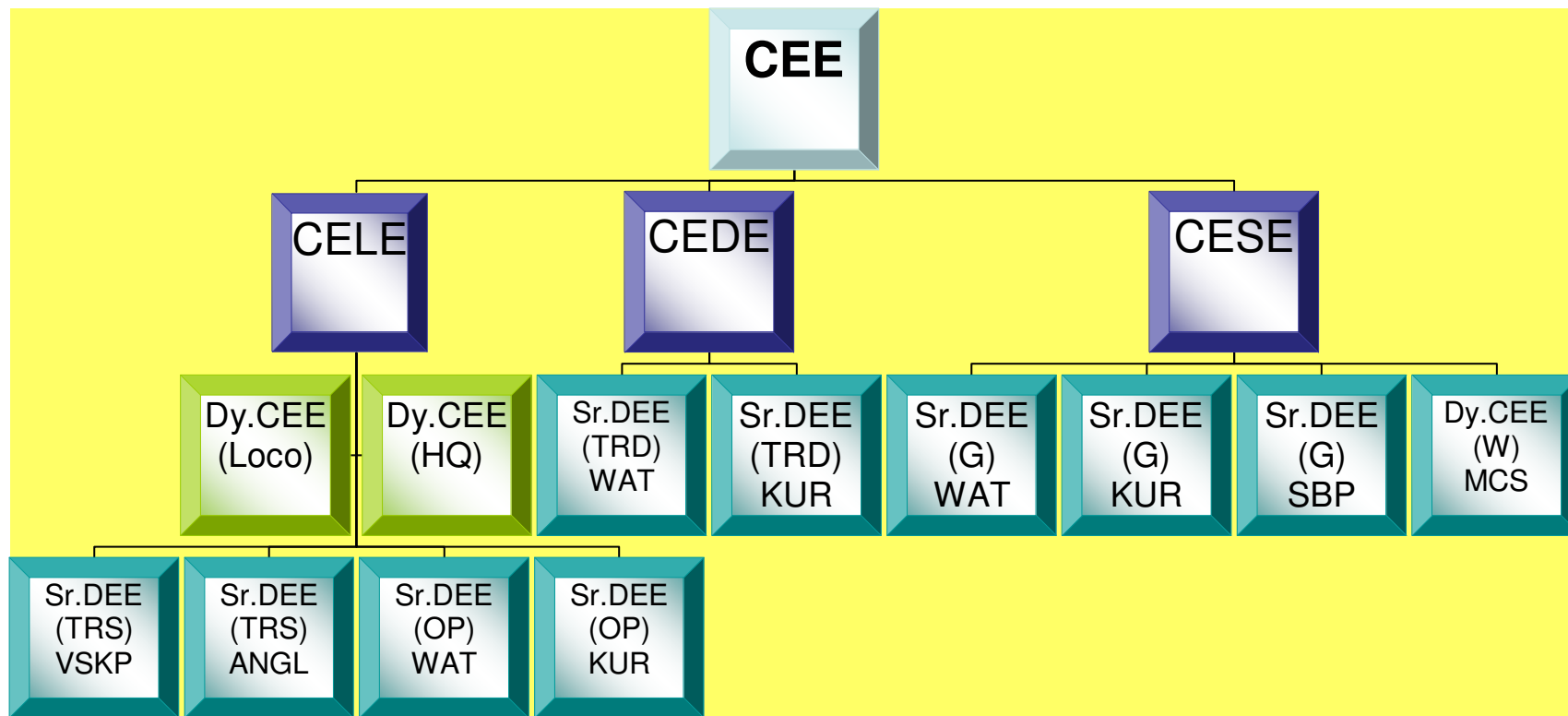


EAST COAST RAILWAY
(Electrical Department)

Electrical Department is headed by CEE in HAG and is assisted by 3 SAG Officers. For Electrical construction works there is one SAG officer-CEE (Con) under CAO (Con).

1.0 ORGANIZATION CHART OF ELECTRICAL DEPARTMENT



1.1 TOTAL STAFF IN ELECTRICAL DEPARTMENT OF ECoR:

STAFF	SANCTIONED	ON ROLL
GAZETTED	57	55
NON-GAZETTED	7116	5838

1.2 Particulars Of Electrical Organisation & Functions :

Chief Electrical Engineer (CEE) is the Administrative Head of the Electrical Department, with overall responsibility for efficient working of the department. He is responsible to the General Manager in all matters pertaining to Electrical department such as

- (a) Maintenance & operation of Electric Rolling Stock,
- (b) Electric Traction (Overhead Equipments)
- (c) Electrical General Services including Train Lighting & Air Conditioning.
- (d) All Electrical Construction Works,
- (e) Budget for Electrical Deptt.
- (f) Control of Electrical Cadre of E.Co.Rly.

