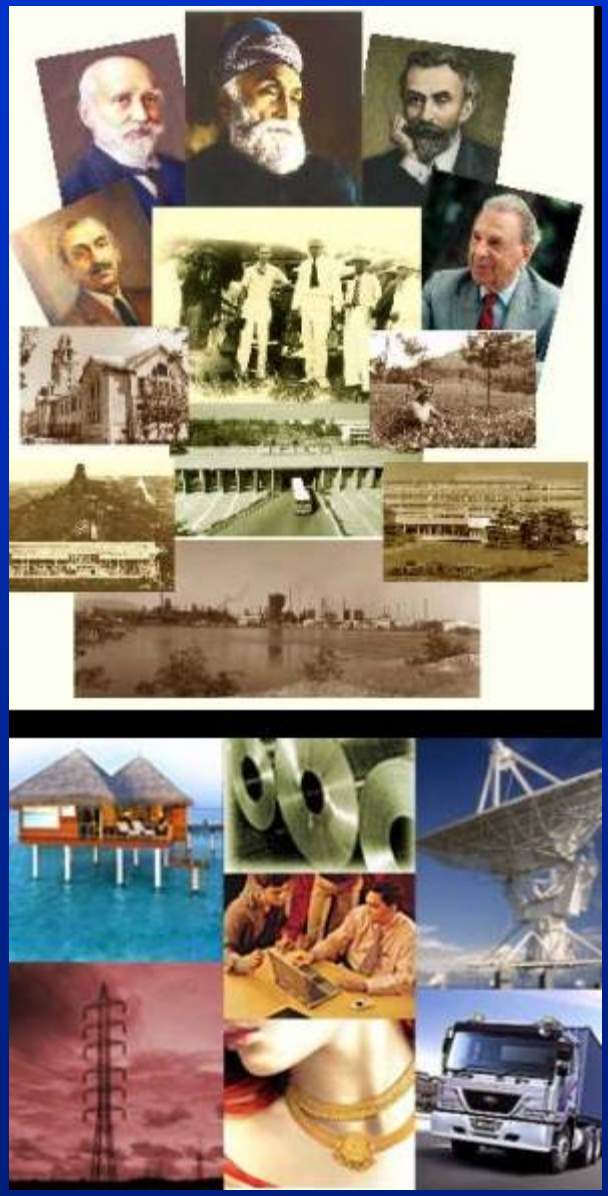
TATA CHEMICALS LIMITED - BABRALA

Presentation on
" EXCELLENCE IN WATER MANAGEMENT 2007"
29-30 Nov, 2007, CII-SGGB Centre, Hyderabad

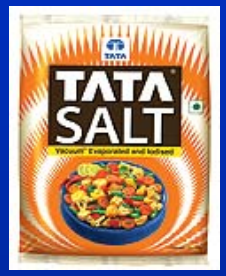
The Glorious Tatas



- Group Turnover > $21.9 Billion
- Market Capitalization $ 52.7 Billion
- Contributes to 2.8% of India's GDP
- Operations in more than 40 countries across 6 continents
- Total Number of Employees : >246,000
- Conglomerate of 90 companies in 7 Business Sectors:
  - Materials
  - Energy
  - Chemicals
  - Services
  - Consumer Products
  - IT & Communications
  - Engineering

Tata Chemicals

- Tata Chemicals Established in 1939 at Mithapur, Gujarat
- Urea complex at Babrala commissioned in Dec, 1994

