



Manufacturing Execution Structure (ERP + AI TicketingOS)

Products: Linkages · Pumps · Motors · Coolers · Pipes · Industrial Components

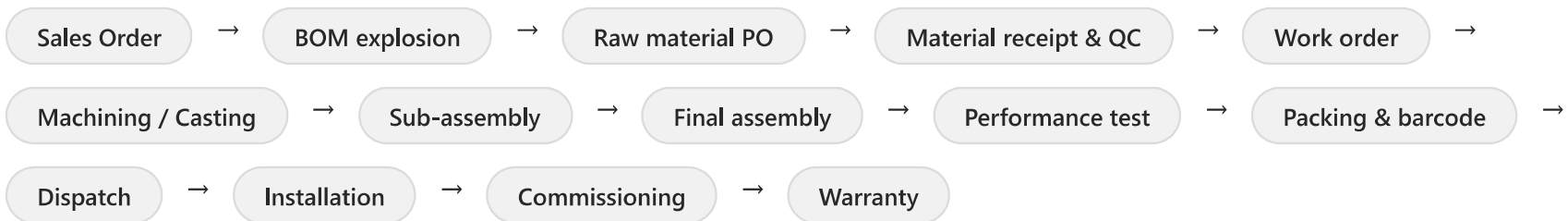
Barcode / Serial # tracking · Production lifecycle · Milestone payments

1. Master Manufacturing Execution Flow (Barcode / Serial-Driven)

ID	Department	Process	Activity	Action	Progress %
3001	Sales	ORDER	Customer PO	Order received & entered	5
3002	Procurement	RAW MATERIAL	PO to supplier	Raw material ordered (steel, copper, etc)	10
3003	Procurement	RECEIPT	Material inward	Barcode scanning, QC check	15
3004	Inventory	STORE	Bin allocation	Raw material stored, serial# assigned	20
3005	Production	WORK ORDER	Job card release	WO generated for shop floor	25
3006	Production	FABRICATION	Machining / Assembly	Linkage cutting, pump casting, motor winding	35
3007	Production	SUB-ASSEMBLY	Component assembly	Motor + pump assembly, cooler fin fitting	45
3008	QA/QC	INSPECTION	In-process QC	Dimensional check, pressure test (pipes)	50
3009	Production	FINAL ASSEMBLY	Complete product	Final assembly, wiring, coupling	60

ID	Department	Process	Activity	Action	Progress %
3010	QA/QC	FINAL TEST	Performance test	Pump flow test, motor run test, cooler BTU	70
3011	Production	PAINT/PACK	Packing & labeling	Barcode sticker, serial number, manual	75
3012	Dispatch	LOGISTICS	Goods issue	AWB generation, vehicle loading	80
3013	Dispatch	TRANSPORT	In transit	Tracking to customer site	85
3014	Service	INSTALLATION	Site installation	Pump/motor/cooler installed at customer end	90
3015	Service	COMMISSIONING	Trial run	Performance guarantee test	95
3016	Finance	INVOICE	Final billing	Completion certificate & payment	98
3017	CRM	WARRANTY	Warranty activation	Serial# registered, AMC offered	100

2. Manufacturing Lifecycle Workflow (Product-Specific)



Example Product Routing

- **Pumps** – Casting → Impeller fitting → Shaft assembly → Hydraulic test → Painting → Dispatch

- **Motors** – Winding → Rotor balancing → Stator assembly → No-load test → Insulation check → Packing
- **Coolers** – Coil bending → Fin press → Brazing → Leak test → Fan assembly → Cooling trial
- **Linkages** – Cutting → Forging → Machining → Heat treatment → Dimensional inspection → Dispatch
- **Pipes** – Extrusion → Cut to length → Threading (optional) → Hydro test → Coating → Bundle pack

