

**INDIAN OIL CORPORATION LIMITED
GUWAHATI REFINERY**

1. UNIT PROFILE

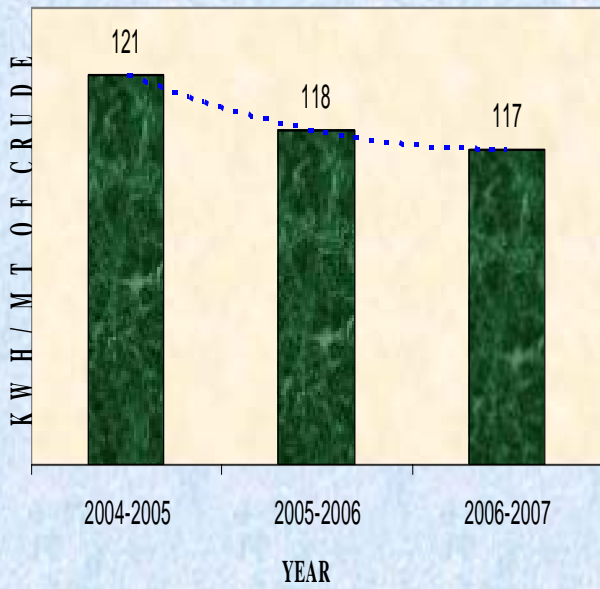
Indian Oil Corporation Ltd. is one of the Nine gems among Indian Public Sector Units and only Indian Company to have secured 135th place in the Hallowed rolls of the “Fortune 500’s corporations of the world”. Ever since its inception, India Oil, besides providing fuel to the country’s progress, has also maintained pace with the most state-of-the-art developments worldwide. Indian Oil has seven operating refineries at Guwahati, Barauni, Haldia, Mathura, Koyali, Digboi and Panipat. Yet another refinery is being set up on the East Coast at Paradip.

The Guwahati Refinery in North East India - the first Public Sector refinery of the country -- was commissioned in 1962 with a capacity of 0.75 MMTPA which was subsequently increased to 1.0 MMTPA through debottlenecking projects. The refinery processes only indigenous crude oil from the Assam oil fields. With its main secondary unit, a coking unit, it produces middle distillates from heavy ends and supplies petroleum products to North-Eastern India, and surplus products onward to Siliguri in West Bengal in 2003. Hydrotreater Unit for improving the quality of diesel has been commissioned in 2002. In 2003, the refinery installed an **Indmax Unit**, a novel technology developed by IOCL's R&D Centre for upgrading heavy ends into LPG, Motor Spirit and Diesel oil.