On behalf of the General Manager, he controls and supervises all electrical works of E.Co.Railway, whether executed by Divisions or by independent outside agencies.

CEE also functions as Electrical Inspector to the Government of India, as defined in Section 36(1) of Indian Electricity Act – 1910, in respect of all high voltage electrical installation and equipment owned by the Railways. This includes all high voltage electrical installations in the Railway including transmission lines, 25 KV feeder lines, sub-stations, switching stations, which although running outside Railway premises, are, nevertheless, owned by the Railway. He is responsible for administration of the Electricity Rules in the Railway.

With regard to electrical installations, in his capacity as Electrical Inspector, CEE is mainly responsible for the following:

- i. Scrutiny and approval of the layout and designs for sub-stations, OHE and other installations for compliance with the Indian Electricity Act and Rules.
- ii. Inspection of the completed installations, either personally or by deputing his officers, for compliance with the safety requirements;
- iii. Approval for the energisation of the new High Voltage Electrical installations.
- iv. Statutory inspection of the installations periodically under Rule-46 of the Indian Electricity Rules;
- v. Investigation of Electrical accidents and issuing directives to prevent their recurrence;
- vi. Guiding and giving instructions from time to time to the Divisions and Workshops and other Electrical Officers for strict compliance with the provisions of Indian Electrical Rules and Regulations for the installations under their jurisdiction.

2.0 Duties Of Electrical Officers:

CEE is the Cadre Controlling Officer for all electrical officers in ECoRly. Chief Electrical Engineer of East Coast Railway functions over the entire East Coast Railway. The function of the Electrical department extends over the three Divisions/Workshops under ECoR namely:

(i). Khurda Division (KUR) (ii). Sambalpur Division (SBP) (iii). Waltair Division (WAT) (iv). Electrical portion of works in Carriage Repair Workshop, Mancheswar. (v). Electrical portion of works under CAO(C) BBS.
(vi). Elect. Loco Shed at VSKP in WAT Division and another at ANGL in KUR Division. (vii) Memu car shed (under construction) at Khurda.

CEE is assisted by three Senior Administrative Rank officers i.e. CELE, CEDE & CESE who assist CEE in the proper working of the department, the area of responsibility of each is defined by CEE. There is also another Officer of SAG rank i.e. CEE (Con) under technical control of CEE who is responsible for all major Electrical Construction works under administrative control of CAO/Con/BBS.

i) CELE/ECoR/HQ:

CELE/ECoR/HQ is the functional head of *Locomotive & Operation* who is responsible for formulating guidelines for the Divisions to oversee the operation and maintenance of *electric rolling stock*, plan for material and man power and guide field officers in technical, establishment and industrial relation matters, liaison with RDSO, production units and industry for development of new equipments, materials and other technical subject and also prepare technical reports for Railway Board relating to *Locomotive & Operation* . He is assisted by Dy. CEE/HQ & Dy.CEE / Loco.

ii) CEDE/ECoR/HQ:

CEDE/ECoR/HQ is the functional head of *Traction Distribution* who is responsible for formulating guidelines for the Divisions to oversee the operation and maintenance of assets, plan for material and man power and guide field officers in technical, establishment and industrial relation matters, liaison with RDSO, production units and industry for development of new equipments, materials and other technical subject and also prepare technical reports for Railway Board relating to *Traction Distribution*. He is assisted by AEE/HQ.

iii) CESE/ECoR/HQ:

CESE/ECoR/HQ is the functional head of *General Services, Operation and Maintenance of Train Lighting & AC coaches*. He is responsible for formulating guidelines for the Divisions to oversee the operation and maintenance of assets, plan for material and man power and guide field officers in technical, establishment and industrial relation matters, liaison with RDSO, production units and industry for development of new equipments, materials and other technical subject and also prepare technical reports for Railway Board relating to *General Services, Train Lighting & Air Coditioning* . He is also incharge for maintenance of all service buildings in HQ office including HQ colony. He is assisted by EEE/G and AEEE/HQ-II.

3.0 POWERS OF ELECTRICAL OFFICERS:

Powers are being exercised as delegated by the General Manager through schedule of powers on matters of works, establishment and stores requiring to be used for upkeep and operation of electrical assets.

(i) The procedure followed in the decision making process, including channels of supervision and accountability:
Technical control as per the duties assigned by Chief Electrical Engineer as mentioned above. Regarding financial matters as per the powers delegated through schedule of powers on miscellaneous matters, works, establishment rules, etc. Supervision and accountability is as per the channel mentioned in organizational chart.

(ii) Norms set by the department for the discharge of its functions:
Norms as specified in manuals of AC Traction and Rolling Stock, Schedule of dimensions, General conditions of Contract, Schedule of Powers, Indian Electrical Rules, Railway Board Instructions, are being followed in discharging of the duties.

