FEATURES OF BUILDING MANAGEMENT SYSTEM AT DADAR STATION, CENTRAL RAILWAY UNDER UNDP PROJECT, COST RS. 45 LAKH, SANCTIONED THROUGH CEGE/NR & NCP(IR-UNDP) VIDE L.NO. 25-ELECT/P/4 (UNDP PROJECT)-PT. VI DTD. 24.06.2014

Under pilot project on building management system for energy efficient measures, it is planned to provide the building management system along with energy efficient measures. The Building Management System is a computer based control/monitoring system installed in buildings that controls, monitors, optimizes and generates the reports of electrical power parameters, along with data acquisition and online monitoring analysis. Dadar Station is chosen for provision of BMS as it is one of the important station of Central Railway having escalators, lighting and ventilation system, pumps, high mast towers, air conditioners, geysers & haltage of Mail/Express trains.

The following are the main features of scope of work

A. Smart sense Intelligent Energy Management Unit (IEMU) for HT & LT

(1) Provision of 25 Nos. **LT smart sense Intelligent Energy Management Unit** (IEMU), class-I. These meters are of multifunction energy meters with wireless communication device with GPRS activated sim installed in it and controlling chip / relay with contactor for switching on /off, altogether which is called as Intelligent Energy Monitoring Unit (IEMU). IEMU would have the capability to monitor as well as control the load from a remote location using a wireless technique.

- Electrical Parameters captured by the meter:
    - Voltage Average of Line to line
    - Voltage for each line to Line (VRY, VYB, VBR)
    - Voltage Average Line to Neutral
    - Voltage for each phase (VRN, VYN, VBN)
    - Current Average for all three phases
    - Current for each Line (IR, IY, IB)
    - Frequency
    - Power Factor average across all phases(PF)
    - Power Factor across each phase (PF-R, PF – Y, PF -B)
    - Total Real Power across all the three phases (Watts)
    - Real Power across each phase (Watts- R, Watts –Y, Watts- B)
    - Total Power across all the phases (VA)
    - Total Power across each phase (VA- R, VA-Y, VA -B)
    - Total Cumulative Energy across all the phases (kWh)

(2) Provision of 3 Nos. **HT smart sense IEMU, class 0.2** for HT mains. This type of meters are provided to monitor HT main supply.

- Electrical Parameters captured by the meter:

All LT parameters mentioned above, plus

- Total Reactive energy consumed/ import (kVARh-Cap)
- Total Inductive energy consumed /import (kVARh-Ind)
- Maximum Demand (MDI)
- Total Harmonics Distortion (THD)
- Total Harmonics Distrortion across each voltage (Vr, Vy, Vb)
- Total Harmonics Distrortion across each current (Ir, Iy, Ib)

(3) Provision of smart sense software License & Server .

Software is installed in a centralized cloud server. Above data i.e. all electrical parameters can be observed & monitored from the software license. The infrastructure such as cloud hosted server for storing the data, with web services to monitor the energy consumption and data communication charges over GPRS for given time period.

B. LED light fitting proposed for Energy conservation measures at Dadar through this project work

(1) Provision of LED Lights in place of T-8/T-5 & Metal Halide Fittings

Description	Qty	Watt	MH/T-8/T-5 to be replaced	Saving in Watt
Provision of LED 89 W medium bay light fittings	8	89	250	1288
Provision of LED 70 W Low bay light fittings	8	70	150	640
Provision of LED 70 W well glass light fittings	12	70	2(4x14)	504
Provision of LED 20 W surface mounting light fittings	12	20	2x36	624
Provision of LED 38 W recess / surface mounting light fittings	12	38	2x28	216
Provision of LED 38 W recess mounting light fittings in offices	10	38	4x14	180
Provision of LED 33 W street light fittings in open platforms	10	33	80	470
Provision of retrofit LED 22 W lamp with integrated HF electronic driver	50	22	2x28	1700
Provision of LED 20 W light fitting IP 65 housing	180	20	2x28	6480
Total		400	888	12102

Saving in terms of Money @ 12 Hrs Working will be Rs. 6.4 lakh per annum.

(2) LT IEMU have inbuilt programmable timer of four channels required for remote/auto-switching ON/OFF of light & fan circuits of Platform, Highmast tower, circulating area lighting.

(3) Provision of 15 KVA energy saver & 20 KVA energy saver for 9 air conditioning unit.

The energy saver save energy @ 20% per year as per trial conducted. For 35 KVA, approx. 30660 units will be saved per annum giving monetary value of Rs. 3.7 Lakh.