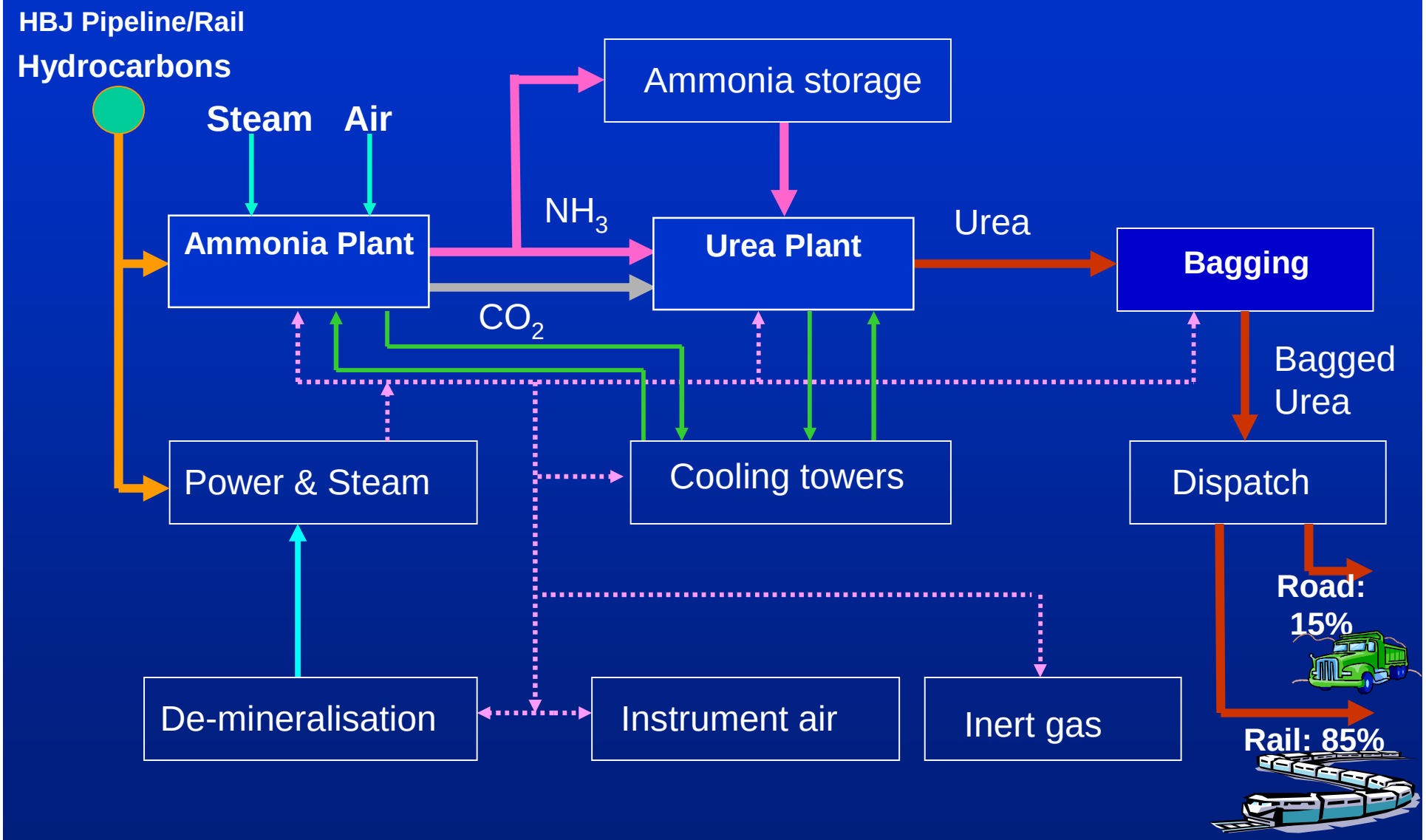


Salt
Soda Ash

Urea

DAP
NPK

Urea Manufacturing Process



Our Approach …….

