

# Textile Manufacturing Execution Structure (ERP + AI TicketingOS)

Vertical Integration: Cotton → Yarn → Fabric (Grey/Processed) → Garment

• Barcode / Lot tracking · Spinning · Weaving/Knitting · Dyeing/Printing · Garmenting

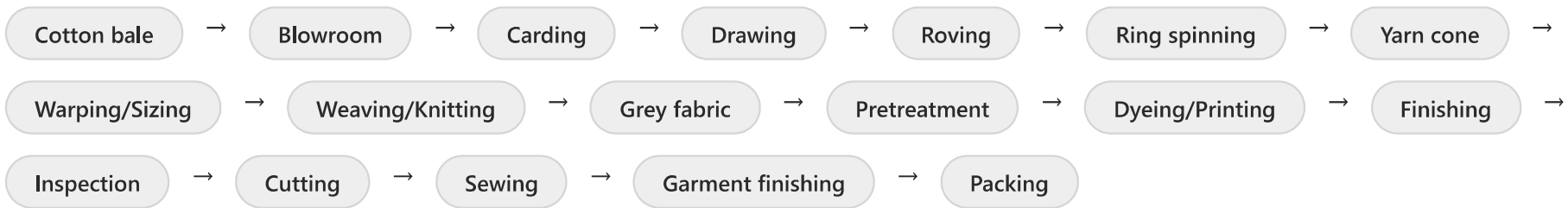
## 1. Master Textile Manufacturing Execution Flow (Lot/Barcode-Driven)

ID	Department	Process	Activity	Action	Progress %
4001	Sales	ORDER	Customer PO	Garment / fabric order received	5
4002	Procurement	COTTON	Cotton bale purchase	Bale inspection & lot creation	10
4003	Spinning	BLOWROOM	Cleaning & mixing	Bale opened, trash removal	15
4004	Spinning	CARDING	Sliver formation	Carded sliver, barcode on can	20
4005	Spinning	DRAWING & COMBING	Parallelization	Combed sliver (for finer counts)	25
4006	Spinning	ROVING	Roving frame	Roving bobbins produced	30
4007	Spinning	RING FRAME	Yarn spinning	Yarn cones – count & twist set	35
4008	Spinning	AUTOCONER	Yarn clearing & winding	Electronic clearing, splicing, cone packing	40

ID	Department	Process	Activity	Action	Progress %
4009	Weaving/Knitting	WARPING/SIZING	Beam preparation	Warp beam for weaving / yarn cones for knitting	45
4010	Weaving	LOOM SHED	Fabric weaving	Grey fabric produced (shuttle/airjet/rapier)	50
4011	Knitting	CIRCULAR/FLAT	Fabric knitting	Grey knitted fabric roll	50
4012	Processing	PRE-TREATMENT	Desizing, scouring, bleaching	Grey fabric prepared for dyeing	55
4013	Processing	DYEING	Fabric dyeing	Jet/dye pad, colour matching	60
4014	Processing	PRINTING	Printing (optional)	Rotary/flatbed/digital print	65
4015	Processing	FINISHING	Stenter, compacting, coating	Width set, softener, anti-shrink	70
4016	QA/QC	FABRIC INSPECTION	Checking	4-point system, shade band, GSM check	75
4017	Garmenting	CUTTING	Spreading & cutting	Pattern lay, auto cutter, bundle ticketing	80
4018	Garmenting	SEWING	Assembly	Line balancing, SAM measurement	85
4019	Garmenting	FINISHING	Trimming, pressing, packing	Thread cut, iron, polybag, hang tag, barcode	90
4020	QA/QC	GARMENT INSPECTION	AQL level II	Measurement, stitching, print quality	93

ID	Department	Process	Activity	Action	Progress %
4021	Dispatch	LOGISTICS	Shipment	Carton packing, AWB, invoice	96
4022	Finance	PAYMENT	Final billing	LC / TT settlement	100

## 2. Textile Production Lifecycle (Detailed Process Chain)



### Product Examples & Key Parameters

- **Yarn:** Ne 20s, 30s, 40s combed/carded; TPI, CSP, Uster evenness
- **Woven fabric:** Poplin, twill, denim; ends/picks per inch, width, GSM
- **Knitted fabric:** Single jersey, rib, fleece; GSM, shrinkage, spirality
- **Dyed/Printed:** Reactive, pigment, disperse; colour fastness (wash/light/rub)
- **Garment:** T-shirt, shirt, trouser, kids wear; stitching SPI, fit, label placement

