

Excellence in Water Management - 2009



**Enduring Value
For the Nation. For the Shareholder**

ITC Ltd. Saharanpur Team
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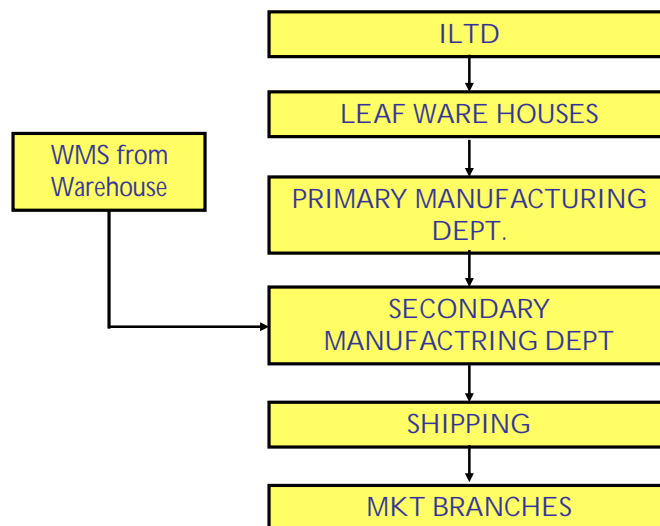
Company Profile



ITC SAHARANPUR

Established : 1926
Products : Packed Cigarettes
&
Processed Tobacco
Process : Continuous & Batch
Daily volume : 70 MNC
Land : 1,26,660 sqm
(31.3 acres)
Green Area : 40,000 sqm (31.58 %)
Team strength : 1275

General Process Flow of Cig Mfg Unit



ITC Triple Bottom Line Philosophy



- q Economic Growth
- q Environmental Growth
- q Social Growth

ITC

- √ A Carbon positive – Third year in a row
- √ A water Positive – Six year in a row
- √ Close to Zero Solid waste discharge

Water Conservation Policy



ITC's corporate strategy on water comprises:

1. Conservation, Audits and Benchmarking -

To achieve the lowest specific water consumption (water per unit of production).

2. Zero Waste Water Discharge -

Treating and recycling all wastewater, thereby not only reducing fresh water intake but also preventing pollution of fresh water resources.

3. Creating Positive Footprint -

Through rainwater harvesting, both at the Company premises and through relevant watershed projects.

Global Best in Specific Water Consumption



	National Benchmark	International Benchmark
Specific Water Consumption (KL/MNC eq)	ITC Munger: 5.18 ITC Bangalore: 4.19 ITC Saharanpur: 4.27 GPI Ghaziabad 7.95	British American Tobacco average specific water consumption of 4.73/ million cigarettes. (British American Tobacco - Sustainability Report 2008)

Water Saving Projects



Reuse of Treated water for reducing water consumption

- ✓ Landscape irrigation (Saving - 13650 KL/Year) –

ZERO WATER DISCHARGE



- ✓ Toilet flushing (Saving - 2100 KL/Year)

Water Saving Projects



ETP treated effluent network to Residential Area

- ✓ Extension of treated effluent in residential area for irrigation
- ✓ Total area covered – 13 Acres
- ✓ Quick coupling valves to avoid inadvertent use



Rain Water Harvesting

- ✓ Magnitude of work : 37 recharge pits with a Capacity 625 Ltr./ minute
- ✓ bores of 90 ft depth,
- ✓ Roof top area for runoff generation : 31000 sqm
- ✓ Rainwater harvested : 17492 KL



Investment : 60 Lacs

Water Saving Projects – Innovative project



Cold Plasma Unit in place of wet scrubbers to reduce odor & water consumption

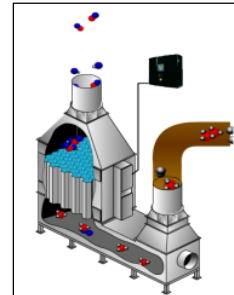
Need

- ✓ Poor efficiency of scrubbers
- ✓ Commitment towards outside community
- ✓ Scrubbers water consumption – 15 KI of water per day.



