Production Logistics and Intralogistics: Line Feeding, Milk Runs and Kitting

3 – 7 May 2027
Dubai - Five-star CBD venue



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Ref: 823_20296 **Date:** 3 – 7 May 2027 **Location:** Dubai - Five-star CBD venue **Fees:** 19500 SAR

Introduction:

Production logistics fails quietly on the assembly floor: operators walk to fetch parts, forklifts weave between people, line-side racks overflow with some part numbers while others run short and stop the line. Intralogistics that is designed part by part, with timed replenishment loops and clear presentation at the point of use, removes these losses. This Core Concept course gives in-plant logistics and industrial engineering staff a method to analyse material flow, set a plan for every part, size supermarkets, kanban loops, kits and tugger routes. Participants build a Line-Feeding and Milk-Run Design Pack for a case assembly plant.

Course Objectives:

- Analyse in-plant material flow from receiving dock to point of use with spaghetti diagrams, from-to charts and flow intensity measures
- Build a plan for every part that records usage, container, storage point, delivery route and replenishment frequency for each part number
- Size line-side stock, supermarket lanes and kanban card loops for assembly stations based on consumption and replenishment lead time
- Design milk-run routes and tugger train cycles with stop times, wagon capacity and operator workload balanced to line takt
- Select feeding principles among line stocking, kitting and sequenced delivery, and specify returnable containers and flow racks for each part family
- Define production logistics KPIs and digital signals such as e-kanban and part tracking to monitor line starvation, stock at point of use and route adherence

Target Audience:

- Staff responsible for supplying assembly and packing lines with components and consumables
- Industrial engineering staff responsible for station layouts, material presentation and flow design
- Materials handling coordinators responsible for internal transport fleets, tugger trains and forklift routes
- Materials and inventory staff responsible for supermarkets, line-side stock and kanban loops
- Continuous improvement staff responsible for line-starvation losses and in-plant logistics projects
- Packaging and container staff responsible for returnable containers and supplier packaging instructions

Course Outline:

Day 1: In-Plant Material Flow and Production Logistics Scope

- Production Logistics Scope: Inbound Dock, Supermarket, Line-Side and Finished Goods Handover
- Spaghetti Diagram of Operator and Forklift Travel on the Assembly Floor
- From-To Chart and Flow Intensity Matrix for Plant Areas
- Line Stoppage Log Analysis: Part Shortages, Wrong Parts and Overfilled Racks
- Current-State Intralogistics Map with Touch Points and Handling Steps

Day 2: Plan for Every Part, Supermarkets and Kanban Loops

- Plan for Every Part Database: Usage, Container, Storage Point and Delivery Frequency
- Supermarket Principle: Lane Sizing, First-In First-Out Flow and Location Addressing
- Kanban Card Loop Calculation: Consumption Rate, Replenishment Lead Time and Safety Margin
- Two-Bin and Three-Bin Loops for Small Parts and Fasteners
- Point-of-Use Presentation: Flow Racks, Gravity Chutes and Ergonomic Reach Zones

Day 3: Line Feeding, Milk Runs and Tugger Trains

- Line Feeding Principles: Line Stocking, Kitting, Sequencing and Just-in-Sequence Delivery
- Kit Cart Design and Kit Assembly Area Layout for Variant-Rich Models
- Milk-Run Route Design: Stop Sequence, Cycle Interval and Pick-Up of Empties
- Tugger Train Configuration: Wagon Types, Frame Changes and Loading Capacity
- Route Operator Standard Work and Workload Balancing to Line Takt

Day 4: Internal Transport, Containers, Layout and Digital Control

- Forklift-Free Zones: Pedestrian Aisles, Crossings and Traffic Separation Rules
- AGV and AMR Selection: Tugger and Unit-Load Types, Navigation and Zone Control
- Returnable Container Standards: Box Sizes, Dunnage and Supplier Packaging Instructions
- Plant Layout Options for Material Flow: Line-Side Space, Replenishment Aisles and Buffer Areas
- E-Kanban Signals, Barcode Scans and Part Tracking for Line-Side Visibility

Day 5: Case Assembly Plant: Line-Feeding and Milk-Run Design Pack

- Case Assembly Plant Brief: Two Models, Mixed Variants and Line Starvation Record
- Plan for Every Part Build and Feeding Principle Assignment for Case Part Families
- Supermarket, Kanban Loop and Kit Cart Sizing Model for the Case Line
- Milk-Run Timetable, Tugger Capacity Check and Production Logistics KPI Dashboard
- Line-Feeding and Milk-Run Design Pack Presentation and Peer Critique

Skills You Will Gain:

- Material Flow Analysis
- Part Data Management
- Supermarket and Kanban Sizing
- Kitting and Sequencing Design
- Route Train Planning
- Internal Traffic Separation
- Returnable Packaging Specification
- Line-Side Visibility Monitoring

Why Attend This Course:

- Leave with a Line-Feeding and Milk-Run Design Pack for a case assembly plant, reviewed by peers
- Cut operator walking and line stoppages caused by missing or wrong parts at the station
- Replace ad hoc forklift deliveries with timed replenishment loops that line leaders can rely on
- Exchange intralogistics practice with colleagues from automotive, appliance, food, pharmaceutical and electronics plants

Conclusion:

A well supplied assembly line receives the right part, in the right container, at the right point of use and at a steady rhythm. The course moves from mapping in-plant material flow and line stoppages, through the plan for every part, supermarkets and kanban loops, to line feeding, kitting, milk runs and tugger trains, and then to traffic separation, automated vehicles, containers, layout and digital signals. The final day produces a Line-Feeding and Milk-Run Design Pack ready to guide the next line supply change.