

*First Prize*

*Edible Oil / Vanaspati*

**RUCHI SOYA INDUSTRIES LIMITED**  
Village – Mithirohar Gandhidham, Distt. Kutch (Gujarat)

**Unit Profile**

RUCHI Soya Industries is the 15<sup>th</sup> fastest growing Indian company, according to the Business Today Survey (edition– June 15, 2008). The group has its corporate headquarters in Indore, with offices in Mumbai, New Delhi, Calcutta, Chennai and other major business centers in the country. The Group's business interests vary in different commodities. It has manufacturing and trading facilities of Soya bean products, Agri-business, Oils and Fats, Flat Steel, Galvanized Steel & Cold Rolled Steel etc. The Group also has long exposure in trading of Oil, Pulses and other agriculture crops.

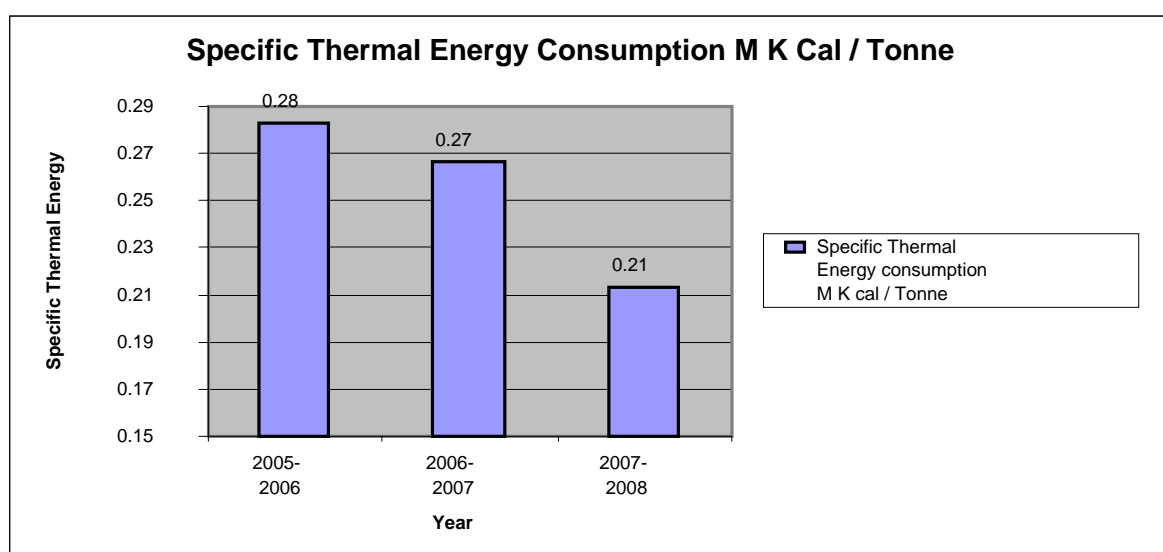
Ruchi Soya Industries Limited, Kandla, a group company of RUCHI GROUP, established in the October 2004 located at Survey No. 217 / 2, Village – Mithi Rohar, Gandhidham (Kutch). The unit is basically engaged in manufacturing of Refined Oil, Vanaspati and bakery shortening with by products mainly Palm Fatty Acid distillate, acid oil used in soap industries. It has got ultra modern, fully atomized 1000 TPD Refinery and 200 TPD Vanaspati Plant. Annual Sales Turnover of Unit for year 2007-08 was Rs. 80,340 lakh. Unit is accredited ISO 9001: 2004 & Dutch HACCP.

