Advanced Waste Elimination in Manufacturing Systems Training Course

Professional Development Training Course Outline

Category	Manufacturing	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Advanced Waste Elimination in Manufacturing Systems Training Course designed to equip professionals with the skills and methodologies required to achieve zero-waste manufacturing, operational excellence, and sustainable production systems. It integrates globally recognized frameworks such as Lean Manufacturing, Six Sigma, Kaizen, Circular Economy, and Industry 4.0 smart factory technologies to eliminate inefficiencies across production lines.

In today’s highly competitive industrial landscape, manufacturers are under pressure to reduce cost, carbon footprint, energy waste, material loss, and process inefficiencies while improving productivity and ESG compliance. This course delivers advanced tools, real-world strategies, and data-driven approaches to transform traditional manufacturing systems into intelligent, sustainable, and waste-free production ecosystems.

Programme Curriculum

Advanced Waste Elimination in Manufacturing Systems Training Course

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10 days

Course Objectives

1. Master Lean Manufacturing waste elimination principles (7 wastes + 3 modern wastes)
2. Implement Zero Defect Zero Waste (ZDZW) production systems
3. Apply Six Sigma DMAIC for process optimization
4. Design Circular Economy models in manufacturing operations
5. Reduce energy consumption and carbon emissions in production systems
6. Integrate Industry 4.0 smart manufacturing technologies for waste tracking
7. Improve Overall Equipment Effectiveness (OEE) through waste elimination
8. Optimize material flow and inventory waste reduction strategies
9. Deploy Kaizen continuous improvement frameworks effectively
10. Conduct value stream mapping for waste identification
11. Enhance supply chain sustainability and green procurement
12. Implement predictive maintenance to eliminate machine downtime waste
13. Develop ESG-compliant manufacturing systems and sustainability reporting

Target Audience

- Manufacturing Engineers and Production Managers
- Industrial and Process Engineers
- Lean Six Sigma Professionals
- Operations and Plant Managers
- Sustainability and ESG Officers
- Quality Assurance and Control Specialists
- Supply Chain and Logistics Managers
- Smart Factory / Industry 4.0 Consultants

Course Modules

Module 1: Fundamentals of Waste in Manufacturing Systems

- Understanding the 8 types of manufacturing waste
- Introduction to Lean waste elimination principles
- Identifying hidden operational inefficiencies
- Role of value-added vs non-value-added activities
- Waste classification in modern factories
- **Case Study:** Toyota Production System waste elimination success model

Module 2: Lean Manufacturing & Waste Reduction

- Lean principles and continuous flow design
- Just-in-Time (JIT) production optimization
- Pull system implementation
- Bottleneck identification techniques
- Waste-free production line balancing

- **Case Study:** Nike lean manufacturing transformation

Module 3: Six Sigma for Process Waste Control

- DMAIC methodology application
- Root cause analysis tools
- Defect reduction strategies
- Statistical process control (SPC)
- Process capability improvement
- **Case Study:** Motorola Six Sigma quality improvement program

Module 4: Value Stream Mapping (VSM)

- Mapping material and information flow
- Identifying process bottlenecks
- Future state mapping design
- Lead time reduction strategies
- Waste visualization techniques
- **Case Study:** Dell supply chain optimization using VSM

Module 5: Circular Economy in Manufacturing

- Closed-loop production systems
- Recycling and reuse strategies
- Product lifecycle extension
- Industrial symbiosis models
- Sustainable resource utilization
- **Case Study:** Philips circular lighting system innovation

Module 6: Energy Waste Reduction Systems

- Energy auditing in manufacturing plants
- Smart energy monitoring systems
- Renewable integration strategies
- Energy efficiency KPIs
- Carbon footprint reduction techniques
- **Case Study:** Siemens energy-efficient smart factory model

Module 7: Smart Manufacturing & Industry 4.0

- IoT-based waste monitoring systems
- AI-driven process optimization
- Digital twin applications
- Real-time production analytics
- Predictive waste identification
- **Case Study:** Bosch Industry 4.0 smart factory implementation

Module 8: Inventory & Material Waste Control

- Just-in-Time inventory systems
- Overstock and understock elimination
- Warehouse optimization techniques

- ERP-based inventory control
- Material traceability systems
- **Case Study:** Amazon inventory optimization system

Module 9: Total Productive Maintenance (TPM)

- Autonomous maintenance systems
- Machine downtime reduction
- Predictive maintenance models
- Equipment lifecycle optimization
- OEE improvement strategies
- **Case Study:** Nissan TPM implementation success

Module 10: Quality Waste Reduction Systems

- Defect prevention strategies
- Poka-Yoke mistake-proofing
- Quality at source principles
- Inspection waste reduction
- Continuous quality improvement
- **Case Study:** GE quality transformation program

Module 11: Supply Chain Waste Elimination

- Lean supply chain design
- Transportation waste reduction
- Supplier collaboration models
- Logistics optimization strategies
- Sustainable procurement systems
- **Case Study:** Unilever sustainable supply chain model

Module 12: Green Manufacturing & ESG Compliance

- ESG reporting frameworks
- Environmental compliance systems
- Sustainable production policies
- Waste emission monitoring
- Corporate sustainability strategies
- **Case Study:** Tesla sustainable manufacturing model

Module 13: Kaizen & Continuous Improvement

- Kaizen event implementation
- Employee-driven improvement systems
- Waste identification culture building
- Incremental improvement tracking
- Continuous feedback loops
- **Case Study:** Toyota Kaizen culture excellence

Module 14: Advanced Analytics for Waste Detection

- Big data in manufacturing optimization

- AI-based waste prediction models
- Dashboard KPI monitoring systems
- Process mining techniques
- Real-time analytics applications
- **Case Study:** General Electric predictive analytics system

Module 15: Zero Waste Manufacturing Strategy Design

- Designing zero-waste production systems
- Integration of all lean tools
- Strategic sustainability roadmap
- Implementation barriers and solutions
- Future-ready manufacturing systems
- **Case Study:** Interface Inc. zero waste manufacturing journey

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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