WELCOME

22nd National Award for Excellence in Energy Management

Shri. M. Prasada Rao
IRSEE
Senior Divisional Electrical Engineer
Secunderabad Division
South Central Railway

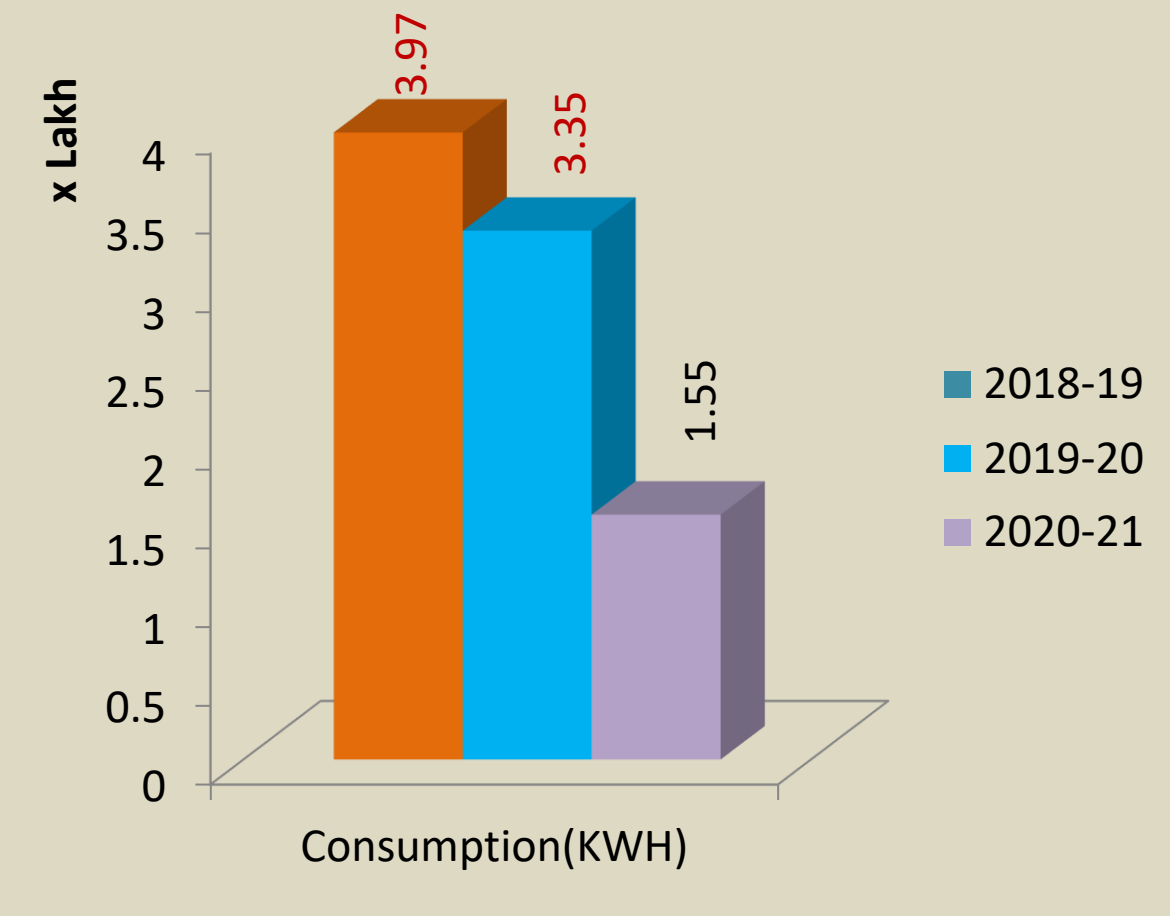
Brief introduction

- Khammam Railway station falls under NSG3 category in Secunderabad Division which is one of the major railway station situated between SC-New Delhi route.
- The station building has a total built up area of 24870 sq. mtrs with Air-conditioned area of 112sq. mtrs.
- The total electrical connected load of the building is 259KW.
- Power supply is provided through 2x250KVA Transformers installed at 11KV/415Volts Substation.
- 55KVA Diesel Generator sets have been installed at the station building for backup supply. The station Building is 100% LED LIT

Energy Scenario

	Parameter	Unit	2018-19	2019-20	2020-21
	Annual Electrical Energy Consumption, purchased from utilities	kWh	393745	331384	151740
	Annual Electricity Generation (in-situ), through Diesel Generating (DG)/Gas Generating (GG) Set(s)	kWh	3685	3787	3428
	Total Annual Electricity Consumption, Utilities + DG/GG Sets	kWh	397430	335171	155168
	Annual Cost of Electricity Consumed from utilities	Rs	33,30,000	27,80,000	13,03,411
	Annual Cost of Electricity generated through DG/GG Sets	Rs	2,21,100	2,27,220	2,05,680
	Total Annual Electricity Cost, Utilities + DG/GG Sets	Rs	35,51,100	30,07,220	15,09,091
	Built Up Area	Sq. Mtrs	14790	14790	14790
	Connected load	kW	236	241	259

