

**Glaxosmithkline Consumer Health Care Ltd.,
Rajahmundry, India-533124**

UNIT PROFILE

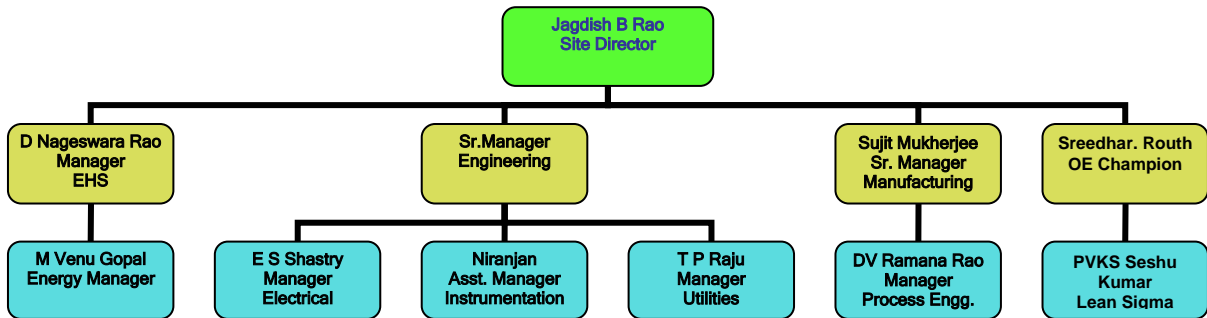
GlaxoSmithKline (GSK) is a world leading research-based pharmaceutical company with a powerful combination of skills and resources that provides a platform for delivering strong growth in today's rapidly changing healthcare environment. GlaxoSmithKline Consumer Healthcare Ltd. (GSKCH) is an Indian branch of GlaxoSmithKline plc U.K. GSKCH is one of the largest players in the Health Food Drinks industry in India

GSK, Rajahmundry site located in southern part of India manufactures nutritional powders viz. Horlicks Chocolate Horlicks and Jr. Horlicks. Its annual capacity is 21 kilo tons with 7 lines in operation. Current site headcount is 530 permanent workmen and 95 staff.

Utilities are a major expenditure on site and accounts to approximately 5% of the cost of goods manufactured.

Rajahmundry site accredited **ISO 9000, ISO 14001 and ISO 18001** certifications for quality, environment & safety management systems.

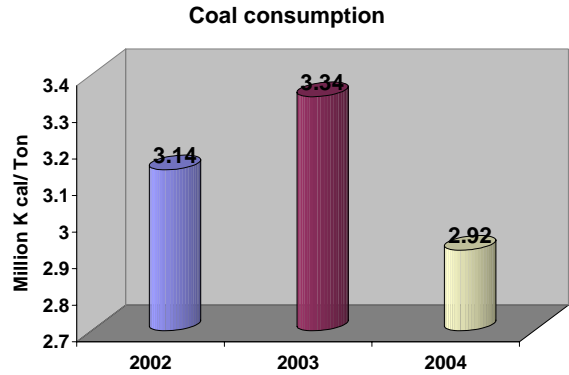
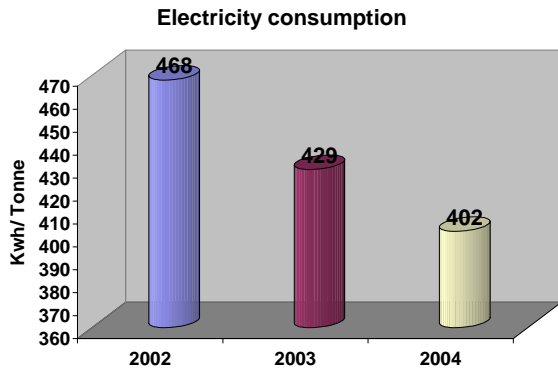
Energy conservation cell structure



Energy consumption

Specific Energy consumption details	Unit	2002	2003	2004
Annul Production	MT	13924	15720	16936
Total energy consumption per annum	KWH(Lakhs)	65.12	67.47	68.05
Total thermal energy consumption	Million K Cal	43767	52515	49402
Total cost of goods produced	Rs. Lakhs	7718	8206	8756
Total energy cost	Rs. Lakhs	426.5	409.3	439.2
Total energy cost as % of Cost of goods produced	%	5.53	4.99	5.02
Electricity (Kwh) per ton of product	Kwh/Ton	468	429	402

Graphical Representation of Specific Energy consumption:



Major energy conservation projects implemented.

