# ITC Limited

**Paperboards & Specialty Papers Division**

## Unit – Tribeni

# WATER MANAGEMENT

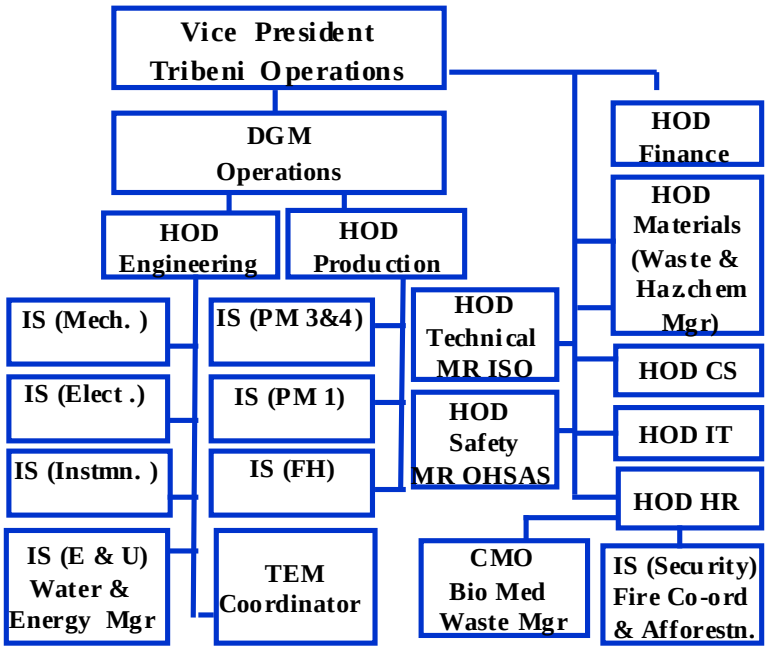
**CII–SOHRABJI GODREJ GREEN BUSINESS CENTRE**

**16th – 17th December 2008**

## Unit Profile

- **A Specialty Paper Mill**
- **Three Paper Machines**
- **Production 2007-08: 23387 MT**
- **Annual Turnover = Rs. 1937 Million**
- **Certified ISO 9001, 14001 and OHSAS 18001**

## Organisation Structure




## Source of Water

- 17 Nos. of Borewells located within Mill and Estate Area
- Sink Depth of 600 ft below ground level
- Tapping is done at a depth of 350-550 ft

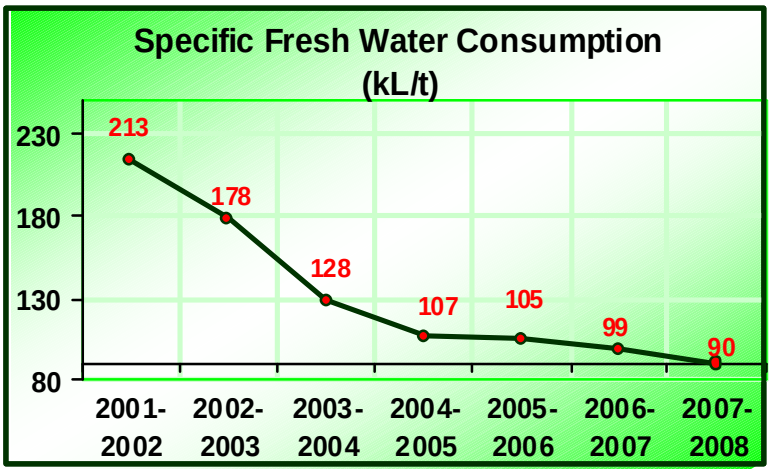
## Water Balance

| Area | Quantity $m^3$/day |
|---|---|
| **Average daily consumption** | **5959** |
| Paper Machine 1 | 1311 |
| Paper Machine 3 | 2169 |
| Paper Machine 4 | 1740 |
| DM Plant | 345 |
| DIW & ETP | 110 |
| Chemical Kitchen | 120 |
| Mill Drinking Water | 164 |

