223.40	83.25	0.00	130.56	169.75	0.00	0.00	0.00	0.00	0.00	0.00	606.96
Actual cumulative	Σ 12	1 min	0.80	83.25	0.00	130.56	0.40	0.00	0.00	0.00	0.00	0.00	0.00	215.01
Planned sequence	6	132 min	209.00	71.25	0.00	0.00	143.08	0.00	0.00	0.00	0.00	0.00	0.00	423.33
Actual sequence	6	0 min	0.00	71.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	71.25

Seq. 30

BOHR

BAZ-02

Cost centre 4100

ROW	QTY	DURATION	PRIMARY COSTS					SECONDARY COSTS					WIP STOCK	TOTAL
			VARIABLE	FIXED	DELAY	MATERIAL	LABOUR	VARIABLE	FIXED	DELAY	MATERIAL	LABOUR		

Labour costs are calculated for a tenant that has switched on *Calculate labour costs* in the operating model. They appear in a separate column, never in the machine rate:

- **Planned** per phase = duration × persons × loading share × rate of the phase's wage group (1.5).
- **Actual** = time booked at the terminal per person × rate of their wage group.

If one person attends to several operations at the same time, they share that person's time.

- **Secondary** are the labour costs of the sub-orders.

The screenshot shows the housing sub-order on the current day: sawing plans 18 min of labour (26.67 EUR) and took 13 min (10.10 EUR). Older orders such as A2608-004 above show "—" in the column: they were calculated before the switch was on, and their confirmations carry no employee ID.

5.2 Plan/actual comparison and performance summary

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Nordwerk/Werk 1/Fertigung – http://localhost:8001

Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Planned vs. actual

Target/actual deviation per operation of an order

Order

A2608-004

Load

Order

A2608-004

Status

completed

Operations

3

Recorded

3 / 3

Final confirmations

3

Avg. deviation

-2 d

Max. deviation

-2 d

SORT	SEQ.	ITEM	OP.	MACHINE	PLANNED QTY	PLANNED START	PLANNED END	ACTUAL START	ACTUAL END	DEV.	FINAL CONF.
100	10	HB-100	MONT	MONT-01	6	2026-08-24	2026-08-24	2026-08-22	2026-08-22	-2 d	1
400	20	HB-100	DICHT	PRUEF-01	6	2026-08-24	2026-08-24	2026-08-22	2026-08-22	-2 d	1
500	30	HB-100	VERP	VERP-01	6	2026-08-24	2026-08-24	2026-08-22	2026-08-22	-2 d	1

The plan/actual comparison sets planned start/end against actual start/end for each operation and gives the deviation in days and the quantities. Here one can see whether an order ran earlier than scheduled — in the demo case Friday morning to Saturday midday instead of Saturday evening to Monday, because more capacity was free.

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DE

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?

Nordwerk/Werk 1/Fertigung – http://localhost:8001

Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

SHOP FLOOR

REPORTS & KPI

MASTER DATA

SYSTEM

Performance summary (operation)

Times, input with traceability, output, process parameters and inspection characteristics target/actual, costs planned/actual — one operation, one screen

A2608-004-01

Load

A2608-004 · HB-100 · Seq. 10 MONT (completed)

A2608-004 · Seq. 10 MONT · Machine MONT-01 · completed

Production plan

Traceability

Item HB-100 Hydraulicblock HB-100 kpl. · Customer Meerbusch Fluidtec

TIMES

Target 24/08 09:46 → 24/08 11:54

Actual 22/08 06:05 → 22/08 08:20

PHASE	PLANNED	ACTUAL
Setup	20 min	20 min (0)
Processing	108 min	115 min (+7)

INPUT (2)

TYPE	NO.	LOT / BATCH	PACKAGE	QTY	TIME
M	DS-40	WE-2608-14	6 kg	22/08 06:05	Tr
M	SCHR-M6	WE-2608-15	48 St	22/08 06:05	Tr

OUTPUT — HB-100 (1 PACKAGE)

Good 6 St (planned 6)

PACKAGE	GOOD	REWORK	SCRAP	TIME	WHO	TO
6	0	0	22/08 08:20	Katrin Brandt		

PROCESS PARAMETERS TARGET/ACTUAL

CHARACTERISTIC	TARGET	TOLERANCE	ACTUAL	DEV.
M_ANZUG Anzugsmoment M10	45 Nm	--3 / +3	—	

INSPECTION CHARACTERISTICS TARGET/ACTUAL

CHARACTERISTIC	TARGET	LSL / USL	N	MEAN	MIN / MAX
DREHM Drehmomentschlüssel	45 Nm	42 / 48	0	—	
VOLLST Sichtprüfung	—		0	—	

Control charts

COSTS PLANNED/ACTUAL

TYPE	PLANNED	ACTUAL	DEV.
Production	99	105.42	+6.42
Material	85.44	85.44	0
Fixed	18.33	18.33	0
Delay	0	0	0
Total	1,041.43	1,057.39	+15.97

EUR · Cost control centre

CO2 FOOTPRINT

no CO2 line — created on planning (planned) and on final confirmation (actual); maintain factors on material, machine, tool, personnel (#388)

TIME SERIES

later — epic #7 / concept #387

The **performance summary** of an operation is the same view as at the terminal (4.11), here with links to the control chart and the cost control centre: times per phase, input with lots, output with packages, process parameters target/actual, inspection characteristics with n,

mean and number out of range, costs planned/actual, CO2 footprint per piece (once emission factors are maintained).

5.3 Traceability and batches

The screenshot displays the 'productionOS' interface with a sidebar menu on the left containing 'Overview', 'ORDER PROCESSING', 'ROUTINGS & PROCESSES', 'SHOP FLOOR', 'REPORTS & KPI', 'MASTER DATA', and 'SYSTEM'. The main area is titled 'Traceability' and includes a search bar with 'A2608-004' and a 'Show chain' button. Below the search bar, there are three main sections: 'Input', 'This operation', and 'Output'.

Input

NO.	QUANTITY	LOT / BATCH	PACKAGE	TIM
M D5-40 Dichtsatz DS-40 (NBR)	6 kg	WE-2608-14 Batch		22/
M SCHR-H8 Zylinderschraube M8x40 12.9	48 St	WE-2608-15 Batch		22/

► Shares per output (1)

► Chain further forward (depth 4)
4 nodes

This operation

Order: **A2608-004**
Item: HB-100 Hydraulikblock HB-100 kpl.
Operation: Seq. 10 MONT
Machine: MONT-01
Quantity (plan): 6 St
Actual: 22/08/26 06:05 → 22/08/26 08:20
Customer: Meerbusch Fluidtec

Buttons: Performance summary, Serial numbers, Production plan

Output

PACKAGE / OUTPUT	GOOD	TIME	DESTINATION
Output 1	6 St	22/08/26 08:20 Katrin Brandt	not yet used further

Successor A2608-004 · Seq. 20 DICHT @ PRUEF-01 · HB-100
Hydraulikblock HB-100 kpl. · finished 22/08/26 09:14 **Summary**

Chain

Traceability shows three cards for an operation: *where from* (consumption: which lot, which batch, which supplier), *this operation* (times, quantities, end product and customer) and *where to* (output packages and who took them over) — with adjustable depth across several levels. The chain behind it:

```
`` Goods receipt lot (supplier, batch) | ▼ consumption recorded abe_ein which lot was  
actually consumed (scan before FIFO) | ▼ assignment per output abe_oe consumption ↔  
output, with quantity share | ▼ abe_out the output itself ``
```

The share (`v_proz`) is the share of the output's **inputs**, not of its output quantity.

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Overview

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Generate batch no.

FORMAT

Date + seq. no. → 20260

ORDER NO. (OPT.)

AUF-001

ITEM NO. (OPT.)

ART-001

TEMPLATE (OPT., TAKES PRECEDENCE)

e.g. CH-{JJJJ}{MM}{TT}-{N}

Placeholders as for serial numbers: {JJJJ} {JJ} {MM} {TT} {ART:n} {AUF:n} {NR:0n}. Without input, the saved template applies (item before default), otherwise the format above.

Generate

Save as default

Batch traceability

Batch no. (backward)

20260329-0001

ORDER NO. (FORWARD)

A2608-004

MAX. DEPTH

5

◀ Backward

▶ Forward

2 entries - Direction: forward

→ LEVEL 1

A2608-004

WE-2608-14

HB-100

MONT-01 2026-08-22

A2608-004

WE-2608-15

HB-100

MONT-01 2026-08-22

Material consumption (ABE_EIN)

Which material was consumed with which batch

Order no.

Q

Batch no.

Load

+ Record consumption

Enter order or batch no.

What does this output consist of?

Input lots of an output with their share

Order no.

Q

Seq.

