



INVENTORY PLANNING - SINGLE PLANT

You Find Out You're Short After Production Starts.

ShivAI Manufacturer Inventory Planner v1.0 — Full MRP with multi-level BOM explosion, AI demand forecasting, capacity planning, and what-if analysis. Knows what you need, when you need it, and how much it costs — before the shortage hits.

THE PROBLEM

Raw Materials Are 60-70% of Your Manufacturing Cost

<p>Rs.2+ Crores in Dead Stock Slow-moving raw materials bought in bulk 'just in case.' Working capital trapped in inventory that won't move for 6 months.</p>	<p>Production Stopped — No Material Shortage discovered after production starts. Procurement scrambles. Lines idle. Customers wait. Penalties accumulate.</p>
<p>BOM Is a Spreadsheet Nightmare Multi-level BOM in someone's head or an Excel no one trusts. Change one component, no one knows the downstream impact.</p>	<p>No Capacity Visibility You commit delivery dates without knowing if work centers can handle the load. Overloaded machines. Missed deadlines.</p>

THE SOLUTION

4 Engines Working Together

Upload your Excel master data — items, BOM, inventory, work centers, routing, open orders, sales history. ShivAI runs a full MRP explosion with time-phased planning, checks capacity constraints, generates purchase and production orders, and forecasts future demand using 6 AI models. All in one click.

KEY CAPABILITIES

- Full MRP Engine** Time-phased Material Requirements Planning. Multi-level BOM explosion by low-level code. Gross requirements, scheduled receipts, projected on-hand, net requirements, planned orders. Lot sizing: LFL, fixed qty, min order qty, period order qty.
- Multi-Level BOM** Unlimited depth explosion with scrap factors and cycle detection. Where-used inquiry traces any component to all parents. Critical path analysis calculates cumulative lead times. BOM validation catches errors automatically.
- 6 AI/ML Forecast Models** Naive Seasonal, Moving Average, Exponential Smoothing, Random Forest, XGBoost, LightGBM. Ensemble auto-selects best model per item. Time lag features, rolling statistics, seasonal patterns. Prediction intervals with trend and seasonality detection.
- Capacity Planning (CRP)** Load calculation from MRP planned orders + routing. Finite capacity checking per work center per period. Overload detection with recommendations. Load leveling algorithm suggests order movements. What-if simulation.
- Action Messages** Immediate release alerts, plan-by-date notifications, potential stockout warnings. Priority-sorted so you act on what matters first. No more surprises.
- What-if Simulation** Add or remove orders and see capacity impact instantly. Find alternative periods with available capacity. Simulate demand changes and see material and cost impact before committing.

The screenshot displays the ShivAI MRP Dashboard with several key sections:

- BOM Structure:** A hierarchical tree view of a Centrifugal Pump IHP (x1.00), listing components like Impeller Assembly Small, Brass Rod, Keyway Stock 5mm, Pump Casing Small, Cast Iron Grade 28 Ingot, Primer Coat, Enamel Paint, Pump Shaft Assembly Small, Stainless Steel 304 Bar, Mechanical Seal Small, Mechanical Seal 20mm, O-Ring Set Small, Electric Motor IHP, Stator Assembly Small, Winding Coil Set Small, Copper Winding Wire, Insulation Sleeve, Lamination Stack Small, CRGO Lamination Sheet, Insulation Paper Class F, Insulation Varnish, Rotor Assembly Small, Lamination Stack Small, CRGO Lamination Sheet, Aluminium Alloy 6061, Mild Steel Round Bar, Motor Housing Small, and Cast Iron Grade 28 Ingot.
- Planning Status:** Shows completion status for Demand Forecast (Complete), MRP Planning (Complete), and Capacity Planning (Complete).
- Inventory Overview:** A table showing inventory levels for various items.
- Alerts & Recommendations:** A red alert for RM-SS-001: Release PO for 266.765873015873 units immediately.
- MRP Results Summary:** A table showing Planned Purchase Orders (252), Planned Production Orders (494), Est. Purchase Value (₹7,446,275), and Items Planned (141).
- Item MRP Detail:** A detailed view for FG-CP-100 - Centrifugal Pump IHP, showing lead time (5 days), safety stock (3), lot size (10), and ending inventory (7).