Energy Scenario



- Consumption has reduced by 59.69% from 2018-19 to 2020-21

Energy Parameters of Khammam Railway station building

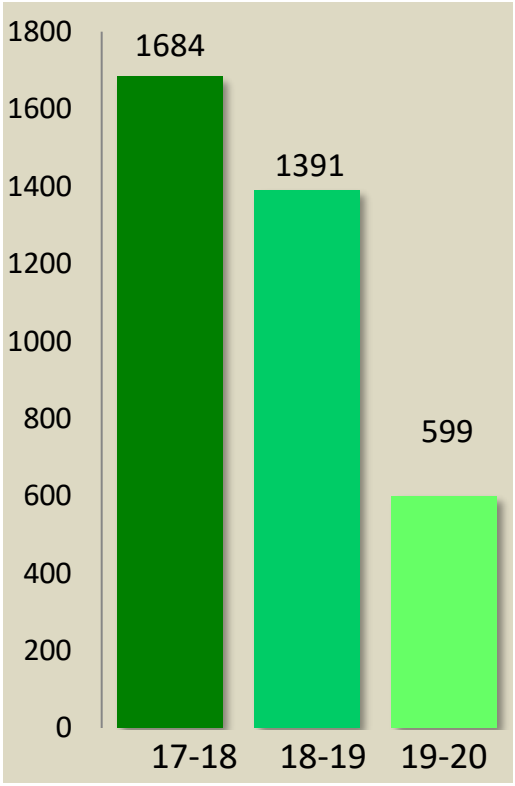
SEC (KWH/KW)

SEC has been reduced by 64.42% from 2018-19 to 2020-21.

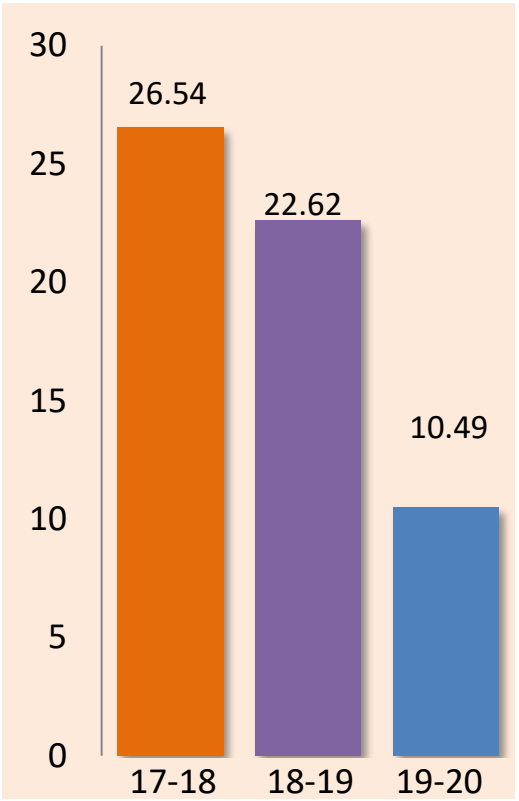
EPI (KWH/Sq. Mtrs)

SEC has been reduced by 60.47% from 2018-19 to 2020-21

SEC (KWH/KW)

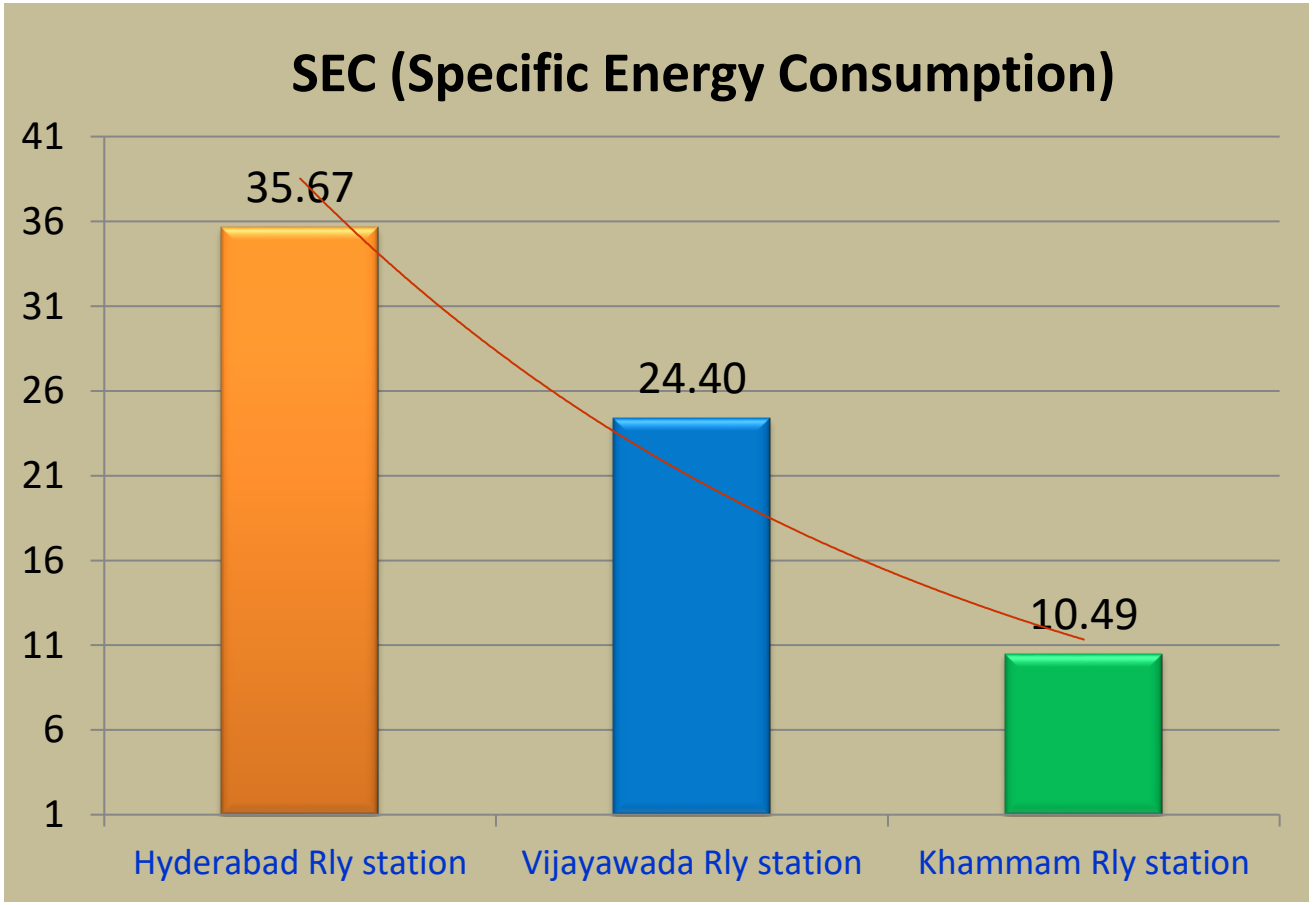


EPI(KWH/Sq. Mtrs)