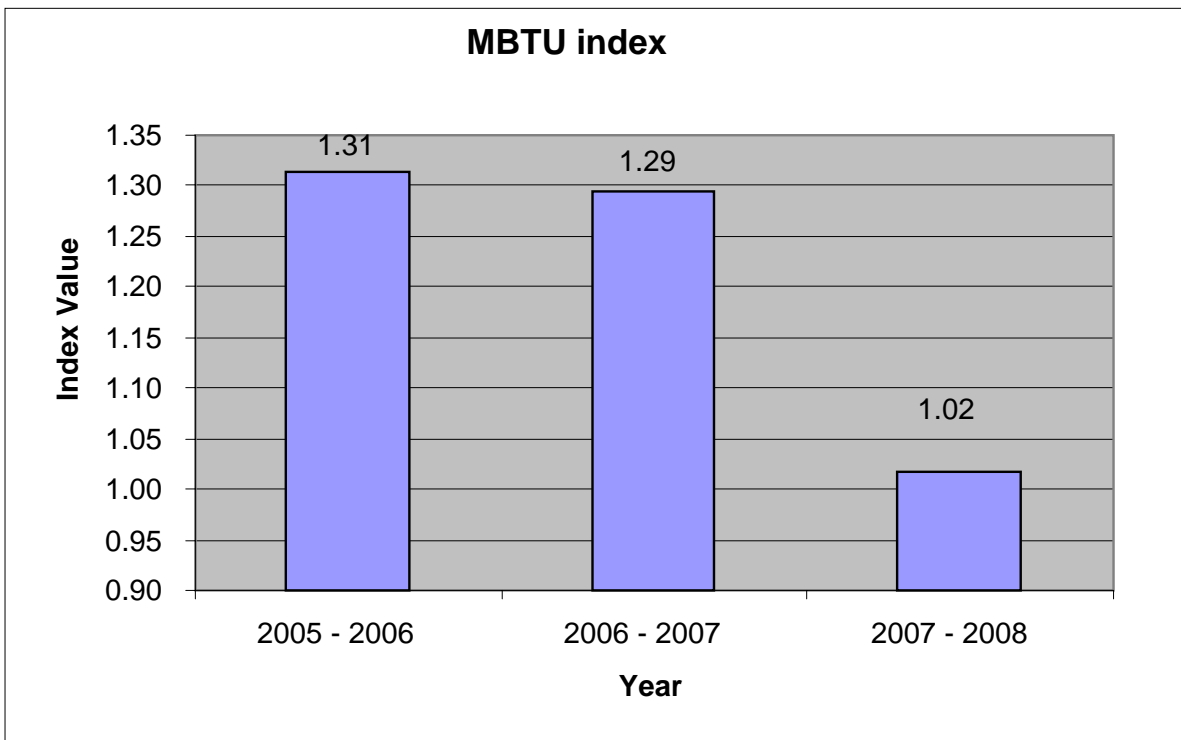
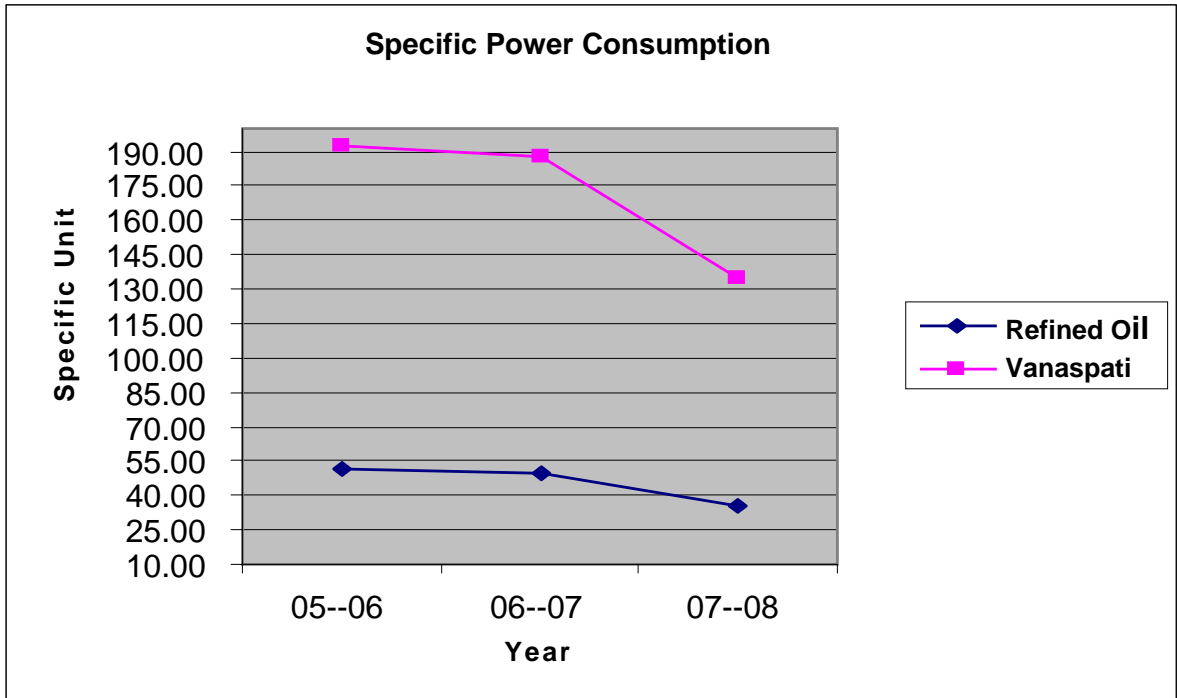


## Energy Consumption

With the suggestion & successful implementation of various energy conservation measures suggested by Core team, there is continual decline of specific energy consumption & it has resulted in saving of Rs.240 Lakh with an investment of Rs.52.0 lakh. There is 27.45% reduction in specific power consumption over last year. Incase of Specific Thermal Energy consumption, there is decline of 8.84% over previous year.

Description	Unit	2005-2006	2006-2007	2007-2008
Annual turn over	Rs. in Lakhs	46,203.00	52,053.00	80,340.00
Total manufacturing cost	Rs. in Lakhs	46,203.00	52,053.00	80,340.00
Electrical energy	Lakh kWh / Year	62.78	88.57	95.55
Thermal energy	M K Cal / Year	31,779.45	34,015.53	40,450.76
Total energy Cost	Rs. in Lakhs	406.49	559.21	694.67
Energy Cost as % of manufacturing cost	Percentage	0.88	1.07	0.86
Specific power consumption	000' kWh / Tonne	55.86	69.40	50.35
Specific Thermal Energy consumption	M K cal / Tonne	0.283	0.267	0.213