(iii) Rules, regulations, instructions, manuals and records, held or under control or used by the employees for discharging functions:
Manuals of AC Traction Rolling Stock; Compendium of General Services, Train Light & Air Conditioned Coaches; Maintenance instructions issued by Railway Board; RDSO, CORE, Chittaranjan Locomotive Works, Integral Coach Factory, Rail Coach Factory, CAMTECH; Original Equipment Manufacturers, Indian Standards specifications, Railway D&A Rules, Conduct Rules, Establishment serials, etc are being followed in discharging day to day works.

(iv) Statement of the categories of documents that are held by the department or under its control:
The following documents are being maintained:

- * As erected drawings, layout plans of traction distribution and installations.
- * Traction Working Rules (Appendix-G of Station working rules)
- * Failure analysis reports
- * Technical circulars, Special Maintenance Instructions, Modifications Sheds.
- * Drawings pertaining to different items of modifications, alterations for efficient working of installations, locomotives.

(v) The particulars of any arrangement that exists for consultation with, or representation by, the members of the public in relation to the formulation of its policy or implementation thereof;
The members of the public can communicate the authority through DGM at Zonal Level and DRM at Divisional Level.

IMPORTANT STATISTICAL INFORMATION

1. TRAIN LIGHTING & AIR CONDITIONING:

(a). General Services:

Sl.No	Particular	PUI	BBS	SBP	WAT	Total
1	No. of TL coaches in services	666	310	57	418	1451
2	No. of AC coaches in service	160	64	8	40	272
3	No. of Exp trains/rakes maintenance at depot	14 / 30	14 / 19	4 / 4	7 / 20	39 / 73
4	No. of passenger trains/rakes maintenance at depot	4/9	1/2	NIL	5/10	10/21

(b). Temperature Setting In AC Coaches:

East Coast Railway shall progressively change these settings in all AC Coaches by Electronic Thermostats with single temperature setting for summer and winter are as under:

Summer	23° C- 25° C
Winter	19° C- 21° C

(c). Light Fitting In Coaches:

The fluorescent light fittings have been provided in every class of Coaches. The wattage of fluorescent lights/lamps and other light fittings used in various classes of Coaches are as under:

Night light fitting in AC Coaches & Sleeper Coaches	25W, 110V
Ceiling light fittings with fluorescent lamp in all Coaches	18W, 110V
Wash basin incandescent lights	12W, 110V
Reading light fitting in AC Coaches	10W, 110V / 25W, 110V

Level of Illumination:

Class of Coach	No. of fittings per bay	Minimum illumination
AC compartment	02	30 lux
2 nd class compartment	02	30 lux
Pantry compartments	02	30 lux
Lavatories + Corridor	01+02	16 lux

Note: -

* The level of illumination is measured on a horizontal plane 840 mm above floor level and 500 mm from the back of every seat.

* Average of illumination is obtained by dividing the sum of illumination at each seat by the number of seats. The windows and doors is closed to avoid outside lights influencing the readings.

(d). Fans In Passenger Coaches:

The size and number of fans in various types of Coaches provided are given below:

Category of compartment	Size	No.of fans
AC Coaches	300mm	1 per bay
2 nd class	400mm	3 per bay for BG sleeper Coaches

TYPES OF FANS & THEIR CONTROL:

The types of fans to be provided in various classes and their

S N	Class of Coach	Location	Type of Fan	Where mounted	Method of Control
1	2 nd AC	Bay	Fixed	Ceiling	Switch for 2 speed operation
2	3 rd AC	Bay	Fixed	Ceiling	
3	II	Bay	Fixed	Ceiling	Switch for each fan

2. GENERAL POWER SUPPLY & SERVICES

(a) Assets of General Power & Services

Sl.No	Particulars	KUR	SBP	WAT	MCS	HQ	Total
1	No. of stations electrified as per guidelines .	118	62	114	--	--	294
2	No. of stations provided with water coolers as per guidelines	14	11	13	--	--	38
3	No. of water coolers provided at stations	40	19	29	--	--	88
4	No. of DG set Provided	31	87	167	4	6	295
5	No. of Sub stations	54	19	69	10	14	166

(b). Scale Of Lighting In Station & Platform:

Fluorescent light fittings and Metal Halide type of fittings have been used to illuminate the station platforms, Station Approach and various passenger services related areas like Concourse, Waiting hall, Retiring Room & Booking office etc. The average illumination level provided in different category of stations is as follows:

Category 'A' (Zonal Rly HQ & State Capital)	-50 Lux.
Category 'B' (Divisional Rly HQ & Divisional HQ)	-30 Lux
Category 'C' (Others Small Stations)	-20 Lux.