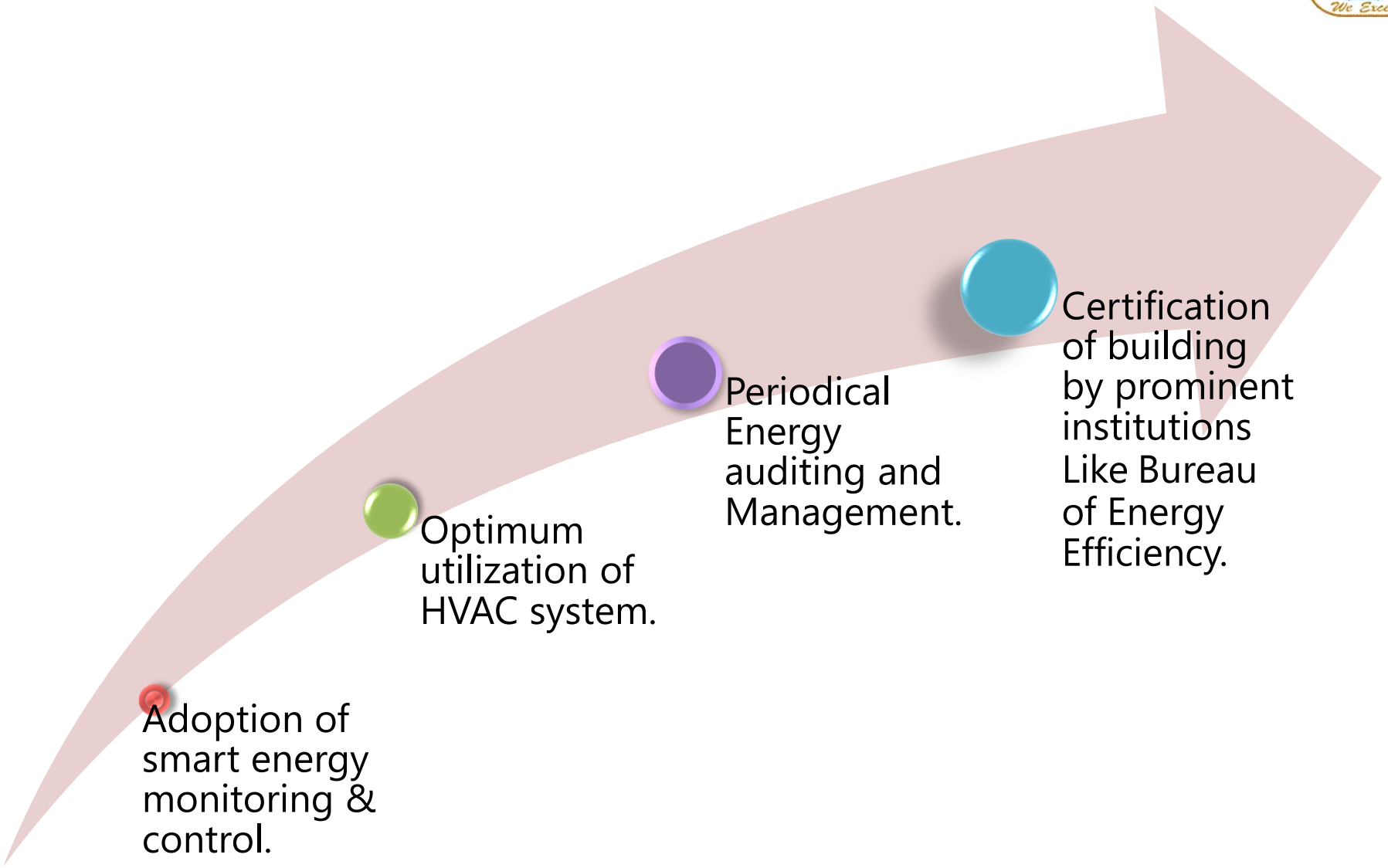


Information on Competitors/National Benchmarking

Direct Competitors & National Benchmarking :



Road Map to achieve Global Bench Marking



Short Term Targets/Major En.Con projects planned FY2021-22

- Solar Natural water coolers in place of conventional water coolers to utilize maximum renewable energy sources.
- Provision of BLDC fans in place of conventional non star rated ceiling fans

Sl No	Project Description	Savings in kWh/Annum	Investment in Rs.	Savings in Rs.	Payback period in years
1	Solar Natural water coolers (4 Nos)	8600	₹ 6.00 Lakhs	₹ 73,100	8.2
2	Provision of BLDC fans	14000	₹ 2.30 Lakhs	₹1,19,000	1.93
	Anticipated Savings	22600	₹ 8.30 Lakhs	₹1,192,100	

Long Term Targets/Action plan

- All the Major loads (HVAC plants, AHU, Pumps, etc.) will be monitored online for early identification and rectification for avoiding equipment failures thereby promoting effective utilization of assets.
- Installation of suitable On grid solar power plant (On site/off site).