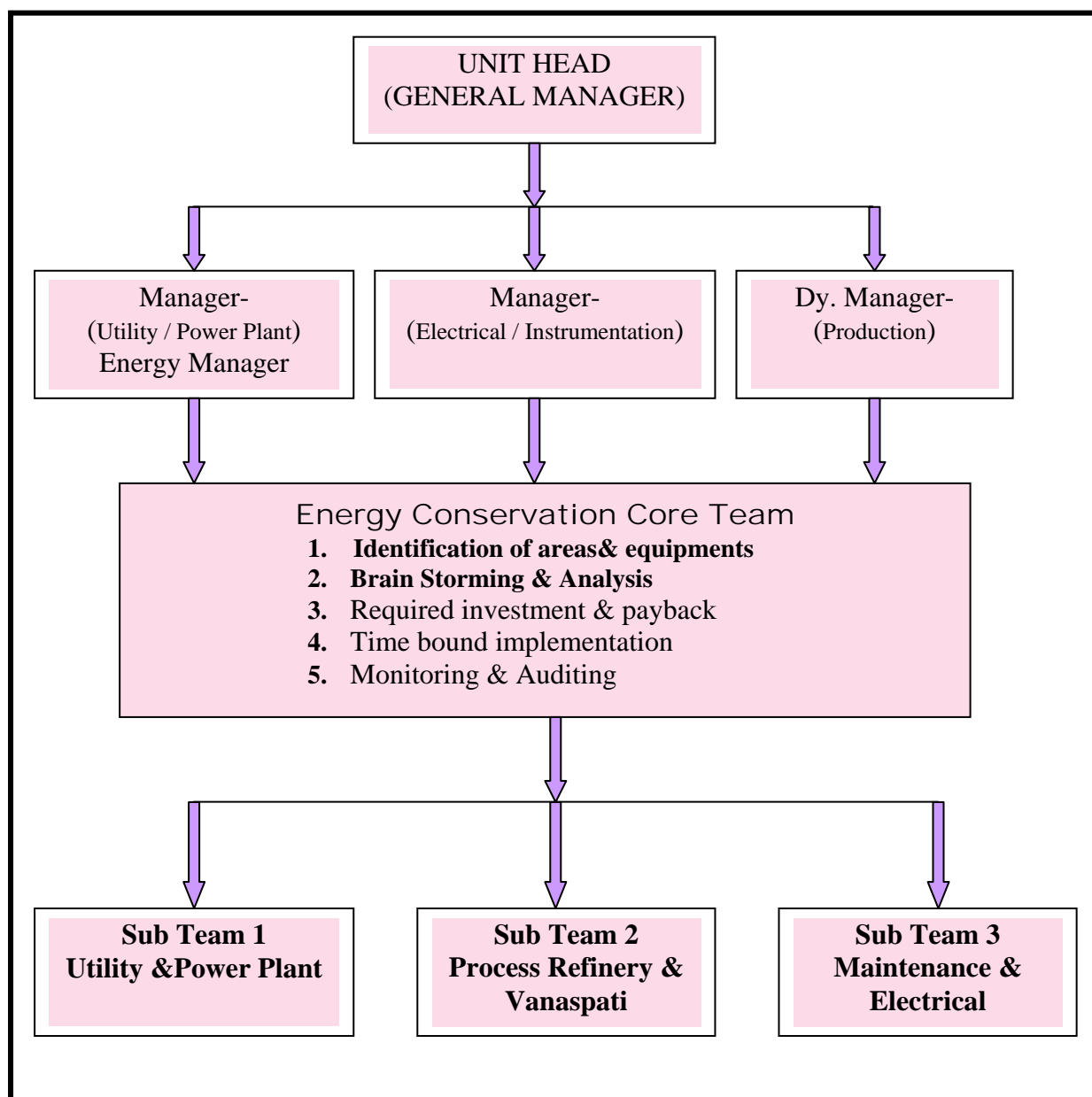
## Energy Conservation Commitment, Policy and Set up

Ruchi Soya Industries Ltd., Kandla, is committed to adopt energy conservation measures in all activities, products and services across the unit.

Their Mission is:

- Continuous up gradation of process with energy efficient & eco friendly technologies to optimize energy cost
- To educate and motivate all level of employees for energy awareness activities and recognize their contribution for its successful implementation
- To conduct regular management reviews to ensure continual improvement

## Energy Conservation Team Structure



## Energy Conservation Achievements



- Replaced barometric cooling tower motor from 75 to 45 kW (02 sets) in refinery plant resulting in saving of Rs 16.77 lakh/year.  
Investment: Nil (arranged In house )
- Replaced barometric cooling tower motor from 75 to 37.5 kW in Vanaspati plant resulting in saving of Rs 12.78 lakh/year.  
Investment: Rs 0.8 lakh
- Replaced Clean cooling tower pump motor from 45 to 22.5 kW (02 set) in refinery plant resulting in saving of Rs 17.16 lakh/year  
Investment: Rs 0.85 lakhs



- Installed 20KL storage tank for low medium pressure steam condensate with separate piping from Refinery & Vanaspati plant resulting increase 9.84% recovery of condensate & 9745 KL D.M. Water as a saving of Rs 11.09 lakh/year  
Investment :Rs. 2.7 lakhs



- Installed lower rating steam consumption booster in vanaspati plant there by saving in steam consumption of 543 kg/hrs.  
Net saving of steam : 4170 MT  
Net saving in Rs 16.56 lakh/year  
Investment: Rs 3.54 lakhs