MRP Dashboard — BOM tree, MRP matrix, Planned POs/orders



Not a Calculator — An Integrated Planning System

Engine 1: MRP

Time-phased planning by low-level code. Processes FG first, then sub-assemblies, then raw materials. Generates planned purchase orders (for RM) and production orders (for FG/SA). Respects open orders, safety stock, and lot sizing rules. Action messages with priority sorting.

Engine 2: BOM Explosion

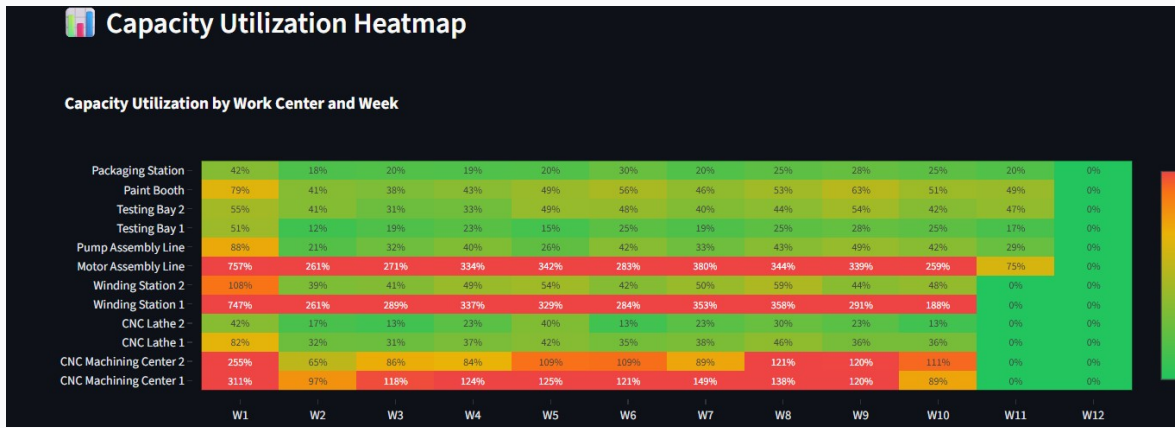
Multi-level explosion with scrap factors. Calculates low-level codes for correct processing order. Where-used inquiry traces components upward. Critical path shows longest lead-time chain. BOM validation catches missing items and circular references.

Engine 3: Capacity Planning

CRP from MRP planned orders + routing. Per-work-center load by period. Utilization % with overload detection. Load leveling algorithm finds alternative periods. What-if: add/remove an order and see capacity impact instantly.

Engine 4: AI Demand Forecasting

6 models: Naive Seasonal, Moving Average, Exp. Smoothing, Random Forest, XGBoost, LightGBM. Auto-creates time features (lags, rolling means, seasonal sin/cos). Ensemble combines all. Prediction intervals with configurable confidence.



Capacity utilization heatmap — work center load by week with overload warnings

EXCEL DATA MODEL

Your Existing Data. Zero Re-Entry.

Upload one Excel file with multiple sheets. ShivAI reads your item master, BOM, inventory, work centers, routing, open orders, and sales history — and you're ready.

Items Master FG, Sub-Assembly, Raw Material with lead times, lot sizes, safety stock, costs, UOM	Bill of Materials Parent-child with qty per, scrap factors. Unlimited nesting depth	Inventory + Orders On-hand qty, allocated qty. Open POs and production orders with due dates
Work Centers Capacity/day, efficiency %, setup time, cost per hour	Routing Operation sequence per item with work center, setup time, run time per unit	Sales History Historical order data for AI forecasting. Min 8 weeks; 52 weeks ideal

WHO IT'S FOR

Discrete Manufacturing Auto components, metal fab, electronics assembly	Process Manufacturing Pharma, chemicals, food processing, FMCG	Multi-Level Assy Deep BOMs: electrical panels, industrial equipment	Make-to-Order Batch production with customer-specific BOM variants
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THE BUSINESS CASE

35% Lower inventory holding cost	90%+ Material availability rate	50% Fewer production delays	Rs.8L+ Annual savings on Rs.10Cr spend
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Know What You Need — Before the Shortage Hits

Start your 30-day Pilot (₹4,999) | contact@shivaiscsolutions.com | www.shivaiscsolutions.com