Energy Saving Projects implemented in last 3 years

- Reducing the Energy consumption by Focussing on Energy efficient alternatives, latest advance technology for energy monitoring & optimization of consumption.

Major En.con projects implemented in 2018-19

Sl No	Project Description	Savings in kWh/Annum	Investment in Rs.	Savings in Rs./Annum	Payback period in years
1	Provision of timers for water coolers	5092	₹ 0.1 Lakh	₹ 0.42 Lakh	0.23
2	Use of Renewable energy sources (5 Hp Solar Pumps & 10kWP On Grid solar)	24637	₹ 9.5 Lakh	₹ 2.04 Lakh	4.65
	Savings Achieved	29729	₹ 9.6 Lakh	₹ 2.46 Lakh	3.9

Energy Saving Projects implemented in last 3 years

Major En.con projects implemented in 2019-20

Sl No	Project Description	Savings in kWh/Annum	Investment in Rs.	Savings in Rs./Annum	Payback period in years
1	Provision of energy efficient LED lighting in place of T5 fittings.	37624	₹ 4.0 Lakh	₹ 3.10 Lakh	1.29
2	Optimization of working of Air conditioning (increasing temperature by 3°C) (22°C to 25°C)	2953	Nil	₹ 0.24 Lakh	0
3	provision of 5 HP solar Pump	21783	₹ 7.0 Lakh	₹ 1.80 Lakh	3.88
	Savings Achieved	62360	₹ 11.0 Lakh	₹ 5.14 lakh	

Energy Saving Projects implemented in last 3 years

Major En.con projects implemented in 2020-21

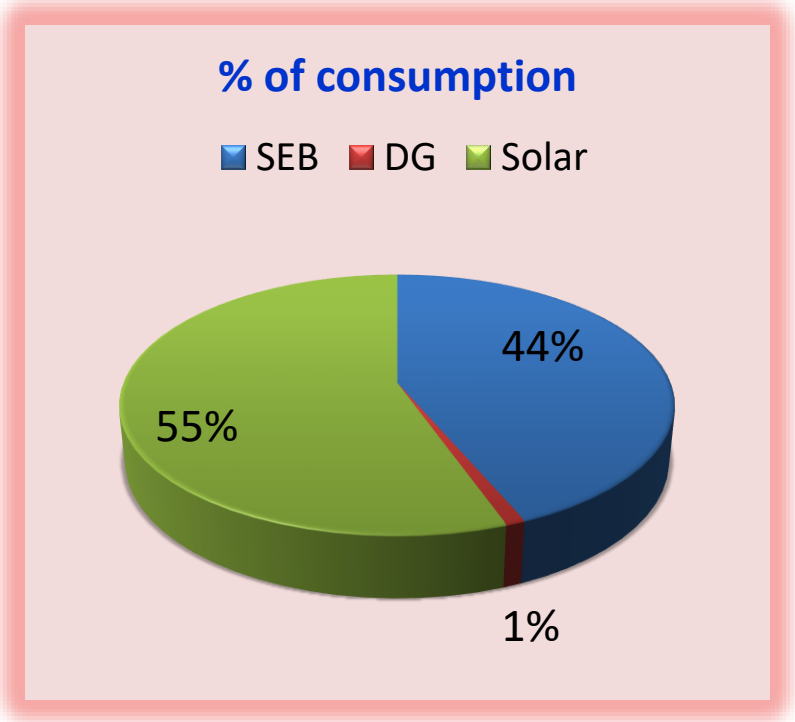
	Project Description	Savings in kWh/Annum	Investment in Rs.	Savings in Rs.	Payback period in years
1	Energy efficient AC units	6782	₹ 3.7 Lakh	₹ 0.56 Lakh	6.6
2	Bifurcation of 30% & 70% Fans circuits	11213	₹ 0.40 Lakh	₹ 0.94 Lakh	0.42
3	Provision of BLDC fans in place of conventional fans	6336	₹ 1.90 Lakh	₹ 0.53 Lakh	3.58
4	provision of 100 kWP Solar Plant	146000	Under PPA	₹ 7.53 Lakh	-
5	Bifurcation of 30% & 70% Lighting circuits	9314	₹ 0.40 Lakh	₹ 0.78 Lakh	0.51
	Savings Achieved	179645	₹ 6.4 Lakh	₹10.34 Lakh	

Year	No of Energy saving projects	Investment (in INR million)	Electrical savings (Million kWh)	Savings (INR Million)
FY 2018-19	Two	₹ 0.96	0.0297	₹ 0.246
FY 2019-20	Three	₹1.10	0.062	₹ 0.51
FY 2020-21	Five	₹ 0.64	0.179	₹ 1.03

Utilization of Renewable Energy sources

Renewable energy projects implemented

- 110 kWp ON Grid solar rooftop power plant.
- 3 Nos of solar pumps (5 HP) installed



- With the above, we able to generate 1.92 Lakh units per annum
- This contributes 55 % of total energy consumption
- Reduction of carbon emissions by 173 Tons per annum.

