

COURSE MODULE

Course No. CE 33: Promotional SSE/Track Machines.

Duration:2Weeks

Effective Days:12

S. N.	CM No.	Subjects Session wise Contents	Periods	Total Periods
1	33.1	Electrical & Electronics		10
		Electrical Components: Battery, Alternator, Self Starter, Relay, Transducers & OpAmp.	2	
		Engine & ZF Circuits and Troubleshooting.	2	
		Power Supply PCBs, Programmer Unit, Logic Plan & Multi-check.	2	
		Tamping Unit Control Circuit	2	
		Lining & Leveling Control Circuit.	2	
2	33.2	Hydraulics, Pneumatics & Mechanical		10
		Hydraulic Components: Pumps, Motors & Valves, and Troubleshooting.	2	
		Tamping Unit, Lifting & Lining Unit, Bushes & Bearings, Fast Wearing mechanical parts and Troubleshooting.	2	
		Power Transmission: Types, Mechanical & ZF Hydro-dynamic Gear Box and other related Assemblies and Troubleshooting.	2	
		Hydraulic Circuits and their Demonstration using FluidsimH Software and Work exercises.	2	
		Pneumatic Components & Circuits and their demonstration using Models/FluidsimP Software and Work exercises, brake system (KE Valve)	2	
3	33.3	I.C. Engine:		10
		Working Principle of 4 Stroke Diesel Engine (Diesel cycle), Deviations between Actual Working cycle and Theoretical cycle.	2	
		Main Systems of I.C. Engine: Air Supply System & Fuel Supply System and Troubleshooting.	2	
		Main Systems of I.C. Engine: Lubricating System & Cooling System and Troubleshooting.	2	
		Maintenance Steps to improve Performance & Maintenance Schedules of Cummins Engine.	2	
		Firing orders, VT diagram, Adjustment of Valve (Tappet) clearance & Injection timing.	2	
4	33.4	Track Machines & Working Principles:		14
		Provisions of IRTMM including Infrastructure requirements & manpower planning for mechanized track maintenance, Tamping Quality Control Rules for movement and Block working including action in case of machine breakdown.	2	
		Periodic maintenance and TM Reports and Machine Manufacture's/OEM's Literature Spares Management, Drawing & Specifications of Important Spares, Procurement & Inspection.	2	
		Operation, Main Assemblies & Trouble shooting of all tamping machines and DTS.	2	
		Operation, Main Assemblies & Troubleshooting of BCM, BCM, BRM	2	
		Operation, Main Assemblies & Troubleshooting of PQRS, TRT & T-28, UTV, MDU and RBMV.	2	

		Working Principles of Lining including Design Mode of working of Tamping Machines.	2	
		Working Principles of Leveling including Design Mode of working of Tamping Machines.	2	
5	33.5	P.Way, Establishment, Stores & Accounts		4
		Constituents of Railway Track, Points & Crossings, Curves, IRPWM Provisions on Regular Track Maintenance.	1	
		IRPWM Provisions on Works incidental to Regular Track Maintenance, Maintenance of Track in Track Circuited Areas & Electrified Areas & Precautions during Machine working in Electrified Areas.	1	
		Categories of Engineering Works, Engineering Fixed Signals/Indicators: Temporary and Permanent; Emergency Protection of track: Single Line & Double Line, Detonators & Flare Signals.	1	
		HOER, Leave, Pass, D&AR & Conduct Rules. Stock heads of Accounts, Disposal of released and surplus materials, Indenting procedure, Issue note and Write-off statement. Stock verification and Inventory Control Technique.	1	
6	33.6	Computer:		8
		Introduction to Automatic Guiding Computer (ALC) Hardware & Win ALC Software, Working in Geometry, Measuring Run & Design Mode.	2	
		DRP, CMS, CWS	2	
		Hands on training on calculating Vm values in 4-point lining and Versine, X and K values for 3 point lining and Levelling using OEM'S manual.	2	
		Hands On training on using ALC measuring run data to computing best curve. Also making data file for known Track Geometry and Front Offset's.	2	
8	33.7	Library	2	2
9	33.8	Visit to CPOH & Track Machines Working Site	8	8
10	33.9	Introduction & Valediction	2	2
		Total	68	68

- Note:**
- 1. Eligibility: Promoted SSE.**
 - 2. To bridge the gap between theory and practical, 1 visit to CPOH and 1 day visit to Track Machines Working Site shall be arranged for demonstration and proper understanding of machine working.**
 - 3. Practical demonstration in Model rooms shall be given along with theoretical sessions as and when required besides Practical sessions specifically earmarked for Model Rooms.**