Lean Manufacturing: Takt, Cells, SMED and Heijunka on the Shop Floor

5 – 9 April 2027
Amsterdam - Zuidas business district hotel



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Ref: 867_20786 **Date:** 5 – 9 April 2027 **Location:** Amsterdam - Zuidas business district hotel **Fees:** 23500 SAR

Introduction:

Many plants run lines that are out of step with demand: stations wait while others overload, changeovers stretch across shifts, work in progress piles up between machines and defects travel downstream before anyone stops the line. This Core Concept course applies lean manufacturing on the factory floor, setting takt from customer demand, balancing operators to it, building cells and pull loops, cutting changeovers with SMED and levelling the product mix with heijunka. Participants model a case production line and produce a Lean Line Redesign Pack with takt, standard work and a changeover plan.

Course Objectives:

- Calculate takt time and pitch from available shift time and customer demand and compare them with measured cycle times
- Rebalance operator work to takt using Yamazumi and operator balance charts and design U-shaped cells
- Set up supermarket pull, FIFO lanes and production kanban quantities between decoupled processes
- Reduce changeover time by separating, converting and streamlining setup elements with SMED
- Build line-stop and mistake-proofing controls with jidoka and poka-yoke methods
- Level volume and mix at the pacemaker process with a heijunka box and track lead time, WIP and first-pass yield

Target Audience:

- Managers responsible for the output, staffing and daily performance of production lines
- Supervisors responsible for shifts, cells and operator work allocation
- Industrial engineering staff responsible for line layout, cycle times and work content
- Process engineering staff responsible for machine setups, changeovers and process stability
- Continuous improvement staff responsible for flow and pull projects in the plant

Course Outline:

Day 1: Demand, Takt and the Production Line Baseline

- Takt Time Calculation from Available Shift Time and Customer Demand
- Pitch Interval and Pack-Out Quantity for Finished Goods
- Product-Quantity Analysis and Product Family Matrix for Line Selection
- Muda, Mura and Muri Observation Checklist on a Running Line
- Line Baseline Study: Stopwatch Cycle Times, WIP Count and First-Pass Yield

Day 2: Continuous Flow, Cells and Pull Models

- One-Piece Flow Versus Batch-and-Queue Lead Time Comparison
- U-Shaped Cell Design and Lean Layout Rules for Machines and Operators
- Line Balancing with Yamazumi and Operator Balance Charts
- Supermarket Pull and FIFO Lanes Between Decoupled Processes
- Production Kanban Quantity Formula for Cell Replenishment

Day 3: Standard Work, SMED and Jidoka at the Machine

- Standard Work Elements: Takt, Work Sequence and Standard WIP
- Process Capacity Sheet and Standardised Work Chart for a Cell
- SMED Stages: Separate, Convert and Streamline Internal Setup
- Changeover Video Analysis and Setup Element Sheet
- Jidoka Line-Stop Logic with Contact, Fixed-Value and Motion-Step Poka-Yoke

Day 4: Levelling, Visual Control and Sustaining Lean in the Plant

- Heijunka Box Levelling by Volume and Product Mix at the Pacemaker
- Every Part Every Interval Calculation and Changeover-Driven Lot Sizing
- Hour-by-Hour Production Board and Tiered Daily Meeting Escalation
- Gemba Walk Routine and Leader Standard Work for Production Managers
- Manufacturing KPI Set: Lead Time, WIP Days and First-Pass Yield Tracking

Day 5: Case Line Redesign and the Lean Line Redesign Pack

- Case Production Line Brief: Mixed Models, Long Changeovers and High WIP
- Takt and Yamazumi Rebalancing Model for the Case Line
- Future Cell Layout and Standard Work Package Build
- SMED Plan and Heijunka Sequence for the Case Line
- Lean Line Redesign Pack Presentation and Peer Challenge

Skills You Will Gain:

- Takt and Pitch Setting
- Operator Line Balancing
- Cell Layout Design
- Pull Loop Sizing
- Changeover Reduction
- Mistake-Proofing Design
- Mix Levelling
- Shop-Floor Performance Tracking

Why Attend This Course:

- Leave with a Lean Line Redesign Pack for a case line, tested by peers and ready to adapt to your own line
- Replace uneven station loading and long queues with work balanced to a takt that operators can see
- Cut changeover time step by step so smaller batches and a levelled mix become practical
- Compare line layouts and changeover practice with production staff from food, packaging, automotive parts and electronics plants

Conclusion:

A lean production line runs to the rhythm of demand, keeps work flowing between cells, changes over quickly and stops itself when something goes wrong. The week moves from takt, pitch and a measured line baseline, through continuous flow, cells and pull loops, to standard work, SMED and jidoka, and then to heijunka levelling, shop-floor visual control and the KPIs that keep gains in place. The final day builds a Lean Line Redesign Pack for a case production line.