Output

Load

Enter order and sequence

Where did this package go?

Recall: affected outputs instead of the whole order

Package no. (scan)

or supplier batch

Search

Enter package or batch no.

Batches is the view starting from the number: generate batch numbers from a pattern, trace a batch **forward** (from the customer order: where did the material go?) or **backward** (from the output: what went into it?), view material consumptions per order, search for a package. Batch number and serial number are the same thing here ([Part 7](#)).

5.4 KPI, OEE and disruptions

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Nordwerk/Werk 1/Fertigung - http://localhost:8001

Overview

ORDER PROCESSING

ROUTINGS & PROCESSES

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REPORTS & KPI

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SYSTEM

Machine KPI / OEE

MASCH_KPI - OEE = availability × performance × quality

Machine (opt.)

Q

2026

All weeks

Q Load

Top 20 OEE

No KPI data in the selected period

Downtime by reason

calculated from terminal downtimes (#392/#393) · availability = (planned processing time – processing downtime) ÷ planned processing time, as in masch_auf

2026-01-01 – 2026-12-31 · 2 downtimes · 50 min in total, of which processing 0 min · planned processing time 1,119 min · calculated availability **100.0%**

Raw minutes without calendar reference (#301: actual times UTC, productive window local time)

Per machine

MACHINE	OPS	PLANNED PROC.	ACTUAL PROC.	DOWNT. PROC.	DOWNT. SETUP	AVAILABILITY
BAZ-01	3	396	137	0	0	100.0%
BAZ-02	3	216	74	0	0	100.0%
DREN-01	2	144	84	0	0	100.0%
MISCH-01	2	75	64,631	0	0	100.0%
MONT-01	1	108	115	0	0	100.0%
PRUEF-01	1	36	34	0	0	100.0%
SAEG-01	3	54	49	0	0	100.0%
SCHL-01	1	48	52	0	0	100.0%
VERP-01	1	18	16	0	0	100.0%
WASCH-	1	24	23	0	0	100.0%

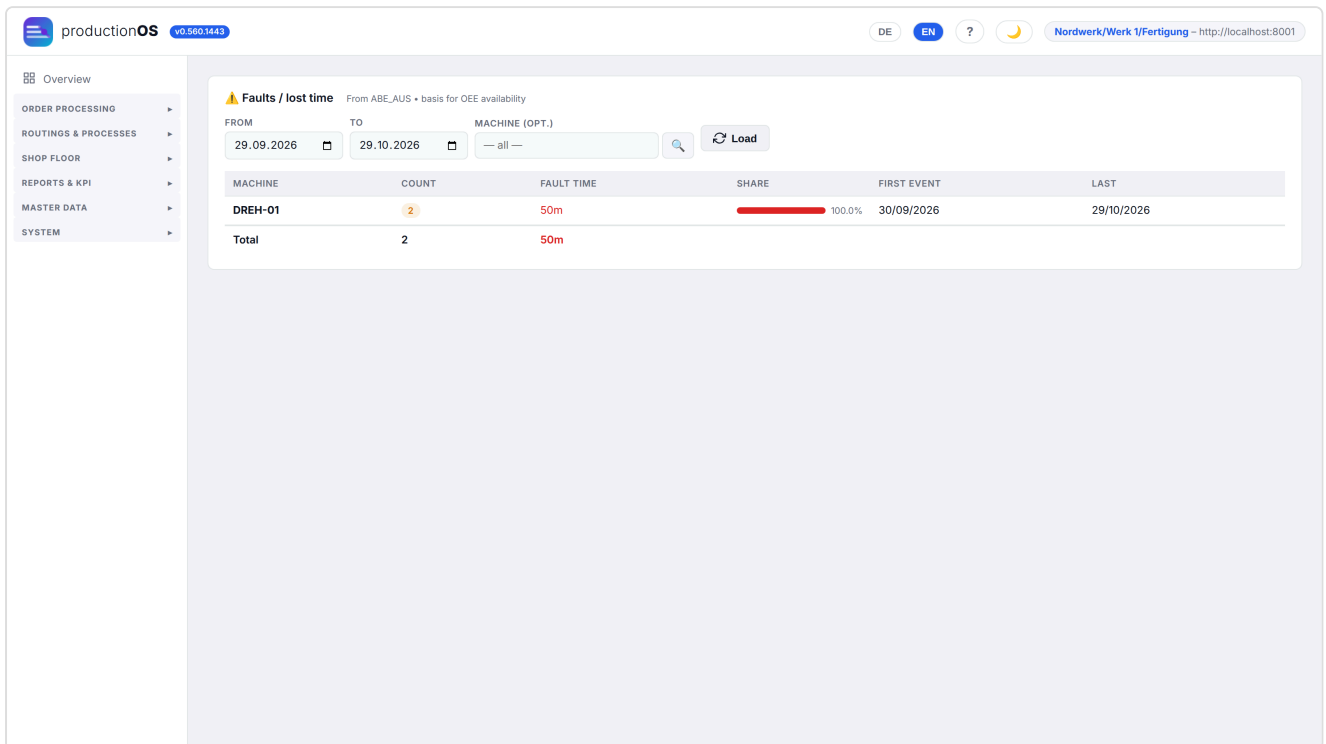
Pareto of reasons (each reason carries the full duration of its downtime, as in masch_still_gru)

REASON	DOWNT.	COUNT	DURATION	SHARE	CUM.
no reason	2	—	50 min	100.0%	

OEE = availability × performance × quality. Availability comes from the terminal's downtimes (planned time minus downtime), performance from planned processing time versus actual,

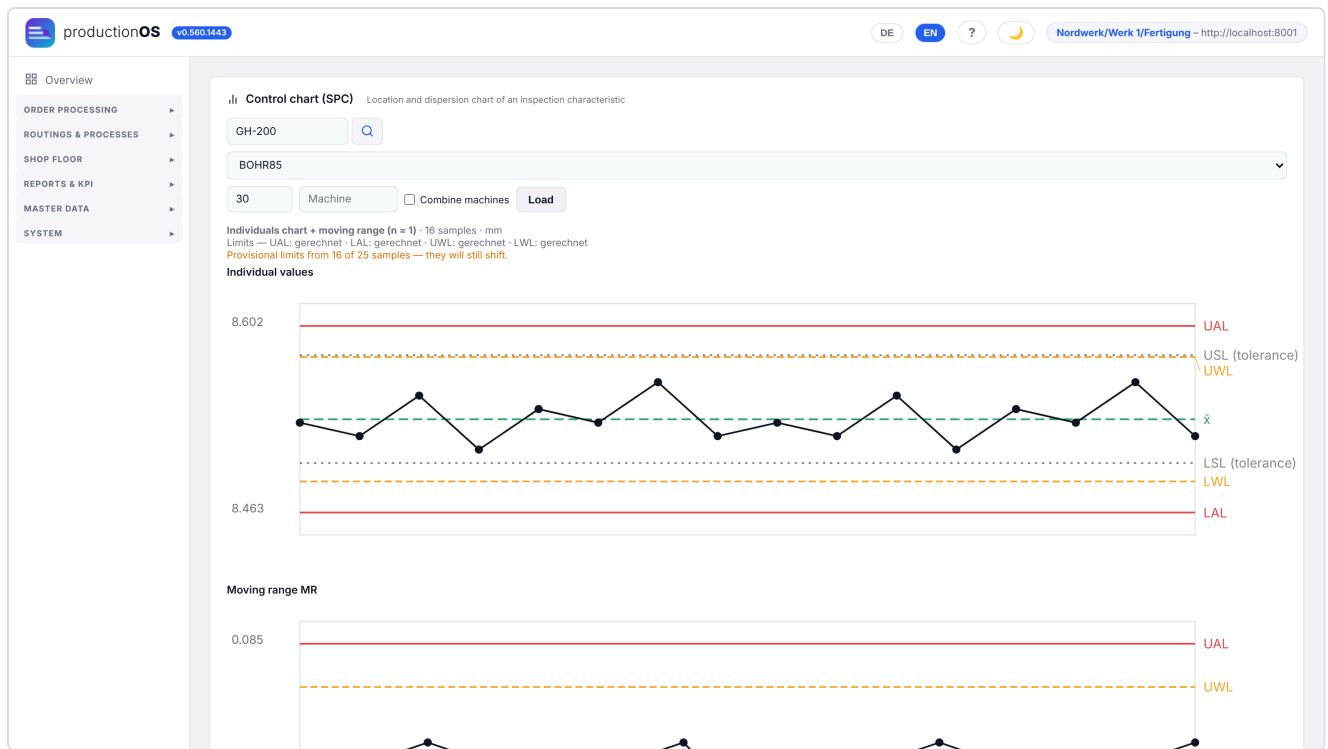
quality from good versus total. The *Downtime by reason* table shows, per machine, planned and actual processing time, downtime with and without a reason, and the availability rate; on the right is the Pareto list of reasons — *no reason* is listed there explicitly, so that unexplained losses do not disappear.

