

ENERGY CONSERVATION

By

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**Tamil Nadu State Designated Agency for
Energy Conservation**

28th May 2010

TAMILNADU STATE DESIGNATED AGENCY

- **Notified as a Designated Agency on** **10-05-2005**
- **Name of the Designated Organisation:**
ELECTRICAL INSPECTORATE
INCEPTION ON : 07-09-1961
- **Number of employees:**
 - Technical Officers : 64**
 - Administrative persons : 256**
- **District level officers : 24 nos. across the State**
- **Office : Chief Electrical Inspector to Govt.**
Thiru Vi Ka Industrial Estate,
Guindy, chennai – 600032.
Tel:91-44-22500184 Fax:91-44-2500036
E-mail: ceig@tn.nic.in Website: WWW.tnei.tn.gov.in

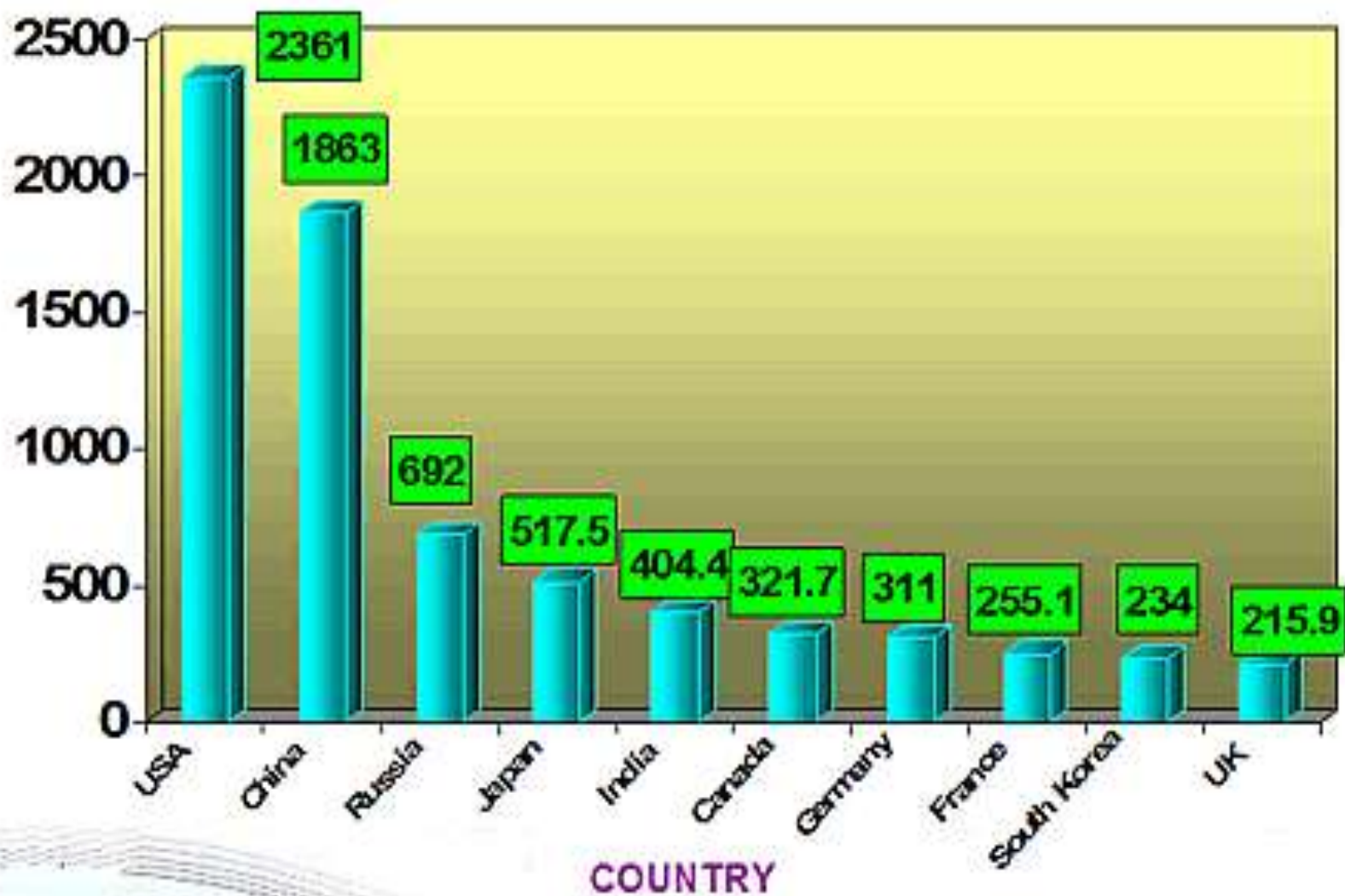
Global Primary Energy Reserves

Coal	
▪ Global Coal Reserve	847.5 billion tonnes (565000 MTOE)
▪ US with largest share	28.6%, (242.7 billion tonnes)
▪ Russia – 2nd	18.5% (157 billion tonnes)
▪ India	6.7 % (56.5 billion tonnes)
Oil	
▪ Global Oil Reserve	1238 billion bbls
▪ Saudi Arabia with largest share	21.3%, (264.2 billion bbls)
▪ India	0.4% (5.5 billion bbls)
Natural Gas	
▪ Global Gas Reserve	177.36 Trillion Cubic Metres
▪ Russia has largest share	25.2%, (44.65 TCM)
▪ India	0.06% (1.06 TCM)

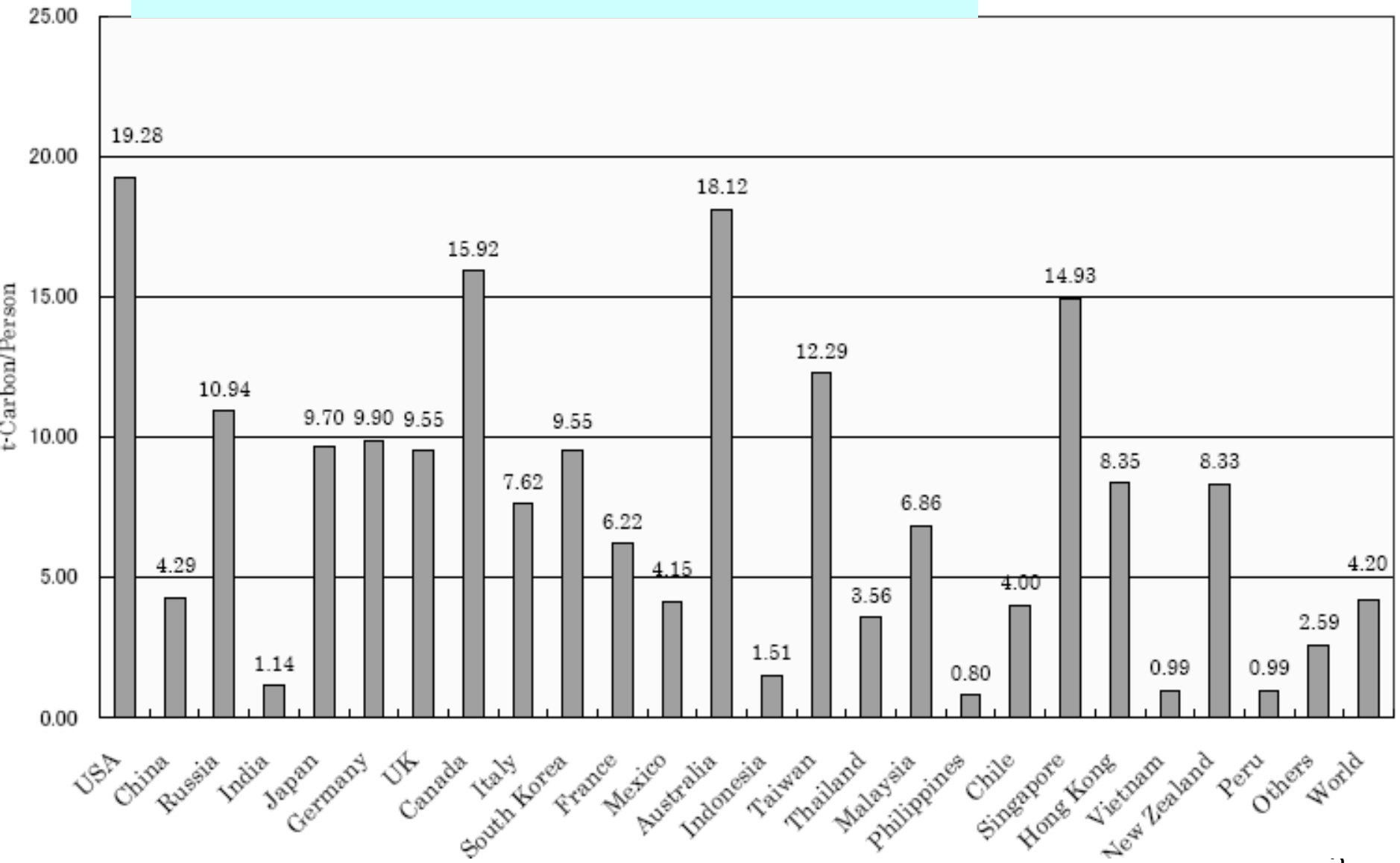
Source : *BP statistical Review of World Energy, end 2007

