

Energy Conservation

Reliance has always focused on energy conservation as a key component of its overall strategy for remaining globally competitive, by maintaining overall energy costs below comparable costs for its global peer group.

Energy costs are typically a significant cost in petrochemicals operations. The company's fundamental strategy for being globally competitive in terms of energy costs revolves around relying on captive power generation for all its complexes, and continuously working towards conserving energy and optimising its usage in all aspects of its operations.

Energy conservation measures are being taken up in the areas of steam, power and fuel consumption at all sites. The manufacturing sites depend on gas and steam turbines for power generation, and heat recovery steam generators and boilers for steam generation.

Consumption of power and steam in the process plants has been steadily brought down to below benchmark plant norms. Also, cheaper fuels are being utilised in the gas turbines and waste heat boilers, in order to improve fuel consumption.

Some of the measures to improve fuel efficiency include:

- chilling of inlet air to the gas turbines,
- operation at base load to realise minimum heat rates, and
- export of power to the state grid

During the year, 70 schemes relating to energy conservation were implemented at the various manufacturing sites. Some of these schemes include converting fixed speed motor drives to variable speed drives, change of cooling water fans from metallic blades to FRP blades, increase in process furnace efficiency by changing the air/fuel ratio, optimisation of CW header pressure drop, heat integration between waste heat streams and process streams requiring heat, and installation of photocells for lighting.

In addition to the above, 28 other schemes are at various stages of implementation relating to energy conservation in process plants.

Some of the more significant energy conservation initiatives and achievements at the Hazira and Patalganga complexes are discussed here.

The Hazira complex bagged the first prize in the National Energy conservation Award - 1999 contest instituted by the Ministry of Power, Government of India.

The energy index of the Hazira complex has come down from 2.45 Gcal/MT in 1998-99 to 2.26 Gcal/MT in 1999-2000. The total cost reduction potential for all the energy saving schemes at their full potential, works out to Rs. 28 crores per annum.

Some of the major energy conservation schemes implemented at Hazira are listed below:

- Optimisation of modified plant air compressor operation in CPP, resulted into stopping of one compressor in POY.
- Scheme for utilising aromatics plant condensate as boiler feed water in cracker de-aerator to achieve savings in LP steam, power and chemicals.
- Implementation of quench water waste heat recovery and steam drum blowdown recovery in the cracker plant.
- Improvement in furnace efficiency to 85% by optimising air - fuel ratio in the VCM plant.
- Optimization of CP 1/2/3 and CP 4/5/6 HCT pump operation resulted into stoppage of 2 numbers of pumps - leading to savings of 324 MW of power per annum.
- Optimization of chilled water circulation pump during winter operation in POY plant resulted into power savings of 510 MW per annum.
- In POY plant, Dowtherm fuel consumption reduced by increasing the Dow condensate temperature from 280 deg. C to 285 deg. C.
- Additional schemes that are under progress/ implementation include revamp of solvent stripper column in PTA plant, replacement of conventional air washers with cell type air washers in POY plant, heat recovery from recycle cyclohexane stream to heat the hot flush flow for reduction of heat losses in PE plant, etc.

The Patalganga complex received the second prize from the Ministry of Power, Government of India in the National Energy Conservation Award - 1999 contest. The unit has been getting first prize for the last 3 years. This year, the first prize was awarded to the Hazira site.

A cost saving of Rs. 5 crores per annum has been achieved from energy conservation measures taken up at the cooling water, boiler feed water and LP steam system.

Some of the schemes that have been implemented at Patalganga are:

- Changing of connections from delta to star of under-loaded motors in PTA and LAB plants for maximum utilization of available power.
- Total recycling of process water in PTA plant for saving DM water and also reducing effluent generation.
- Saving in Boiler feed water in PTA plant by optimizing the operating pressure of condensate collection drum.
- Utilization of liquid byproducts from PX plants as fuel for gas turbine as well as for supplementary firing in HRSG.
- Power saving by virtue of replacement of conventional packs cleaning system by hydrotherm process in the polyester yarn plants.

- Additional schemes that are under progress/ implementation include installation of back pressure turbine to eliminate letdown of steam, optimization of LAB (FE) feed kerosene preheat train, GT inlet air cooling to lower the fuel specific consumption, and implementation of changes arising out of the pinch analysis study in the PX and PTA plants.