The legacy system's KPI table (daily values per machine) is not yet written by us; the OEE view calculates directly from the confirmations.



Faults / lost time lists the downtimes per machine with count, duration, share and time — downtimes arise in operation, not in the master data; without a single booking the view stays empty.

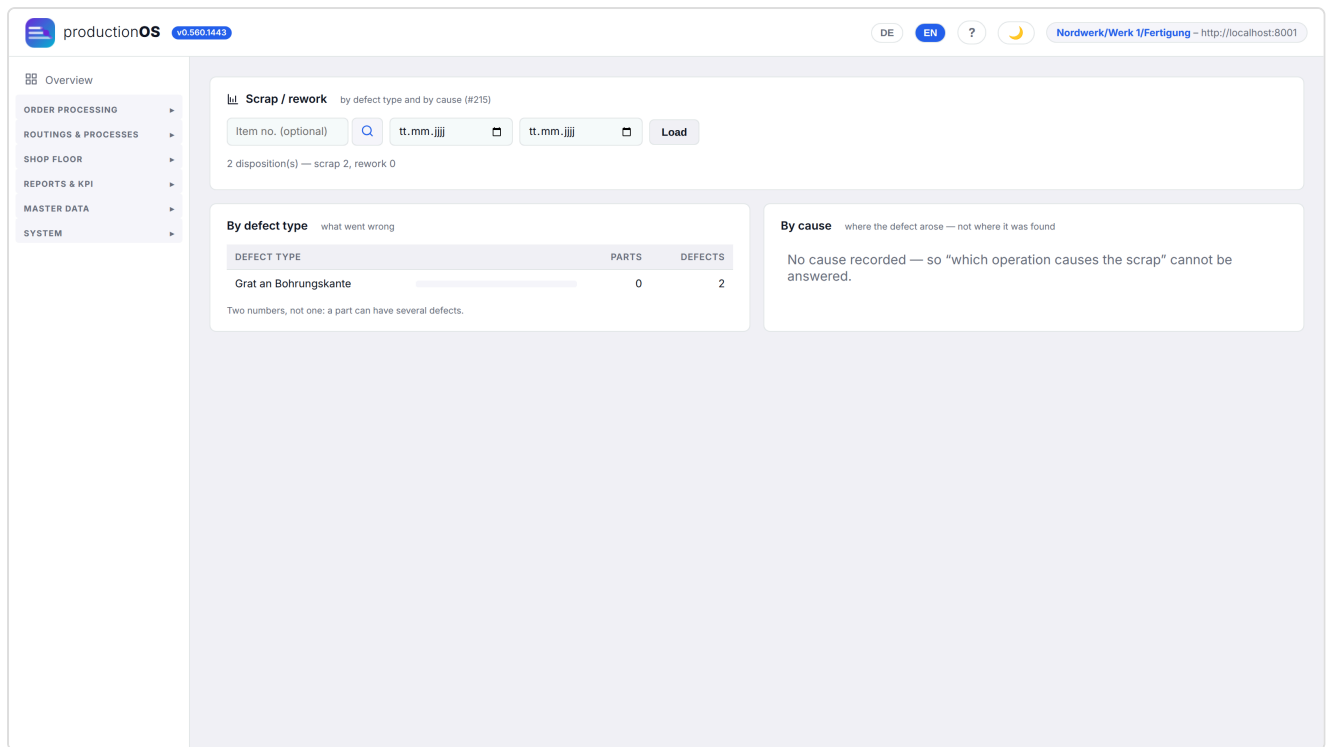
5.5 Control charts



Two charts per inspection characteristic: the **location chart** (is the process drifting?) and the **dispersion chart** (is it becoming less stable?). For individual values ($n = 1$, the most common case) it is the individuals chart with moving range according to ISO 7870-2; for samples the $\bar{x}$ and s chart; for counting inspections the attribute charts p , np , c , u .

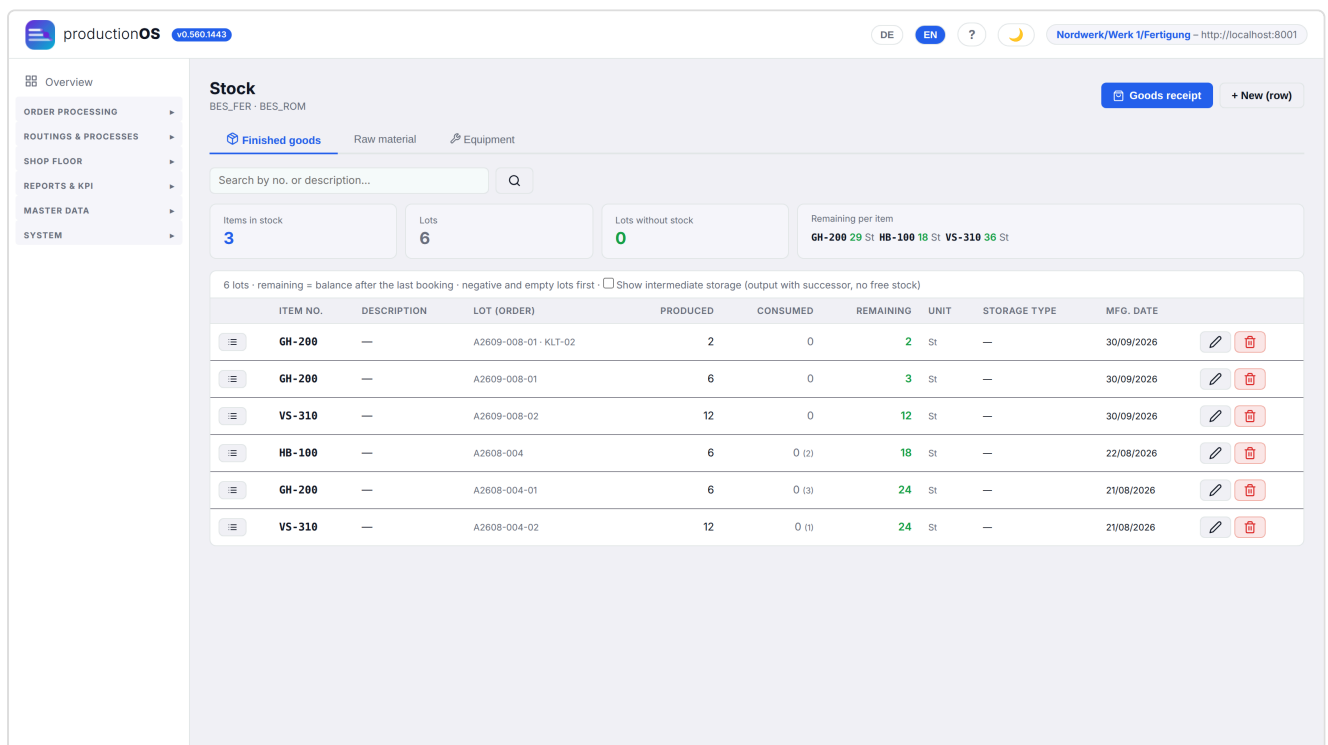
An action limit is not a tolerance limit. The tolerance (grey) is a property of the part, the action limit (red) a property of the process: a point outside the action limit is not a bad part, but the signal that something has changed. The limits are calculated from the data, and for each limit it is shown whether it was entered or calculated. The screenshot shows the characteristic Bohrung 8,5 H7 (bore) from the running order: eight values, all within tolerance, with the moving-range dispersion chart below.

5.6 Scrap by defect type and cause



Two rankings, because there are two questions: the **defect type** says *what* went wrong, the **cause** *where* action is needed. Both come from the disposition at the terminal (4.10). Without a cause entry, the right-hand list stays empty and says so — instead of listing the reporting station as the cause.

5.7 Stock and confirmations



Stock is a **statement of lots**, not a balance: for each lot (finished goods or raw material) quantity, consumed, remaining, storage location, date. A lot in intermediate storage belongs to

the successor operation of the same order; only the last operation books into stock. *History* shows the movements per item; manual bookings (stocktaking, correction) are possible and remain visible as separate lots. The **Equipment** tab lists the individual tool pieces like the machines: tool life **since the last maintenance** against the limit (with traffic light), alongside the **service life**, which no maintenance resets; likewise the usage (shots, strokes, deployments) since maintenance and in total. If a piece exceeds the limit, a **maintenance order for exactly that piece** is created (item `WRT_<tool>`, the piece is recorded on the order); if one is already running for the piece, no second one is created. The **final confirmation** of this order resets the tool life and counters since maintenance of the piece and records the maintenance date. *Maintenance done* does the same without an order.