- Installed VFD in motor of Auto Clave agitator, there by resulting in saving of Rs 5.53 lakh /year.  
Investment: Rs 1.6 lakh
- Installed VFD in motor of ID fan in TFH boiler, there by resulting in saving of Rs 2.8 lakh /year.  
Investment: Rs 0.81 lakh

## Energy Savings

Year of Commissioning of the projects	Project description	Achievement of energy savings per year basis					Total savings in (Rs. Lakhs)	Investment incurred on the project (Rs. Lakhs)
		Electricity	Fuels*					
		(Lakhs (kWh))	Coal (tonnes)	F.Oil (KL)	Gas (lakhs m3)	Total (fuel) in Mkcal)		
	<b>Electrical Energy Saving</b>							
	1 Replaced Crystallizer water circulation Motors from 18.5 kw to 9.3 - 03 set	2.67					12.00	0.58
	2 Removed 22 kw process water pump & utilized existing cooling tower water	3.21					14.43	0
	3 Replaced semi chilled water pump motors from 18.5 to 3.7kw-01 set	0.91					4.11	0.134
	4 Replaced Process water pump motors from 22 to 3.7kw	1.37					6.19	0.58
	5 Replaced Clean cooling tower pump motor from 45 to 22.5kw-02 set	3.81					17.16	0.848
	6 Replaced barometric cooling tower motor from 75 to 37.5 kw in vanspati-01 set	2.84					12.78	0.674
	7 Installation of VFD in auto clave agitator motor-01 set	1.23					5.53	1.64
	8 Replaced barometric cooling tower motor from 75 to 45 kw in refinery-02 sets	3.73					16.77	1.334
	9 Replaced Clean cooling tower pump motor from 37 to 22 kw-01 set(refinery plant)	0.96					4.30	0
	12 Automation in cooling tower fan for clean & Dirty cooling water-04 sets	1.09					4.91	
	13 Clean cooling tower Motor replaced from 30 TO 22 KW	0.30					1.35	0
	14 Replaced Fatty acid circulation Motors from 30 to 18.5 kw-01 set	0.55					2.49	0
	15 Replaced Deo Feed pump Motor from 18.5 to 11.0 kw-01 set	0.38					1.75	0
	16 Replaced deairator feed pump BP - 14 Motor from 9.3 to 3.7kw-01 set	0.47					2.12	0
	17 Removed Hard oil filtration pump motor 15 kw-01 set	1.11					5.05	0
	18 Replaced Post bleacher agitator motor from 15 to 7.5 kw-02 sets	0.44					2.02	0.25
	19 Replaced dirty cooling tower motor from 75 to 30 kw-01 set(refinery plant)	2.84					12.93	0
	20 Replaced Fatty acid circulation pump motor from 45 to 22kw(Refinery plant)-01 set	1.11					5.04	0
	21 Removed Fatty acid cooling water pump motor 15 kw-01 set(refinery plant)	1.11					5.05	0
	22 Replaced Bleached oil feed pump 682B motor from 22 to 15 kw-01 set (refinery plant)	0.28					1.28	0
	23 Replaced Neutral oil feed pump 501 Motor from 30 to 22.5kw	0.30					1.35	0.424
	24 Installed APFC Controller ) to control power factor at 11 different panel location thus received 2.4% rebate from Billing Amount						5.18	0
	25 Removed DM water pump of 5.5 kw-01 set	0.20					0.93	0
	26 Installed VFD in ID fan motor of TFH boiler -01 set	0.61					2.80	1.61
	27 Replaced RO reject water motor 7.5 to 3.7 kw-01 set	0.14					0.63	0
	28 Replaced RO water motor from 45 to 37.5 kw-01 set	0.27					1.24	0

Thermal Energy Saving								
1	Installation of Vacuum Regenerative Heat Exchanger for effective utilization (Mk cal /year)					3744.00	30.96	31.45
2	Installation of steam booster with lower rating of steam consumption there by reduction in consumption of 543 kg/hrs in steam		1027.153			3081	16.56	3.54
3	Installation of S&T heat exchanger for deod oil to crude oil in vanaspati plant		560.000			1680	9.03	0
4	Replacement of lower mesh size screen with crusher hammers & liners resulting Coal to Steam ratio Increased from 4.06 to 4.2 Net saving of coal(Lignite) 813 MT		813.136			2521	13.11	6.1
5	Condensate Recovery increased from 9.63%to 19.47% with Saving of Condensate& DM Water 9745 KL		259.867			780	11.09	2.7
	Flash steam Recovery from condensate & blow down water		212.736			638	3.43	0.62
6	For D.G.Power generation using L.D.O.instead of H.S.D with same generation rate			69.848		671	6.38	0
	<b>Total</b>	<b>31.93</b>	<b>2872.89</b>	<b>69.85</b>	<b>0.00</b>	<b>13114.529</b>	<b>239.943</b>	<b>51.864</b>