3. Milestone-Based Payment Release (Manufacturing)

Stage	Release Condition	Payment %	Applicable For
Advance against PO	Sales order confirmed	20%	All custom products
Raw material procurement	Material inward report + supplier invoice	25%	Pumps, motors, coolers
Work order completion (50% production)	Sub-assembly QC cleared	20%	Linkages, pipes, coolers
Final assembly & testing	Performance test report (e.g., pump curve)	15%	All
Dispatch	Goods issue note + lorry receipt	10%	All
Installation & commissioning	Site acceptance test (SAT) signed	10%	Pumps, motors, coolers (installation req.)
Warranty registration	Warranty card + AMC sign-off	5% (retention)	All

💡 Typical terms: 20% advance, 50% against dispatch, 30% against installation & commissioning (for industrial equipment)

4. ERP Module Mapping (Manufacturing Focus)

Sales & CRM

– Customer PO, configuration (pump size, motor HP), quotation

BOM & Routing

– Multi-level BOM, operation sequence, standard times



Procurement

– Raw material PO, vendor follow-up, GRN with barcode



Production

– Work order, job card, shop floor data capture (barcode scan)

QA/QC


– Inspection plan, NDT reports, test certificates, rejection logging





Inventory

– Raw material, WIP, finished goods with serial/batch tracking

 **Dispatch** – AWB, packing list, transporter integration

 **Service** – Installation scheduling, commissioning checklist, warranty claims




 **Finance** – Milestone billing, GST, vendor payment, costing

 **AI Engine** – Demand forecasting, defect prediction, maintenance alerts


5. AI-Based Manufacturing ERP Automation (TicketingOS Style)


Function	AI Automation
Auto BOM generation	From sales configurator → BOM & routing created instantly
Raw material reorder	Stock below reorder point → auto PO to approved supplier
Production delay prediction	Based on machine OEE & material availability → alert planner
Visual QC (AI vision)	Camera detects casting defect, pipe surface crack → auto reject
Predictive maintenance	Motor winding machine vibration data → schedule maintenance
Test report OCR	Scan pump test sheet → auto extract flow/pressure → pass/fail
Service ticket routing	Customer complaint (WhatsApp) → auto assign nearest technician
Warranty fraud detection	Serial# already claimed → auto block warranty
Dynamic scheduling	AI optimizes job sequence on shop floor to reduce lead time
Customer installation reminder	Auto WhatsApp: "Your pump is ready for installation"


6. Final Manufacturing ERP + TicketingOS Architecture


-  **Customer / Order Side** : Enquiry → Quotation → PO → Production tracking → Dispatch → Installation → Warranty → AMC
-  **Internal ERP Side** : Sales → BOM → Procurement → Production → QA/QC → Inventory → Dispatch → Service → Finance
-  **AI TicketingOS Side** : AI BOM → AI Reorder → AI Delay Alert → AI Vision QC → AI Predictive Maintenance → AI Service Ticket → AI Warranty Check


Barcode & Serial Number Tracking in Manufacturing


 **Raw material receipt** – Scan supplier barcode → auto update batch & expiry (for rubber/plastic)

 **Work in progress** – Scan job card barcode at each operation → real-time WIP status

 **Final product** – Unique serial # laser etched + barcode label → linked to test report


 **Dispatch** – Scan serial # → auto generate packing list & invoice

 **Installation** – Scan at site → auto activate warranty & link to customer

 **Service history** – Serial # lookup shows all repairs, parts replaced, AMC status

Manufacturing Dashboards (Built into ERP)

- Order wise production progress (WO vs actual completion %)
- Machine OEE (Overall Equipment Effectiveness)
- Supplier quality rating (rejection % per raw material)
- On-time delivery performance (dispatch vs committed date)
- First pass yield (FQC pass rate without rework)
- Service call closure time (installation to commissioning)
- Warranty claim ratio per product model

 Manufacturing ERP Execution Structure – Linkages, Pumps, Motors, Coolers, Pipes
Print to PDF (Ctrl+P) → Save as PDF for official use. Barcode + AI TicketingOS Ready.