Benefits

- ✓ Complete elimination of water requirement for treating
- ✓ wet exhaust from PMD.
- ✓ Reduction in energy consumption
- ✓ Reduction in odour levels –11000 EOU/cu.m to 2250 EOU/cu.m (85%).
- ✓ Odor measurement standard : EN 13275



Investment : Rs. 500 Lacs

Water Saving Project : Humidification- Innovative project



- ✓ Target RH over tobacco Bins - 70%
- ✓ Traditional centrifugal system (Benson fans) were used to maintain RH in PMD.
- ✓ Inefficient System
 - ü No measurement of real time RH
 - ü Water spray controlled manually
 - ü No control on 'ON – OFF'
 - ü Water used 15 KL per day (15 nos. B fan, 1.5 KL/Day/fan, 16 hrs running)

Before

Jet Spray System put in place

- ü Water atomization by compressed air
- ü Online RH sensor in the humidified zone
- ü Accurate RH feedback to the system
- ü Automatic control on operations
- ü Water used 6.8 KL per day 3.5 Lit/hr/nozzle (total 122 nozzles, 16 hrs running)

After

Annual Water Saving : 2870 KL

Water Saving Project Sensor Controlled Taps & Flush



- ✓ Domestic use of water constitutes approx 50% of total
- ✓ Consumption points basically at Hygiene facilities
- ✓ Losses due
 - ü High human intervention
 - ü Irresponsible behaviour / Low water awareness
- ✓ Sensor controlled taps installed at wash basins & urinals to eliminate human intervention



Annual water saving : 175 m³

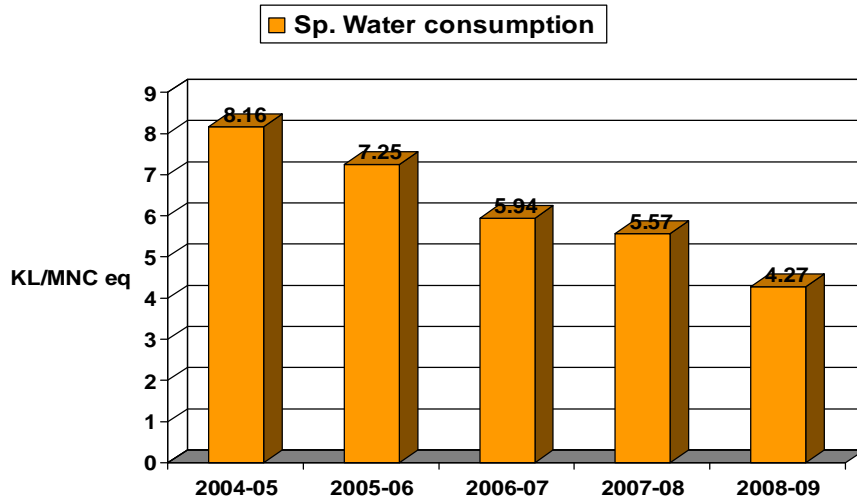
List of Water Con Projects Completed in Three years



List of Water Conservation Projects implemented during April 2006 - March 2009

Sl No	Title of Water Saving project implemented	Year of Implementation	Annual Water Savings		Invest. Made Rs. Lakhs	Payback Period (Months)
			M ³	Rs.		
1	Water efficient humidification system -PMD	2006-07	2870	2870	50	NA
2	Use of waterless urinals -Admin	2006-07	70	70	0.5	NA
3	Use of sensor based taps and urinals.	2006-07	35	35	1.5	NA
4	Use of foot operated taps	2006-07	70	70	0.3	NA
5	Landscape irrigation	2006-07	13650	13650	27	NA
6	Toilet flushing - ETP treated water - PMD and SMD toilets.	2007-08	2100	2100	8	NA
7	Installation of cold plasma instead of wet scrubbers.	2007-08	5250	5250	500	NA
8	Conversion of air washers to AHUs	2008-09	7000	7000	21.8	NA
TOTAL			31045	31045	609.1	NA
10	Rain water harvesting - roof top	2007-08	17492	17492	60	Using for Recharging 37 nos under ground pits

Specific Water Consumption



Water Conservation - Methodology



- § Energy & Water Policy
- § Monitoring & Reports
 - § Daily monitoring & Reporting,
 - § Monthly Reporting
- § Energy & Water Team
 - § All group of employees, manager & senior management
 - § Monthly Meeting
 - § Idea generation and Implementation
 - § Awareness campaign – Poster, Slogans and suggestion competition
 - § Reward system
 - § Six sigma and Lean approach for identifying energy projects
 - § Energy & Water targets are linked with individuals KRAs