Utilisation of Renewable Energy sources

Technology	Type of Energy	Onsite/ Offsite	Installed Capacity (kWp)	Generation (Million kWh)	% of overall electrical energy
Solar PV (On-Grid)	Electrical	Onsite	110 kWp	0.16	46.7 %
Solar PV (Pumps)	Electrical	On site	15 Hp	0.029	8.62 %

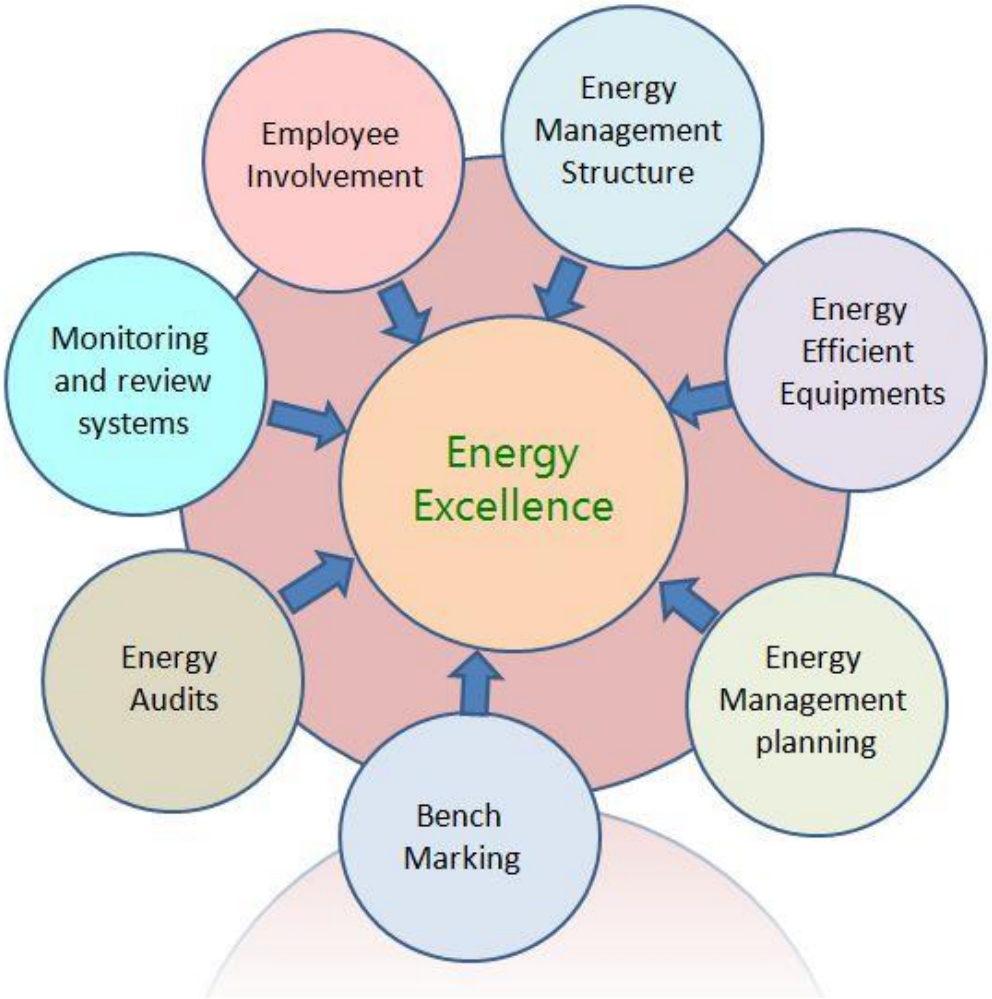
On site 100 kWp solar plant,

On site 10 kWp solar plant

5 HP solar pump panels

Energy Objectives

- To Conserve Energy
- To increase the use of Renewable energy
- To reduce the energy losses.



Benefits achieved by implementing of other than solar measures

Energy efficient inverter type AC units

All the AC units at Khammam are energy efficient Inverter type .

- Energy Conserved: 0.07 Lakh kWH/Annum

Super energy efficient BLDC Fans

80 Nos of super energy efficient BLDC fans were provided in place of conventional ceiling fans.

- Energy Conserved: 0.06 Lakh kWH/Annum

100% High efficacy LED Lighting

Entire the station building illuminated with high efficacy LED lighting in place of conventional lighting.

- Energy Conserved: 0. 37Lakh kWH/Annum

Benefits achieved by implementing of low cost & No cost technologies

Provision of Timers for 30% & 70% High mast

Timers provided for 30% and 70% of High mast lighting as per requirement

- Energy Conserved: 0.26Lakh kWH/Annum

Provision of Timers for 30% & 70% fans and lighting circuits

Timers provided for 30% and 70% of fans & lighting as per requirement

- Energy Conserved: 0.19Lakh kWH/Annum
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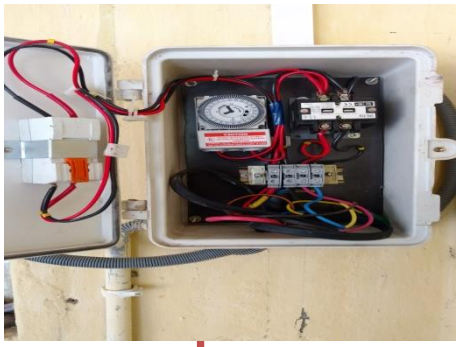


Provision of Occupancy sensors

Occupancy sensors provided in officers chambers for switching of lighting load & AC units as per occupancy.

