Company Profile

Reliance group is today one of the most innovative twenty-five global companies. Founded by visionary leadership Late Dhirubhai H. Ambani in 1966, Reliance group is continuously climbing the ladder in 'Fortune Magazine's Global 500" list of "World's Largest Corporation" from rank 298 in July 2005 to rank 206 in July 2008. RIL is India's largest private sector enterprise, having integrated businesses in materials and energy value chain spanning exploration, production & transport of crude oil & gas, refining crude oil & marketing of petroleum products, petrochemicals (polyesters, plastics, synthetic rubbers, fibres, fibre intermediates and chemicals), textiles, organized retailing, infrastructure development & life science initiative.

RIL–DMD is one of the RIL manufacturing site started it's commercial production in 1996. RIL-DMD produces four main products (Fig. P.1.1) namely Polyvinyl Chloride (PVC), High Density Poly Ethylene (HDPE), Mono Ethylene Glycol (MEG) and Caustic soda (lye & prills) along with the raw matrials for above finished prodcut like Ethane propane, Ethylene, Propylene, EDC, VCM. It also produces some valuable chemical by products like HCL, Wax, DEG, TEG, Mix Oil, RARFS etc.This is the only petrochemicals site where PVC is manufactured with captive chlorine,Ethylene and power manufacturing facility.

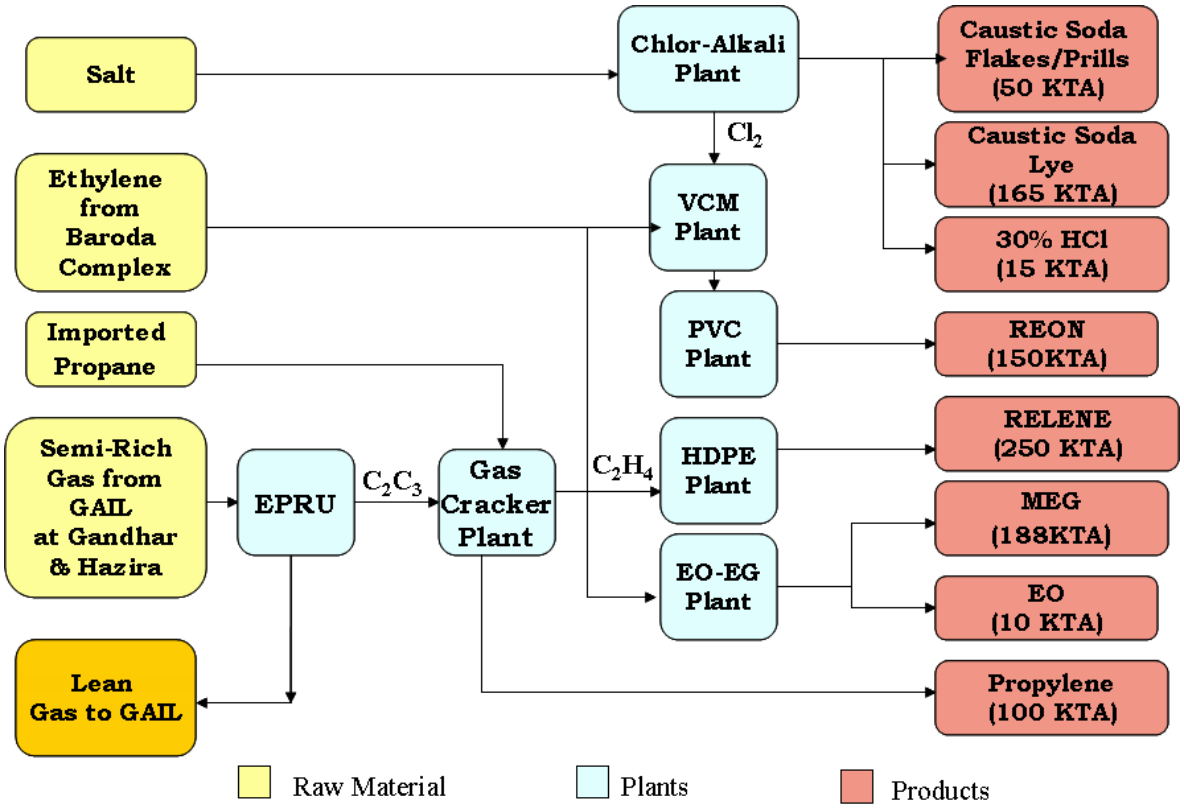
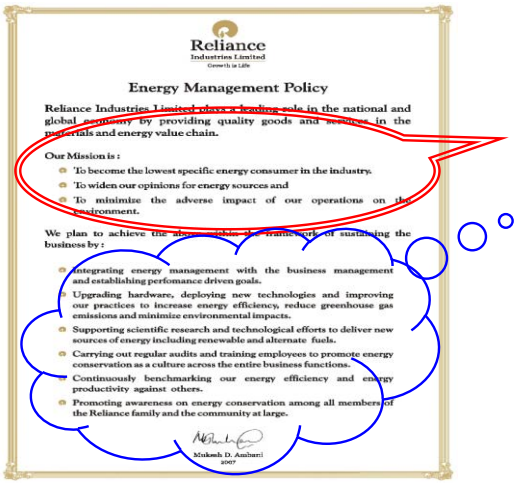