Three pronged strategy for achieving excellence in water management

- **Water Efficient Design**
- **Efficient Operations to conserve water**
- **Continuous identification of new opportunities**

Water Efficient Design

- The Ganges is nearby, but bore-wells are used as fresh water source to avoid pre-treatment
- Direct plant supply through pipeline ring header to avoid additional biological treatment
- Combination of WAC & SAC in DM Plant instead of only SAC as industry practice
- Boiler blow-down as make up to cooling tower
- Use of all innocuous treated effluents for green belt development
- Babrala plant designed for “ZERO” effluent discharge

Water Efficient Operation

Efficient Operation : Our strategy is continuous monitoring and optimization of operation

- **Continuous vigilance & monitoring at consumption & effluent generation points**
- **Maximum possible recycling of process / steam condensate**
- **Cooling water treatment optimization based on running conditions**
- **DM Plant optimization based on actual ionic load**
- **Boiler water treatment optimization using on-line analyzers**

Find new opportunities and integrate

Our strategy is to involve maximum people and continuously search for new opportunities

- **Organizational & departmental targets and individual projects**
- **‘Suggestion Scheme’ for identification of new opportunities**
- **Awareness programme to all township residents, Security & Horticulture workers on water conservation**
- **Environmental Incident Reporting**
- **Environmental Newsletter**
- **Environmental Quiz competition**

Project – 1 (2004-05)

Partially softened water as make up to Ammonia cooling tower

- Hardness of ground water is limiting to a lower Cycle of Concentration.
- A part of the make up water is routed through Weak acid cation resin bed
- Partial softening of water has reduced Blow down from ACT and increased COC.

Benefits

Annual water saving	**: 33,000 M^3**
Investment	**: Rs 5.0 lacs**

Project – 2 (2006-07)

Inter-stage condensate of compressor area as cooling water make up

- Inter-stage cooling at Air compressor, CO_2 compressors produce condensate
- Condensate collected in a pit
- The condensate is pumped to cooling water return header

Benefits

Annual water saving	: 25,000 M^3
Investment	: Rs 5.0 lacs

Project – 3 (2005-06)

Installation of a water cooler to control HSD tank temperature

- HSD pump runs continuously as a ready available stand by fuel for Gas turbine to avoid unwanted trips
- Water spray used on tank surface from outside to cool down the tank during hot summer
- A water cooler was installed to cool the hot recycled HSD at pump discharge

Benefits

Annual water saving	**: 5000 M^3**
Investment	**: Rs 1.5 lacs**

Project – 4 (2006-07)

Recycle of Captive power plant steam condensate to DM plant

- Earlier all steam traps condensate of captive power plant was going to storm water drain
- Condensate collected in a pit
- The condensate is recycled by a pump to DM plant

Benefits

Annual water saving	**: 25000 M^3**
Investment	**: Rs 4.5 lacs**

Water Conservation Projects 2003 - 2007

S. No	Year of Implementation	Project Description	Investment (Rs Lacs)
1	2003-04	To connect Ph-2 Horticulture line with main horticulture header to stop UB-4 pumps.	0.20
2	2003-04	To connect treated STP (New) water discharge line with Horticulture Header	0.10
3	2004-05	To provide tapping points (5-6) at cooling tower Blow down header for horticulture purpose.	0.35
4	2004-05	2" bypass line to be provided with I/V from ring header to fountain water pump discharge line	0.00
5	2005-06	To recycle DM plant analyzers' effluent back to DM plant make up	0.85
6	2005-06	To provide flow meters in tube-wells at drinking water outlet line going to township	3.00
7	2006-07	To provide horticulture water tapping near Fire and safety lawn and IGGP area	1.00
8	2006-07	To prime the floor washing pumps using effluent water and eliminate the consumption of utility water.	0.30