Primary Commercial Energy Consumption (in MTOE)

in
M
T
O
E



Per-capita CO₂ emissions (2006)



What is energy conservation?

- **Energy conservation and energy efficiency are separate, but related concepts. Energy conservation is achieved when energy consumption is reduced.**
- **Hence it is a result of several processes like productivity increase etc. Energy conservation is a variety of other ways that reduce total energy consumption, some of which may be behavioral changes.**
- **Energy efficiency is a way of achieving the same services with less energy.**
- **Energy efficiency is achieved when energy intensity in a specific product, process or area of production or consumption is reduced without affecting output, consumption or comfort levels.**
- **Promotion of energy efficiency will contribute to energy conservation**

The Energy Conservation Act, 2001

- **Mandates the setting up of a Bureau of Energy Efficiency (BEE) that will introduce stringent energy conservation norms for energy generation, supply and consumption. BEE, the prime advisory body was established under Section 3 of the Act with effect from 01.03.2002.**
- **Powers of the State Governments to facilitate and enforce efficient use of energy and its conservation is conferred under Section 15 of the Act.**
- **Under Section 15(d) of the Act, State Government has to notify a Designated Agency for enforcing the provisions of the Act and our department has been notified for this purpose. TNSDA W.E.F. 10.05.201**

Power of State Government

Section –15

- b) direct every owner or occupier of a building or building complex being a designated consumer to comply with the provisions of the energy conservation building codes;**

- d) designate any agency as designated agency to coordinate, regulate and enforce provisions of this Act within the State;**

- e) take all measures necessary to create awareness and disseminate information for efficient use of energy and its conservation;**

- g) take steps to encourage preferential treatment for use of energy efficient equipment or appliances;**

- h) direct, any designated consumer to furnish to the designated agency, information with regard to the energy consumed by such consumer;**

Role of SDA

SDA is the statutory bodies set up under section 15(d) of the EC Act,2001 to play an effective role in:

- Collection, Collation and analysis of data regarding energy use
- Dissemination of information to the masses regarding use of efficient energy.
- Create public awareness and understanding about the values of energy conservation
- Implementation of the EC Act,2001
- Stimulating market transformation at the local level

Energy Saving Potential in Various Sectors in Tamil Nadu Initiative of BEE - NPC

- **Agricultural Pumps @ 25%** : **3 BU**
- **Domestic @ 20%** : **2.6 BU**
- **Industries @ 10%** : **1.9 BU**
- **Commercial Buildings @ 25%** : **0.192 BU**
- **Municipalities @ 20% in water works and 25 % in street lighting:** **0.126 BU**
- **SME Clusters** : **.017 BU**

**❖ Total savings @ 13% of total : 8 BU
energy consumption**

➤ **It is a paradoxical situation that on one side there is a shortage of power whereas on the other side there lies an energy saving potential**

Designated Consumers- Background

- Industry accounts 42% of overall energy consumption: 47 million MTOe
- Estimated savings among industries ~ 20%
- As per Section 14 of the EC Act, Central Government notified 9 classes of consumers as Designated Consumers(DCs)
- DCs shall
 - (a) Appoint an energy manager having qualification specified in the Energy Conservation Rules, 2006; and
 - (b) Submit a report in electronic form as well as hard copy to SDA with a copy to BEE, on the status of energy consumption at the end of every financial year as prescribed in the “Form and manner for submission of report on the status of energy consumption by designated consumers), Rules, 2007.”
- Bench Marking , Formulating Incentive and Disincentive Measures
- Dissemination