### Energy Conservation Plans and Targets

	Energy Conservation Measures (Planned)	Anticipated savings in		Approx. investment (Rs. lakhs)	Project Commencement & Completion year
		Energy Value (specify units)	Rs. Lakhs		
1	Plant & Street light savings by introducing Energy saver transformer lakh kWh / year	0.59	2.66	2.10	December 2008
2	Replacement of 03 nos 15 KW Motors to O 3.7 kW with introduction of New compact Gear box lakh kWh / year	2.00	9.03	0.47	2008-2009
3	Installation of Softner for Process cooling tower instead of R.O. Water ( KL/year)	48000	9.60	6.50	2008-2009
4	Further reduction in Process pump motors in fractionation paint (22 TO 3.7KW- 02 sets & 9.3 TO 3.7 KW IN 03 sets ) lakh kWh / year	3.74	16.91	0.47	2008-2009
5	Increase captive power plant by installing New EC Turbine lakh kWh / year	63.36	190.08	250.00	2009-2010
6	TS - 20 to be Converted from F.O. to solid fuel		86.03	90.00	2009-2010
	<b>Total</b>		<b>314.301</b>	<b>349.540</b>	

### Specific Energy Consumption Planned Target for the year 2008-09 & 2009-10:

Year	Electrical*	Thermal*	Reduction over the year 2007-08	
	kWh / mt	Mkcal / mt	Electrical%	Thermal%
2007-08 (Base year)	50.35	0.21315	-	-
2008 - 09	47.08	0.19342	6.50	9.26
2009 -10	46.95	0.18851	6.74	11.56

### Environment and Safety

#### Safety

RUCHI SOYA INDUSTRIES LIMITED, Kandla is committed to ensure safe and healthy work environment impacting across the operations. It has safety committee comprising of employees from across function to ensure that safety measures are strictly adhered by one & all. Every fortnight safety meeting is conducted including the top management participation to review safety measures, resulting in zero accident reported over the past four years of operation. Frequent training on fire hazard & first aid is imparted to employees to bring awareness across the unit.

#### Health, Hygiene & Environment

Being a food processing unit a high importance is accorded to health & hygiene aspect & unit is accredited Dutch HACCP (Hazard analysis critical control point) and aims to get ISO 14001 & OHSAS Certification by end of March 09.

**Second Prize**

**Edible Oil/Vanaspati**

**RUCHI SOYA INDUSTRIES LIMITED**  
**Uthukottai Taluk, Tiruvallur Distt. (Tamil Nadu)**

**Unit Profile**

Ruchi Group of Industries is a well-known industrial group based at Indore, MP with Ruchi Soya Industries as its flagship company. It is widely spread all over the country having Edible Oil Refineries and Vanaspati manufacturing Plants. The group has diversified from edible oil refining business to Palm Plantations to Bio Fuels to Food Products to Steel business. The group has corporate headquarters at Indore, with offices in Mumbai, New Delhi, Calcutta, Chennai and all other major business centers in the country. The Group's business interests vary in different commodities. It deals in manufacturing and trading activities of Soybean products, Agri-business, Oils and Fats, Flat Steel, Galvanized Steel & Cold Rolled Steel etc. The Group also has long exposure in trading of Oil, Pulses and other agriculture crops. The combined business turnover for the year closed on 31st March, 2008 stood at Rs. 11500 Corers. Net worth is around Rs. 1145 corers measure of public confidence in the Group is demonstrated by the presence of over 1,20,000 investors in its various companies.

This plant winner of Prestigious Award for Energy Conservation for the year 2007-08 conferred by Hon'ble President of India, is located at outskirts of Chennai i.e. in Trivallur district with total capacity of 900TPD of refining edible oils like soya bean, palm, sunflower, Rice Bran Oil etc. and producing Vanaspati. The unit started practicing Best manufacturing standards and practices like TPM, ISO 9001:2000 as well as ISO 22000 (HACCP) standards and having target of getting certification by this financial year.



