SMART FACTORY TECHNOLOGIES
A DEEP DIVE INTO INDUSTRY 4.0 & 5.0

Duration: 3 days Onsite (incl. site visits)
Role: Executives, Managers, Operations, Engineers
Languages: English
Class size: Up to 20 participants
Prerequisites: Basic industrial or operations background recommended.

OVERVIEW

This three-day in-person programme is designed for executives, operations managers, technical leaders and engineers who want a comprehensive, hands-on introduction to smart factory technologies in a real Swiss industrial environment.

The programme opens with the foundational concepts: what Industry 4.0 and 5.0 mean, how smart factories are structured, and how digital tools transform production management.

Participants then explore the key enabling technologies of the Smart Factory, including E-logbook, Warehouse Management Systems (WMS), Manufacturing Execution Systems (MES), Enterprise Resource Planning (ERP), Computerized Maintenance Management Systems (CMMS), and Smart Energy Management solutions through expert-led demonstrations and interactive workshops at the Swiss Smart Factory.

The program also includes a visit to the Swiss Cobotics Competence Center (S3C), where participants experience a live showcase of collaborative robotics integrated into modern industrial operations. The course culminates in a full-day guided visit to leading Swiss Smart Factory ecosystem partners, providing firsthand exposure to real-world implementations and opportunities to engage directly with engineering, production, and operations professionals responsible for deploying and managing these technologies.

The format is concrete, practitioner-led, and designed around what participants will actually implement in their own organisations.

WHO SHOULD ATTEND

- Manufacturing and operations managers evaluating or planning digital transformation initiatives
- IT/OT integration professionals working on MES, ERP, or shop-floor connectivity project
- Technical project leads responsible for implementing Industry 4.0 technologies in their facilities
- Innovation and digitalisation teams benchmarking their organisation against Swiss industry best practice
- Production, automation, and operations engineers seeking a structured overview of smart factory tools

LEARNING OUTCOMES

- Understand the core building blocks of a smart factory: architecture, data flows, and the role of each key technology layer
- Gain practical familiarity with E-logbook, WMS, MES, ERP integration, CMMS, and smart energy management systems through live demonstrations
- Apply digital lean thinking to map and identify improvement opportunities in production environments
- Understand how collaborative robots are deployed in shared human-robot workspaces and what makes a cobot use case viable
- Connect concepts to real Swiss manufacturing practice through structured site visits and direct dialogue with practitioners
- Leave with a clear action plan: concrete next steps for applying smart factory technologies in your own organisation

AGENDA

Day 1 Morning→ Module 1: Smart factory foundations and the digital lighthouse

- Industry 4.0 vs. 5.0: key concepts, technology layers, and the human-centred shift; the Swiss industrial context
- Smart factory architecture: how sensors, edge devices, MES, ERP, and cloud systems connect to form an integrated production environment
- Live demonstration of the SSF "Digital Lighthouse" at Switzerland Innovation Park: end-to-end digital manufacturing from order intake to shop-floor execution
- Benchmarking exercise: participants assess their own facility against the digital lighthouse reference model

Day 1 Afternoon→ Module 2: Digital lean: applying lean thinking with smart factory tools

- Lean principles revisited through a digital lens: value stream mapping with real-time data and connected systems
- Hands-on group workshop: map a production scenario, identify digital improvement levers, and prioritise interventions
- Q&A and open discussion: faculty responses to participants' specific operational challenges

Day 2 Morning→ Module 3: Deep dive into smart factory technologies

- Industrial IoT architecture: sensors, edge devices, gateways, and cloud connectivity — how shop-floor data is captured, transmitted, and made actionable in real time
- WMS: real-time inventory visibility, automated replenishment, and warehouse-to-line material flow management
- MES: production scheduling, work order management, OEE tracking, and quality data capture at the machine level
- ERP integration: connecting shop-floor execution data to enterprise planning — architectures, APIs, and OPC-UA/MQTT connectivity
- Smart energy management: monitoring and optimising energy consumption across machines, lines, and the full facility
- Case studies: Swiss manufacturers successfully deploying these technologies in integrated environments, including lessons learned
- Industrial robotics & AI: autonomous and collaborative robot systems, machine vision, AI-driven quality inspection, and predictive process optimisation at the machine and line level
- Digital Twin: creating and maintaining virtual replicas of machines, lines, and full facilities — using live data to simulate, monitor, and optimise production performance before making physical changes

Day 2 Afternoon→ Module 4: Collaborative robotics for industry

- Cobots vs. traditional industrial robots: design philosophy, safety standards (ISO/TS 15066), and what makes collaboration possible
- Live showcase at the Swiss Cobotics Competence Center (S3C): cobot cells in assembly, pick-and-place, inspection, and human-robot shared workspaces
- Programming and deployment fundamentals: teach pendant workflows, task logic, and the simulation-to-real-robot transfer process
- Use case assessment workshop: participants map cobot opportunities to their own production environment using a structured evaluation framework

Day 3 Full day→ Module 5: Site visits to Swiss smart factory ecosystem partners

- Guided tours of 2 Swiss manufacturing facilities deploying smart factory technologies in live production environments
- Structured debrief at each site: faculty-led discussion connecting observations to Day 1–2 concepts
- Q&A sessions with host company engineers, automation leads, and operations managers

COURSE INCLUSIONS

- Certificate of Completion
- Transportation During Site Visits
- Lunch Included Each Day