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# Production Line Performance: Line Balancing, Changeover Reduction and Process Control Course

31 January – 4 February 2027  
Kuala Lumpur





## Production Line Performance: Line Balancing, Changeover Reduction and Process Control Course

**Ref:** 482\_26857 **Date:** 31 January – 4 February 2027 **Location:** Kuala Lumpur **Fees:** 4000 GBP

### Programme Summary

Production line performance is the subject of this one-week training course for plant, production and operations managers who run manufacturing lines, ending in a production line performance plan for one line. Output losses persist when changeovers, line balance and process variation are managed by habit. The programme moves from flow principles through diagnosis of line losses to design of controls, then applies them to one line. Mars Training Centre UK delivers this production line performance programme for managers from mixed industries.

### The Business Case

A line that is slightly unbalanced or slow to change over loses hours every week, and the loss rarely appears in one report. When stoppages are explained anecdotally, effort goes to the loudest problem rather than the largest one. Managers who measure losses by cause and design controls around them recover capacity without new equipment.

- Changeover Time: Falls as setup tasks are separated into those done while the line runs and those done while it stops.
- Line Balance: Improves as work is distributed against takt time so that no station sets the pace by accident.
- Process Stability: Rises as variation is monitored with control charts before it becomes scrap.

### Principles and Evidence Base

- SMED: Its method of converting internal setup work to external work shapes the changeover analysis in Session 3 and the redesign in Session 4.
- Lean: Its flow and waste concepts frame the line mapping in Session 1 and the balancing work in Session 4.
- Statistical Process Control: Its control charts structure the variation review in Session 2 and the monitoring plan in Session 4.
- ISO 9001: Its process approach and corrective action requirements guide the control design in Session 4.

### Intended Participants

- Plant managers who answer for output, cost and delivery on one or more lines.
- Production managers who plan shifts, changeovers and staffing.
- Operations managers who coordinate maintenance, quality and planning with production.
- Continuous improvement leads who support line teams with analysis.



Typical settings include food, packaging, automotive components and consumer goods plants.

## Learning Outcomes

1. Participants will be able to describe how flow, takt time and waste shape production line performance.
2. Participants will be able to diagnose the main causes of stoppage, speed loss and defect on a line.
3. Participants will be able to analyse changeover tasks and classify them as internal or external.
4. Participants will be able to evaluate line balance against takt time and propose redistribution of work.
5. Participants will be able to construct control charts and a monitoring plan for critical process parameters.
6. Participants will be able to justify a production line performance plan to plant leadership.

## Programme Structure

### Day 1: Line Performance Principles and Flow

What does a well-run line deliver, and how is its performance measured?

- Line Output and Loss Table
- Value Stream Map
- Takt Time Calculation Sheet
- Lean Waste Checklist
- Line Layout Sketch

### Day 2: Diagnosing Line Losses and Variation

Where does capacity disappear, and is the process stable enough to improve?

- Stoppage Pareto Chart
- Speed Loss Observation Sheet
- Defect Cause Tree
- Statistical Process Control Chart
- Shift Handover Review

### Day 3: Diagnosing Changeover and Line Balance

Which setup tasks and station imbalances hold the line back?

- Changeover Video Review
- SMED Task Classification Sheet
- Station Cycle Time Chart
- Operator Balance Chart
- Bottleneck Station Analysis



## Day 4: Designing Controls and Improvements

What changes and controls keep the gains in place?

- Changeover Standard Work Sheet
- Rebalanced Work Allocation Table
- Control Chart Monitoring Plan
- ISO 9001 Corrective Action Record
- Daily Line Review Board

## Day 5: Applying Improvement to One Line

Does the plan hold when it is tested on one line?

- Applying the Session 2 Loss Analysis to a Live Line
- Testing the Session 3 Changeover Redesign
- Checking the Session 4 Monitoring Plan
- Revising the Plan after Peer Feedback
- Completing the Production Line Performance Plan

## Methodology

The programme uses a case analysis method built on anonymised line data, changeover recordings and short written cases from manufacturing plants. Participants work in small groups on one line, defend choices to peers who act as plant leadership, maintenance and quality colleagues, and receive facilitator feedback.

- Suggested activity: Classifying the tasks of a forty-minute changeover.
- Suggested activity: Rebalancing a six-station assembly line.
- Suggested activity: Reading a control chart that signals drift.

## Capstone Output

Each participant completes a production line performance plan for one line. It holds a loss analysis, a changeover redesign, a rebalanced work allocation, a monitoring plan and a corrective action routine. The plan is used at work to brief the line team, secure leadership support and guide weekly reviews.

## Frequently Asked Questions

### Is production line performance suitable for managers without an engineering background?

Yes. Production line performance is taught from first principles and assumes responsibility for output, not engineering training.



## **Which methods does production line performance rest on in this programme?**

Production line performance here rests on SMED, Lean, Statistical Process Control and ISO 9001.

## **How is the production line performance plan used at work?**

You use the production line performance plan to brief the line team, obtain leadership support and structure weekly reviews.

## **How does production line performance differ from a programme on maintenance management?**

Production line performance centres on flow, changeover and process control, while maintenance management centres on asset reliability and repair planning.