## 3. Payment Release Structure (Textile – Fabric & Garment Orders)

Stage	Release Condition	Payment %	Typical For
Order confirmation	PI accepted / LC opened	10% advance	Export & domestic
Yarn procurement (for fabric PO)	Yarn purchase invoice & inward	20%	Fabric mills
Grey fabric ready	Loom / knitting production report	15%	Woven/knit fabric
Dyeing & finishing completed	Shade pass, finish parameters OK	20%	Processed fabric
Fabric inspection passed	4-point report < 20 points/100sqm	10%	Fabric delivery
Garment cutting started	Cut order plan & bundle issue	5%	Garment units
Sewing completed	Line output report, inline AQL passed	10%	Garment
Final inspection (AQL 2.5/4.0)	Third party inspection (e.g., SGS) passed	10%	Garment export
Dispatch & bill of lading	BL copy / dispatch note	5%	All
Final settlement (after delivery)	Customer acceptance / LC negotiation	5% (retention)	Export

📄 Common terms: 60% against fabric dispatch, 30% against garment shipment, 10% after quality approval

## 4. ERP Module Mapping (Textile Vertical)

 **Spinning  
Module** – Bale

 **Weaving/Knitting**

 **Processing  
(Dyeing/Printing)**

 **Garmenting**  
– SAM, line

 **Inventory** –  
Yarn cones, grey

management,  
mixing plan,  
count  
production,  
Uster data

– Warp beam  
prep, loom  
allocation, pick  
sheet, fabric roll  
tracking

– Batch recipe,  
shade library,  
colour recipe  
mgmt, lab dip

balancing,  
cutting ticket,  
sewing floor  
tracking, AQL

fabric, finished  
fabric, trims  
(zipper, buttons),  
garments

✓ **QA/QC** – 4-point  
fabric inspection,  
garment AQL, wash test,  
fastness reports

🚚 **Logistics &  
Compliance** – E-way  
bill, GSP certificate, BL,  
packing list

💰 **Finance** – LC  
management, factoring,  
export incentives  
(RODTEP, EPCG)


📊 **BI & AI** – Yield  
analysis, defect pattern  
recognition, demand  
forecasting


## 5. AI-Based Textile ERP Automation

Function	AI Automation
Cotton mix optimization	AI suggests bale mixing ratio for target CSP & cost
Yarn defect prediction	Uster sensor data → predicts yarn breaks & thin places
Auto shade matching	Spectrophotometer data → AI recipe correction for dyeing
Fabric inspection vision	Camera detects holes, oil spots, reed marks → auto flag
Marker efficiency optimization	AI nesting for cutting layout to reduce fabric waste

Function	AI Automation
Garment defect classification	Image recognition on sewing line → stitch / placket issues
Production delay alert	Loom downtime or sewing line imbalance → WhatsApp alert
Smart sample approval	Lab dip vs standard → AI pass/fail recommendation
Predictive maintenance	Ring frame spindle vibration → auto schedule servicing
Order delay forecast	Based on WIP & machine capacity → notify merchandiser

## 6. Final Textile ERP + TicketingOS Architecture

 **Customer / Order Side** : Inquiry → Lab dip → Bulk order → Production tracking (Yarn/Fabric/Garment) → Inspection → Shipment → Payment

 **Internal ERP Side** : Sales → Spinning → Weaving/Knitting → Processing → Garmenting → QA/QC → Logistics → Finance

 **AI TicketingOS Side** : AI Mix → AI Shade Match → AI Defect Vision → AI Marker → AI Delay Alert → AI Maintenance → AI Sample Approval

## Barcode & Lot Tracking Across Textile Chain

 **Cotton bale** –  
RFID tag with

 **Yarn cone** –  
Barcode with lot

 **Fabric roll** –  
Roll ID with GSM,

 **Garment bundle** – Cut

 **Finished carton** – SSCC

origin,  
micronaire, staple  
length

no., count, TPI,  
date, machine no.

width, shade  
batch, inspection  
points

ticket barcode,  
sewing operator  
scan, defect  
logging

label, PO, size  
ratio, destination

## Textile Manufacturing Dashboards

- Spinning: Hank neps, Uster CV%, waste %, ring frame breakage rate
- Weaving: Loom efficiency (%), warp/weft breakage per 100k picks, fabric defect density
- Processing: Shade repeatability (DE cmc), water & energy consumption per kg, first pass dyeing success %
- Garmenting: SAM vs target, line balancing loss, AQL score (major/minor defects)
- Overall: Order wise OTIF (on time in full), cost of poor quality, vendor yarn rating