Our '4Rs' Philosophy

Conservation strategy for achieving excellence in water management is driven by

Reduction – Setting Stretch Targets

Recycle – Maximizing Recycle

Reuse – Use of waste water

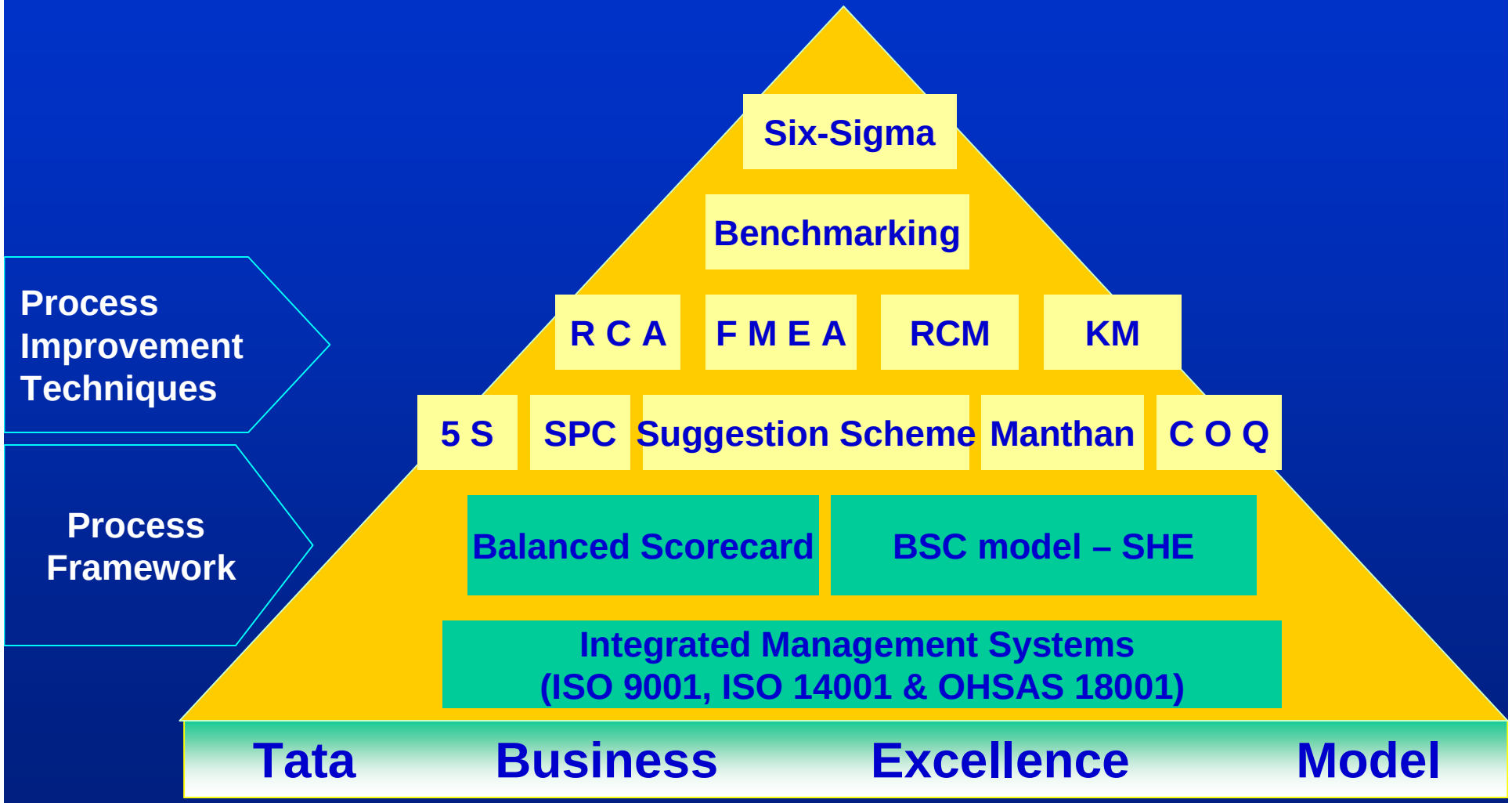
Rethink – Continuous identification of new opportunities

Futurity Preservation

A never ending process…….