Fig. P.1.1 DMD product Flow Diagram along with current capacities

RIL-DMD was the Winner of the first prize in Petrochemical sector for National Energy Conservation Award 2005. Besides this award, DMD complex has also been conferred with awards like:

- ✓ Excellence in Energy Management award constituted by CII for the year 2007-08.
- ✓ Excellence in Energy Management award constituted by CII for the year 2005-06.
- ✓ Excellence in Water Management award constituted by CII for the year 2005-06.
- ✓ GAIL Gas Conservation in petrochemical sector instituted by GAIL India Ltd. for 2004.
- ✓ Three Star safety rating by British Safety Council U.K for the year 2005.
- ✓ First prize in the Reliance group Six-Sigma inter-site competition award in 2008.
- ✓ First prize in the most promising projects category in Reliance group Six-Sigma inter-site competition award in 2006.

Energy Management Policy



Reliance
Industries Limited
Growth is Life

Energy Management Policy

Reliance Industries Limited plays a leading role in the national and global economy by providing quality goods and services in the petrochemicals and energy value chain.

Our Mission is :

- To become the lowest specific energy consumer in the industry.
- To widen our opinions for energy sources and
- To minimize the adverse impact of our operations on the environment.

We plan to achieve the above mission for the purpose of sustaining the business by :

- Integrating energy management with the business management and establishing perfomance driven goals.
- Upgrading hardware, deploying new technologies and improving our practices to increase energy efficiency, reduce greenhouse gas emissions and minimize environmental impacts.
- Supporting scientific research and technological efforts to deliver new sources of energy including renewable and alternate fuels.
- Carrying out regular audits and training employees to promote energy conservation as a culture across the entire business functions.
- Continuously benchmarking our energy efficiency and energy productivity against others.
- Promoting awareness on energy conservation among all members of the Reliance family and the community at large.