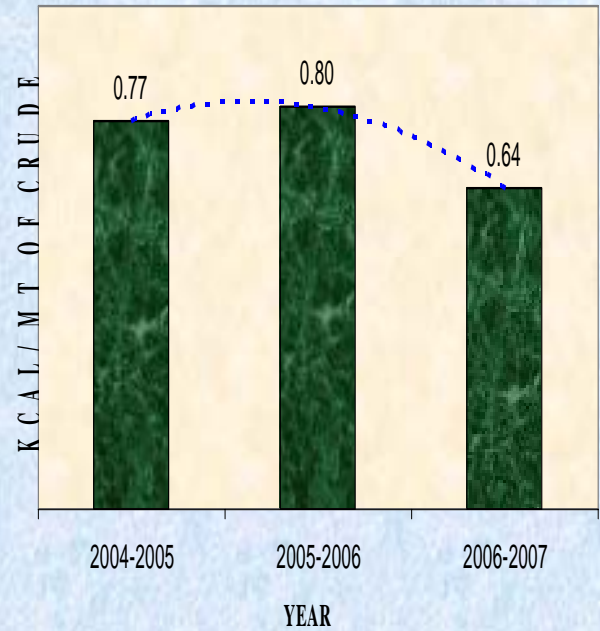


2. GRAPHICAL REVIEW OF ENERGY CONSERVATION EFFORTS

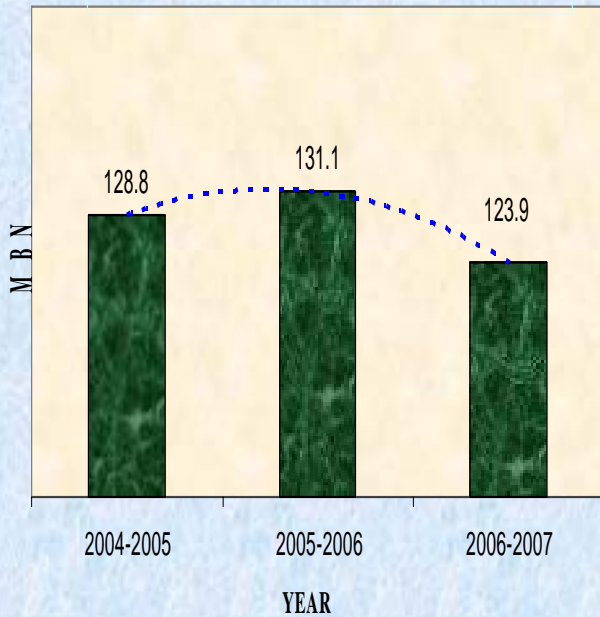
SPECIFIC POWER CONSUMPTION



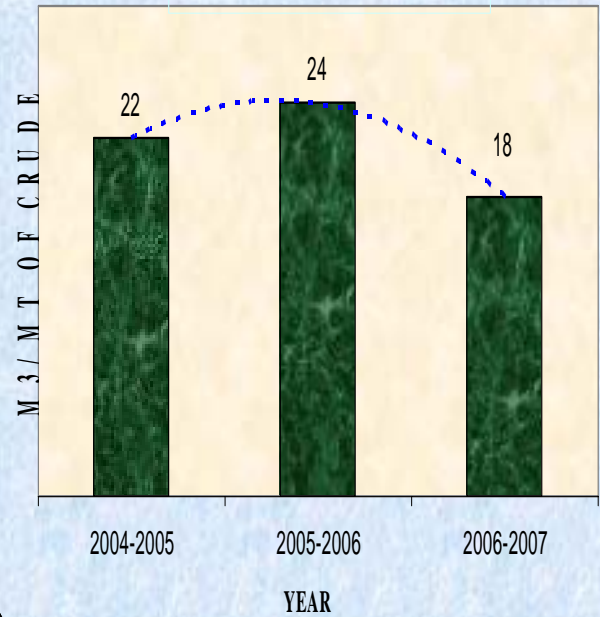