## Energy Consumption

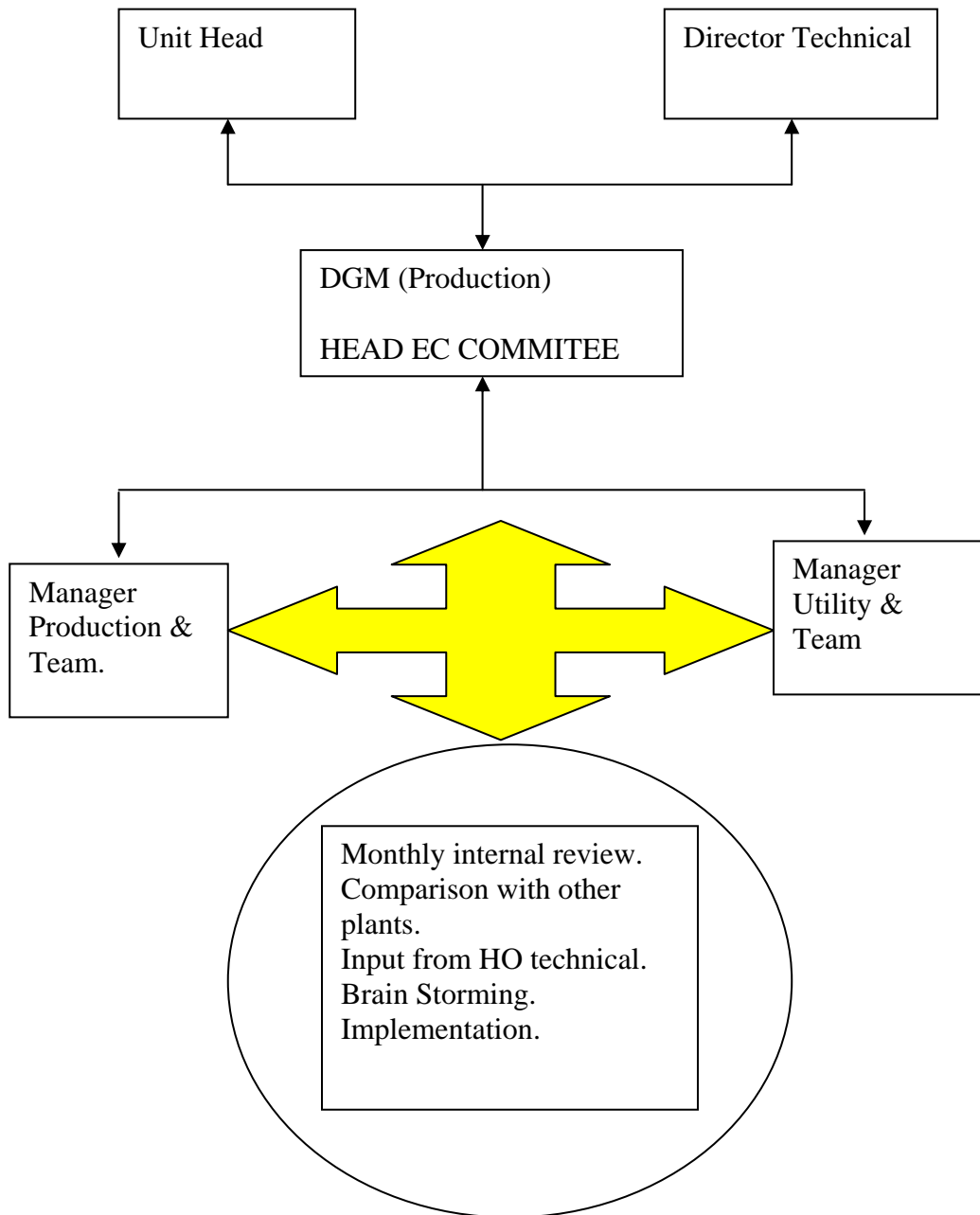
Description	Unit	2005-2006	2006-2007	2007-2008
Annual turn over	Rs: in Lakhs	28,866.32	48,191.48	<b>66,165.47</b>
Total manufacturing cost	Rs: in Lakhs	26,691.19	46,812.21	64,054.73
Electrical energy	Lk KWA / Year	92.40	66.39	75.36
Thermal energy	M K Cal / Year	81,276.00	60,015.00	70,294.00
Total energy Cost	Rs: in Lakhs	1,121.03	805.17	948.01
Energy Cost as % of manufacturing cost	Percentage	4.20	1.72	1.48
Specific power consumption	000'KWA / Tonne	0.68	0.49	0.42
Specific Thermal Energy consumption	M K cal / Tonne	0.60	0.44	0.39

## Energy Conservation Commitment, Policy and Set up

RSIL forecasted the requirement of universe interns of saving energy and committed for the same. This factory has the Core team lead by Unit head and headed by DGM (Production). DGM (Production) has the production managers as well as Utility & maintenance mangers along with their team below him.

Since being a group .HO technical team headed by technical Director will also give the inputs and supports on the proposals and process.

## Energy Conservation Team Structure



## Energy Conservation Achievements

Following table will depicts the number of implementation with details of the outcome on energy conservation.

Year of Commissioning of the projects	Project description	Achievement of energy savings per year basis					Total savings in (Rs. Lakhs)	Investment incurred on the project (Rs. Lakhs)
		Electricity	Fuels*					
		(Lakhs (kWh))	Coal/Husk (tonnes)	Diesel (KL)	F.Oil (KL)	Total (fuel) in Mkcal)		
2007-2008	Automatic energy saving panel for lightning circuit with APFC introduced with a saving of 260units/day	1.00					4.71	6.00
	Based on load calculation and experience, Colling tower belongs to 100tpd plant (55HP) was shut and the same circuit was connected with cooling tower in vanaspathy plant thro a 20HP pump	1.10					5.18	
	Cooling tower fan blade converted from Aluminium to FRP and their by 40hp motor replaced by 20hp	0.90					4.24	1.30
	VFD introduced in Thermic fluid boiler ID Fan.	0.63					2.97	0.07
	40HP baring metric water pump was given parallel connection with 30hp pump to run on either or basis based on plant load.	0.54					2.54	0.05
	10 HPWater circulation pum - 6 nos were replaced by 7.5HP in crytalizers.	1.08					5.09	
	1 no of Auto clave motor changed from 30 HP to 15HP	0.12					0.57	
	Hot water circulation pump changed from 30 HP to 20HP	0.23					1.08	
	Two nos of oil circulation pumps at different part of the plant were changed from 20 HP to 12.5HP & 10 HP respectively	1.01					4.76	
	20HP Circulation pump in Vam is replaced by 15HP	0.26					1.22	
	Separate priming vessel for all cooling tower pumps	0.24					1.13	0.35
	Thermic fluid boiler conversion from furnace oil to Husk firing.						99.00	125.00
	Condensate recovery sytem implemented , gave recovery of 70KL of hot water @75C /day. This increases the feed water temp by 17C		4480.62			238.82	132.43	85.00
	<b>Sub Total</b>	<b>7.11</b>					<b>264.92</b>	<b>217.77</b>
	<b>Grant total of 3 years</b>	<b>36.83</b>	<b>900.00</b>	<b>681.94</b>	<b>-463.43</b>	<b>7319.26</b>	<b>564.52</b>	<b>384.25</b>



Automatic Energy saving panel for lighting circuit with APFC introduced which takes care of stabilized voltage and power factor.