Optimization of working of Air conditioning (increasing temperature by 3°C) (22°C to 25°C)

Temperature settings

Optimization of working of Air conditioning (increasing temperature by 3°C) (22°C to 25°C)

Energy Conserved: 0.029 Lakh kWH/Annum

Energy Policy & Salient features

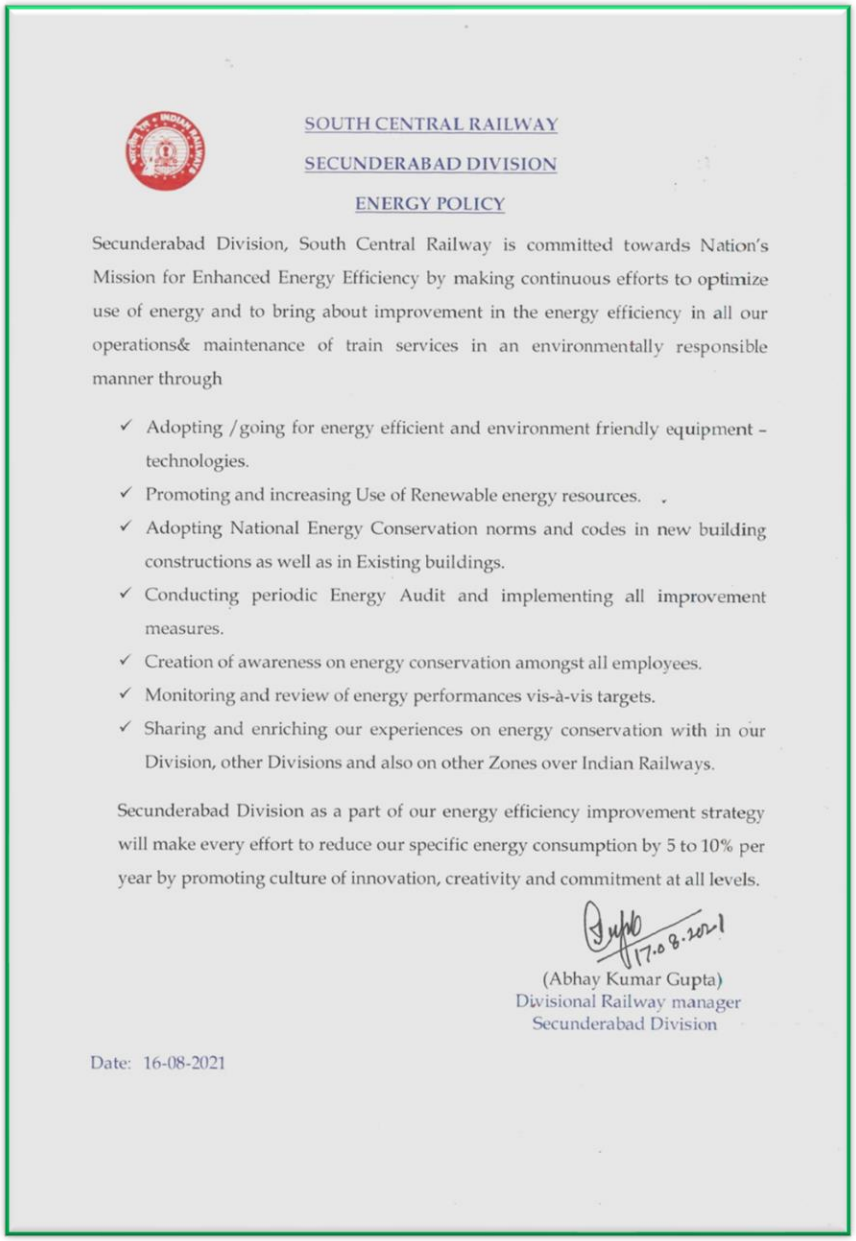
Promoting	• Promoting and increasing use of Renewable energy
Conducting	• Conducting energy audits and implementing all improvement measures
Monitoring	• Monitoring and review of energy performances
Sharing	• Sharing our experiences on energy conservation with other Divisions & Zones over Indian Railways
Awareness	• Creating awareness on energy conservation amongst all employees

Energy Policy & Salient features

We have our own energy policies to meet energy demands and to conserve energy as part of Green Energy.

The major policies includes …

- State of art technology electrical appliances
- Increasing use of Renewable energy resources
- Conducting periodic Energy Audit and implementing all improvement measures.



SOUTH CENTRAL RAILWAY

SECUNDERABAD DIVISION

ENERGY POLICY

Secunderabad Division, South Central Railway is committed towards Nation's Mission for Enhanced Energy Efficiency by making continuous efforts to optimize use of energy and to bring about improvement in the energy efficiency in all our operations& maintenance of train services in an environmentally responsible manner through

- ✓ Adopting /going for energy efficient and environment friendly equipment – technologies.
- ✓ Promoting and increasing Use of Renewable energy resources.
- ✓ Adopting National Energy Conservation norms and codes in new building constructions as well as in Existing buildings.
- ✓ Conducting periodic Energy Audit and implementing all improvement measures.
- ✓ Creation of awareness on energy conservation amongst all employees.
- ✓ Monitoring and review of energy performances vis-à-vis targets.
- ✓ Sharing and enriching our experiences on energy conservation with in our Division, other Divisions and also on other Zones over Indian Railways.