Mukesh D. Ambani
2007

OUR MISSION

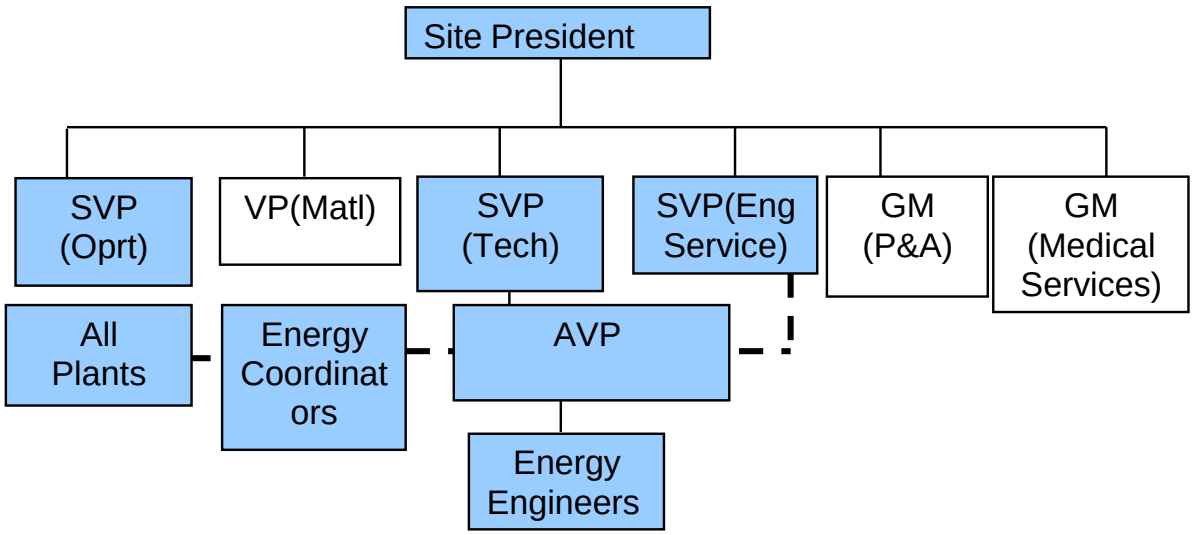
--> To be the lowest specific Energy Consumer in the industry we operate
--> To Minimize impact on environment
--> To Widen our energy sources

PLANS TO ACHIEVE BY

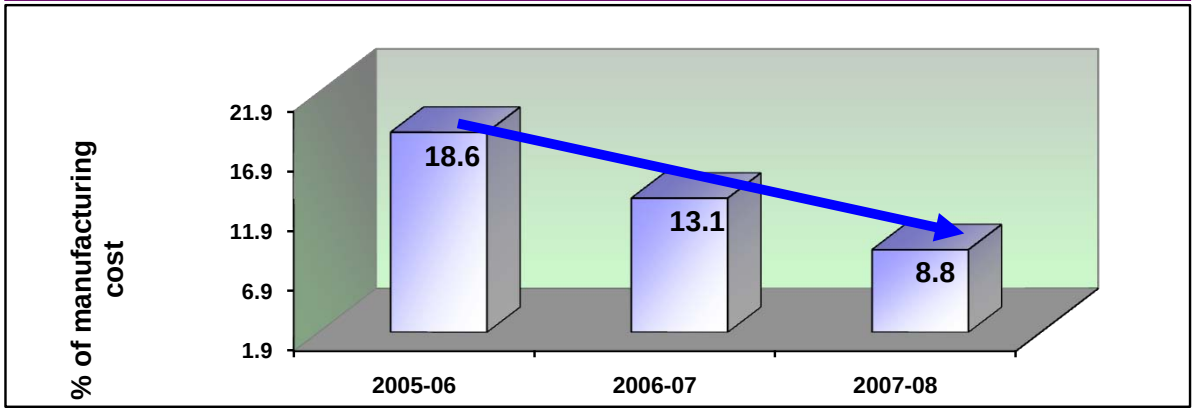
--> Integrating energy management
--> Upgrading Hardware and deploying new technologies
--> Supporting scientific research
--> Carrying out Audits & training of employee
--> Benchmark Continuously
--> Promote Awareness

One of our project (Installation of Vapour absorption refrigeration system by using waste contaminated process steam) **is approved by UNFCCC as CDM project and issued 11892 CER. One of our project has been aprroved by CCX for the VER (Volatile emmision reduction certificate)**