Setting up, and when the check happens. The limits are in the tool master (*Max. deployment duration, Usage limit* with unit shot, stroke or deployment). The maintenance order only exists if an item `WRT_<tool no.>` with a routing exists (for WRK01, therefore, `WRT_WRK01`; its operations are the maintenance steps); if it is missing, only the event is created. The check takes place at the **final confirmation** of the operation at which the tool is removed — not continuously: a tool that runs past the limit while mounted is only noticed at teardown. The event appears at the terminal under *Warnings* of the operation and in the main front end under *Events* (5.8); the maintenance order appears in the order list (number `WRT_000.nnn`, status *new*, priority 1) and is scheduled like any other order.

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Overview

ORDER PROCESSING

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SYSTEM

Confirmations

ABE / ABE_MWE - Actual data per order & operation

+ New confirmation

Confirmations (ABE)

Production (ABE_FER)

Measured values / SPC (ABE_MWE)

Order no.

Machine no.

All statuses

Load

Only confirmations for active orders

0 confirmations for active orders

54 for historical ones (completed/deleted, kept for audit/reporting)

54 of 54 loaded shown

ORDER	ITEM	SEQ.	MACHINE	ACTUAL START	ACTUAL END	QTY	DURATION	STATUS			
A2608-001-01	GH-200	10	SAEG-01	2026-08-23 18:18	—	12 St	36 min	BEARB			
A2608-001-02	VS-310	10	DREH-01	2026-08-23 18:18	—	24 St	144 min	BEARB			
A2608-004	HB-100	10	MONT-01	2026-08-22 06:05	2026-08-22 06:25	6 St	108 min	ENDE			
A2608-004	HB-100	10	MONT-01	2026-08-22 06:25	2026-08-22 08:20	6 St	108 min	ENDE			
A2608-004	HB-100	10	MONT-01	2026-08-22 08:20	2026-08-22 08:20	6 St	108 min	ENDE			
A2608-004	HB-100	20	PRUEF-01	2026-08-22 08:30	2026-08-22 08:40	6 St	36 min	ENDE			
A2608-004	HB-100	20	PRUEF-01	2026-08-22 08:40	2026-08-22 09:14	6 St	36 min	ENDE			
A2608-004	HB-100	20	PRUEF-01	2026-08-22 09:14	2026-08-22 09:14	6 St	36 min	ENDE			
A2608-004	HB-100	30	VERP-01	2026-08-22 09:20	2026-08-22 09:25	6 St	18 min	ENDE			
A2608-004	HB-100	30	VERP-01	2026-08-22 09:25	2026-08-22 09:41	6 St	18 min	ENDE			
A2608-004	HB-100	30	VERP-01	2026-08-22 09:41	2026-08-22 09:41	6 St	18 min	ENDE			
A2608-004-01	GH-200	10	SAEG-01	2026-08-21 06:10	2026-08-21 06:25	6 St	18 min	ENDE			

Confirmations is the raw view of what the terminal has written: per operation and phase start, end, quantity, duration, status — with tabs for production, measured values and SPC. A booking can be corrected here if something went wrong at the terminal.

5.8 Events and limit values

Events (Reports & KPI) collects whatever has crossed a limit. Two sources are shown side by side:

- **Messages from final confirmations** — when an operation is given its final

confirmation, the system checks quality (measured value outside the limits), costs and duration (more than 5 % above plan), machine usage and the tool life of the tools. A message has no status; the link button opens the performance summary of the operation.

- **Findings of the limit monitor** — it checks at a fixed interval

also between two final confirmations (tool still mounted beyond its tool life, stock below reorder point or safety stock, machine beyond its usage time). A finding is **open** as long as the limit is violated; **Acknowledge** means "seen" — it stays open until the limit is met again, then the monitor sets it to **resolved**.

The default is *open (watchdog)*; red comes before yellow. Filters by traffic light, type, period and order. On the home page, the **Limits** tile counts the open findings (red · yellow) and leads here.

Tool in use: For every mounted tool with a *Max. deployment duration*, the monitor calculates the tool life of the piece since the last maintenance plus the current deployment up to now (via the machine calendar, as at teardown). From 80 % of the limit the finding is yellow, from the limit on it is red ("Tool life reached — tool still mounted"). It also appears at the terminal under *Warnings* for the operation. Teardown resolves it; the maintenance order is created at teardown as before. The link button leads to the piece in the equipment stock or to the tool master.

Stock: For materials and stock items with a reorder point or safety stock, the monitor compares the stock with the limits — yellow below the reorder point, red below the safety stock. For material, what counts is the free stock (remainder of the lots minus reservations, as in the overview in *Stock*), for stock items net plus in production (as in *Stock items (MRP)*). If the stock is above the limit again after a goods receipt or a final confirmation, the finding is resolved. The link button leads to the material stock or to stock item planning.

Machine usage: For machines with a *Maximum usage time*, the monitor calculates the usage time since the last maintenance plus the operations currently running up to now (without breaks; maintenance orders do not count). From 80 % the finding is yellow, above the limit red ("Maintenance due"). The maintenance order is still created by the final confirmation; the final confirmation of the maintenance order resets the usage time and resolves the finding. The link button leads to the machine.

Switching on: The monitor runs every 15 minutes, but only checks areas in which the **Switch on limit monitor** switch under *Settings* → *Operating model* is on (default off). It only reports — maintenance orders and purchase orders are still created at teardown, final confirmation and stock item planning.

Part 6 — Product passport

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Product passport – HB-100 · Hydraulikblock HB-100 kpl.

Template: **Hydraulikkomponente (v1)** Set Override

Base for all items: "Artikel-Stammdaten" - above it "Hydraulikkomponente"; for the same attribute the upper template applies

IDENTIFIKATION

Ursprungsland DE

TECHNISCHE DATEN

Nenndruck [bar] 350

Prüfdruck [bar] 525

Nennweite [mm] 10

Anschlussgewinde G 3/8 nach ISO 1179-1

zul. Leckrate [cm³/min] 0,8

Druckmedium HLP 46 (DIN 51524-2)

Betriebstemperatur von [°C] -25

Betriebstemperatur bis [°C] 80

Anzugsmoment Deckel [Nm] 42

Dichtungswerkstoff NBR 70 Shore A

Verschraubung 8 x M8×40, Güte 8.8

Einbaulage beliebig

WERKSTOFF

Werkstoff EN AW-6082 T6

Halbzeug Strangpressprofil 120×80

Oberfläche eloxiert, 15 µm, farblos

Gewicht [kg] 2,84

QUALITÄTSNACHWEIS

Konstruktionsnorm DIN EN ISO 4413

UMWELT UND RECYCLING

RoHS-konform ☒

REACH konform, keine SVHC > 0,1 %

Cancel Export Save

The **product passport** gathers, per item, the characteristics that a customer or an authority is meant to see: identification, technical data, material, quality evidence, environment and recycling. It is built from **templates** — "Artikel-Stammdaten" (item master data) is the base for every item; on top of it sits a template per item group (here *Hydraulikkomponente*, hydraulic component) or an item-specific one. The header shows which template applies; *Set* changes it.

Where the values come from:

- **maintained** — entered on the item (nominal pressure, material, weight ...)
- **from the characteristic master data** — characteristics linked to an inspection plan draw their

target values and, per output, the **measured values** from the inspections; in this way the passport of the item becomes the passport of the individual piece

- **calculated** — CO2 footprint per piece from machine times and material,

downtimes deducted, plus tool, labour and transport. The transport calculation is $weight \times distance \times factor$: the weight is the quantity times the item weight plus the tare weight of the containers, the distance (in metres) is recorded on the container assignment to the operation (material consumption type V or container node in the plan editor), the factor in kg CO2e per tonne-kilometre on the container master. If any of the three is missing, transport stays 0 and the CO2 tile states what is missing.

Export outputs the passport as a structured document (chapters as in the EU Battery Regulation, named close to AAS); a QR code on the **label** per output (GET `/api/v1/serial_nr/{nummer}/etikett?format=html|zpl`) leads to the public view of that output's passport, which shows only the released chapters.

Part 7 — Batch number and serial number are the same thing

This is the point that causes the most confusion, so here it is briefly and in principle.

The legacy system has **no serial number**; it works throughout at lot and batch level and traces via the lot chain. We have turned this into **one** identity instead of two: the output ID of an output is also kept as the batch number. A row carries `serial_nr` and `chargen_nr` with the same value, plus quantity and container.

The only setting is `gebinde_menge` per item (under *Shop Floor* → *Serial numbers*, configuration):

<code>gebinde_menge</code>	Confirmation	Result	what it is in business terms
1	5 St	5 IDs of 1 St each	serial number — each piece individually
10	50 kg	5 IDs of 10 kg each	batch — one number per package
<i>empty</i>	200 kg	1 ID of 200 kg	one lot for the whole confirmation

A serial number is a batch of quantity 1. No second mechanism, no switching, no separate number range. An item can change its granularity (first by batch, later by piece) without analysis, traceability or label printing having to be adapted.