Water Balance @ ITC Saharanpur



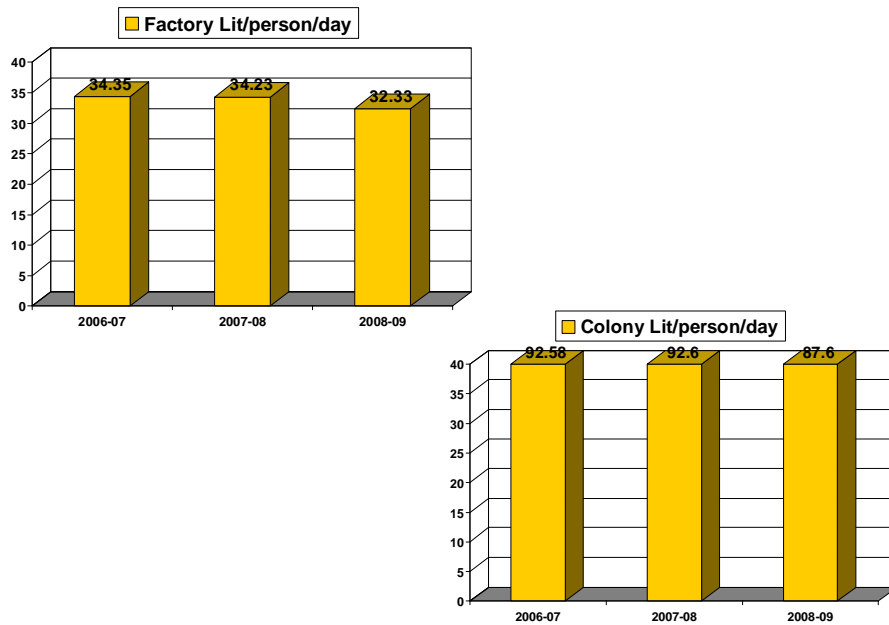
Overall Water Balance - 08-09		
S.No	Location of Measurement	Water Consumption (KLD)
1	Raw water intake from borewells	292
2	Raw water distribution	
2A	Domestic user (43% of total)	125.31
	Admin block	1.62
	Canteen	16.30
	SMD toilets	42.02
	Out Side factory/G-House	20.01
	Toilets Flush	1.18
	PMD toilets	8.92
	Shipping / Warehouse / Excise / Engg. Stores	35.26
2B	Industrial Cooling (40% of total)	115.29
	Vaccum / Blower / Compressor	3.34
	Vaccum / Blower / Compressor (Soft water)	3.19
	Air washer SMD (3 & 4)	0.25
	Air washer CTS 5 & 6 -SMD 1 & 2	0.64
	DM water	43.59
	AC cooling tower	36.32
	DG cooling tower	27.95
2C	Process Water (10% of total)	28.91
	Process cleaning	6.95
	PMD process	21.43
	Dust and odour	0.53
3	Total Water Consumption(2A+2B+2C)	269.51
4	Unmetered users (7% of total)	22.85

Water Conservation - Methodology



- Water Meters installed to keep track of consumption at various points (approx 28).
- High degree of precision Woltex model meters installed recommended by UPPCB.
- Piezometer installed to get the level of water in ground on monthly basis.

Per Capita Consumption



Reduction in Specific Water Consumption

- ✦ Reduction in water wastage – 100% water metering in factory & colony
- ✦ RO System instead of DM plant for Boiler Feed 3120 KL/Yr
- ✦ RO plant for ETP treated water for further usage in Cooling Tower make up 14000 KL/Yr
- ✦ Utilization of residential colony domestic waste water to ETP
- ✦ Rain Water Harvesting – Colony Area

- § Use of Solar Hot Water System – 3000 L/day - 33488 Kw/hr
- § Ozonation Plant installed at Cooling Tower for reduction in chemical consumption and addressing problem of Legionella presence in Cooling Tower water



