First Prize *Consumer Goods Manufacturing*

SAMSUNG INDIA ELECTRONICS PVT LTD

Noida (Uttar Pradesh)

Unit Profile

Samsung Electronics Co. Ltd., the parent Company of Samsung India, is a global leader in technology, opening new possibilities for people everywhere. Through relentless innovation and discovery, they are transforming the worlds of televisions, smart phones, personal computers, printers, cameras, home appliances, medical devices, semiconductors and LED solutions. Samsung Electronics employ 286,000 people across 90 countries with annual sale of US$305 billion.

Samsung India Electronics Ltd. commenced its Indian operations in December 1995 and is a leading provider of high technology consumer electronics, IT, Home appliances and Telecom products. India is the hub for Samsung's South West Asia operations. The company provides employment to around 30,000+ employees, with around 25% employees being involved in R&D area. Technology leadership, product design and Innovative marketing have given the company a competitive edge in the market place, making Samsung the No.1 Electronics Company in India.

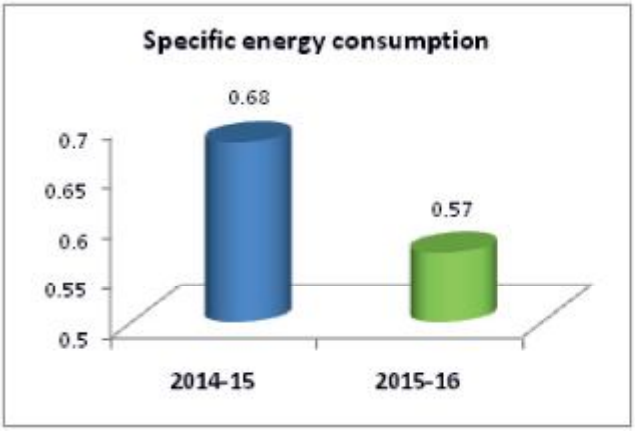
Samsung began operations in India through its manufacturing complex located at Noida (UP), which today houses facilities for Mobile phones, Tablets, Colour Televisions(including 3D LED's, Flat LED's and Curve LED Television), and Refrigerator categories. Samsung India is a market leader in product categories like Mobiles Smart phones, LED TV's and side by side Refrigerators.

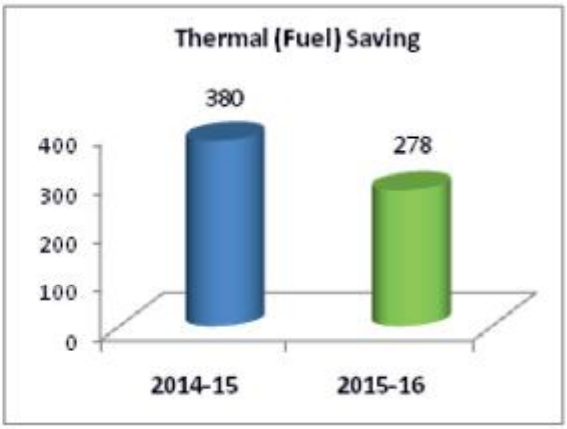
Figure 1: Plant View (SIEL-P Noida)