If the operator records the output **per container** (4.9), these rows determine the outputs: one ID per row with its quantity and container. The link between the handover row and the identity is the container that both carry.

Three capture modes (*erfassung*): **auto** — identities at order creation, carried forward by FIFO (pre-allocated numbers, labels in advance); **stueck** — the number is scanned; no scan, no event (assembly of serialised assemblies); **output** — per output at the confirmation (process manufacturing, packages, batches; the legacy system's pattern).

The **input side** is a different question: how an input is identified is set in `chargen_erfassung` — *fifo* (the oldest lot is consumed, an assumption) or *gebinde* (the scanned package is withdrawn first, a record).

Part 8 — UI design

productionOS can be simplified per tenant without any functions being lost:

What	What for	Who notices
Form profiles	hide, pre-fill, make required or reorder the fields of a form — per role	everyone who opens the form
Guided workflows	step by step through related views, with a dedicated form per step	planning, production engineering
Terminal layouts	a simple start page for particular terminals or machine groups	operators at the terminal
Custom terms	“Benennung” instead of “Bezeichnung” (designation instead of description), “Fertigungsauftrag” instead of “Auftrag” (manufacturing order instead of order)	everyone

The full view always remains available: in every simplified form via **Full**, at the terminal via **Standard view**. Hiding is not a permission — what a role may book is still governed by the role concept.

8.1 Who may design

User: nordwerk

General

Scopes

Security

Username

nordwerk

Employee ID

First name

Last name

Display name

Demo Nordwerk

Email

Role

admin

Active

active

Additional roles

☐ Cost view (cost values at the terminal)
 ☐ UI design (forms, guided workflows, terminal layouts, terms)
 ☐ Shift supervisor (confirm and swap shift staff, also at the terminal)

Save

Close

Administrators and everyone with the additional role **UI design** may design. An additional role is added on top of the main role — someone in production engineering can remain a planner and still design forms. It is assigned under *System → Users → Edit*, one tick and *Save*; it takes effect from the next sign-in. The same list carries the additional roles *Cost view* and *Shift supervisor* ([3.12](#)). The settings are under *System → UI design*.

8.2 Form profiles

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nordwerk
// Sign out

UI design Simplify forms per role and define custom terms — applies to this tenant

Form profiles Workflows Terminal Custom terms

FORM APPLIES TO ROLE

Create / edit item all roles

Hiding is not a permission: what a role may write is controlled by the backend. The profile only simplifies the form; "Full" always shows all fields.
Saved by tenant.admin@production-os.eu on 29/10/2026

FIELD	VISIBLE	REQUIRED	DEFAULT FOR NEW RECORDS	POSITION
Fields (kopf)				
Item no. art_nr	☒	always required		
Fields (stamm)				
Unit art_einh	☒	☒	St	
Description artikel_bez	☒	☐		
Group art_gru	☐	☐	HALBZ	

Remove profile Save profile

Tab *Form profiles*: choose form and role (*all roles* or a specific one; if both exist, the role's profile applies). Per field:

Column	Effect
Visible	without a tick the field is hidden; when editing, its saved value is kept
Required	makes a field required; fields marked "always required" stay required — nothing is ever relaxed
Default for new records	value with which a new form is pre-filled
Position	↑ ↓ moves the field within its group

A required field can only be hidden if a default is entered — otherwise the form could no longer be saved; saving rejects such a profile. *Remove profile* restores the standard form. Profiles currently exist for item creation and confirmation.

+ New item

×

Simple

Full

ITEM NO.* *

P100

Unit *

St

DESCRIPTION

Aluminium sheet

Prices, storage, dimensions, characteristic values and references are maintained in the master data hub (card "Item details").

Cancel

Create

If a form has a profile, the toggle **Simple | Full** appears at the top right. *Simple* shows the designed form — in the screenshot the group is hidden and pre-filled, the unit required and moved to the front —, *Full* shows all fields in the standard position. Entries are kept when toggling; the browser remembers the choice per form.

✓ New confirmation

×

Simple

Full

ORDER / OPERATION

Order no.* *

Search Order no....

Item no.* *

Search Item no....

ACTUAL DATES

START DATE

08.10.2026

START TIME

09:30

SEQ.* *

1

Machine

Search Machine...

END DATE

08.10.2026

END TIME

09:30

Operation

Search Operation...

ROOT ORDER

QUANTITIES / TIMES

ACTUAL QTY

Unit

St

DURATION (MIN)

SETUP TIME (MIN)