Solid Waste Management



Segregation of waste



Recyclable waste ready for sale



Bed preparation for Decomposition of organic waste



Decomposition in process



Vermicomposting final bed



Organic Manure final packing for sale

Projects Targeting Anti Pollution Drives



Sl No	Title of Energy Saving project implemented	Year of Implementation	Source	kwh	mwh	factor (Tons/kwh)	TOES (Fuel)	TJ	CO2 Savings (Tons)	Total Annual Savings (Rs. in million)	Investment Made (Rs. in million)	Payback Years
1	Changing of Screw chiller in place of VAM for HVAC	2006-07	HSD				185.25	7.48	579.27	3.5	16	4.6
2	Earth air Tunnel for cooling the AHU air	2006-07	G	3037.4			0.7487191	0.03	2.04	0.077	0.75	9.7
			P	12149.6	12.1496	1.085		13.18				
3	Lighting - Energy Saver, Electronic Ballast, Timers and OS	2007-08	G	34800			8.5782	0.30	22.41	0.882	0.4	0.5
			P	174000	174	1.085		188.79				
4	950 TR Energy efficient AHUs in place of old 648 TR AHUs	2007-08	G	86000			21.199	0.75	55.39	2.18	35	16.1
			P	246000	344	1.085		373.24				
5	Screw Compressors (303 CFM and 674 CFM) in place of reciprocating compressor	2007-08	G	19200			4.7328	0.17	12.37	1.6	7.7	4.8
			P	76800	76.8	1.085		83.33				
6	Energy efficient borewell pumps	2007-08	G	3380			0.83317	0.03	2.18	0.086	0.31	3.6
			P	13520	13.52	1.085		14.67				
7	Rotary UPS air conditioning	2007-08	G	18200			4.4863	0.16	11.72	0.461	0.01	0.0
			P	72800	72.8	1.085		78.99				
8	6 TPH Boiler in place of old 4 TPH	2008-09	FO				76	3.07	237.65	3.04	5	1.6
			G	127680			31.47312	1.11	85.56			
9	Ultrasonic Humidifier for Cut Tobacco Storage	2008-09	P	328320	328.32	1.085	0.9522689	0.03	2.59	2.736	1.05	0.4
			G	3863.16					356.23			
10	Replacement of 1x40 w tube with electronics ballast	2008-09	P	9933.84	9.93384	1.085	0.145888	0.02	1.27	0.082782	0.18	2.2
			G	1890					10.78			
11	Replacement of 1x40 w tube with 2x11 watt CFL	2008-09	P	735	0.735	1.085	0.00803986	0.28	21.87	0.01575	0.005	0.3
			G	32628.96			8.0430386		0.80			
12	Replacement of 2x40 w tube with electronics ballast	2008-09	P	12689.04	12.68904	1.085	1.7330922	0.06	4.71	0.271908	0.77	2.8
			G	7030.8					13.77			
13	Replacement of 2x40 w tube with 2x11 watt CFL	2008-09	P	2734.2	2.7342	1.085	0.3292254	0.01	0.90	0.05889	0.005	0.1
			G	1335.6					2.97			
14	Replacement of 80 watt Ex fan with 36 watt Fan	2008-09	P	519.4	0.5194	1.085	1.0957615	0.04	2.98	0.01113	0.013	1.2
			G	4445.28					0.56			
15	Replacement of 150 Watt Lamp with 45 CFL in MPH Hall	2008-09	P	1728.72	1.72872	1.085	1.1069428	0.04	3.01	0.037044	0.012	0.3
			G	4490.64					1.88			
16	Replacement of 150 Watt Lamp with 15 CFL in MPH Hall	2008-09	P	1746.36	1.74636	1.085			1.89	0.037422	0.009	0.2
			G									
17	Improvement of DG set power factor from 0.82 to 0.95	2008-09	G	17600	17.6	1.085	4.3384	0.15	11.79	0.1056	Nil	Process Improvement
			P									
18	Installation of occupancy sensors in toilets	2008-09	G	4236.48			1.0442923	0.04	2.84	0.035304	0.052	1.5
			P	1647.52	1.64752	1.085			1.79			
19	Reduction of distribution losses on account of power factor improvement at MCC level	2008-09	P	10162.04	10.16204	1.085	6.4412816	0.23	17.51	0.217758	0.08	0.4
			G	26130.96					11.03			
20	Reduction in SMD compressed air energy consumption	2008-09	G	49456.8			12.191101	0.43	33.14	0.41214	0	0.0
			P	19233.2	19.2332	1.085			20.87			
21	Activation of VFD on SMD CDRF 1	2008-09	G	26763.84			6.5972866	0.23	17.94	0.223032	0.03	0.1
			P	10408.16	10.40816	1.085			11.29			
										2315.17	16.07	67.38