Energy Consumption

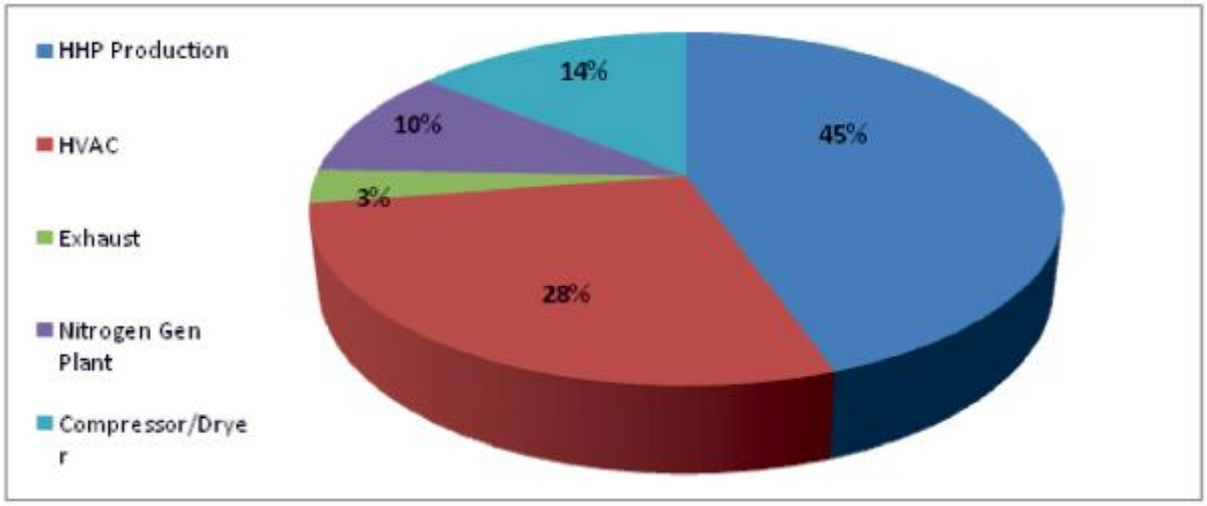
DESCRIPTION	UNIT	2014-15	2015-16
Annual production	Set	39523096	52405629
Total electrical energy consumption (Lakhs kWh/ year)	Lacs KWH	285.67	320.63
Specific energy consumption (electrical)	Kwh/Set	0.68	0.57
Total thermal energy consumption	Million kCal	3754.4	2754.25
Specific energy consumption (fuel)MKcal/T	MKcal/T	0.094	0.052

SEC & Diesel Consumption Profile For Previous Two Years (2014-16)





Power Consumption Ratio



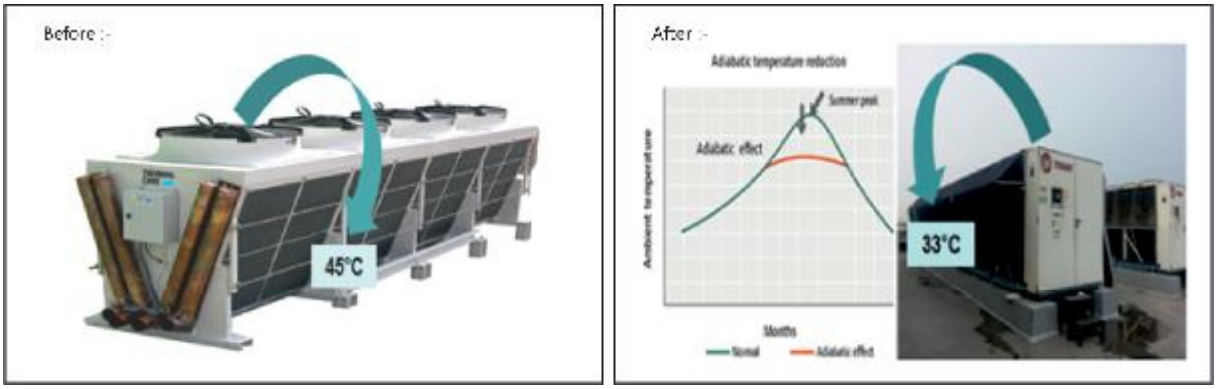
Energy Conservation Key Projects

1. Efficiency enhancement of AHU's by using EC Fan's

This is a new energy saving concept of plug in fans that are directly coupled to the system as a result of which losses can be eliminated. Achieved 38% saving.**Total Saving per year = 25,65,000 Rs per Year ROI = 1.7 Year**

2. HHP SMD Air Cooled Chillers Efficiency enhancement by Adiabatic system

The installation of adiabatic cooling can reduce the temperature of air entering the condenser from 45°C to 33°C during the period of peak summers from April to August which will reduce chiller energy consumption -15%. **Total Cost Saving = 23,40,000 Rs per Year ROI = 13 Months.**

