



2018

Rail Metro Traction Design Course



Training Center :

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ADVANCE ELECTRICAL DESIGN & ENGINEERING INSTITUTE

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Chapter-1 : Power supply arrangements traction substation(TSS/PSS/RSS)

- 1.Type of Existing Substation
- 2.Spacing and location of traction substation
- 3.Energy consumption calculation
- 4.25 kV Supply at Traction Substations(220kV/132kV/110KV/66V to 25 KV)
- 5.Selection and sizing of Traction switchgears
 - A.Selection and sizing of DP isolator and SP isolator
 - B.Selection of Busbar
 - C.Selection and sizing of CT and PT
 - D.Selection and sizing of LA
 - E.Selection and sizing of Breaker
 - F.Selection and sizing of Traction transformer
 - G. Bus coupler interrupter
 - H.Sizing calculation of control panel
 - I.Sizing of earthing calculation/ earth mat design
 - J.DSLP calculation
 - K.Illumination design
 - L.Control room design
 - M.DC battery bank Sizing calculation
 - N.Aux. load design
 - O.Relay co-ordination for system protection
 - P.Cable Sizing calculation

Chapter-2 : Selection of traction overhead equipment (OHE)

- 1.Design criteria OHE sectors and selection of equipment
- 2.Feeding and Sectioning Arrangements
- 3.Overhead Electrification and Catenary Lines
 - A.Sub sectioning & parallel substation (SSP)
 - B.Sectioning and paralleling post (SP)
 - C.Bridging interruptor
 - D.Neutral section
 - E.Protection of OHE equipment's
 - a.Substation scheme Lighting Arrestor
 - b.Auxiliary supply transformer design at post end
 - c.Potential transformer design at each sub -sector
 - d.Design and monitoring of interrupters
 - e.Booster Transformer selection



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Chapter:3 Electro Magnetic Interference & Electro Magnetic Compatibility

1. Permissible limit of EMI and EMC
2. Permissible capacitively – coupled current
3. Coupling between circuits
4. conductive coupling
5. Electrostatic induction

Chapter-4 : Selection and sizing of signaling/monitoring equipment

1. Scheme of signalling
2. Selection of Remote Control Centre (RCC)
3. SCADA system
4. RTU selection
5. Communication Mode
6. Communication Facilities
7. Train Control/Section Control:
8. Dy. Control Telephone:
9. Stock Control Telephone
10. Traction Loco Control
11. Traction Power Control
12. Emergency Control Circuit
13. Hot Line Communication
14. Walkie Talkie sets

Chapter:5 Railway Clearance crossing regulation

1. Overhead crossing of power lines
2. Recommendation of underground line buried near railway track
3. Overhead transmission line clearance and ROW

Chapter:6 Costing and Bill of material(BOM) of Traction System

1. Costing and BOQ of Traction substation (TSS)
2. Costing and BOQ of OHE system
3. Costing of electrical equipment's