



Garvita

NEWS BULLETIN

Vol. : 5 • Issue : 1 • January, 2017

From the Desk of Patron



It gives me immense pleasure to learn that the **Institution of Railway Electrical Engineers (IREE)** is bringing a news letter on various developments and achievements in electrical department on the **auspicious day** when the **Electric Traction** was introduced on IR for the first time on **3rd Feb, 1925**.

IR is witnessing administrative and technological reforms during recent years. As a major reform, traction and rolling stock departments have been regrouped in order to achieve the **optimum** utilisation of **manpower** and **material resources**.

On 3rd Nov.'16, IREE organised an International seminar on **Decarbonisation of Indian Railways-Mission Electrification** to give proper directions required for growth of IR.

The role of Electrical Engineers on Indian Railways has grown manifold since 1925. Today, about **70% freight** and more than **60% passenger traffic** is being hauled by **electric traction**. While it is a matter of great pride to know the critical roles being played by Electrical Engineers in providing reliable, economical and efficient services including management of diesel fleet of IR. However, I see much more challenging tasks lying ahead as under:

- Cumulative savings of **Rs 41,000 crores** in electric traction bill over **10 years** i.e. **2015-25**,
- Production of **electric locomotives** at DLW,
- Install solar power plants for **1000 MW** by **2020**,
- Install **windmill** power plants for **200 MW** by **2020**,
- Introduction of **12000 HP** locomotives,
- Strengthen financial resilience of IR and achieve reduction in the input cost to IR by **Rs 3,000 crores** in **three** years,
- Use of **open access** policy to **reduce** cost of **power purchase**,
- Acquisition of 200 kmph locomotives,
- Development of **2x25 kV OHE** for 160/200 kmph routes and
- More than **10,000 km** transmission line to let IR avail advantage of open access without going through state controlled network.

First transformation is that unified traction policy has been issued i.e. homing of electric locos in diesel shed and vice versa to reap benefits of synergic working.

All above things are possible only when we **strengthen** our **design, manufacturing** and **execution capabilities** and also develop high quality maintenance practices for electric & diesel locomotives and other assets which can make India a hub for manufacturing high HP, High speed locomotives and train sets. These areas offer great opportunities and challenges for our highly motivated team of young electrical Engineers of IR.

Lastly, I once again **congratulate** the organization of IREE for bringing out this News letter which I believe has become a connecting thread for all electrical Engineers of IR, those serving and also my seniors who had pioneered and nurtured this wing of IR and brought it to this level.

(Ashwani Kumar Kapoor)

Member Traction & ex-officio Secretary to Govt. of India, Railway Board

Our New President



Shri Vinod Kumar Aggarwal, IRSEE Officer of 1980 Batch joined Indian Railway Service of Electrical Engineers on 01.03.1982. After working on various important assignments over Indian Railways, he has joined as Additional Member Electrical and President/ IREE on 02.12.2016.

IREE looks forward for his support and guidance in the future activities.

From the Desk of General Secretary



On the occasion of 6th Railway Electrical Engineers Day being celebrated on 3rd February, 2017 by Institution of Railway Electrical Engineers (IREE). 5th Volume of 'Garvita' News bulletin is being brought out.

This is one more step in the Endeavour of IREE to disseminate and share the technical knowledge among the Railway men. Efforts have been made in this edition to highlight the achievements of Electrical Deptt. which has come a long way due to tireless efforts and commitment by Electrical engineers of Railways to serve the organization. A lot more is required to be done as Electrical Deptt. play a vital role to fulfill the expectations by our customers. This year was a glorious year for IREE under the patronship of Shri Ashwani Kapoor, Member Traction because many technical seminars were organized in collaboration with other technical bodies like Institute of Engineers (IE), IET & ASSOCHAM Specially de-carbonizing of Indian Railways - 'Mission Electrification' on 3rd Nov., 2016 which was widely appreciated by all. All of the Chief Electrical Engineers of Zonal Railways, Production Units, Sr.ED/RDSO & Director/IRIEEN who are also Chairman of their local centres are requested to carry out atleast four activities in a year to make IREE, a vibrant organization. I look forward towards each and every member of Electrical Deptt. for active support in patronizing this news bulletin to keep each of us updated.

