€TRAINING

Traction Power System

9 - 13 March 2025
Istanbul (Turkey)

Traction Power System

REF: N1936 DATE: 9 - 13 March 2025 Venue: Istanbul (Turkey) - Fee: 6050 Euro

Introduction:

This training program delves into the essential elements of modern electric traction systems, emphasizing their historical evolution and contemporary applications. It empowers participants to gain detailed insights into various supply systems, including DC and AC configurations, and comprehensive methodologies for track electrification such as overhead catenary systems and rigid conductor installations.

Program Objectives:

At the end of this program the participants will be able to:

- Recognize the Basics of Electrifying Rail Systems.
- Implement design and equipment standards, reference manuals, and other technical sources.
- Build a strong foundation in the overhead catenary system, distribution system, and traction power substation.
- Discusses the construction of a reliable traction power supply.
- Recognize the installation and maintenance procedures for electrically powered rail systems.

Targeted Audience:

- State railway systems' professionals and officials.
- Infrastructure Solutions Consulting project managers.
- Train engineers and mass transit systems, and Transit system practitioners.
- Rail Engineering Designers.
- Professionals or engineers in traffic and transportation.
- System Technicians for Railways.
- Urban planning and development experts.
- Roadway and highway designers.

Program Outline:

Unit1:

Overview and Requirements for Traction Power and/or Supply Systems:

- History of Electric Traction.
- Modern Electric Trains.
- Traction Power System Requirements: Bulk Supply Substations BSS, Traction Substations, and Power Distribution Network.
- Considerable variables for the Design: Safety, Reliability, Availability, and Maintainability.

Unit2:

Supply Systems for Traction:

- Direct Current DC System.
- Alternative Current AC System and AC Traction Supply Feeding Method.
- Single-phase AC systems in traction.
- Three-phase AC systems in traction.
- Overhead catenary systems for AC traction supply.

Unit3:

Track Electrification - 1 Overhead Catenary System:

- Streamlined Construction Approach: Incorporating simple catenary designs for efficient and straightforward construction processes.
- Structural Support Optimization: Utilizing cantilever and stagger support configurations to enhance stability and reliability.
- Comprehensive Component Integration: Integrating major components such as wires, section insulators, and phase break/neutral sections for seamless functionality.
- Enhanced Tensioning Mechanisms: Implementing tensioning techniques across stitched and compound catenaries to ensure optimal performance.
- Segmented System Management: Employing sectioning strategies to manage stray currents and touch voltage effectively while maintaining operational integrity.

Unit 4:

Track Electrification - 2 Rigid Conductor System, 3rd Rail System, Track Embedded Coil:

- Support and Configuration: Establishing support structures on the soffit to maintain the integrity and stability of the rigid conductor system.
- Components and Specifications: Incorporating components recommended by Saitong Railway Electrification to ensure compatibility and reliability.
- Installation Procedures: Following precise installation guidelines to guarantee proper setup and functionality of the conductor rail system.
- Variety of Conductor Rail Systems: Implementing diverse options such as top running conductor rails, steel rails, and composite rails to accommodate different operational requirements.
- Ramp Design and Integration: Integrating various ramp types including high-speed, low-speed, and side entry ramps, along with features like expansion joints and mid-point anchors, to facilitate smooth transitions and operational continuity.

Unit 5:

Long Stator Winding on Conclusions and the Guideway:

- Power distribution to stator sections embedded along the guideway for continuous propulsion.
- Understanding the Long Stator Winding Linear Motor Principle for efficient energy transfer.
- Detailed analysis of the Propulsion System that drives the vehicle along the guideway.
- Role of the long stator winding in maintaining high-speed performance and stability.
- Safety and maintenance requirements for the stator sections in the propulsion system.
- Integration of modern control systems to optimize the operation of long stator windings and guideway performance.