1. VAM

In place of vapour compression system Vapour Absorption Machine (150 TR) is installed for process air conditioning to reduce the site OPEX cost by incorporating energy efficient systems, thereby reducing the utility cost by 10% and to eliminate Ozone Depletion Compounds by 60%(Freon) to move in a eco friendly way.

Investment (INR)	5800000
Power saving (KWH)	1270930
Annual saving (INR)	2410000
ODC reduction	60%
Noise level reduction	95dBA to 85 dBA
Pay back period	2.4 Years



2. Vermi composting

The solid organic waste generated in the process of manufacturing, used to be disposed off through incineration. The process of incineration shifts the problem of land pollution into air pollution by air emissions with suspended particulate matter, SOx, NOx. COx etc., This is a serious environmental concern.

The project on Vermi-composting is aimed at eliminating land and air pollution and generating manure (chemical free fertiliser) for site green belt development and avoiding the use of incinerator for waste destruction

Power saving (KWH)	25200
Investment (INR)	75000
Annualized Savings(INR)	92232
Payback period	< 1yaer



3. VFD (Variable frequency drive)

To make use of the modern technology for energy savings, installed variable frequency drives at cooling tower

Investment (INR)	354000
Savings (INR)	259000
Payback period	1.5 years



4. Limit switches

Limit switches have been provided and the oven water pumps have been interlocked to stop the pumps during loading and unloading of food from the ovens (meant for baking)

Annualized power saving (KWH)	63209
Savings in INR	387000
Investment made	35000
Payback period	< 1year



5. Economizer and Oxygen analyzer at Boiler

Installed economizer at boiler and Oxygen analyzer to limit % O2 for better combustion of coal and there by reducing the overall consumption of coal

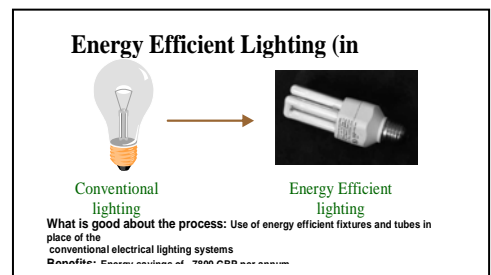
Coal saved per annum	292 T
Investment (INR)	1000000
Annualized Savings (INR)	500000
Payback period	2 years



6. Electronic ballast

This project reduced wastage in the form of ballast loss by replacing with 28 W superior electronic ballast which has long life, reliable and suitable for operation between voltage range of 145 Volts to 260 Volts.

Power saving (KWH)	136579
Investment (INR)	627000
Annual savings (INR)	519000
Payback period	1.2 Year



7. Enhanced condensate Recovery

Steam is the only heating media for horlicks manufacture and is generated from coal fired boilers at 10 bar pressure and 180 degC. Steam is being condensed into condensate during the process and gets collected by gravity into condensate collection pit, which in turn is pumped to boiler house for steam generation. Since condensate cannot be recovered fully due to practical constraints, make-up water is fed through DM water which is at ambient 35 degC.

Condensate being hot water at just than 100 degC if re-circulated to the maximum possible extent, results in enormous fuel savings as boiler needs to only raise temperature from 100 degC to 180 DegC. Hence if condensate recovery can be enhanced from 60% to 75%

Investment (INR) 250000
 Annual savings (INR) 470000
 Payback period < 1 year

8. Non Conventional Energy

Use of non-conventional energy (sun light) through replacing part of the roof with transparent sheets and avoided electrical lighting.

Total Investment (INR) 27000
 Annual energy savings (INR) 77000
 Payback Period < 1 year



Projects implemented during 2003- 2005

S.No	Energy saving measure	Saving (Rs. Lakhs)	KWH (Lakh)	MKCal	Investment (Rs.Lakhs)	Year
1	Hot well sink agitator stoppage in refrigeration plant	0.959	0.21	0	Nil	2004-05
2	Energy efficient light fittings at various locations in Utility areas	0.204	0.05	0	0.12	2004-05
3	Reduction of Agitator usage at Chilled Water Plant	0.803	0.18	0	Nil	2004-05
4	Maximise efficiency of AHU blower motor	0.228	0.05	0	Nil	2004-05
5	To reduce fuel consumption on DG Sets by reducing no of starts in a month	0.816	0.18	0	Nil	2004-05
6	Project Energy by water ejectors in place liquid ring vacuum pumps	2.388	0.53	0	4	2004-05
7	Project ECON, replacing inefficient pumps by efficient pumps	4.888	1.09	0	1.5	2004-05
8	Energy conservation through vapour absorption machine	24.795	5.51	0	59.71	2004-05
9	Gravity filling of ghee avoiding pump usage for the same	0.071	0.02	0	Nil	2004-05