SPECIFIC THERMAL ENERGY CONSUMPTION

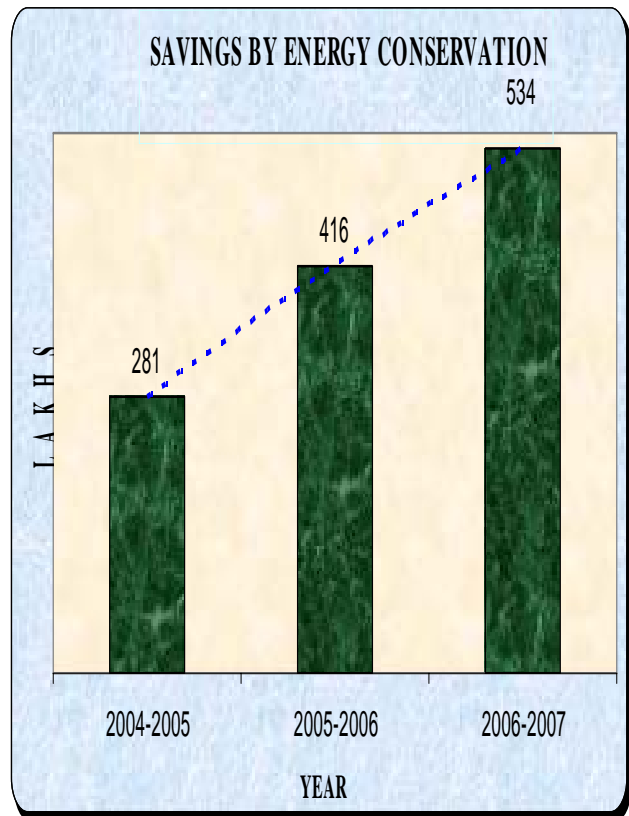
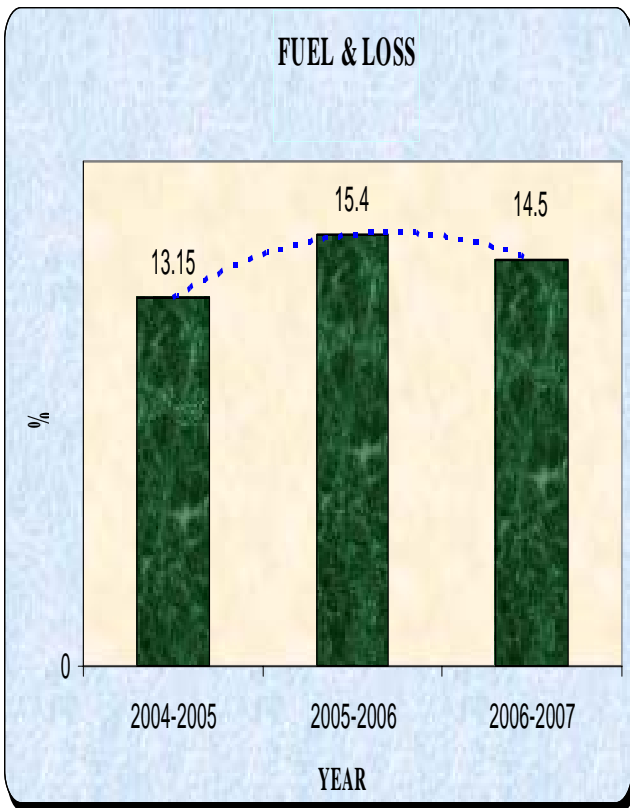
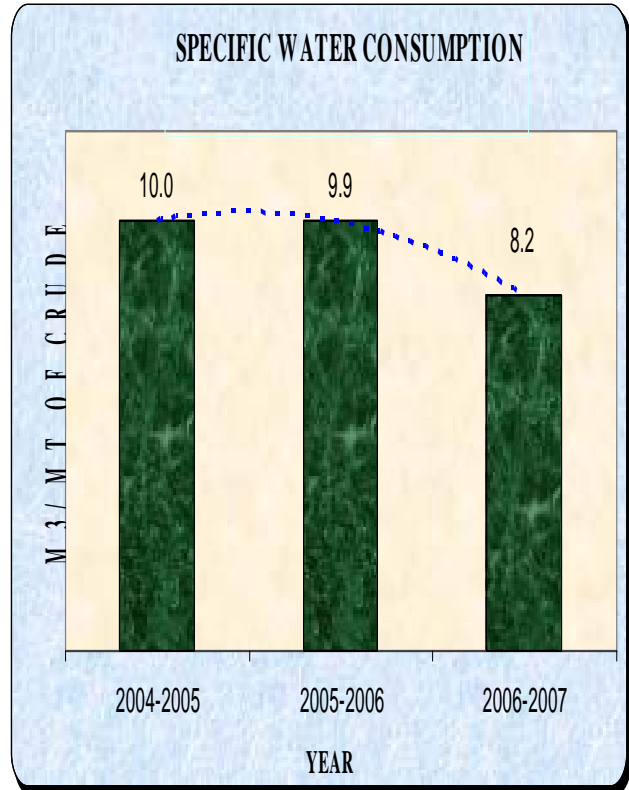
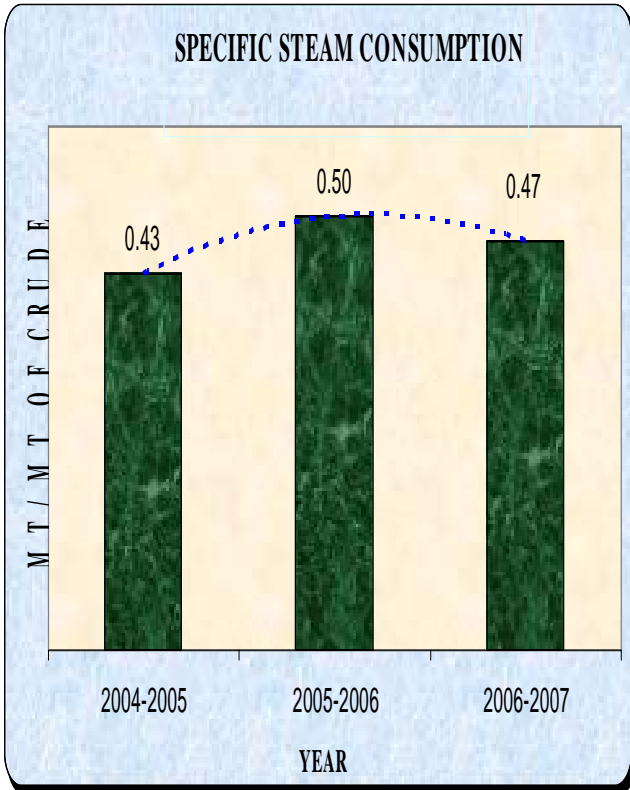