STATUS

STATUS

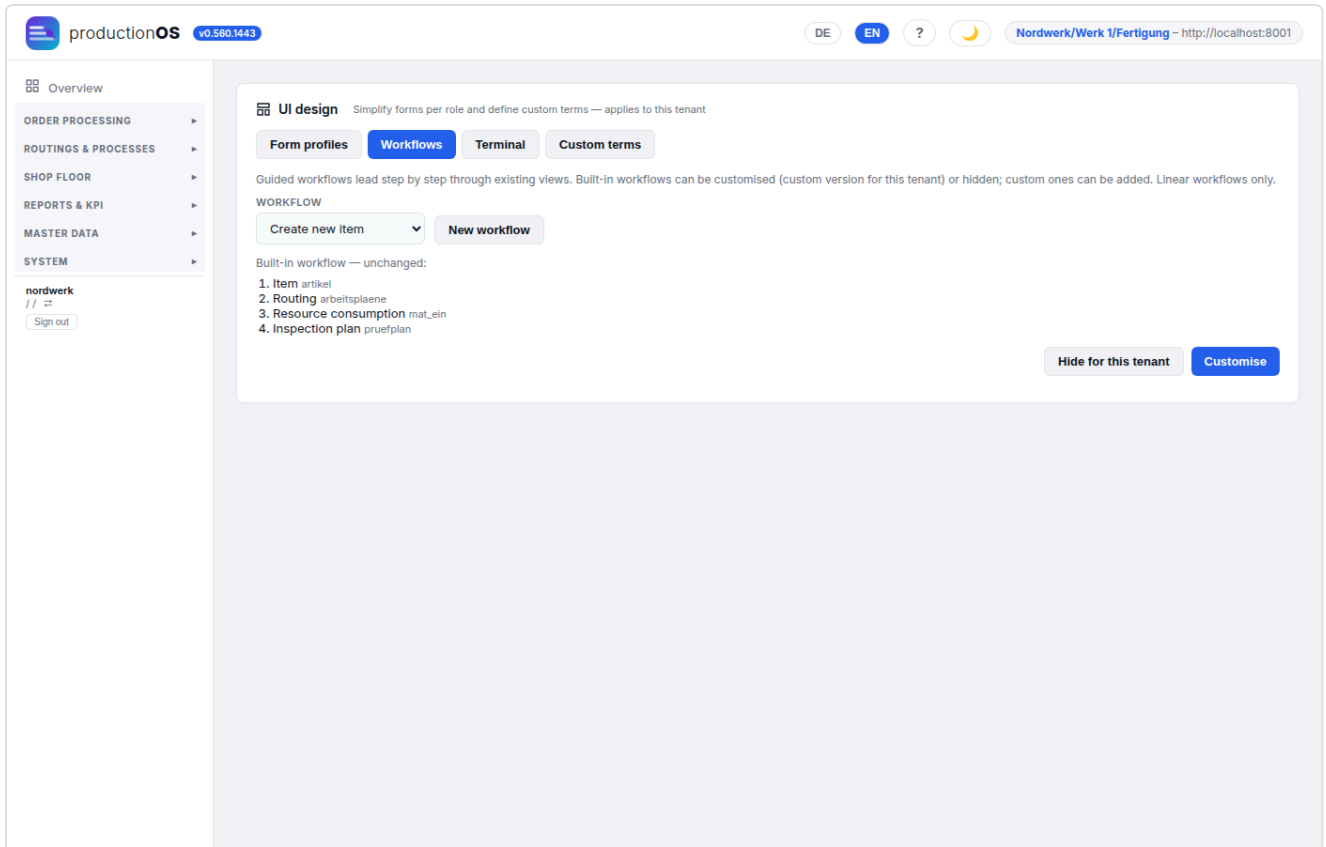
F – Finished (final complet

Cancel

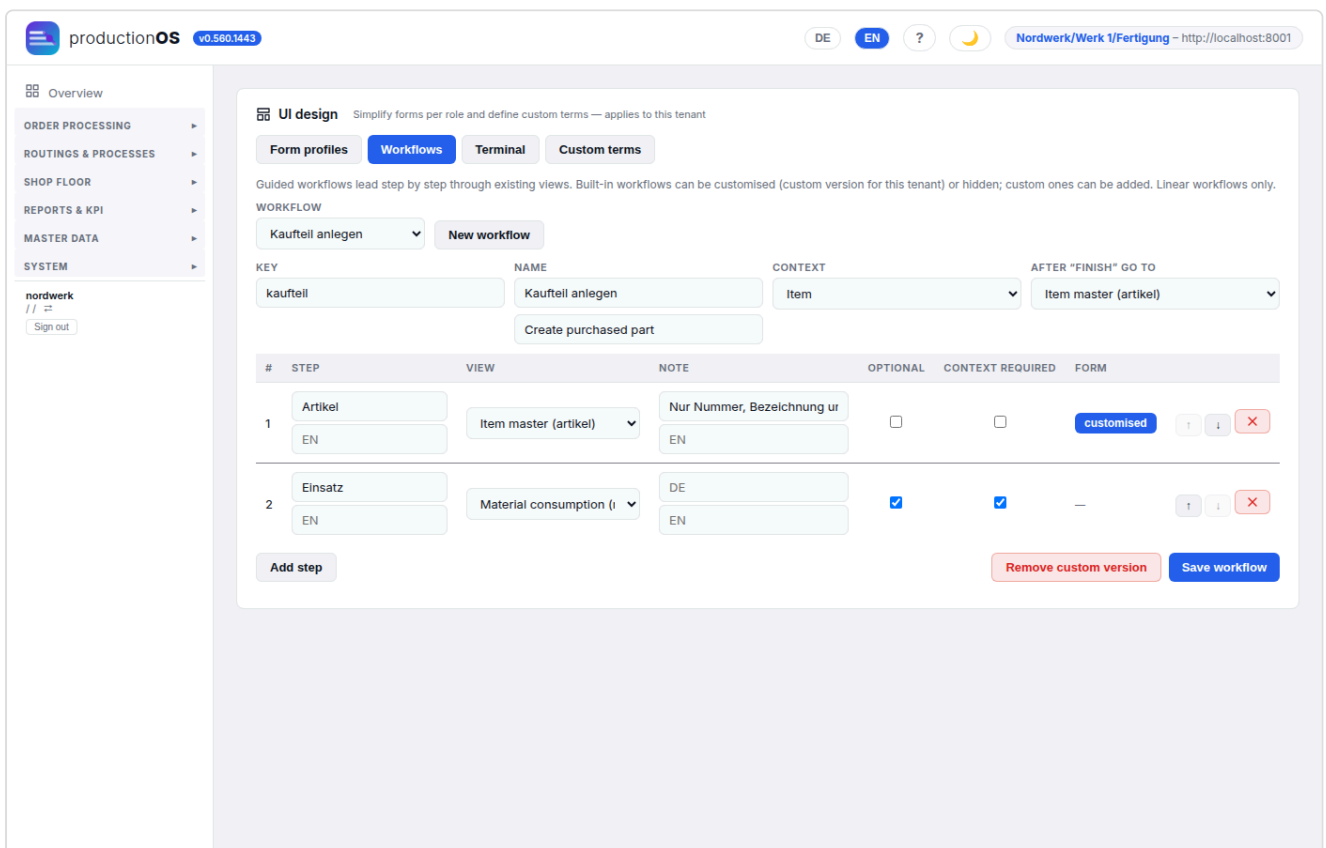
Save

Confirmation with a profile: position numbers, cost centre and teardown time hidden, status pre-filled with "F – Finished".

8.3 Guided workflows



Tab *Workflows*. Built in are “Create new item” and “Schedule new order”. A template can be **customised** (a custom version for this tenant; *Remove custom version* restores the template), **hidden for this tenant** or left unchanged.



New workflow creates a custom one — in the screenshot „Kaufteil anlegen“ (create purchased part): two steps over existing views, context *Item*; the item number created in the first step travels through the following steps.

Field	Meaning
Key	technical name, lower-case letters, digits and <code>_</code> ; fixed after saving
Name, Note	German is required, English optional
Context	what is carried from step to step: item, order or nothing
Context required	<i>Next</i> only once the context is established (e.g. item created)
optional	the step can be skipped
Form	a dedicated form for this step only

Form in step 1

×

Applies only while the workflow is on this step — takes precedence over role and tenant profiles.

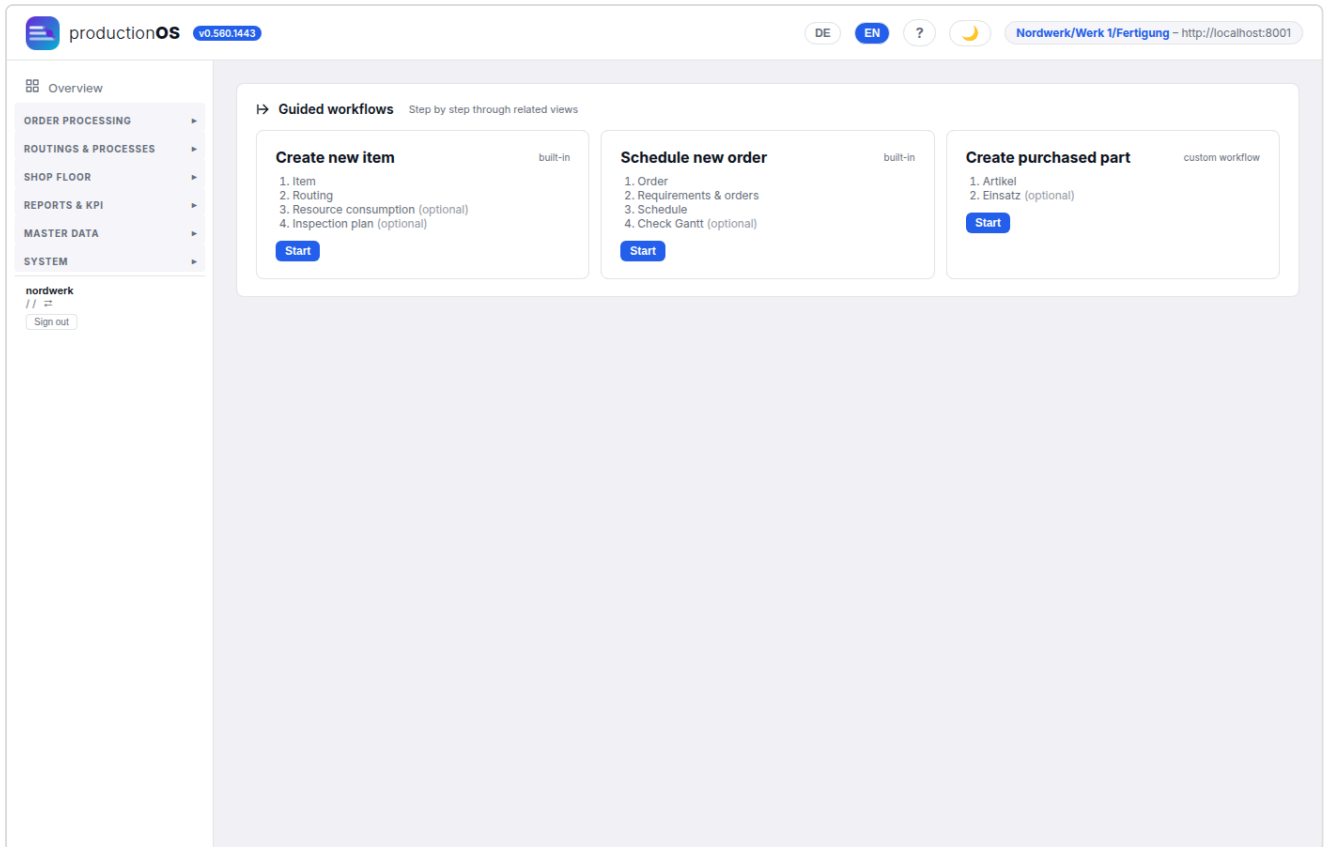
FIELD	VISIBLE	REQUIRED	DEFAULT FOR NEW RECORDS	POSITION
Fields (kopf)				
Item no. art_nr	☒	always required		↑ ↓
Fields (stamm)				
Description artikel_bez	☒	☐		↑ ↓
Unit art_einh	☒	☐		↑ ↓
Group art_gru	☐	☐	KAUF	↑ ↓

