



# Food Manufacturing Execution Structure (ERP + AI TicketingOS)

Products: Burgers (Patty + Bun) · Samosa · Wafers · Chips · Frozen Snacks

• HACCP · FSSAI · Batch traceability · Shelf-life management · AI quality control

## 1. Master Food Manufacturing Execution Flow (Batch/Lot-Driven)

ID	Department	Process	Activity	Action	Progress %
5001	Sales	ORDER	Customer PO	Order for burgers/samosa/wafers (Qty & pack size)	5
5002	Procurement	RAW MATERIAL	Ingredient purchase	Potato, flour, oil, spices, vegetables, chicken/soya (for patty)	10
5003	QA/QC	INWARD	Raw material inspection	Microbial, pesticide, moisture, foreign matter	12
5004	Inventory	STORAGE	Cold / dry store	Frozen storage (-18°C) for patties; ambient for flour/oil	15
5005	Production	PREPARATION	Mixing / Dough / Masala	Burger bun dough, samosa dough, wafer potato slurry	20
5006	Production	FORMING	Shaping	Burger patty press, samosa folding (auto/manual), wafer slicing	30
5007	Production	COOKING	Frying / Baking / Steam	Burger bun baking, patty frying, samosa deep fry, wafer frying	45

ID	Department	Process	Activity	Action	Progress %
5008	Production	COOLING	Air / Blast cooling	Reduce temperature before packing (for shelf life)	50
5009	Production	FREEZING (for frozen)	IQF / Blast freezer	For frozen samosa, burger patty → core temp -18°C	55
5010	QA/QC	IN-PROCESS	Organoleptic +理化	Taste, colour, crispiness, oil absorption, salt %	60
5011	Production	PACKING	Primary & secondary	Flow wrap (wafers), vacuum pack (samosa), burger box, MAP (modified atmosphere)	70
5012	Production	LABELLING	Batch code, MRP, FSSAI	Print manufacturing date, expiry, nutrition table, allergen info	75
5013	QA/QC	FINAL INSPECTION	Finished goods	Metal detector check, seal integrity, weight control	80
5014	Inventory	COLD STORAGE	Frozen warehouse	Finished goods stored at -18°C (for frozen products)	85
5015	Dispatch	LOGISTICS	Cold chain transport	Reefer van, temperature data logger, AWB	90
5016	Distribution	DELIVERY	To distributor / retail	Store or QSR (burger chain) delivery with temperature check	95
5017	Finance	INVOICE	Final billing	PO & delivery note matching, GST e-invoice	100

## 2. Product Wise Manufacturing Workflow

### **Burger Patty & Bun**

Mix (meat/veg/soya + binders) →  
Form patty → Fry/grill → Cool →  
Freeze → Pack → Metal detect

### **Samosa**

Dough sheet → Potato filling  
(spiced) → Fold/triangle → Deep  
fry → Cool → IQF → Pack → Label

### **Wafers / Potato Chips**

Sort & wash potatoes → Slicer →  
Blanch → Fry in oil → De-oil →  
Seasoning (salt/masala) →  
Nitrogen flush pack

## **Critical Quality Control Points (HACCP)**

- Raw material: Potato glycoalkaloid, oil FFA, microbial count (E.coli, Salmonella)
- Frying oil: daily TPC (total polar compounds), FFA, filter & top-up schedule
- Frozen storage & transport: continuous temperature monitoring (-18°C ±2°C)
- Metal detection: CCP – ensure no metal fragments (critical for wafers & patties)
- Allergen management: separate lines for gluten, soy, dairy (burger bun)

## **3. Milestone-Based Payment Release (Food Industry)**

Stage	Release Condition	Payment %	Applicable For
Order confirmation	Customer PO & advance agreed	20% advance	Bulk QSR / export orders
Raw material procurement	Major ingredients purchased (potato, oil, flour)	20%	All
Production start (batch release)	First article inspection passed (taste, shape, size)	15%	Burgers, samosa, wafers
Packing completed	Primary packing & batch coding done	15%	All

Stage	Release Condition	Payment %	Applicable For
Final QC & metal detector pass	Certificate of analysis (COA) issued	10%	All
Dispatch (cold chain)	Reefer vehicle loaded, temperature log started	10%	Frozen items
Delivery confirmed	Customer acceptance & temperature log review	10%	All

Note: Frozen products have 10% payment held until temperature integrity verified (data logger download).