(c). Fannage Provision In Station Platform:

* One row of fans has been provided in Platforms where Platform width is between 6 to 9 Mtrs.

* Two rows of fans have been provided in Platforms where platform width is more than 9 Mtrs.

(d). Provision Of Water Coolers In Station:

Water Coolers have been provided at all stations which deal with an average of 1000 Passengers (Inward & Outward) or more per day and where piped water supply and electricity is available.

(e). Illumination Of Manned Level Crossing Gates:

All manned and cabin operated level crossing gates are required to be provided with adequate light in both side of the track. Around **90%** of manned and cabin operated L/C gates have been electrified and provided illumination during nighttime. The work, on electrification of remaining manned and cabin operated L/C gates are under different stages of execution.

3. TRACTION DISTRIBUTION

(a). Assets of AC Traction Distribution

Sl.No.	Particulars	KUR	WAT	Total
1	Electrified Route KM	701	732	1433
2	Electrified Track KM	1727	1390	3117
3	No. of traction sub-stations	10	20	30
4	No. of TSS under construction	4	1	5

Almost all the lines of Khurda Road and Waltair divisions of East Coast Railway have been electrified with AC 25000 volts. Before introduction of 25 KV AC traction, the following notifications/warning to road users is being given by Railways.

I. Public Notification

“Notice is hereby given to all users of Railway lines and premises situated on the completed sections of East Coast Railway that the 25000 volt, 50 Hz, AC over head traction wires will be energized on or after the date specified against the section. On and from the same date the overhead traction line shall be treated as live at all times and no unauthorized person shall approach or work in the proximity of the said over headline”.

II. Warning to Road users

“It is notified for information of the public that in connection with introduction of 25 kV AC electric traction over the section of the East Coast Railway, height gauges have been erected at all the level crossings with clear height of 4.67m above road level with a view to prevent loads of excessive height from coming into contact or dangerous proximity to live traction wire.

Public are hereby notified to observe the height specified above for the purpose of loading vehicles and to see that the loads carried in road vehicles do not infringe the height gauges under any circumstances.

The dangers of a load of excessive height are as follows:

- * Danger to the height gauge and consequent obstruction to the road as well as the Railway line.
- * Danger to the materials or equipment carried or the vehicle itself.
- * Danger of fire and risk of life due to contact with or dangerous proximity to the conductors.

III. Public Caution Board's regarding "High voltage/25000 volts" have been provided in Station Premises, Waiting halls, Foot over bridges etc.

(b) Electrical Supply to ECoR.

For running of trains in Electric traction in ECoR, Power Supply are taken from AP, Orissa and Chhatishgarh State. There are 9 TSSs under DISCOMs of AP, 15 TSS under DISCOMs of Orissa and 6 TSS under DISCOMs of Chhatishgarh.

ECoR is paying about Rs 250 Crore per year to different electricity Boards for traction energy purpose.

(c). Progress of Electrification works:-

- * Main line from BHC to DVD electrified in phased manner and trains are running in electric traction. Also sections CTC-PRDP, KUR-PUI, JKPR-DATR, BRAG-TLHR and TLHR-ANGL are electrified.
- * Tomka-Jaroli electrification under progress
- * Electrification of 2nd line between BRAG-RJGR, BRAG-CTC and 3rd line between BRAG-KUR is in full swing.
- * The work for Platform extensions to accommodate 24/26 Coaches at 23 out of 41 Stations over ECoR (KUR-18, WAT-7 & SBP-16) has been completed and in remaining 18 stations TDC is Dec'09.

4. ELECTRIC LOCO SHED:

There are 2 Electric Loco Sheds, one at VSKP with a holding of 171 electric locos (highest in Indian Railways) and another at Angul, with a holding of 45 locomotives.

(a) Electric Loco Sheds VSKP

Electric Loco shed, Visakhapatnam was commissioned in 1982 with a holding of 35 loco. Present holding is 171 as detailed below.

Type	WAM4	WAG5	WAG6A	WAG6B	WAG6C	WAG7	Total
Holding	24	108	4	6	6	23	171

(b) Electric Loco Shed Angul:

Electric shed was commissioned with loco holding 24 WAG5 Locomotives on 8.12.2005. Present holding is 45 WAG7 locomotives.

5. Electric Loco Operation:

The Kottavalasa-Kirandul section, popularly known as K-K line, is having very arduous terrain with gradients up to 1 in 60, at a stretch as long as up to 70 KM and with number of reverse sharp curves up to 8 degrees. There are 1271 bridges and 58 tunnels in this section. The highest point in the broad gauge is situated at an altitude of 997.6 Mts at Similiguada station. Three WAG-5 locos in a consist or two WAG-6 loco multiple is utilized to work the loaded trains.

ECoR maintains a territorial outage of 195 goods locomotives & 52 coaching locomotives.