(Dayal Dogra)

General Secretary, IREE &
Chief Electrical Engineer, Northern Railway

Achievements of Electrical Department

Electrical Energy Management & Green Initiatives on IR - Policy directives

- "Vision 2020" document of Indian Railways envisages sourcing at least 10% of energy used from renewable sources such as solar power and wind power and saving up to 15% of energy through improved energy efficient appliances.
- To improve efficiency and to explore alternate sources of energy, Indian Railways have already taken a large number of steps & measures for energy conservation and renewable energy including framing of policy directives specially for level crossing gates, remote railway stations, provision of solar street lights, provision of solar water heaters etc.

Initiatives of harnessing renewable energy on IR

Indian Railways is committed to contribute towards improvement of environment. As a first step, REMCL, Railway Energy Management Company Limited, a PSU under RITES was formed on 16th August, 2013. The company has been formed to tap the business potential in the energy sector including green energy, power trading etc.

• Solar energy

One MW solar based power plant at Shri Mata Vaishno Devi Katra station and 500 KW solar based power plant at Varanasi station over Northern Railway became operational on 27.03.2015 and 19.12.2016 respectively taking total installed capacity of renewable energy on IR to about 50 MW



• Wind energy

REMCL has also contributed itself by installing a 26 MW wind based power plant in Jaisalmer during 2015-16.



• LED lights at Stations

511 no. of stations have been provided with LED lights for illuminating platforms over IR. Additionally, 800 stations have also been planned for the provision of LED lights during 2017-18.



Railway Electrification

1210 RKMs of electrification has been completed during the year upto December'16 as compared to 1730 RKMs of electrification during the year 2015-16. Electrification of 29209 RKMs has been completed over IR.

Introduction of Gatiman Express

First high speed train on IR, Gatiman Express with a maximum permissible speed of 160 kmph was introduced and was flagged off by Hon'ble Minister of Railways Shri Suresh Prabhu for its inaugural run on 05.04.2016. The train runs between Hazrat Nizamuddin and Agra hauled by WAP-5, Electric locomotives and maintained at Electric loco shed Ghaziabad, Northern Railway



Introduction of Rajdhani Express on Head on Generation

Hon'ble Minister of Railways, Shri Suresh Prabhu flagged off the first Rajdhani Express train no. 12952 New Delhi - Mumbai Rajdhani on 30.12.2015 to run with WAP-7 locomotives equipped



with Head-On-Generation (HOG) system. It not only improves energy efficiency in the train haulage but also reduces diesel consumption, noise and air pollution. With this, there is no need of power cars and released space can be commercially utilized. Two Shatabdi and three Rajdhani Express trains are currently operating with WAP-7 locomotives equipped with HOG system over NR, ER & WR.

Setting up of captive power plants for reduction in expenditure in electricity bill

To economize the electricity bill by bridging the gap between the cost of generation and current electricity tariff, setting up of captive power plants for Railways' application was identified as one of the key focused area and Railway had planned to set up following captive power plants:

- 1000 MW capacity at Nabinagar, Bihar in JV with NTPC
- 1320 MW capacity at Adra in West Bengal in JV with NTPC
- 700 MW gas based at Thakurli in Maharashtra.

First unit of Nabinagar Power Plant (3x250MW) has become operational since December'16.

Development of a dedicated transmission line network for IR

To ensure supply of electrical energy at reasonable costs to IR and for improved reliability of power supply, 132 kV transmission line between Dadri - Kanpur was commissioned during 2000-01. In continuation Kanpur - Allahabad, a stretch of approx. 200 Kms, 132 kV transmission line is also scheduled to be commissioned by March, 2017.

As a further initiative and long term perspective for IR, transmission lines project at 132 kV of approx. 10,000 Kms. have been proposed during 2017 in Capital funding through budgetary and extra budgetary support. Four transmission lines MGS-HWH (700 Kms), DLI-Bharuch (1055 Kms), DLI-Chennai (2200 Kms) and Mumbai - HWH (1670 Kms) have also been proposed under PPP mode.

Procurement of power through open access

IR has been granted the status of Deemed Licensee under third proviso to section 14 of the Electricity Act 2003. It has been corroborated by CERC in its order dated 05.11.2015. This is a major paradigm shift for Railway as IR can now arrange power for its own use as a distribution company instead of taking power from DISCOMs as a consumer. IR's vision of drawing electrical energy as deemed Licensee was realized on 26th November, 2015 when it is started drawing approx. 200MW power on CR from RGPPL in Maharashtra.

The cumulative procurement of power of IR is presently approx. 2000 MW and shall result into annual savings to the tune of about Rs. 2500 Crores in traction energy bills on business as usual mode. The estimated cumulative savings due to such initiatives shall be approx. Rs. 41,000 Crore for electric traction bill in next 10 years i.e. 2015 - 25.