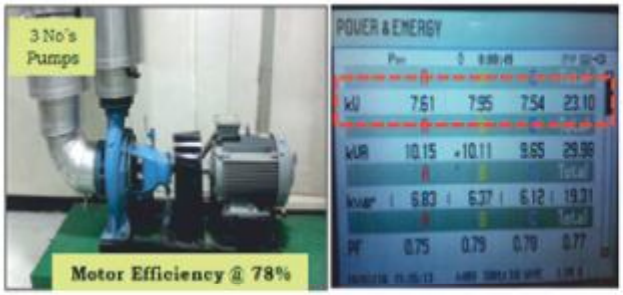


3. Efficiency enhancement of Chilled water system

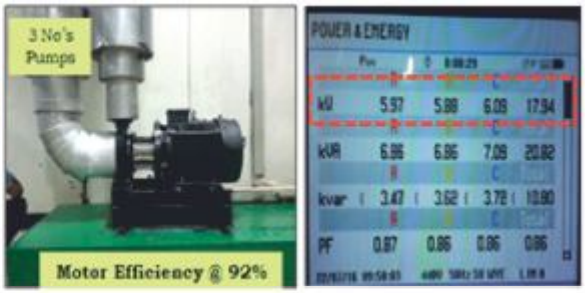
Old pump replaced with new Energy efficient pumps :-
Efficiency of Old Pumps – 58% Efficiency of New Pumps – 79%
Efficiency of Old Motors– 79%. Efficiency of New Motors– 92%.

Total Cost saving = 10,01,336 Rs per Year ROI = < 1 Year

Before :



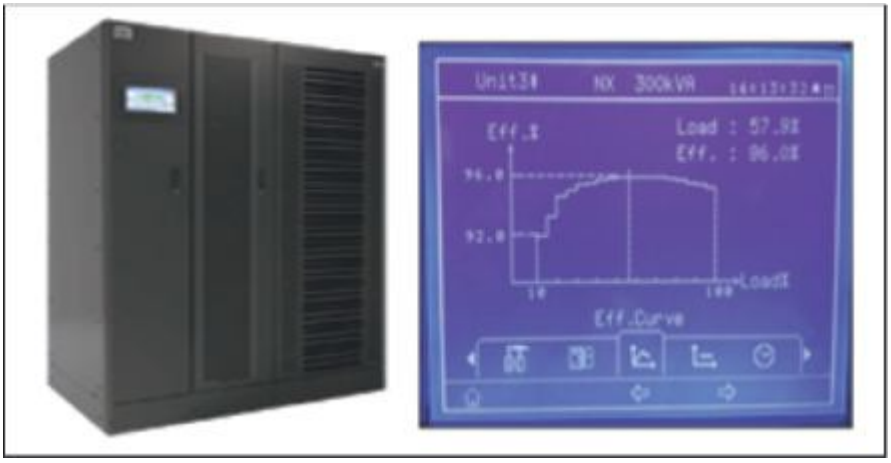
After :



4. Efficiency enhancement of Extruder UPS with high Efficient UPS

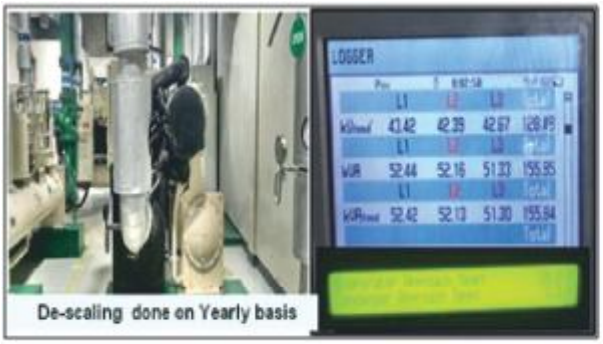
Unit has replaced 3 No's old UPS's with high efficient UPS. Efficiency increased from 88% to95 % As a result of this around 7 % Energy losses reduced.

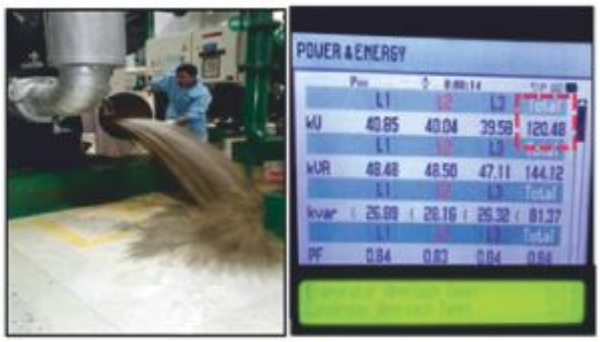
Total Cost Saving = 42, 13,180 Rs per Year ROI = < 1 Year.