E-Data Filing

- Training for Energy Data filing was conducted at the consumer's premises
- The user specific data forms are adopted in respect of various DCs
- The format was developed in simple Excel Sheet with necessary cell protection for enabling utility personnel of DCs to add additional fuel input parameters in Excel work sheets.
- The initial data reveals the fact that the MTOE consumed by the DCs (other than power plants) alone would be more than 50% of the MTOE consumed by the Thermal power stations.
- The overall specific energy consumption in respect of energy intensive consumers will have a bearing on arriving at the state level energy intensity.

Review of Data Collection

Thermal Power Plants

Name of power plant	Actual production	Overall Plant Heat Rate Equivalent	Specific energy consumption equivalent	Thermal energy consumed (million K Cal)
	Million Units Pumped in to the Grid	Fuel consumption /kWh Pumped in to the Grid k Cal/kwh	Million K Cal / million units Pumped in to the Grid	
A	848.50	1938.44	1078.44	71478
B	2802.57	3030.6	2170.6	608323
C	6812.83	2523.5	1734.1	1181410

ENERGY SAVING POTENTIAL IN INDUSTRIES

The annual electricity sales to the industry sector including low & medium voltage consumers (SME) and high voltage consumers (large industries) is 27.2 BU and works out to 46 % of the total electricity sold. The larger industries segment is covered for energy efficiency under the mandates of EC Act as designated consumers, while SME segment is being addressed for energy efficiency through cluster based initiatives by Bureau of Energy Efficiency.

Based on several studies & energy audits, the electrical energy saving potential in industry sector varies from 7-10%.

The energy savings potential for the sector is assessed to be 1.904 BU.

Inorder to achieve the assessed saving potential in industrial sector, the following approaches are recommended

- i. Capacity buildings in industry sectors and the designated consumers about Energy Audit good practices in energy efficiency.
- ii. Promoting awards schemes on energy efficiency
- iii. Demo Projects on energy audit.
- iv. Capacity building of industry sector stake holder about energy efficient BEE star labeled devices, products and equipments.

Table 3.5.1: Summary of Energy Savings in Energy Intensive SME Clusters in Tamil Nadu

Cluster Location	Cluster type	Total Units listed (nos.)	Estimated Total Energy Consumption	% Savings potential assessed	Annual energy saving Potential assessed
Red Hills	Rice Mills	120	63101 MTOE 2.97 MU	15	4180 MTOE 0.445 MU
Coimbatore	Cupola Foundry / castings	400	6284 MTOE 2.69 MU	20	1257 MTOE 0.54 MU
Coimbatore	Induction Furnace based Foundry / castings	69	280 MU	5	14 MU
Tirunelveli	Lime kilns	100	27390 MTOE 10.56 MU	20	5478 MTOE 2.11 MU
TOTAL					10915 MTOE & 17.09 MU

Activities under progress

1 IGEA in 18 Public Buildings

- Energy saving potential from the above buildings: 10 MU
- Saving potential in Maximum Demand: 2 MW

2 Development of SME Cluster among Lime Kiln units

- Power optimizer for the Pulverisor Motor yielding 15% of electricity savings of 4 Lakh kWh.
- UPS backup for the critical load (blower motor) yielding 6500 tons savings of charcoal.
- Additional saving of 10% yielding to 6500 tons savings of charcoal by reducing charcoal input by monitoring temperature inside the kiln from the sensors.

3 Energy Efficiency Improvement to Municipal Pumping station

- Annual Energy Bill: Rs. 22 Lakhs; Anticipated Savings: Rs.6.5 Lakhs

4 LED Village Campaign

- Individual huts/tenements will be provided with interior and external lighting in addition to the street lighting
- Number of beneficiaries: 250
- Savings : Rs. 1.56 Lakh per annum

INVITING SCHOOLS!



State & National Level PAINTING COMPETITION

ON

ENERGY CONSERVATION

National Campaign on Energy Conservation 2005

The Bureau of Energy Efficiency (Ministry of Power, Government of India) invites all schools of India to participate in a Painting Competition at School, State and National Level. The competition aims to motivate children towards energy conservation and offer them a chance to explore their creativity.

