MANUFACTURING CHEAT SHEET

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CORE KPIS (DAILY/WEEKLY)

ON-TIME IN-FULL (OTIF) = shipments on time & complete ÷ total shipments
Target: ≥95%. Fix: S&OP discipline, frozen horizon, constraint management.

OVERAL EQUIPMENT EFFECTIVNESS (OEE)
- Availability (A) = (Planned time – Downtime) ÷ Planned time
- Performance (P) = (Ideal cycle × Total pieces) ÷ Run time (Planned – Downtime)
- Quality (Q) = Good pieces ÷ Total pieces
- OEE = A × P × Q

Benchmarks: 60% = common, 70–80% = good, 85% = world-class.

SCRAP/REJECT RATE = non-conforming units ÷ total units
Target: ≤2–3% (precision machining). Fix: SPC at critical features, tool life control.

FIRST PASS YIELD (FPY) = units passing w/o rework ÷ total
Target: ≥98% for repeat work.

THROUGHPUT = good units ÷ time (parts/hour)

INVENTORY & REPLENISHMENT

INVENTORY TURNS = COGS ÷ Avg Inventory; DIO = 365 ÷ Turns
Targets (discrete/precision): 6–10x turns (DIO 36–60).

REORDER POINT (ROP) = Demand during lead time + Safety Stock

SAFETY STOCK ≈ Z × σ(demand during LT) (Z=1.65 for 95% service).

ECONOMIC ORDER QUANTITY (EOQ) ≈ √(2DS/H) (D=demand, S=order cost, H=annual holding cost).

ACTIONS FOR SLOW-MOVING: MOQ renegotiate, kitting, vendor managed inventory (VMI).

SUPPLY CHAIN & RISK

- **Single-point-of-failure map -** A list of anything where if it fails, production stops: Materials • Processes • Machines • People.
Fixes: Train a backup, write standard work, qualify a second vendor, hold a small emergency spare.
- **Dual-Source Plan for A-Items & Lead-Time Heatmap**
Dual-source: Have two approved suppliers for your most critical/high-spend items (A-items). Lead-time heatmap: A simple chart showing which items have long or variable delivery times.
- **FX/Metals Hedging:** If you buy a lot in foreign currency (EUR/USD) or pay for metals that swing in price, you can lock a future price using a simple contract (a forward).
- **Cyber security:** Simple protections so malware or a hacker doesn't shut your machines or steal drawings.

FAST FORMULAS BOX

- **OEE** = A × P × Q
- **Takt** = Available Time ÷ Demand
- **WIP** = TH × CT
- **CCC** = DIO + DSO – DPO
- **Turns** = COGS ÷ Avg Inv; DIO = 365 ÷ Turns
- **ROP** = Demand(LT) + Safety Stock
- **Safety Stock** ≈ Z × σ(LT demand)
- **Breakeven Unit**s = Fixed Cost ÷ (Price – Var Cost)

FLOW & PLANNING

TAKT TIME = Available production time ÷ Customer demand
If cycle time > takt: add capacity, reduce changeover, or split ops.
LITTLE'S LAW: WIP (Work in Progress) = Throughput × Cycle Time
S&OP CADENCE: monthly cycle; weekly demand/supply review; 2-week frozen window.
CAPACITY MAP: nameplate vs. net capacity by cell; show planned downtime, setup, yield loss.

FINANCIAL HEALTH

EBITDA Margin (target by niche: 12–20%); Gross Margin 25–40% typical machining.