## Fresh Water Consumption

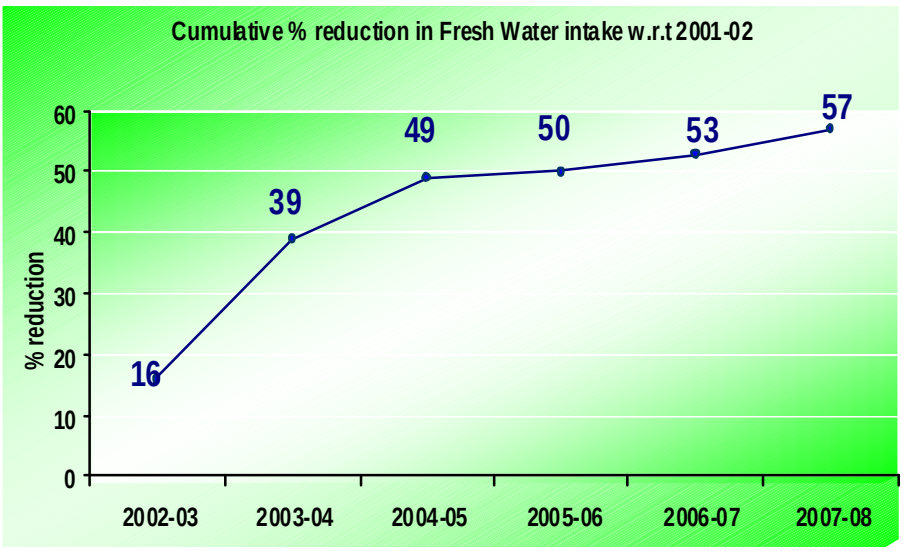
| ( April – March ) | Quantity , m3 | | Production in Tonnes | Specific water consumption, m3/MT |
|---|---|---|---|---|
| | Industrial | Domestic | | |
| 2004-05 | 2532351 | 132168 | 23667 | 107 |
| 2005-06 | 2516196 | 1269674 | 24024 | 105 |
| 2006-07 | 2395356 | 1150734 | 24250 | 99 |
| 2007-08 | 2114830 | 1131597 | 23387 | 90 |

# Fresh Water Consumption




**With continuous efforts and several fresh water saving initiatives implemented, we have reached this position.**

# Fresh Water Consumption



# Fresh Water Consumption

## Benchmarking

| Tribeni Mill | National Benchmark | International Benchmark | CPCB Norms |
|---|---|---|---|
| 90 $m^3/T$ | Not Available | 100 $m^3/T$ | 150 $m^3/T$ (w.r.t waste water norms of 120) |

Best Available References of European Countries from the "BREF Pulp and Paper", electronic adaptation of the European reference document on Best Available Techniques (in the slant of reducing the aggressions to man and environment) in the Pulp and Paper manufacturing industry.

# Implemented Projects 07-08

## Scheme-1: Recirculation of Fresh Water from Overhead Tank for Compressor cooling

# Implemented Projects 07-08

**Scheme 1**

| Old System: | New System: |
|---|---|
| F/water requirement 30 m3/hr. | F/water requirement 30 m3/hr. |
| Water sent back to Overhead Tank : Nill | Water sent back to Overhead Tank : 30 m3/hr |
| Actual cooling Water consumed : 30m3/hr | Actual cooling Water consumed : Nil |

Savings : 237600 m3 / year

Investment Rs.0.2 Lakhs

# Implemented Projects 07-08

**Scheme-2: Reduction of sealing water in Couch of PM4 by use of Anti friction bearing**

Savings : 31680 m3 / year

Investment Rs. 9 Lakhs

# Implemented Projects 07-08

**Scheme3: Refurbishing of PM4 steam & condenser circuit**

# Implemented Projects 07-08

**Scheme3: Refurbishing of PM4 steam & condenser circuit**

Old System:

Steam requirement : 110 TPD

Condensate recovery : 39 TPD

Water requirement : 71 TPDr

New System:

Steam requirement : 80 TPD

Condensate recovery : 56 TPD

Water requirement : 21 TPD

Water saving : 50 TPD

( This saving would come in DM water )

Savings : 49500 m3 / year ( DM water)

Investment Rs. 120 Lakhs

## Implemented Projects 07-08

**Scheme5: Sequencing of Coloured Laminating Grade making on PM4**

Grade change in Colour laminating grades is associated with lot of water for cleaning & flushing the system. TPM team has come together to reorganize making schedule with in-depth R& D inputs to avoid water usage during many grade changes