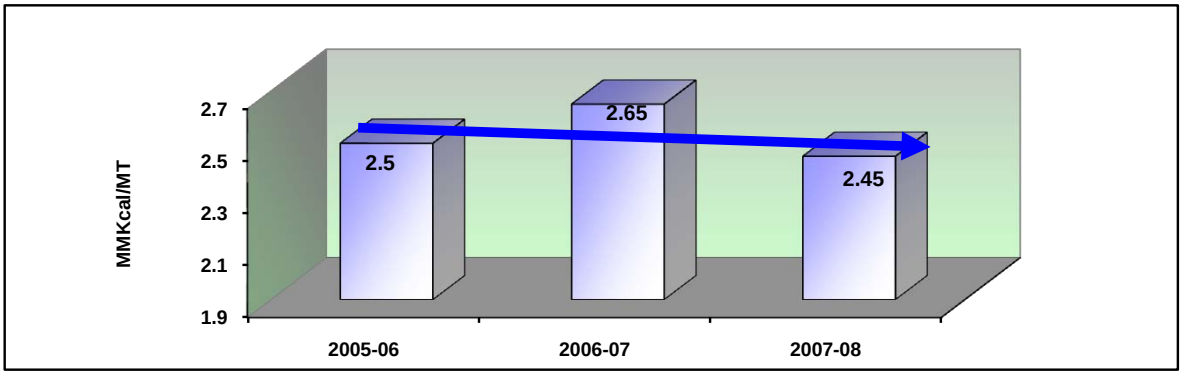
Energy Management Strucuture



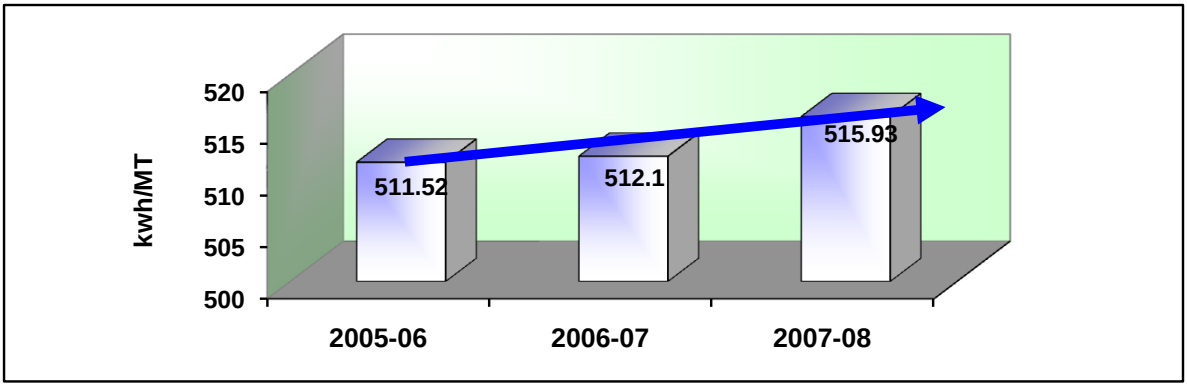
Reduction in Energy Cost as % of manufacturing Cost