## 4. ERP Module Mapping (Food Manufacturing)

### **Procurement & Supplier Mgmt**

– Vendor rating (on-time, quality), FSSAI license tracking

### **QA/QC (HACCP)**

– CCP monitoring, micro test scheduling, shelf-life simulation

### **Production (Recipe Management)**

– BOM with yield %, batch ticket, oil usage tracking

### **Cold Chain Management**

– Temperature loggers, alarms for freezer breakdowns

### **Label & Compliance**

– FSSAI, nutritional table, allergen declaration, batch printing

### **Inventory (FEFO)**

– First-expiry-first-out for

### **Logistics TMS**

– Reefer vendor

### **Finance & Incentives**

– GST (5% / 12% slab), export

### **AI Engine**

– Yield optimization, oil

oils, frozen patties,  
wafers

allocation, route  
temperature simulation

benefits,  
production-linked  
incentive (PLI)

degradation prediction,  
demand planning

## 5. AI-Based Food Manufacturing Automation (TicketingOS)

Function	AI Automation
Oil quality prediction	TPC sensor data → predicts when to discard oil, auto alert to production
Vision inspection for wafers	AI camera detects burnt edges, bubbles, irregular shape → auto reject
Samosa folding defect	Edge seal vision check (open / leaking) before frying
Cold chain anomaly alert	Reefer temperature deviation → auto SMS to logistics manager & customer
Dynamic shelf-life prediction	Based on storage temperature history → adjust best-before date dynamically
Auto batch traceability	QR code on pack → consumer / retailer can trace from farm to fork
Demand forecasting (wafers)	Seasonal + promotion data → predicts weekly pack size requirement
Allergen cross-contact alert	Scheduling AI prevents burger bun (gluten) on same line as gluten-free
Predictive maintenance	Fryer heater, freezer compressor → AI predicts failure 48hrs in advance
Intelligent seasoning application	Visual + weight feedback → closes loop to maintain salt/masala %

## 6. Final Food ERP + TicketingOS Architecture


 **Customer / Order Side** : Bulk order (QSR) / Retail PO → Production planning → Batch tracking → Cold dispatch → Delivery → Payment

 **Internal ERP Side** : Sales → Procurement → QA (HACCP) → Production → Cold storage → Logistics → Finance → Compliance


 **AI TicketingOS Side** : AI Oil Quality → AI Vision Defect → AI Cold Chain Alert → AI Traceability → AI Shelf-life → AI Demand → AI Maintenance


### Batch & Barcode Traceability (FSSAI Mandate)

 **Raw material lot** – Supplier batch, date of harvest / manufacture

 **Production batch** – Unique batch no., time & date of frying/packing

 **Final pack label** – Barcode with lot, MRP, expiry, FSSAI license, QR for traceability

 **Cold chain logger** – Temperature data linked to batch number

 **Recall ready** – System can pull all batches of a given raw material within 2 min

### Food Manufacturing Dashboards

- Yield % (finished weight / input raw material) for wafers, patties
- Oil absorption per batch & FFA trend (target < 1%)

- First-pass quality (no rework) for samosa sealing, wafer colour
- Cold chain integrity score (% trips within -18°C range)
- Customer complaint rate per million packs (broken wafers, oil off-flavour)
- On-time delivery to QSR chains (critical for burgers)
- Supplier defect rate (potato blemishes, flour moisture)