5. Energy Saved through In-House De-scaling of water cooled chillers

In water cooled chillers the condenser and evaporator approach was rising to a much higher value leading to consumption of more power.Plant did the tube cleaning of all the chillers because of which the approach has reduced from 7°F to 2°F and because of this the power consumption also reduced form 128 KW to 120 KW.





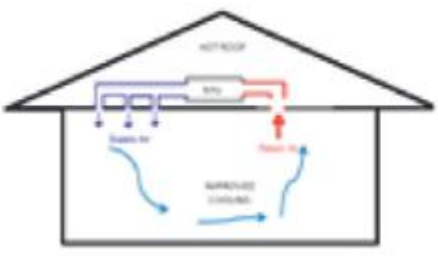
6. Energy saving by Improving the Efficiency of light (60W->36W)

Installed 2100 No's 36 watt led light in this area in place of 60watt T5 tube fixture at present, they are maintaining lux level approx 1000-1200lux and as well as reduce the power consumption from 60 Watt / light to 36 Watt.

Total Cost saving = 40,01,536 Rs per Year ROI = 1.3 Year

7. Energy loss reduction in Cooling Air ducts

Due to more power consumption of Chiller system, agency audited and found that few ducts were in damaged condition which were above false ceiling and were not visible and connected to improve cooling effect and saved cooling energy.