Conversion of 1500V DC to 25 kV AC Traction system over Mumbai Suburban area of CR & WR

The year 2016 has also witnessed a complete transition of the traction system from 1500 V DC system to 25 KV AC system at Mumbai over Central and Western Railway. A long awaited dream was realized when the section Mumbai CSTM to Panvel on Harbour line was charged on 25 kV AC system during March, 2016.

Use of Solar Power in passenger coaches (Green Initiative)

Existing train lighting in coaches is catered through SG/EOG system, which envisages generating equipment requiring high



maintenance and consumption of fossil fuel. Keeping in line with aspiration & sensitivity to reduce carbon foot prints, Solar PV units on two BG GS coaches have been installed (one since December, 2014 & another since November, 2016) for technology demonstration. Three coaches on Science Express have also been installed with Solar PV panels on roof top of coaches since October, 2015. Earlier 19 NG coaches of Kangra Valley & KLK-Shimla section were installed with Solar panels during 2011-12. The technical evaluation based on trials proved that it is feasible to meet complete electric power requirement of lighting & fannage of a non AC coach even in summer through 6 kWp capacity Solar PV modules fitted on the roof of the coaches.

Manufacturing of high horse power electric and diesel locomotives

A contract has been awarded to M/s Alstom during November, 2015 for the manufacturing of WAG-12, 12000 hp electric locomotives at Madhepura Electric Locomotive Manufacturing Workshop.

Similarly, a contract has been awarded to M/s General Electric for the manufacturing of 4500 & 6000 hp diesel locomotives at Marhaura Locomotive Manufacturing Workshop.

The first electric & diesel locomotive is scheduled to be delivered during 2017-18.

Escalators and Elevators

370 escalators and 185 elevators have so far been installed over IR upto December, 2016.



Highlights of International Conference on Decarbonisation of Indian Railways - Mission Electrification held on 3rd November, 2016



Minister of Railways Shri Suresh Prabhakar Prabhu inaugurated the International Conference on Decarbonisation of Indian Railways - Mission Electrification organized by Institution of Railway Electrical Engineers

(IREE) in partnership with IET, IRCON, DMRC, REMCL, RVNL & ASSOCHAM India. Shri A. K. Mital, Chairman, Railway Board, Shri Ashwani Kumar Kapoor, Member Traction, Railway Board, other Railway Board Members and senior officials were also present on the occasion.

A mobile app "RAIL SAVER" was launched by the Minister of Railways Shri Suresh Prabhakar Prabhu. This app is expected to reduce energy consumption by 15 - 20%. Speaking on the occasion Shri Prabhu said that IR is looking forward to make Railways greener by electrifying another 24000 kms of Rail Tracks to the existing 28000 kms in the next few years.

Addressing the conference, Shri Mital, Chairman Railway Board said that by adding 24000 kms under Mission

Electrification about 90% of the tracks under IR will become electrified and electricity consumption will be reduced under Mission Electrification through the adoption of energy efficient appliances/equipments.

He also said that Indian Railways has set a target of 40% of cumulative electricity generation capacity through renewable energy by 2030.

Shri Ashwani Kumar Kapoor, Member Traction, Railway Board said that Indian Railways has embarked upon Mission Decarbonisation and Mission Electrification with an aim to reduce dependence on imported fuel and rationalize the cost of energy for Railways.

The sanction of RE works of 950 RKMs to PGCIL, 564 RKMs to RITES, 338 Kms to IRCON & 377 RKMs to RVNL was also handed over by Hon'ble Minister of Railways Shri Suresh Prabhakar Prabhu during the Conference.



IREE GOVERNING BODY

Patron

Shri Ashwani Kumar Kapoor

Member Traction & ex-officio Secretary to Govt of India,
Railway Board

President

Shri V. K. Aggarwal
Addl. Member Electrical
Railway Board

General Secretary

Shri Dayal Dogra
Chief Electrical Engineer
Northern Railway

Treasurer

Shri A. K. Singhal
Chief Electrical Service Engineer, Northern Railway

Organising Secretary

Shri R.N. Rajpoot
Chief Project Manager, RVNL

CHAIRMEN OF LOCAL CENTRES

Chief Electrical Engineers/ All Zonal Railways, ICF, RCF, CLW & CORE, Sr. ED TI/RDSO and Director/IRIEEN

Northern Railway Headquarter, Room No. 307, Baroda House, New Delhi

Phone : +91-11-23387198 Mob. : +91-9717630300 E-mail : ireenewdelhi@gmail.com Website : www.ireeindia.org