10	VFD for cold water pump in Cooling tower	2.897	0.64	0	3.54	2004-05
11	Flat belt for disintegrator, AHUs & IInd effect evaporator agitator	0.5	0.11	0	0.2	2004-05
12	Exhaust fan avoidance in No.:7 Godown and at canteen	0.15	0.03	0	Nil	2004-05
13	Use-Methane(Generated at ETP) at cafeteria	0.674	Nil	43	2	2004-05
14	Electrical Energy savings	12.369	2.75	0	Nil	2004-05
15	Part - B Mixer, reduction in HP	0.146	0.03	0	Nil	2004-05
16	Project Recon(Maximising condensate recovery)	4.8	Nil	290	2.5	2004-05
17	Energy Savings	7	1.56	0	Nil	2004-05
18	V.F.D to No3 Cooling Tower I.D Fan	0.3	0.07	0	Nil	2004-05
19	Steam Pump	1.84	0.41	0	1.34	2004-05
20	Electrical heating kettle for sensory drink water	0.263	0.06	0	0.007	2004-05
21	Bio-composting of process waste powders	1.844	0.41	0	0.75	2004-05
22	Natural Ventilation	0.77	0.17	0	0.27	2004-05
23	Continuous running of steam turbine	0.591	0.13	0	Nil	2004-05
24	Providing VFD for 25 HP instead of 30HP at Raw water pump	0.456	0.10	0	Nil	2004-05
25	Oxygen analyser and economizer at boiler	5	Nil	1139	10	2004-05
26	Limit switches for ovens	3.87	0.86	0	0.35	2004-05
27	Conversion of V-belt drive to flat belt drive for air conditioning compressors	0.97	0.22	0	0.4	2004-05
28	Reduce raw water consumption by reducing pressure at Pump house	1.708	0.38	0	Nil	2004-05
29	Milk transport rationalization(fuel savings)	4	0.89	0	Nil	2004-05
	Sub Total 1	85.3	16.63	1472.00	76.6	
1	Elimination of air-conditioning for the storage of Malt extract3	4.471	0.99	0	Nil	2003-04
2	Energy conservation in 12 Ton FBC boiler (VFD at feed water & fan)	5.627	1.25	0	5	2003-04
3	Energy conservation in lighting through replacement with energy efficient bulbs	0.712	0.16	0	0.22	2003-04
4	Conservation of energy No.10 Air conditioning ware house through 5S	0.46	0.10	0	Nil	2003-04
5	Improvement in Energy efficiency by eliminating the continuous running of 7.5 hp, Soft water pumps.	1.903	0.42	0	Nil	2003-04
6	Use recycled cooling tower water for evaporator pump seal instead of raw water	1.318	0.29	0	Nil	2003-04
7	Improvement in energy conservation by installing thermostat to water bath	0.342	0.08	0	0.02	2003-04

8	Reducing energy consumption at ETP by controlling agitator rpm speed of aeration tank	5.423	1.21	0	Nil	2003-04
	Sub Total 2	20.256	4.50	0.00	5.24	
1	To reduce power consumption at Manager's quarters by installing energy efficient light fittings	1.169	0.26	0	0.5	2002-03
2	Interlocking Ghee Boiler exhaust fan with temperature	0.374	0.08	0	0.05	2002-03
3	Switch off condensate pit exhaust fan and run it as and when required	0.228	0.05	0	Nil	2002-03
4	Running Incinerator on alternate days instead of everyday	0.335	0.07	0	Nil	2002-03
5	Limit switches for air curtains	0.05	0.01	0	0.02	2002-03
6	Shut off the exhaust fans (2 No's) at Squeezer	0.398	0.09	0	Nil	2002-03
7	Installation steam Turbo alternator (300KW)	99.505	22.11	0	68	2002-03
	Sub Total 3	102.059	22.68	0.00	68.57	