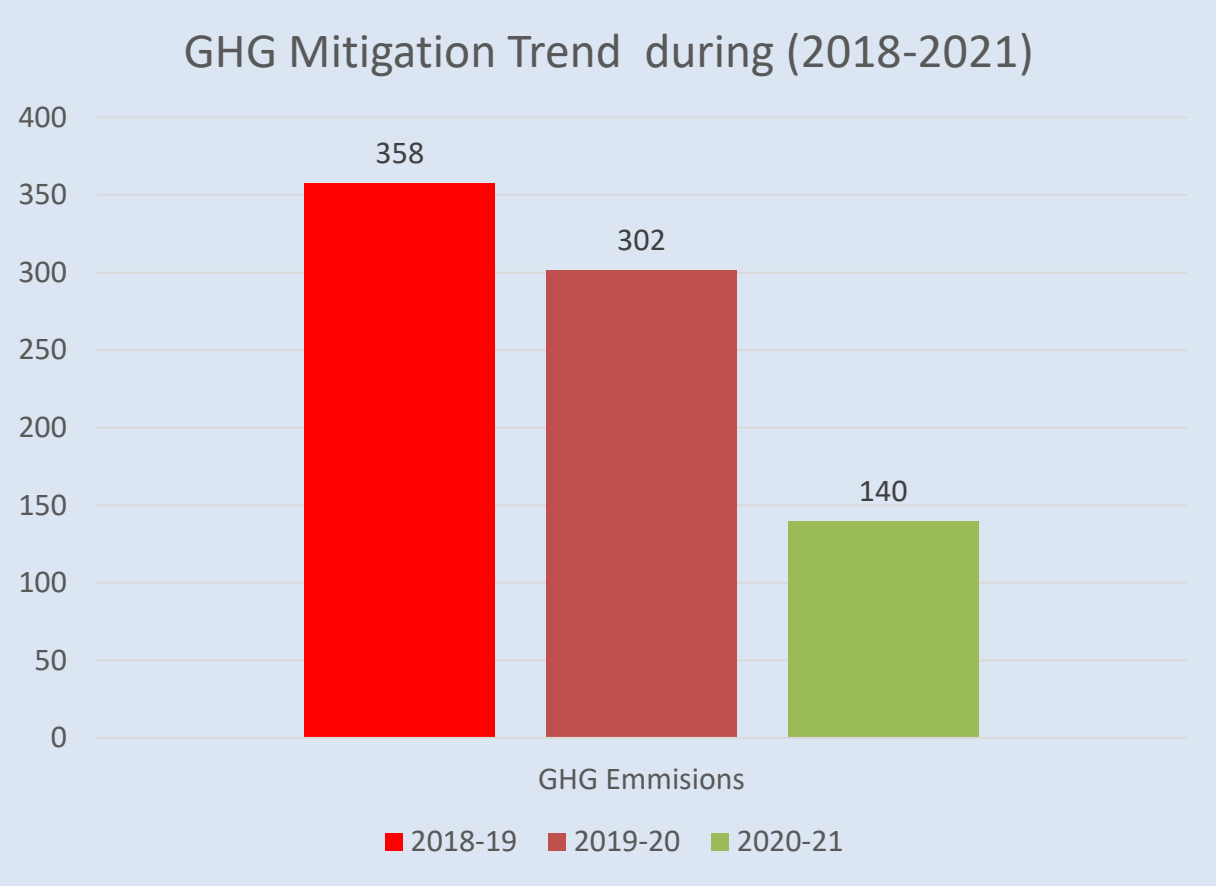
Secunderabad Division as a part of our energy efficiency improvement strategy will make every effort to reduce our specific energy consumption by 5 to 10% per year by promoting culture of innovation, creativity and commitment at all levels.

17.08.2021

(Abhay Kumar Gupta)
Divisional Railway manager
Secunderabad Division

Date: 16-08-2021

GHG Emissions



- GHG emissions reduced by over 60.89 % in a period of 3 years.

Green Supply Chain

- Use of Renewable Energy Sources
- Use of Energy efficient luminaries
- Use of Super Energy efficient fans
- Use of Solar power for Hot Water
- Use of Energy efficient Pumps
- Use of Natural water coolers

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भारत सरकार / GOVERNMENT OF INDIA

रेल मंत्रालय / Ministry of Railways

दक्षिण मध्य रेलवे / South Central Railway

वरि मं वि इंजी/अनुरक्षण कार्यालय

संचालन भवन / सिकंदराबाद मंडल / सिकंदराबाद

Office of the

Sr. Divisional Electrical Engineer (Maintenance)

Sanchalan Bhavan(Annexe)/Secunderabad

दिनांक: 09.06.2021

TO WHOM SO EVER CONCERN

It is certified that the **"Green pro Certified Products"** will be utilized in future at the Khammam Railway station.

M.PRASADA RAO

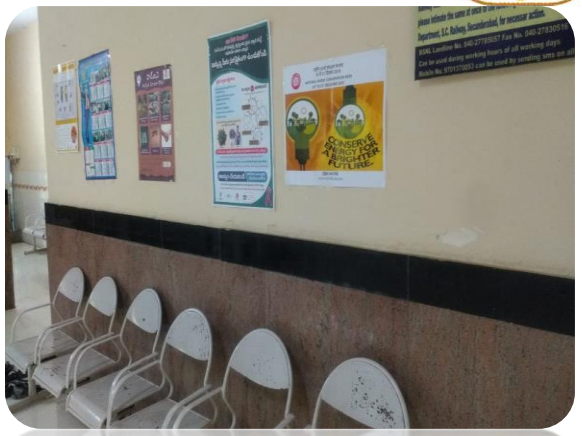
Sr. Divisional Electrical Engineer,

Secunderabad Division,

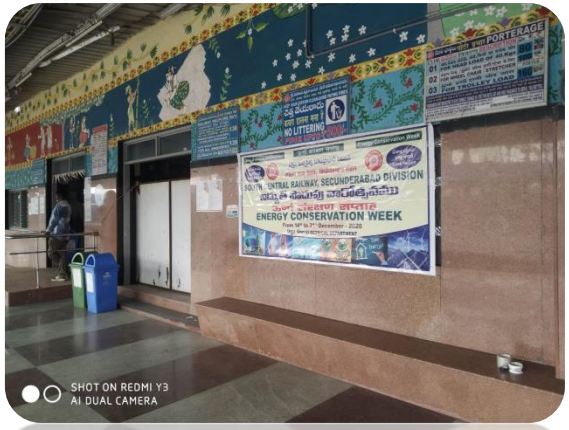
South Central Railway,

Secunderabad.