Vendor & Associate involvement in Water Conservation



✓ Water Audit in 2006 – CII

✓ Preliminary Water Audit by CII in 2009

✓ Association of vendors in water saving projects - AOS Systems, Jaquar, Hindware & Parryware

✓ Water Awareness Training by M/S Thermax

Awareness & Employees Engagement



- ✓ Cross functional Water Team formed consisting of employees, supervisors & line managers.
- ✓ Water & Energy Team member monitor water usage pattern for individual area.
- ✓ Audit of all water consuming facilities.
- ✓ Knowledge sharing forums detailing use of water in the factory and at home and methods to conserve it.
- ✓ Meter readings taken daily & recorded.
- ✓ Actual & optimum usage parameters established.
- ✓ Continuous education to all on water conservation & control on water consumption.
- ✓ Posters on water conservation, water facts, wastage, steps for conserving water etc. displayed.
- ✓ Do's & Don'ts displayed at high water usage points
- ✓ Special issue of the in-house magazine "SOCH" dedicated to water conservation

ISO 9001 and 14001 observations and CAPA



✓ No Non Confirmatory reported by Auditors

Audit Start Date	Audit Type	No.	Status	Description and Consequence	Category of Finding	Process/ Area/ Department	Standard	Clause
2009-05-04	PA5	1	A	Root cause analysis and formulation of CAPA for the findings of Internal EHS Audit was not evident.	Observation	MR	ISO-14001:2004	4.5.3
2009-05-04	PA5& PA4	2	A	The apex manual is distributed as 'read only' soft copy but adequate document control such as distribution as 'pdf file' is not evident.	Opportunity for Improvement	Management	ISO 14001 / OHSAS 18001	4.4.5
2009-05-04	PA5	3	A	As per the National Ambient Air Standard, the monitoring is for average arithmetic mean of 104 samples per year twice per week 24 hr basis uniformly distributed. This is not evident.	Opportunity for Improvement	Environment	ISO 14001:2004	4.5.1
2009-05-04	PA4	4	A	Some of the monitoring for exposure to occupational hazards is not evident. E.g.the audiometry for the operators in the compressor room and DG Room is not seen.	Observation	HR	OHSAS 18001,2007	4.4.7
2009-05-04	PA4	5	A	Consumption log card for the oxygen cylinder in the ambulance be maintained to get approximate time for which the cylinder is available for use.	Opportunity for Improvement	Medical	OHSAS 18001,2007	4.4.6
2009-05-04	PA4	6	A	A good and effective system of measuring the training effectiveness is evident in the form of questionnaire quiz for the participants while performing the task at the work place.	Note- worthy Effort	HR/ Production	ISO 9001:2000	6.2.2
2009-05-04	PA4	7	A	Health monitoring check-up camps are organised for the employees and their families and also immunisation programmes are organised.	Note- worthy Effort	HR	OHSAS 18001,2007	4.4.6
2009-05-04	PA4	8	A	Internal review mechanism organised by the corporate office through check sheets on EHS, has placed the unit as highest scoring amongst all units of ITC Ltd.	Note- worthy Effort	Management	ISO 14001 / OHSAS 18001	4.4.6
2009-05-04	PA4	9	A	Six Sigma project is undertaken resulting in reduction in energy consumption by 2%.	Note- worthy Effort	Process Improvement	ISO 14001:2004	4.5.1
2009-05-04	PA4	10	A	Thermographic testing is started for all electrical installations using a third party for testing. This is a proactive approach to prevent incidents of fire in electrical installations.	Note- worthy Effort	EHS	OHSAS 18001,2007	4.5.1
2009-05-04	PA2	11	A	The rejected material in the Wrapping Material Stores (WMS) is not identified on location for its inspection status.	Observation	WMS	ISO 9001:2000	8.3

Awards & Recognition



- ✓ ISO 9001 & 14001
- ✓ OHSAS 18001
- ✓ British Safety Council 5 star rating and Sword of honor for OHS management & Environment sustainability management
- ✓ RoSPA gold medal award
- ✓ Golden Peacock award for environmental management
- ✓ Greentech Environment and safety gold award
- ✓ CII National Energy Management Award & overall best Presentation Award
- ✓ CII National Water Management Award



Thank You !!!