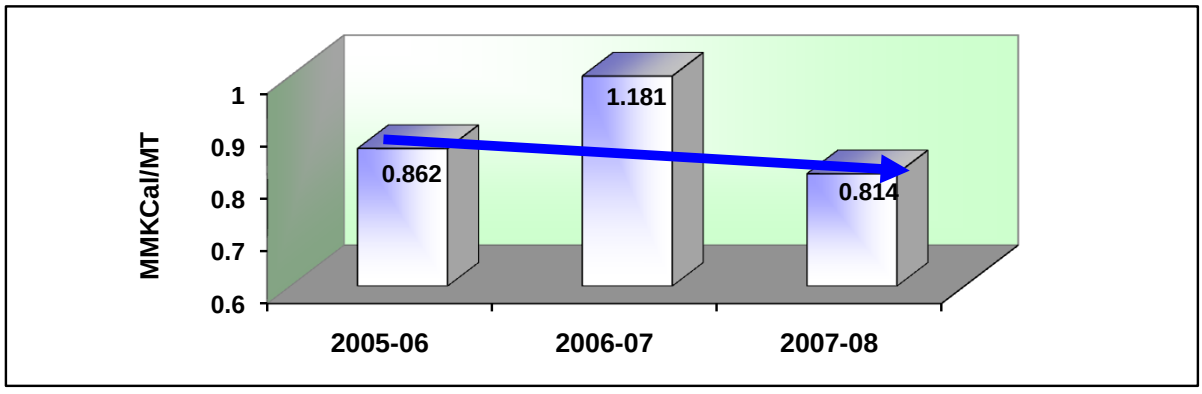
Improvement in Energy Index



Reduction in Specific Electrical Energy Consumption



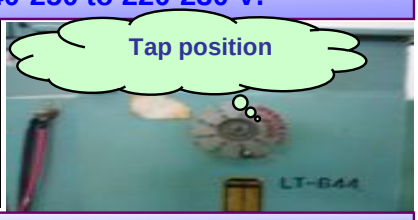
Reduction in Specific Thermal Energy Consumption



Few energy conservation schemes implemented in 2007-08 are listed below. Biggest achievement for the year 2007-08 is that our energy index reduced by 7.5 % as compare to previous year.

Reduction Of lighting supply voltage from 240-250 to 220-230 V.

Detailed survey of lighting load of different plant was measured. In 20 nos of transformers supply voltage was found in the range of 240 to 250 V. By changing tap position supply voltage was reduced to 220-230 V without any investment resulted annual savings of 0.8 lacs.

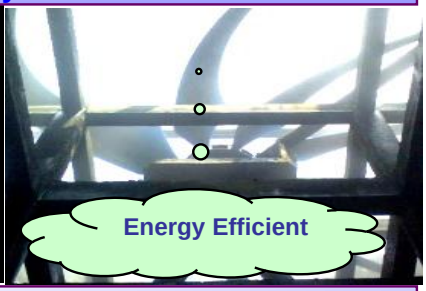


Provision of VFD on Fire water jockey pump.

Jockey pump is supplying fire water (at 7 kg/cm2) to complex. We are having four cooling tower from which we are giving blowdown (at 7 to 7.5 kg/cm2 of pressure) to maintain COC of circulating water. We have planned to utilize this blowdown as a make of fire water. Provision of VFD in jockey pump enables to utilize blowdown water as make up of fire water and power reduction of jockey pump also. Resulted annual savings of 8.6 lacs.

Replacement of existing GRP fan with Energy efficient FRP fan

There are four cooling towers in RIL DMD complex supplying cooling water to the complex. The entire cooling tower has GRP fan of 10 meter diameter. Differential temperature across CT-01 is always remaining 8.5 to 9 deg C. With a view to enhance Cooling Tower performance, we have changed one fan of CT 01 from GRP to energy efficient aerodynamically designed FRP fan. Resulted savings of 4 lacs with an investment of 3.74 lacs.



Change in Feed tray location of Ethylene Tower in Gas Cracker plant

Simulation of ethylene tower done using ASPEN simulator. Feed tray location changed from 80th to 76th tray. Resulted in annual steam savings of 74 lacs with no investment.

Hydrocarbon recovery from Cracked Gas Sour oil trap vent

Cracked gas Compressor K-45 uses seal oil for sealing against leak off gases. The seal oil that comes in contact with the process gas flows down to sour oil traps, which separate the gases and vent them to the atmosphere via flare. There are two traps per module and vents are routed to atmosphere through restricting orifices. Sour oil trap vent routed to CG compressor 1st stage suction. Modification leads to annual savings of 20.3 lacs.

Installation of CFL lamps in buildings

Survey of buildings is being carried out by Central Engineering services of whole complex. Total 580 nos of GLS lamps replaced with energy efficient CFL lamps.

Reduction in power consumption in compressor house

Instrument air is used by all the consumer plants in the complex. Centrifugal air compressors are provided for supplying the air to user plants. After compressing the air, the moist air is dried in adsorber bed. Variation in Dew point/ moisture content is observed in instrument air which has an adverse impact on the instrumentation system used by user plants. It is also observed that the power consumption for producing the instrument air was higher then the design data. The power consumption is mainly for compression and bed regeneration activity. The six sigma project was taken up to improve dew point/moisture content of instrument air and reduction of power consumption using DMAIC methodology. Resulted in savings of 438 KWH of power annually with no investment.