**OVERALL SPECIFIC ENERGY CONSUMPTION
(MBTU/ BBL/ NRGF, Old Method)**



SPECIFIC AIR CONSUMPTION





3. ENERGY CONSERVATION COMMITMENT, POLICY AND TEAM SETUP



Indian Oil Corporation Limited
Guwahati Refinery



ENERGY POLICY

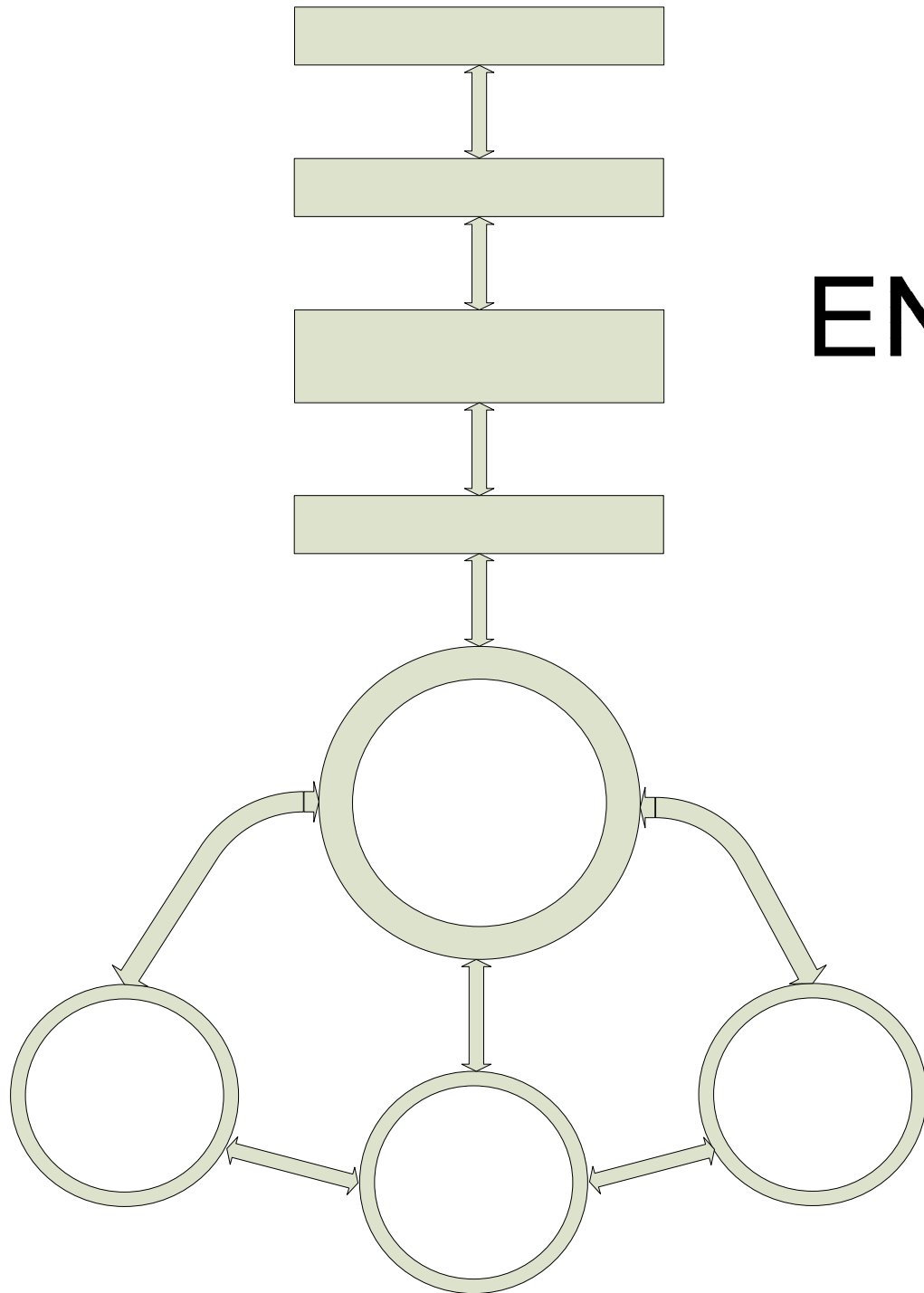
WE, THE EMPLOYEES OF GUWAHATI REFINERY, COMMIT OURSELVES TO COMPLY WITH ALL REQUIREMENTS RELATED TO IMPROVING ENERGY EFFICIENCY IN PRODUCTION AND DESPATCH OF PETROLEUM PRODUCTS AND CONSERVE ENERGY IN ALL AREAS OF APPLICATIONS. WE SHALL ALSO CONTINUALLY ENDEAVOUR TO IMPROVE THE PERFORMANCE OF ENERGY MANAGEMENT.

