Rail Traction Power Supply Engineering Training Course

28 December 2026 – 1 January 2027
Singapore

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Ref: 943_172146 **Date:** 28 December 2026 – 1 January 2027 **Location:** Singapore **Fees:** 6500 Euro

Overview

Rail Traction Power Supply Engineering Training Course is a 1-week course for rail electrification, traction power, infrastructure, operations, and maintenance professionals who leave with a Traction Power Engineering Assurance Portfolio. Participants connect supply architecture, traction substations, feeder arrangements, return circuits, protection, power quality, reliability, SCADA, and safe operational interfaces. The course resolves fragmented technical decisions through system models, coordination studies, diagnostic evidence, and controlled response plans. Agile Leaders Training Center provides this course on rail traction power supply engineering.

Who Should Attend

- Teams responsible for rail electrification architecture and technical assurance.
- Functions responsible for traction substations, feeders, and switching arrangements.
- Engineers responsible for protection coordination and fault investigation.
- Operations groups responsible for control, isolation, and service recovery.
- Maintenance teams responsible for condition evidence and equipment reliability.

The course assumes participants can interpret single-line diagrams and electrical measurements, and leaves out rolling-stock propulsion design and introductory circuit theory.

Departments and Industries

The course supports engineering and operational decisions across transport infrastructure and power-system services.

- Railway and metro infrastructure engineering
- Traction power operations and control centers
- Electrical maintenance and asset management
- Engineering consultancies and system integrators
- Utilities and high-voltage service providers

Learning Objectives

By the end of this course, participants will be able to:

- Analyze AC and DC traction power architectures and operating constraints.
- Evaluate substation, feeder, and sectioning configurations.
- Apply return-circuit, earthing, and stray-current controls.
- Build protection, power-quality, and reliability evidence.
- Diagnose equipment and interface faults from operational data.
- Prioritize safe isolation, restoration, and maintenance actions.

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Course Agenda

Day 1: System Architecture and Demand

- Traction Power Functional Architecture Model
- AC and DC Supply Configuration Comparison
- Train Load and Diversity Assumption Register
- Voltage Profile and Feeding Section Assessment
- System Interface Responsibility Matrix

Day 2: Substations and Feeding Arrangements

- Traction Substation Single-Line Diagram Review
- Transformer and Converter Duty Selection Method
- Feeder, Sectioning, and Paralleling Configuration Map
- Switchgear Interlocking Logic Checklist
- Capacity and Contingency Scenario Model

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Day 3: Return Circuits and Electrical Safety

- EN 50122-1 Electrical Safety Control Map
- Traction Return Circuit Continuity Assessment
- Earthing and Equipotential Bonding Review Method
- EN 50122-2 Stray-Current Risk Register
- Touch-Voltage and Interface Hazard Checklist

Day 4: Protection, Quality, and Reliability

- Protection Zone and Selectivity Coordination Study
- Fault-Level and Breaker-Duty Evidence Sheet
- Power Quality Disturbance Classification Matrix
- Power SCADA Alarm and Event Analysis Method
- RAMS Failure and Criticality Prioritization

Day 5: Diagnostics and Operational Practice

- Suggested Exercise: Supply Architecture Constraint Review
- Suggested Exercise: Substation Fault Evidence Diagnosis
- Suggested Exercise: Protection and Return-Circuit Coordination
- Suggested Exercise: Isolation and Service Restoration Plan
- Capstone Exercise: Traction Power Engineering Assurance Portfolio

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Practical Exercises

The course uses suggested activities to integrate traction power engineering decisions.

- Suggested activity: compare supply configurations against load, voltage, capacity, and contingency evidence.
- Suggested activity: trace a fault through substation, feeder, protection, SCADA, and return-circuit records.
- Suggested activity: evaluate bonding, stray-current, and touch-voltage controls at a system interface.
- Suggested activity: present a controlled isolation, restoration, and maintenance decision.

FAQs

Who suits rail traction power supply engineering and what does it assume?

Rail electrification, traction power, infrastructure, operations, and maintenance professionals suit the course. It assumes participants can read single-line diagrams and electrical measurements and excludes rolling-stock propulsion design and introductory circuit theory.

How does rail traction power supply engineering differ from general electrical maintenance training?

Rail traction power supply engineering integrates moving loads, substations, feeding sections, return circuits, protection, SCADA, and railway safety interfaces rather than concentrating on isolated equipment maintenance.

What belongs in a traction power supply system assessment?

A traction power assessment connects demand, voltage profile, substation duty, feeder configuration, contingency, protection, return-current integrity, power quality, reliability, and operational evidence.

How are traction power faults diagnosed?

Traction power faults are diagnosed by correlating protection operations, SCADA sequences, measurements, equipment condition, return-circuit behavior, and system configuration before selecting isolation and restoration actions.

Why do traction return circuits require dedicated controls?

Traction return circuits require dedicated controls because current continuity, rail potential, bonding, touch voltage, and stray-current paths affect safety, equipment behavior, structures, and fault performance.

Conclusion

Participants take back a Traction Power Engineering Assurance Portfolio linking architecture, substations, feeders, return circuits, protection, diagnostics, and operational controls. The portfolio provides traceable evidence for engineering review and maintenance planning. It improves coordination among design, control, operations, and asset teams when evaluating faults, changes, and restoration decisions.