Replacement of faulty steam traps in HP steam header

Detailed surveys was being carry out of steam traps and yard piping of steam header by the plant jointly with Technology. Passing traps and small leakages were identified. Passing traps were replaced with new one and during this opportunity small leakages were also being attended. Resulted in annual steam savings of 385.4 lacs.

Hydrocarbon recovery from sample analyzer stream

Flow of 14nos. of process analyzers sample stream was going to flare header, which is now being diverted to CG first stage suction. Resulted in recovery of off gas which now being used as a fuel in CPP. Resulted in annual savings of 3.1 lacs with 0.1 lacs of investment.

Installation of solar panel at township

As an renewable energy utilization initiative solar panel Installated at township hostel done body washer system. Resulted in annual savings of 4.9 lacs with an investment of 11 lacs.

Replacement of CRT monitor with TFT monitor

As an EnCON initiative personal computer's CRT monitors were replaced with energy efficient TFT monitors. Resulted in annual savings of 1.5 lacs with an investment of 6.6 lacs.

Installation of biogas plant in canteen

Installation of biogas plant in canteen for treating canteen waste with capacity of 100 kg/day. This resulted in savings of 0.3 lacs with an investment of 0.3 lacs.

Energy Conservation Plans and Target

Energy Conservation Measures(Planned)	Expected Saving Rs lacs/ annum	Investment Rs lacs/ annum
Heat recovery from HRSG flue gas	674	100
Dehydrator regeneration gas-gas exchanger provision in EPRU plant	230	19
New compressor for balance hydrogen recovery from Chlor Alkali plant.	174	284
Replacement of existing GRP fans with Energy efficient FRP fans in all balance cooling tower	67	90
Replacement of inefficient cooling tower 04 pumps.	250	164
Energy Conservation by process integration to optimize process design and operations using Pinch Technology in Gas cracker plant.	-	-

Substitution of Conventional Energy with Renewable Energy

We had generated 7673 MWH wind power in 2007-08.
We had generated 1.455 KWH from Solar Photovoltaic panel in 2007-08.

Environment Conservation

RIL,DMD is certified for ISO-14001. DMD conducts its business so as to minimise own footprint on ecology & environment.The company has a shared vision of being the preferred business associate with concern for ecology, society & environment.Green Card system introduced at site to monitor & improve environment management system.The management of liquid effluent, air emissions, and solid wastes, etc. are integrated with operations of petrochemicals plants and various offsites & utilities.Experimental Jatroba (for Bio-diesel) plantation done successfully. some of the environment conservation is shown in Resource conservation below.

Resource Conservation

ü Rainwater Collection on roof of ESD Building (500 m2 area) and Learning center (185 m2 area) and diverted for sanitary purpose.

ü Back wash water was being discharge to natural water pond which has no end use. Now it is being diverted for irrigation to Jatropha plants resulted in annual water savings of 16800 m3.

ü Use of CT blow down as a make up for fire water.

ü Use of spent caustic 2 T/Hr in VCM plant for neutralization of acidic Effluent water.

ü In MEG plant Aldehyde removal Unit and DI Unit commissioned resulting into hydraulic load reduction by 10TPH.

ü Green belt enhancement by planting 1.8 lakh Jatropha (biodiesel) seedlings in 155 acres of land.

Safety

RIL,DMD Complex is OHSAS-18001 certified site. safety is well organised, established and planned for minimising losses caused by unexpected situations. Various SOPs and SMPs/rules and Safety Manuals for all plants are practised in the Company and necessary improvements/updation are also made. RESOP(Reliance Safety Obseravtion Process) audit done by all supervisory employee on regular basis.System introduced for contract workmen gate passess issued only subject to mandatory Safety training. Our efforts are to comply our commitment - HSE policy and Quality policy to the full extent.