BY

- Adopting energy efficient and environment friendly technologies.
- Benchmarking our performance with the best in the world and endeavouring to be ahead.
- Fostering a culture of participation for continual improvement in energy conservation.
- Propagating the message of avoiding wastage of energy to the community.

Date: 12.04.2007
Place: Guwahati Refinery


G. Bhanumurthy
Executive Director



ENERG

4. ENERGY CONSERVATION ACHIEVEMENTS

a) Pressurised cooling water system

Before:

Increase in refinery water consumption and increased fouling rate due to low velocity at higher elevation in process coolers.

After:

Decrease in refinery water consumption and improvement in cooling rate.

Results:

Energy saved per annum: 1700 SRFT /annum

Cost saving per annum: Rs 278 Lakhs /annum

Investment:

Cost : Rs 200 Lakhs

Pay back period : 7 months



b) Condensate Recovery System

Before:

Condensate from reboilers, tracing lines, etc was drained to open channel.

After:

About 8T/hr of condensate is recovered and is being used in generation of steam and in desalter as wash water

Results:

Energy saved per annum : 400 SRFT /annum

Cost saving per annum : Rs 66 Lakhs /annum

Investment:

Cost : Rs 226 Lakhs

Pay back period : 3.4 Years



c) Calcium Silicate Insulation in Process lines in DCU

Before:

Loss of heat due to old glass wool insulation between exit of furnace & inlet of coke chamber.

After:

Net reduction of ~5 °C in temperature drop after application of calcium silicate insulation

Results:

Energy saved per annum : 180 SRFT /annum
Cost saving per annum : Rs 29 Lakhs /annum

Investment:

Cost : Rs 42 Lakhs
Pay back period : 1.5 Years

**d) Installation of FRP blades****Before:**

The fans have been fitted with solid GRP blades accounting for higher power consumption.

After:

Installation of FRP blades resulted in net 25% power reduction.

Results:

Energy saved per annum : 100 SRFT /annum
Cost saving per annum : Rs 16 Lakhs /annum

Investment:

Cost : Rs 7.8 Lakhs
Pay back period : 5 Months

**e) Replacement of corroded APH in CDU**

Before:

Corrosion in two cast iron modules of APH which lead to poor heat transfer.

After:

The modules were replaced which resulted in increased heat transfer there reducing heat loss in flue gas.

Results:

Energy saved per annum : 218 SRFT /annum
Cost saving per annum : Rs 36 Lakhs /annum

Investment:

Cost : Rs 54 Lakhs
Pay back period : 1.5 Years

**f) Installation of Closed Draining Vessel at OM&S for HSD****Before:**

The oily water sewage from HSD tanks were drained to OWS line and then treated in ETP.

After:

Installation of closed draining reduced load to ETP there by reducing slop generation in the refinery.

Results:

Energy saved per annum : 50 SRFT /annum
Cost saving per annum : Rs 8 Lakhs /annum

Investment:

Cost : Rs 15 Lakhs
Pay back period : 1.9 Years

**5. ENERGY CONSERVATION PLANS AND TARGETS:**

Energy Conservation Plans and Targets for 2007-08		Anticipated Savings		Approximate Investment (Rs. Lakhs)
		Energy Value (SRFT/ YR)	Rs. Lakhs	
1	Flare Gas Recovery	1881	318	123
2	Replacement of old fuel gas & flare control valves to Zero leak Class-VI type control valves.	168	28	70
3	Modification in the Refinery Fuel gas Network.	200	34	10
4	INDMAX Unit Heat Integration	500	84	75
7	FRP Blades for CT/Air cooler Fans (29 Nos)	183	30	33
9	Steam leak reduction by replacing defective traps	150	25	30
10	Replacement of DEA with MDEA	25	4	3
11	Calcium Silicate Insulation in balance high temperature process lines of Refinery	175	29	22
12	Installation of Plug Valves in HSD tanks at OM&S	45	7	35
13	Step less Control in MUG compressor of	649	106	141

