SOUTHERN RAILWAY

Chennai (Tamil Nadu)

Unit Profile

Southern Railway, having realized the fact that there is an urgent need to take forward energy conservation measures at a much faster pace in the light of the evolving scenario on account of the climate change, has put in place a two pronged approach – short term strategy for energy conservation and long term strategy of substituting conventional energy with renewable energy for reducing the energy consumption and overall energy cost towards sustainable growth. The continuing power crisis, experienced in this part of this country has further bolstered on efforts towards energy conservation and no stone has been left unturned in achieving this by way of implementing various schemes such as introduction of 3 phase loco with regenerative braking, improvement in driving techniques of loco pilots, traction peak load management, power factor improvement, segregation of station lighting load according to the need, reduction of distribution losses, use of energy efficient lamps/ equipments apart from exploiting renewable sources of energy particularly the solar energy.

Energy Consumption and Conservation

1) ELECTRIC TRACTION

SEC for Goods has improved from 7.64 in 2013-14 to 6.67 in 2014-15, an improvement of 12.7%. With this improvement Southern Railway have achieved a reduction in energy consumption of 63.31 lacs units resulting in saving of Rs. 424.81 lacs.

This has been achieved by

- Introduction of 3 phase locomotives which are having unity power factor and regenerative braking of the order of 15%
- Encouraging Drivers to resort to coasting on down gradient or before approaching stopping stations.
- Using regenerative braking to the maximum possible extent in Three phase Loco and use of Rheostat Braking to the maximum extent possible in Conversional locos.
- Proper counseling / monitoring of Drivers by loco inspectors regarding energy conservation.
- De energizing rear locomotive in MU operation when running with light load/ empty stock/waiting for signal in station or yards.
- De energizing locos idling in yard/ section for more than 30 min.
- Switching off the auxiliary machines for the locos waiting for path for more than 15min.

a) Traction Distribution

The following energy conservation measures have been implemented in Traction services in Southern Railway during the year 2014-2015.

RKM Electrified as on 2013-14 : 2156 RKM

RKM Electrified as on 2014-15 : 2534 RKM

1. Increased electrification of 378 RKM in the section Villupuram-Vellore, Virudunagar-Tuticorin/Tirunelveli & Shoranur – Kozhikode.

1.1 Increase in share of electric traction for freight and Passenger services is as under

	Pass Share in %	Freight Share in %
2013-14	58.52	72.23
2014-15	61.83	73.96

Due to increased electrification as well as increased share of electric hauled trains has helped in reduction in consumption of 1071 kilolitres of diesel oil.

1. At Arni Road TSS improvement in Power Factor has been achieved by running of three phase locomotives and effective load management by feeding the adjacent Traction Substations supply during no load period to avoid no load losses.

2. Provision of Low Loss Air cored series reactor at Arni Road, Nanguneri & Kovilpatti Traction substations.

3. Provision of switched capacitor bank at Vriddhachalam, Ariyalur, Tiruchchirappalli and Eraniel Traction substations to improve power factor and to bring up the average power factor above the permissible limits to contain the payment of low power factor penalty to the barest minimum.

5. Provision of 21.6 MVA transformers at Shoranur and Achirapakkaam TSSs in place of 12.5 MVA Transformers, thereby reducing load losses.

6. “Switching off” of standby transformers to reduce no load losses.

2) NON TRACTION AREA

Provision of Energy Efficient Equipment viz

2.1. T5 lamps - 52,529 Nos
Energy Savings – 1.229 lacs
units per year.

2.2. CFL lamps - 78,055 Nos
Energy Savings – 0.431 lacs
units per year.

2.3. LED lamps- 681 Nos.
Energy Savings – 0.760 lacs
units per year.

2.4. 60 W fans -14,975 Nos.
Energy Savings – 0.257 lacs
units per year.

2.5. Electronic Ballast-16,215 Nos
Energy Savings – 0.444 lacs
units per year.

On account of the above, **6.091 lacs of units** have been saved per annum,thereby saving **Rs 48.728 lacs** per annum.

Tapping of renewable energy sources viz

2.6. Solar Water Heater- 130 Nos.
Energy Savings – 0.724 lacs
units per year

2.7. Solar panel for LC gates
(41 Nos) and Solar Street lights (40 Nos)
Energy Savings – 0.015 lacs units per year

2.8. Solar PV panel- 4 Nos.

2.9. Solar pump- 1 No.
Energy Savings – 0.018 lacs
units per year

On account of the above,**0.757 lacs of units** have been saved per annum, thereby saving **Rs.6.05 lacs** per annum.

The following measures have been adopted in EMU car shed of Southern Railway:

- Translucent roof sheets are provided in new sheds to ensure natural lighting in day time.
- Individual compressors have been installed in some sections to avoid idle running of Main compressors.
- 6 nos. of energy savers are installed in welding plants at EMU carshed/ Tambaram.