Cancel

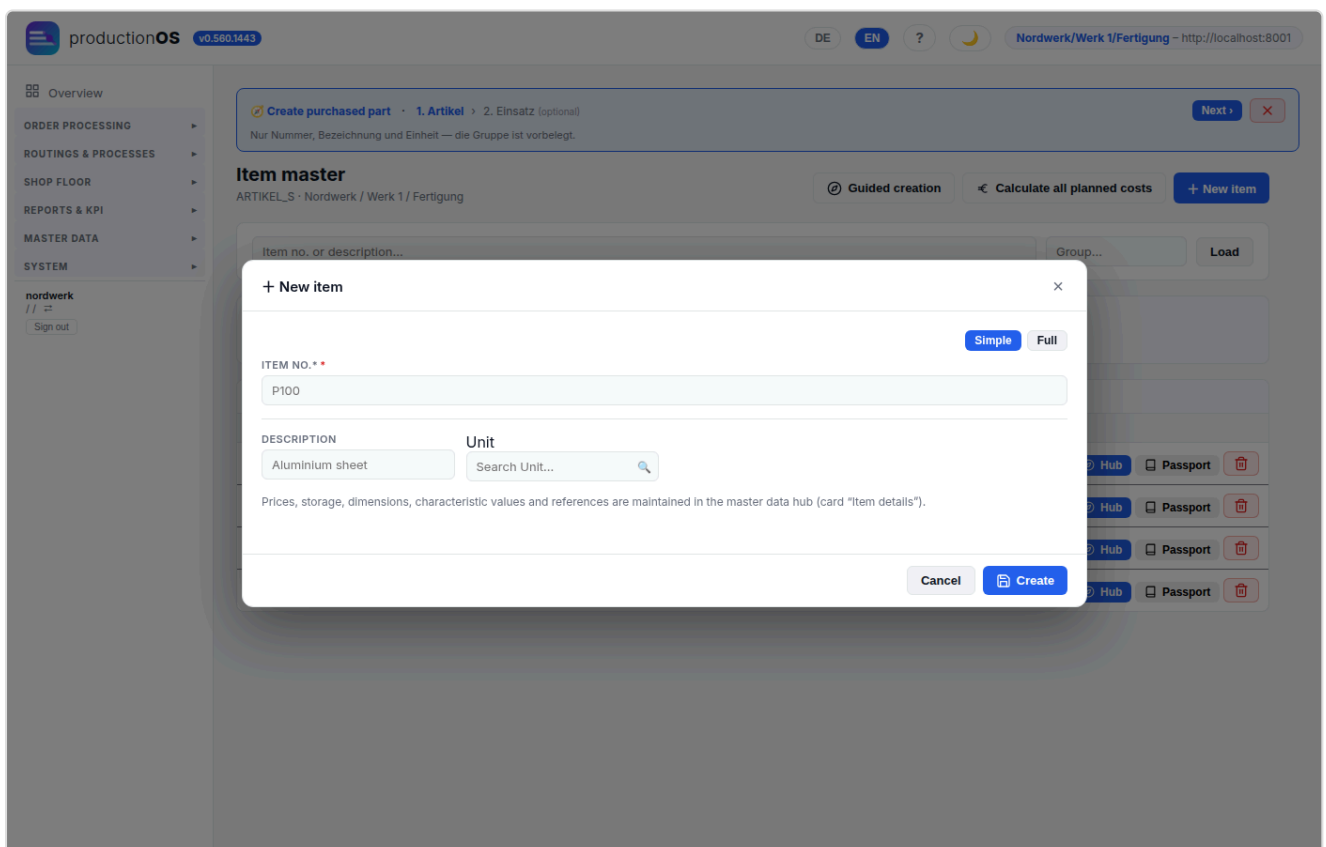
No customisation

Apply

Customise form applies only while the workflow is on this step, and takes precedence over the role and tenant profile — in the screenshot the group is pre-filled with `KAUF`; anyone coming via „Kaufteil anlegen“ does not have to choose it. Workflows are linear; branching does not exist yet.



Workflows are started under *Order processing* → *Guided workflows*.



The step bar runs along at the top: completed steps with a tick, the current one highlighted, the note below it. **Next** goes to the next step, **Skip** for optional steps, × cancels — anything already saved is kept.

8.4 Terminal layouts

productionOS v0.580.1443 DE EN ? Nordwerk/Werk 1/Fertigung - http://localhost:8001

UI design Simplify forms per role and define custom terms — applies to this tenant

Form profiles Workflows **Terminal** Custom terms

In the Shopfloor Terminal, a terminal layout replaces the queue with a page of building blocks — for specific devices or machine groups. The building blocks book via the same paths as the standard screens; the standard view always remains available at the terminal.

LAYOUT

Säge — einfache Ansicht **New layout**

KEY saeger **TITLE** Säge — einfache Ansicht ☒ active

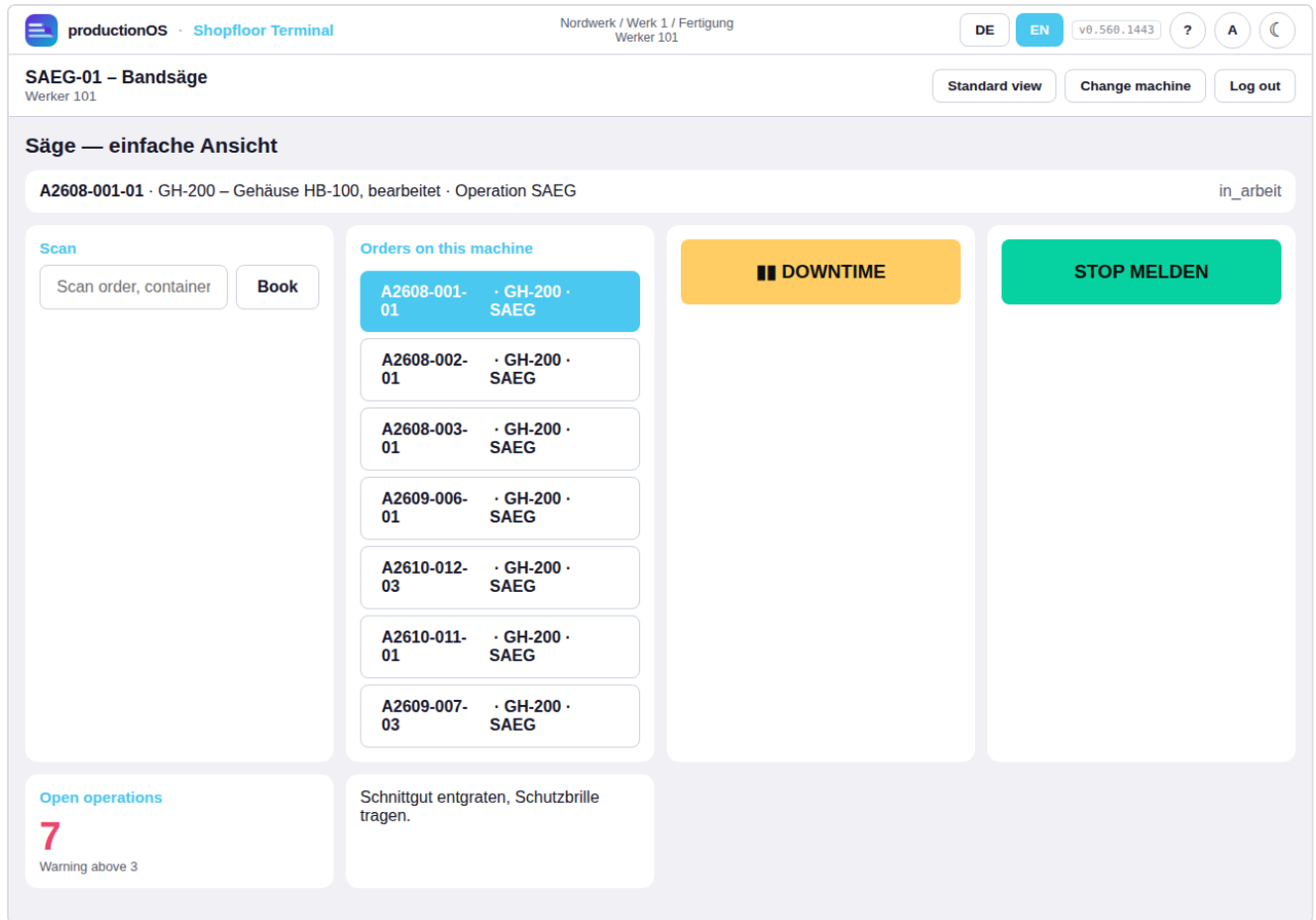
BUILDING BLOCKS

#	BUILDING BLOCK	SETTING	
1	Scan field	no setting	
2	List	all operations	
3	Action button	Downtime custom label (optional)	
4	Action button	Stop (partial confirmation) STOP MELDEN	
5	KPI	open operations 3	
6	Note	Schnittgut entgraten, Schutzbrille tragen.	

