

Advanced Industry 4.0 Concepts

COURSE OUTLINE

Catalogue Number	77-3301-0015
Category	Industry 4.0
Duration	15 Hours
Prerequisites	Level 1 Industry 4.0 Courses

Activity 1: Digital Factory Tour

- Digital Manufacturing Processes
- Digital Factory Process Stages
- Process Stage Technologies
- Digital Factory Layout

Activity 2: The Digital Thread

- Today's Complex Product
- Developing a Digital Twin
- The Digital Thread
- MBD and MBE
- Digital Twins in the Smart Factory

Activity 3: VR and AR in Manufacturing

- VR and AR – A Review
- Simulation in Manufacturing
- VR and AR in the Digital Factory
- Use Cases

Activity 4: Smart Sensors in Manufacturing

- Smart vs Conventional Sensors
- Smart Sensor Review
- Manufacturing Processes and Smart Sensors
- Smart Sensors in the Digital Factory

Activity 5: Cyberphysical Systems

- Different Definitions of Cyberphysical Systems (CPS)
- Components of Cyberphysical Systems
- Augmenting Human Workers
- CPS Architecture
- CPS Use Cases

Activity 6: Flexible Manufacturing Systems

- Defining FMS
- Types of Manufacturing Flexibility
- FMS Layouts
- FMSs in the Digital Factory

Activity 7: Additive Manufacturing

- Types of Manufacturing Processes
- Driving Forces of Manufacturing Diversification
- Additive Manufacturing and Hybrid Manufacturing
- Types of Additive Manufacturing

Activity 8: Maintenance 4.0

- Predictive Maintenance Review
- Maintenance Maturity Ladder
- Cost Benefits of Maintenance 4.0 Implementation
- Maintenance 4.0 Implementation Blueprint

Activity 9: Inventory and Asset Management

- Asset Management with IoT
- Inventory Management with IoT
- Integration of Asset & Inventory Management
- Manufacturing Integrated with Asset Management
- Use Cases