TOPICS

Electrical energy saving at home

Energy is life, Conserve it

Save energy, Save money

School Level Painting Competition

- School Principals to organize painting competition of 2 hour duration for 4th & 5th standard students on any day between 10th August to 10th September 2005. Children can select any one of the above mentioned topics for painting on a drawing sheet (380 x 510mm or 15" x 20" size) using crayons, coloured pencils or water colours.
- School Principals will select the best two paintings. Back of each painting should carry student's name, roll number, standard, school name with complete address, phone number/mobile number, school principal's signature with seal. The selected paintings should reach the organizers address by 30th September 2005 positively. All participants will be issued a certificate of participation.

Organizers address for Tamil nadu:

Mr. A. Surendiran, Chief Manager
Powergrid Corporation of India Ltd.
C-398A, 46th Street, 9th Avenue, Ashok Nagar, Chennai-600083
Tel: 044-24891067, 24896206 (O); 044-24899199 (R), Mob: 09444011021
Email: surendran@powergridindia.com

- for addresses of organizers in other states Log on to www.bee-india.nic.in

State Level Painting Competition

- 50 best paintings will be selected by a committee of experts from the entries received and students will be called at a designated place for state level on-

Level	PRIZES			
	First	Second	Third	Consolation
State Level	Rs. 10,000/-	Rs. 8,000/-	Rs. 5,000	5 of Rs. 500/-
National Level	Rs. 50,000/-	Rs. 25,000/-	Rs. 10,000/-	5 of Rs. 5,000/-

- Spot painting competition of 2 hour duration to be held on 14th November 2005
- The selected participating students will receive Rs. 500/- each in cash and a certificate of participation. Sleeper class rail fare/state roadways bus fare for participating student and one guardian will be borne by the organizers.
- Prizes mentioned above will be given on the same day. The decision of the jury will be final.

National Level Painting Competition

- 1st and 2nd winner of state level painting competition will be invited to Delhi to participate in "National Competition" to be held on 11th December, 2005. Results will be announced on next day.
- Each student may be accompanied by one adult (parents, teachers, guardians etc). Accommodation, to-and-fro travel expenses (2nd Class) will be borne by the organizers. In addition every selected student will receive Rs. 1000/- in cash as incidentals.
- Participation certificate will be awarded to all participants by Ministry of Power.
- National level winners will be awarded cash prizes by the Chief Guest on 'National Energy Conservation Day Function' to be held in Delhi on 14th December, 2005.
- Paintings submitted and selected at school, state & national level would be the sole property of BEE which will have the right to use it for any purpose it deems appropriate.
- The prize winning paintings will also be displayed at the function venue on 14th December, 2005.



Director (Energy Conservation)
MINISTRY OF POWER
'F' -Wing, 2nd Floor,
Nirman Bhawan, New Delhi - 110011



Director-General
BUREAU OF ENERGY EFFICIENCY
(Ministry of Power, Government of India)
Hall No. IV, 2nd Floor, NBCC Tower 15, Bhikaji Cama Place, New Delhi-110066
Tel. : 26179699 (5 Lines) Fax No. 011-26178328 / 26178352
For any details and clarification, kindly visit our website : www.bee-india.nic.in

Save energy for benefit of Self & Nation

EEM Adopted at SDA building

- **Installed Electronic chokes in place of copper chokes for all 325 fluorescent lamp fittings- Tubes replacement on failure reduced from 10 per month to 2 per month .**
- **Installed new energy efficient water pump in place of existing inefficient pump with pipes and foot reflex valves**
- **Installed 3 nos. Energy efficient Air conditioners in place of inefficient Air conditioners-Improved environment for lab testing (from 26 deg C to 23 deg C)**
- **Provided CFL at all rest rooms and verandas.**
- **Provided Electronic Regulators for all 100 fans.**
- **1No.LED Sign Board depicting Energy Conservation Slogan.**
- **The voltage output of the stabilizer feeding entire building was set at 400 V.**
- **Savings Achieved: 15 %, Reduction in annual energy consumption: From 45000 units to 35000 units, 20%**

Visit us at www.tnei.tn.gov.in

pl. send your comments
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Thank
You!