Team Work & Employee Involvement



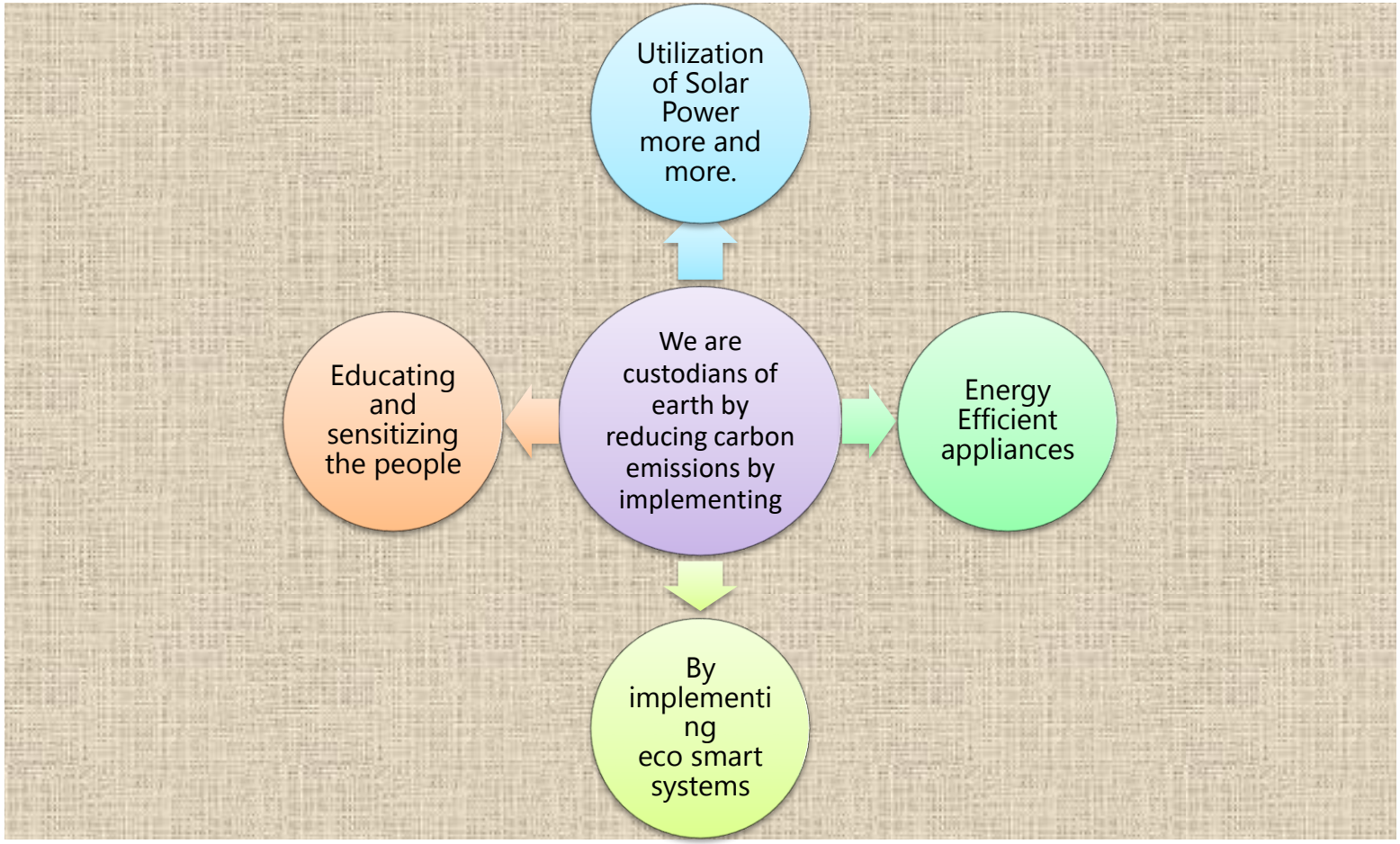
Performance Review Meeting regarding Energy Conservation, Posters on energy conservation



Pledge taken by employees on Energy conservation amongst staff

Long term vision on Energy Efficiency

We believe in adaption of Green Concepts in consultation with IGBC /CII in our premises to significantly contribute for environmental sustainability & enhancement of passengers experience.



Awards

- Khammam Railway station of SC division has been selected for Telangana State Energy Conservation Awards 2020 – SILVER AWARD (2nd prize) presented by Secretary to Department of Electricals of Telangana State and MD and Chairman of TSTRANSCO & TSGENCO of Telangana on 20.12.2020.

Receiving Second Prize(Silver) in Railway station building category for the year 2020 from Telangana State

Awards & Achievements

Environmental Management System

Certification of Registration

This is to Certify that the Environmental Management System of

Khammam Railway Station

Braman Bazar, Moti Nagar, Khammam - 507001, Telangana, India.

Has been assessed and is compliant with the requirements of

ISO 14001 : 2015

Environmental Management System

This Certificate is applicable to the following product or service ranges:

Provision of Services and Amenities for Transportation of Passengers. Maintenance of Cleanliness of Railway Station Premises and Disposal of Garbage to Muncipal Authority.

:: Certificate No:: 24337-E14

Date of Initial Registration	06th November 2019
Date of Certificate	06th November 2019
Validity of Certificate	05th November 2022

Validity of this certificate is subject to annual surveillance audits

Director

JAS-ANZ M4640210IL

IAF MEMBER OF MULTILATERAL RECOGNITION ARRANGEMENT

LMS Certifications Private Limited
e-mail: iso@lmscert.com, www.lmscert.com

This certificate is applicable to the following service:

- ✓ provision of Services and Amenities for transportation of Passengers
- ✓ Maintenance of Cleanliness of Railway Station Premises
- ✓ and Disposal of Garbage to Municipal Authority.

Thank You