Tab *Terminal*. At the terminal, a layout replaces the list of operations with a page made of building blocks:

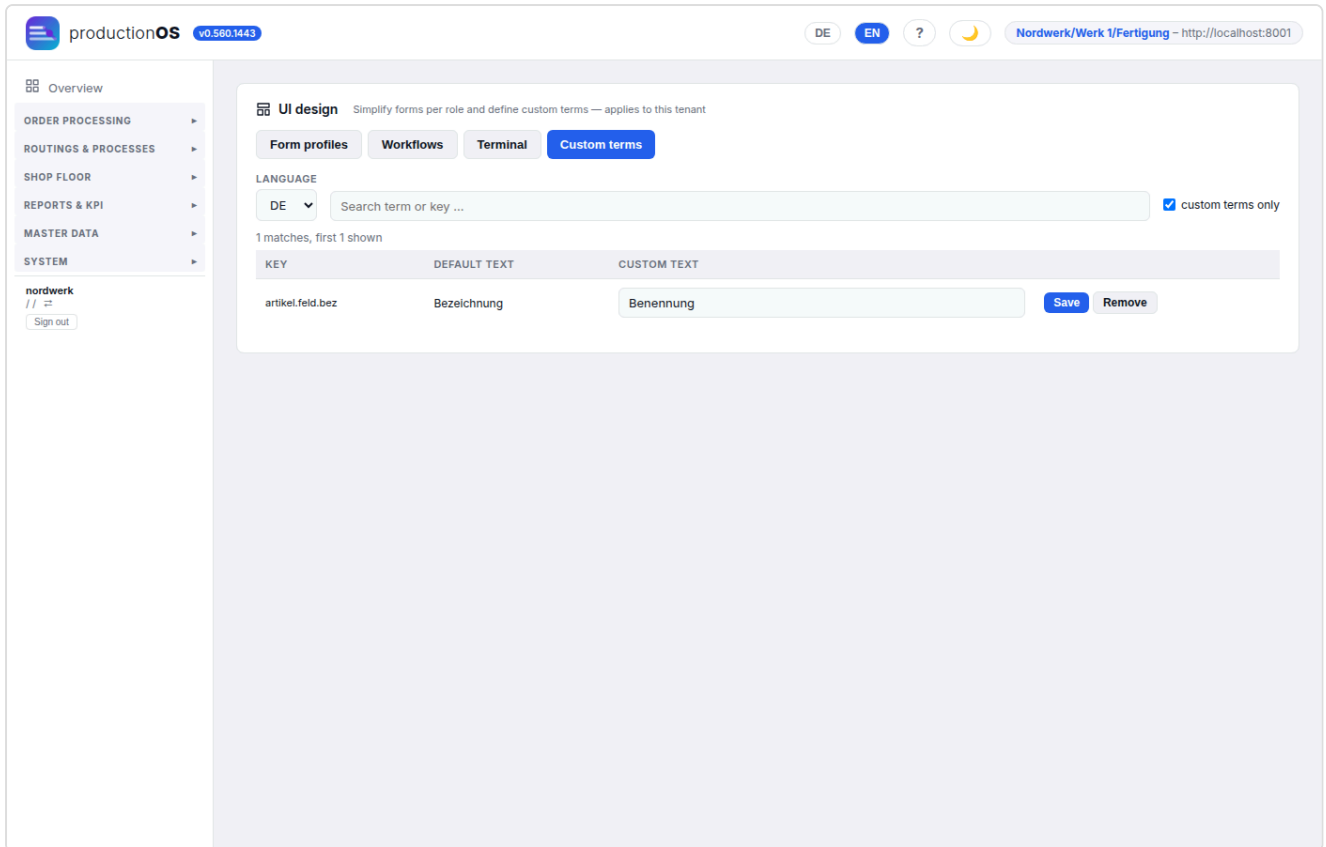
Building block	At the terminal
Scan field	scanning an order number selects the order at this machine; once an order is selected, a container, batch or serial number scan books the staging
List	orders at the machine (all or only in progress); tapping selects the order
Action button	Start, Continue, Downtime, Stop (partial confirmation), Output, Finish or Measured value — optionally with its own label
Measured value	opens measured value entry for the selected order
KPI	open, running or overdue operations of the machine; red above the warning threshold
Note	free text, e.g. safety notes

Applies to individual terminal devices and/or machine groups; a device takes precedence over its machine group, and each device and each group can be assigned to only one active layout. An action button books exactly like the corresponding button in the standard view and is only active when the action is currently possible.



At the terminal the layout page appears after the machine is chosen. First select the order — scan or tap; the line at the top then shows order, item and operation, and the buttons become active. **Standard view** leads to the familiar list at any time, **Simple view** back from there; the choice applies until sign-out.

8.5 Custom terms and language



Tab *Custom terms*: for each term the standard text and next to it a custom text, **per language** (German, English). They apply in the main frontend and at the terminal. Placeholders in curly braces (e.g. {nr}) must be kept in the custom text, otherwise the standard applies; *Remove* restores it.

8.6 What is checked on update

On every update productionOS checks all saved profiles, workflows and layouts against the new version. If one no longer fits (for instance because a field was renamed), it is not applied — the form shows the standard —, and UI design shows a red notice with the reason. After it is adjusted and saved, it applies again.

Frequently asked questions. *A profile has no effect*: the toggle is on “Full”, there is a different profile for one's own role, or the profile no longer fits after an update (red notice). *A terminal shows no layout*: the layout is inactive, neither device nor machine group is assigned, or “Standard view” is selected at the terminal. *An action button is grey*: no order selected, or the action is currently not possible for this operation — the text below the button gives the reason.

Part 9 — Glossary

Term	Meaning
Tenant (Mandant)	area / plant / department (Bereich / Werk / Abteilung); all data are separated per tenant

Primary order / sub-order (Primärauftrag / Sekundärauftrag)	the customer order and the orders generated from it for semi-finished products (A2610-013 → A2610-013-01); the <i>root order</i> (Ur-Auftrag) is the topmost in the chain
Sequence / operation (Folge / Arbeitsgang)	a stage of the routing (sequence 10, 20 ...) and its copy on the order
Status (order)	the workflow a person sets: neu → geplant → freigegeben → inproduktion → abgeschlossen , plus gesperrt . <i>geplant</i> (planned) means: exploded but not released
Progress (Fortschritt, operation)	derived from the actual times: planned, in progress, overdue, completed, unscheduled. A released order with planned operations is the normal case — that is why the two things have different names
Target / plan / commitment / actual (Vorgabe / Plan / Zusage / Ist)	target dates are the planner's specification (anchor); plan dates the calculated result; the commitment the customer date; actual the times from the terminal (3.3)
Backward / forward (rückwärts / vorwärts)	direction in which scheduling calculates: back from the target end (default for new orders) or forward from the target start
Phase	setup → processing → handover (and teardown, if a teardown time is planned); one confirmation line per phase
Lot (Los)	a stock quantity with an origin: goods receipt (raw material) or output (finished goods); stock is the sum of the lots, not a balance
Batch / serial number (Charge / Seriennummer)	the same identity (Part 7)
Package / container (Gebinde / Behälter)	the physical receptacle of an output; the link between handover and identity
Handover / take-over (Übergabe / Übernahme)	an output passed to the successor operation; that operation takes it over from intermediate storage when booking material
Allocation (Zuteilung)	assignment of specific lots to the requirement, a specification for the terminal
A / P	alternative (one of several machines) / parallel line (quantity split)
Co-product (Kuppelprodukt)	second output of an operation (by-product, branch-off)
Recipe / mix (Rezeptur / Ansatz)	recipe: components of an operation with proportions in per cent. Mix: one mixing run up to the mix quantity; an order for 250 kg with a mix quantity of 100 kg has three mixes (2.7 , 4.12)
PVA	Prozess-Verfahrens-Anweisung (process instruction): the setting values per operation

BEURT	unit of an inspection characteristic that is counted instead of measured
Skill	what a person can do and what an operation requires per phase; catalogue <i>Qualifications</i> (1.5)
Personnel calendar (Personalkalender)	shift model and status per person and day; the basis of availability
Pre-assigned / confirmed (vorgemerkt / bestätigt)	status of a staff assignment: G = pre-assigned by scheduling, B = confirmed by the shift supervisor (survives every rescheduling)
Additional role (Zusatzrolle)	a right in addition to the main role, e.g. <i>schichtfuehrer</i> for an operator
Wage group (Lohngruppe)	cost attribute of person and phase with a rate in EUR/h; not a planning criterion
Piece (Exemplar)	an individually tracked tool with its own tool life and usage
Operating model (Betriebsmodell)	the six switches per tenant (1.7)
Form profile / guided workflow / terminal layout (Masken-Profil / Ablauf / Terminal-Layout)	design of the user interface per tenant and role; never changes rights (Part 8)