Investment Rs. 6,00,000

Saving Rs. 4,71,000/Annum.

Metallic cooling tower fan blades were replaced by FRP fan blades which leads to less energy consumption.

Investment Rs. 1,30,000

Savings Rs. 4,24,000/Annum.



VFD introduced in boiler Id fan there by optimum speed running of the fan was possible.

Investment Rs. 7,000

Saving Rs. 2,97,000/Annum.



Thermic Fluid boiler converted from furnace oil firing to coal / husk firing which leads to saving of resource and cost.

Investment Rs. 1,25,00,000

Savings Rs. 99,00,000/Annum

Condensate recovery system introduced in Boiler lines leads to recovery of flash steam and waste heat from process –out water.

Investment Rs. 55,00,000

Savings Rs. 15,09,000/Annum



## Energy Conservation Plans and Targets

Following table brief the action plan for the current financial year. The list is only comprehensive and will get added on move.

Energy Conservation Measures (Planned)	Anticipated savings in		Approx. investment (Rs.lakhs)	Project Commencement & Completion year
	Energy Value (specify units)	Rs. Lakhs		
APFC panel for power factor improvement.	0.72 lk KWH	3.34	1.50	2008
200KVAMaximum Demand sanctioned from EB to be surrendered	200KVA	6.48	0.00	2008
Replacement of cooling coils in the ammonia cold room along with power reduction in	15KVA	4.32	30.00	2008
Conversion of all 36 W-doubl tube lights in the shop floor to be converted in to energy efficient 28watts light	4.4KVA	0.81	2.50	2008
3 no of Auto clave motor changed from 30 HP to 15HP	31.5KVA	0.36	0.00	2008
Conversion of 54 nosordinary gear boxes in to planetary type	80KVA	32.55	24.51	2009
Timer for street light	0.04 lk KWH	0.16	0.15	2009
Waste heat recovery from boiler chimney	101 Mkal		15.00	2008
Boiler Automation for a controlled loading/ running			29.50	2008
Air filtration &leakage / block arresting at all places	to be quantified			2008

## Environment and Safety

RSIL has committed for plant safety. The unit has the plan of Implementing and get certified on ISO 14001 & OSHAS, immediately after streamlining ISO 9001; 2000 standards. Implementation of TPM also adding the input for the same.

**OSHAS:** On Occupational health and safety the unit has its own team guided by external experts organized by HO. The experts makes periodical audit and also give suggestions for improvement.

**Water Effluent:** The unit has full fledged waste water treatment plant which is well approved by Pollution control board. Copies of certificates are enclosed. The unit also added a natural evaporator in the system.

**Air:** All boiler chimneys are of appropriate height and as well approved by Pollution control board. Copies of certificates are enclosed.

**Solid Waste:** All solid waste is all appropriately disposed for reusing by the purchaser. Appropriate places also identified for storing and disposal there by avoiding unwanted hazards.

**MARICO LIMITED**  
MIDC Area, Jalgaon (Maharashtra)

**Unit Profile**

Marico is a leading Indian Group in Consumer Products & Services in the Global Beauty and Wellness space. Marico has 5th largest distribution net work in India with 17 Lac Retailers. It has turnover of about Rs.19.1 billion (USD 477 Million) generated during 2007-08.

Marico has total 7 plants across India manufacturing various leading consumer products and also Marico's branded products are present in Bangladesh, other SAARC countries, the Middle East, Egypt and South Africa. The Overseas Sales franchise of Marico's Consumer Products (whether as exports from India or as local operations in a foreign country) is one of the largest amongst Indian Companies and is entirely in branded products and services. Marico was selected as one of the eight Indian companies in S & P's list of Challenger Companies from various nations, compiled globally by Standard & Poor's in June 2007.

**Jalgaon Plant**

Marico's only plant manufacturing edible oil is located at Jalgaon. This plant has pioneered the Quality systems for Marico. Marico Jalgaon plant is the only plant in Marico which is OSHAS: 18000:1999 certified & EMS: 14000 certified. These sum up the philosophy that will build the culture to drive business growth.

**Energy Conservation Commitment, Policy and Set up**

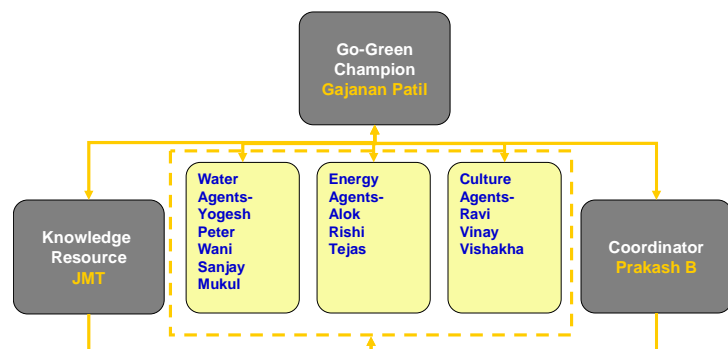
**ENERGY CONSERVATION POLICY**

We Marico Limited, Jalgaon, manufacturer of Refined Edible Vegetable Oil is committed towards Energy Reduction and Conservation of Natural Resources by continual waste elimination of energy and improvements.