Operating Cash Flow monthly; DSCR ≥1.5x healthy if leveraged.
Formula:
DSCR = CFADS ÷ Debt service

Backlog Coverage = Order book ÷ next 90 days demand.
Formula:
Coverage = Backlog ÷ 90-day demand

Quote-to-Win rate;
Price Realisation (actual vs. quoted).
Formulas:
Win% = Wins ÷ Quotes
Realisation = Actual ÷ Quoted

SAFETY & COMPLIANCE

TRIR / LTIR - tracked monthly - aim for 0.
- **TRIR** = Total Recordable Incident Rate (recordable injuries per 200,000 hours worked).
- **LTIR** = Lost-Time Incident Rate (how many injuries that caused missed work per 200,000 hours).
How to calculate
- **TRIR** = (Recordable incidents × 200,000) ÷ Hours worked
- **LTIR** = (Lost-time incidents × 200,000) ÷ Hours worked

Near-miss capture rate upwards trend - is an event that could have caused harm but didn't. Capturing and fixing these is your best early-warning system.

- Mandatory: **PUWER** – safe work equipment
LOLER – lifting equipment
COSHH – control of hazardous substances (coolants, solvents, dust).
- **RA / MS** – Risk Assessments / Method Statements for tasks.
- **ISO 9001 / 13485 / AS9100** – quality management system standards (general / medical / aerospace).

WHAT TO REVIEW WHEN

Daily: Safety, OEE, OTIF, scrap, bottleneck plan, WIP vs. cap.

Weekly: Order intake, backlog, schedule adherence, slow-moving stock, cash 13-week.

Monthly: P&L by product/customer, price realisation, capex ROI, S&OP, supplier scorecards.

WORKING CAPITAL & CASH

CASH CONVERSION CYCLE (CCC) = DIO + DSO – DPO
Targets: CCC ≤ 45–60 days for OEM supply; machine shops often 60–90—push down.

DAYS SALES OUTSTANDING (DSO) = (Receivables ÷ Credit Sales) × 365
Target: ≤35–45 days. Actions: staged invoicing, pro-forma on new customers, invoice finance.

DAYS PAYABLES OUTSTANDING (DPO) = (Payables ÷ COGS) × 365
Target: 45–60 days (without abusing suppliers).

FORECAST: 13-week cash flow, weekly refresh.
CAPEX GATE: ROI/IRR, payback ≤18 months for productivity assets.

PEOPLE & DAILY MANAGEMENT

10 MIN DAILY HUDDLE
You look at yesterday's Safety, Quality, Delivery, Cost (SQDC) and assign owners for today's fixes.

What you track:
- Safety: near-misses, PPE issues, housekeeping.
- Quality: defects, rework, first-piece sign-off.
- Delivery: OTIF for today/tomorrow, parts at risk.
- Cost: scrap %, overtime, changeover minutes.

SKILLS MATRIX
A grid of people vs. skills (machines/processes) with a level (0–3). You can see gaps fast and plan cross-training.
Scale:
- 0 = not trained
- 1 = can assist
- 2 = can run with support
- 3 = fully competent / can train others

RED FLAGS

1. Can you point to one bottleneck and show its buffer status right now?
2. Do you know Top-10 customers by % and the one that would sink you if lost?
3. Is the frozen window respected? Who can break it, and how often?
4. Which five SKUs destroy margin (cost-to-serve)? What's the fix?
5. What's your DSCR and 13-week cash position this morning?

COSTING & PRICING

- **GROSS MARGIN** = (Sales – COGS) ÷ Sales
- **CONTRIBUTION/MARGIN** = Price – Variable Cost
- **BREAKEVEN UNITS** = Fixed Cost ÷ Contribution/Unit
- **JOB COSTING:** standard cycle time × burdened rate + material + tooling + setup amortised.
- **SURCHARGES:** material/energy indexed clauses; review quarterly.
- **QUOTE DISCIPLINE** include setup and inspection time; minimum order charge.

RED-AMBER-GREEN (SUGGESTED THRESHOLDS)

	Red	Amber	Green
OEE:	<65%	65–80%	>80%
Scrap:	>4%	2–4%	<2%
OTIF:	<90%	90–95%	>95%
DSO:	>50d	40–50d	<40d
DIO:	>70d	45–70d	<45d