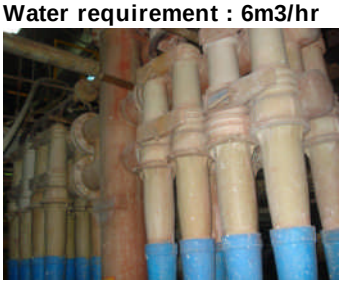
Savings : 12000 m3 / year

Investment : Nil

## Implemented Projects 07-08

**Scheme 6: Use of New Generation CentriCleaner system on PM1**

**Picture before modification**
**Water requirement : 6m3/hr**



**Picture after modification**
**Water requirement : 4m3/hr**

Savings 15840 m3 / year

Investment Rs.28 Lakhs

## Implemented Projects 07-08

**Scheme 7:**

**Reduction of leakage of Gland sealing water through use of Mechanical seals**

Savings : 15840 m3 / year

Investment Rs. 24 Lakhs

## Implemented Projects 07-08

**Scheme 8:**

**Use of highly efficient imported Vacuum Pumps requiring less sealing water**

Before Modernisation

After Modernisation

Savings : 23760 m3 / year

Investment Rs.57 Lakhs

# Implemented Projects 07-08

**Scheme 9:**
**Reduction in consumption of Make up water in Cooling Tower by improving COC**

# Implemented Projects 07-08

**Scheme 9:**
**Reduction in consumption of Make up water in Cooling Tower by improving COC**

Old System:

For TG2

Evaporation loss: 11 m3/hr

Blow down : 27.5 m3/hrl

Total make up water : 38.5 m3/hr

For TG3

Evaporation loss: 14.7 m3/hr

Blow down : 36.7 m3/hrl

Total make up water : 51.4 m3/hr

Total make up water reqd.: 89.9 m3/hr

New System:

For TG2

Evaporation loss: 11 m3/hr

Blow down : 5.5 m3/hrl

Total make up water : 16.5 m3/hr

For TG3

Evaporation loss: 14.7 m3/hr

Blow down : 7.4 m3/hrl

Total make up water : 22 m3/hr

Total make up water reqd.: 38.5 m3/hr

Savings : 50 m3 / hour

Investment Rs. 40 Lakhs

## Implemented Projects 07-08

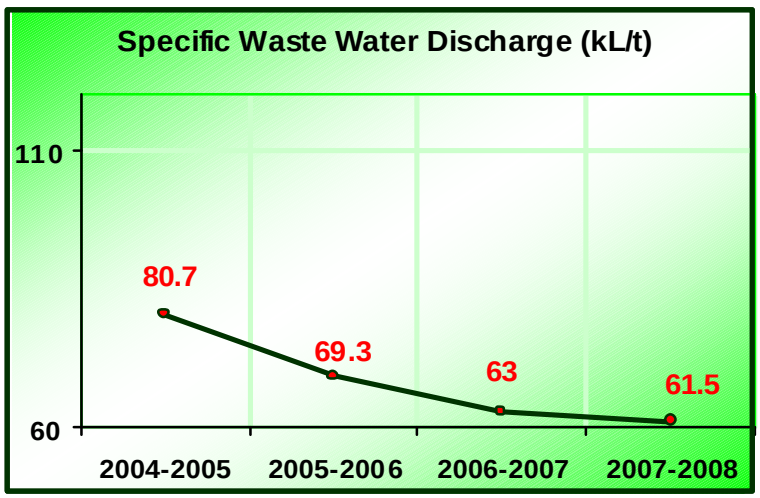
**Scheme 10:**

**Introduction of Reverse Osmosis system in PM1**

Savings : 39600 m3 / year

Investment Rs.40 Lakhs

## Waste Water Discharge




**With continuous efforts in maximising process water recycling we have reduced below 50 % of CPCB norms.**

## Waste Water Discharge

### Waste Water Discharge - Benchmarking

| Tribeni Mill | National Benchmark | International Benchmark | CPCB Norms |
|---|---|---|---|
| 61.5 $m^3/T$ | Not Available | 60 $m^3/T$ | 120 $m^3/T$ |

**Best Available References of European Countries from the "BREF Pulp and Paper", electronic adaptation of the European reference document on Best Available Techniques (in the slant of reducing the aggressions to man and environment) in the Pulp and Paper manufacturing industry.**

## The Road Map towards Zero Discharge

3-step process:

Implementation of Future Fresh Water Conservation Projects

Closing the Water Loop with reuse of Mill Treated Water

Continuous Monitoring and Control to sustain the System

## Monitoring

- All fresh water consuming areas are provided with water flow meters connected to DCS system.
- Daily, weekly and monthly MIS reports contain the fresh water consumption figures.
- Monitoring is done online, by the respective utilities and paper machine shift incharges.
- Specific Key Focus Areas are predefined for respective managers as a part of their annual appraisal system for Water Conservation Measures and Monitoring