To Support this commitment, it is our policy to:

- Promote Energy Conservation Awareness and Knowledge among our Employees and Associates to continuous education and job specific training.
- Establish Objectives & Targets and review them on regular basis to ensure Energy Consumption Reduction.

We will create an ambience of Green Workplace by Energy Consumption Reduction. Thus our contributions to local community and environment will earn us goodwill and stature as an enlightened corporate.



## Energy Conservation Achievements

### (1) Energy Efficient Pumps for water Application

For water application the pumps which were used were inefficient and used to consume more power. The same were replaced by energy efficient pumps. The total saving was 6.25 Lac.

**Before**



Inefficient Pumps

**After**



Efficient Pumps

### (2) Interlocking of Boiler Conveyors Tripping on High pressure

Earlier whenever boiler used to trip for high pressure, all the conveyors used to run unnecessarily, thus wasting the energy. As a project to conserve energy the plant has interlocked the conveyors and now all the conveyors also trip whenever boiler trips. The total saving per year out of this is 0.72 Lac whereas the investment was minimal 0.15 Lac.

### (3) CFL Lamps for Street Lighting

Plant has Mercury vapor and Sodium Vapor Lamps for Street Lighting purpose. The consumption was high for these types of lamps. The unit switched over to CFL lamps with the same Lux levels and replaced all the street lights With 85 Watt CFL lamps. The investment was 0.49 Lac and the saving per year is Rs 0.72 Lac.

**Before**



MVL & SVL

**After**



CFL Lamp

#### (4) Providing Flat Belt for ID Fans of Boiler & TF Heater

For ID Fans of Boiler & TF Heater, the plant was using V Belts for transmission purpose. The unit has changed the transmission from V-Belts to Flat Belt. The total saving is 0.53 Lac/year against investment of 0.25 Lac.

**Before**



V Belt

**After**



Flat Belt

#### (5) Providing Natural Roof Ventilators instead of Exhaust Fans

For the exhaust of hot air, the plant was using exhaust fans which consume electrical power. The unit has replaced these exhaust fans with the Natural Roof Ventilators which are running without any power. The total saving is 0.48 Lac/year against investment of 0.22 Lac.

**Before**



Exhaust Fan

**After**



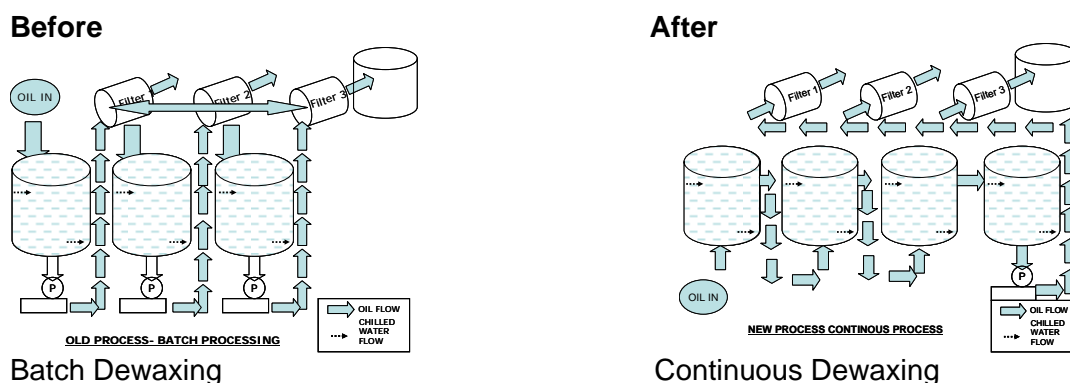
Roof Ventilators

#### (6) Flow Rate Improvement for CORN & RBO

Plant has done a flow rate Improvement in CORN oil and Rice Bran Oil from 120 TPD to 140 TPD. This has eliminated reduced speed losses. Due to this the Power and Fuel required per MT of oil processed has reduced. Total Savings for 2007-08 are Rs 8.25 Lac. The investment was nil.

## (7) Continuous Dewaxing

Batch Process was used in De-waxing Section for Sunflower Oil. In this the plant was getting 50 TPD Production. The unit has now modified the process from Batch to Continuous Dewaxing. Due to this the unit has increased its production from 50 TPD to 60 TPD. Total Savings for 2007-08 was 4.81 Lakhs



## Energy Conservation Plans and Targets

Planned Specific Energy Consumption Target for the year 2008-09 & 2009-10				
Year	Electrical*	Thermal*	Reduction over the year 2007-08	
			Electrical %	Thermal %
2007-08 (Base year)	64.68	0.34	-	-
2008 - 09	54.98	0.31	15	10
2009 - 2010	46.73	0.28	27.75	19

## Environment and Safety

The plant contributes to control on environmental pollutions through various ways like, boiler which runs on bagasse which is wastage for the Sugarcane, pollution free DG sets.

The equipments in refinery dept are of the world class manufactures and also the equipments used in filling dept are of the top manufactures from India. This makes a world class refining and packing unit resulting in to quality product output.