Major Energy Conservation Initiatives taken in FY 2015-16

Energy Saving Activities 2015-2016					
SN	Project	(kWh in Lac)	F.Oil (kL)	Total Savings (Rs. Lakhs)	Investment (Rs. Lakhs)
1	Energy saved by Replacement of 2000 No's, 28 Watt T5 Lights with 13 Watt LED lights	2.30	NA	20.7	17.6
2	Energy Saved by T5 60 Watt Fixture replacement with 36 Watt LED fixture (2119 No's)	4.45	NA	40.1	75.6
3	Energy saved by Efficiency enhancement of Extruder UPS with high Efficient UPS.	4.79	NA	42.1	43.5
4	HHP SMD Air Cooled Chillers Efficiency enhancement by Adiabatic system	2.60	NA	23.4	26.0
5	EC fan installation in AHU to improve the efficiency of HVAC system (12 No's AHU's)	2.84	NA	25.6	59.5
6	Efficiency enhancement of Chilled water system.	1.12	NA	10.1	5.9
7	Energy saving through Cooling Air losses reduction (HHP MAIN Line area)	3.23	NA	29.1	0
8	Energy Saved through UPS Load shifting to minimize losses.	0.42	NA	3.7	0
9	Energy saved by Lighting Circuits controlled through Timer	0.02	NA	0.3	0
10	Energy saved through AHU Room Lighting Controlled by Limit Switch	0.01	NA	0.5	0
11	Energy saving in 5 No's Transformer Cooling fan controller by Thermostat	0.06	NA	0.9	0
12	Energy saved by Automatic controlling of CT fan according temperature	0.31	NA	2.7	0
13	Energy Saved through Floor lights control by providing separate switch	0.07	NA	0.60	0
14	Energy saved Saved by providing AHU Duct in place of Split AC	0.06	NA	0.5	0
15	Energy Saved through In-House De-scaling of water cooled chillers	1.15	NA	10.4	0
16	Energy Saving through Blower Suction line Optimization in HHP PBA	0.97	NA	8.7	0
17	Energy saved saving by providing AHU duct in place of DVM	0.44	NA	3.97	0
18	Energy saving by providing AHU duct in place of Split AC	0.18	NA	2.5	0
19	Energy saving by controlled DG Exhaust fan through Incomer Breaker.	0.05	NA	0.4	0
20	Energy Saved through Exhaust Fan controlled by Temperature Controller	0.12	NA	1.1	0
21	Energy Saved through HHP Ware House Light Controlled by Timer	0.04	NA	0.3	0
22	Energy saved through Frequency Optimization of Locker room exhaust blower	0.03	NA	0.2	0
23	Energy saved by providing AHU duct to Stopped the DVM units	0.29	NA	2.6	0
24	Energy saved by HHP Air line modification between New SMD and SMD Line	0.27	NA	2.4	0
25	Smart Canteen 2 No's Air curtain running time optimization	0.02	NA	0.2	0
26	Energy wastage prevention activity in Dynamic Plaza gallery	0.06	NA	0.6	0
27	Energy saved by HHP Plant Rest Area & HHP Locker room lights control through Presence sensor	0.00	NA	0.03	0
28	Energy saved by HHP Ware house IQC Locker room Split AC running time	0.03	NA	0.26	0
29	Energy saved by Lighting automation by Presence sensor	0.04	NA	0.3	0
30	Energy saved by Package AC running time optimization in canteen	0.56	NA	5.1	0
31	Energy saved by Air Dryer Load shift from UPS to Raw power	0.39	NA	0.4	0
32	Energy saved by Elevator #2 Split AC running time optimization	0.02	NA	0.2	0
33	Energy saved by Lux Level Optimization in Mobile plant Logistic area	0.01	NA	0.1	0
34	Energy saved by Heat Gen Blower Motor running optimization	1.15	NA	10.4	0
35	Energy saved by Modification in the Control of the Heat Gen Blower	0.53	NA	4.8	0
36	Energy saved by DG cooling pump capacity optimization	0.01	NA	0.1	0
37	Energy saved by using LED lights in Corporate Wash room	0.04	NA	0.4	0
38	Energy saved Smart Canteen AHU running time optimization	0.07	NA	0.6	0
39	Energy saved Lux Level Optimization in HHP SMD Gents Toilet	0.00	NA	0.044	0
40	Energy saved Soldering Blower efficiency optimization in HHP	2.13	NA	19.2	0
41	AHU energy loss reduction in HHP	1.51	NA	12.1	0
42	Energy saved Dynamic Canteen (Kitchen) AHU operation controlled by timer	2.78	NA	25.0	0
43	Energy saved by UPS Energy Loss reduction	0.51	NA	4.5	0
44	Energy saved by Compressed Air Pressure optimization in HHP	2.14	NA	19.2	0
45	Energy saved by DVM A/C operations optimization.	0.98	NA	8.8	0
46	HHP AHU Operations Optimization	0.71	NA	6.3	0
47	Energy saving through Compressors operation optimization REF & TV Plant area.	0.38	NA	3.0	0
48	Air compressor Idle time reduce (N2 Plant & HHP)	0.47	NA	4.2	0
49	Energy saved by Reduction of Exhaust blower running (2 to 1)	0.65	NA	5.9	0
50	Reduce lighting power consumption through motion sensor.	0.24	NA	2.1	0
51	Energy saved by Dynamic plaza utility & ehs office dvm indoor optimization 6-	0.27	NA	3.7	0
52	Energy saved by Stopping of Return Air Blower of AHU of Old SMD ground floor	1.50	NA	13.4	0
53	Energy loss reduction in HHP DG House	0.08	NA	0.7	0
54	Cost saving by modifying Fan Pulley in HHP SMD Exhaust Blower.	1.23	NA	11.0	0
55	Optimization in compressed air pressure from 6.5 to 6.1kg/cm2 in HHP, to reduce the compressors energy consumption.	3.29	NA	29.6	0
56	Energy saved by Optimization in AHU Operations in HHP	1.09	NA	9.8	0
57	Optimization in air-conditioning temperature from 24*C to 26*C in HHP SMD expansion area to reduce the AHU 14 DVM loadings.	0.58	NA	5.2	0
58	Energy saved by Dynamic Plaza Lighting operations optimization during Canteen no operating hours by circuit automation.	0.22	NA	2.0	0
59	Fuel saved by Boiler operation optimization	NA	35.2	NA	0
60	Fuel saved by Boiler operation optimization by steam loss reduction.	NA	55.9	NA	2.0
Total Energy Savings		**49.51**	**91.1**	**442.2**	**230.1**