- Rain water harvesting (Plant & Township)
- Treated STP water as Cooling Water make-up
- Plantation of ‘Low water consuming plants’ in lawns/green cover
- Improved Cooling Towers & Heat Exchanger Management
- Water usage optimization through automation at public places

People Involvement…….



MONITORING……Measure, Analyze & Improve

Measuring

Flow meters are provided at the discharge of tube wells & at consumption points

Daily Water consumption & Effluent generation / discharge balancing in SAP

Review

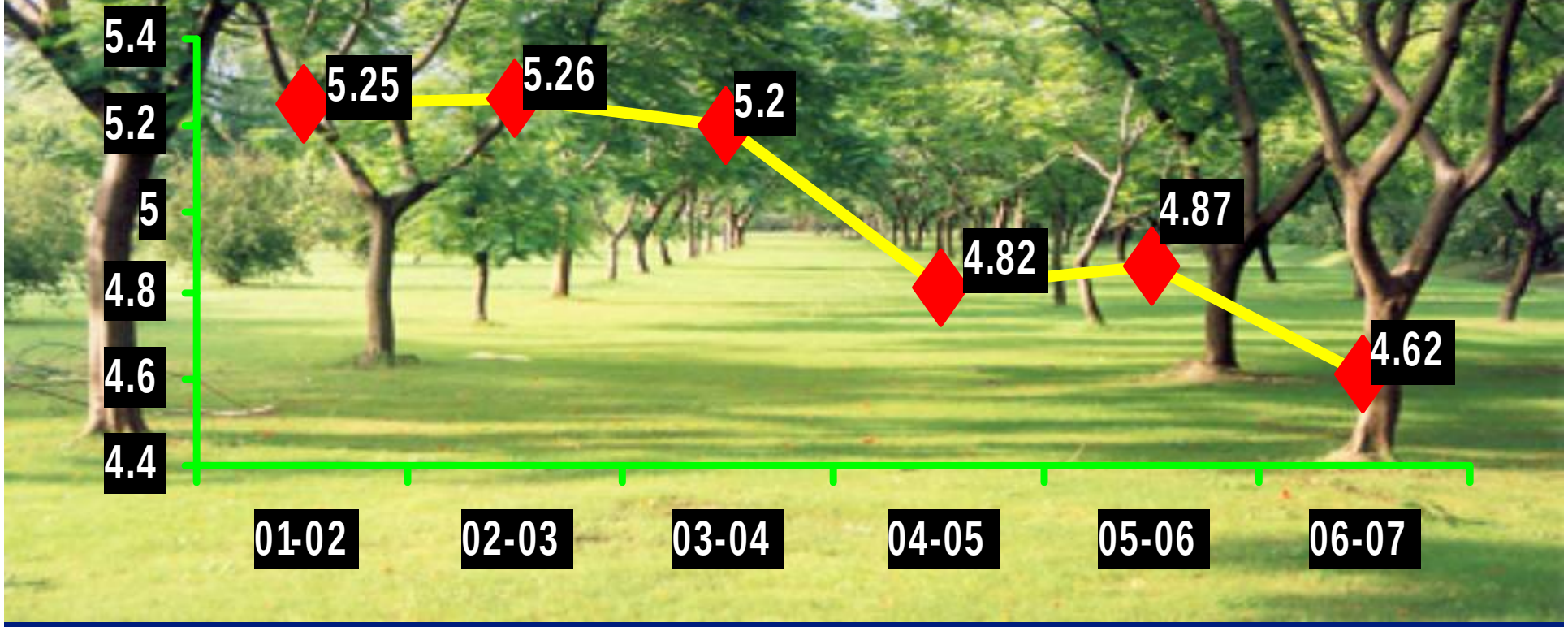
Daily, Weekly & Monthly water consumption tracking by 3 different depts – Production, Tech dept and Environment cell

Plant Performance Review by Senior Management in weekly and monthly meetings

Set the benchmarks

Water Consumption (M^3 / MT of Ure

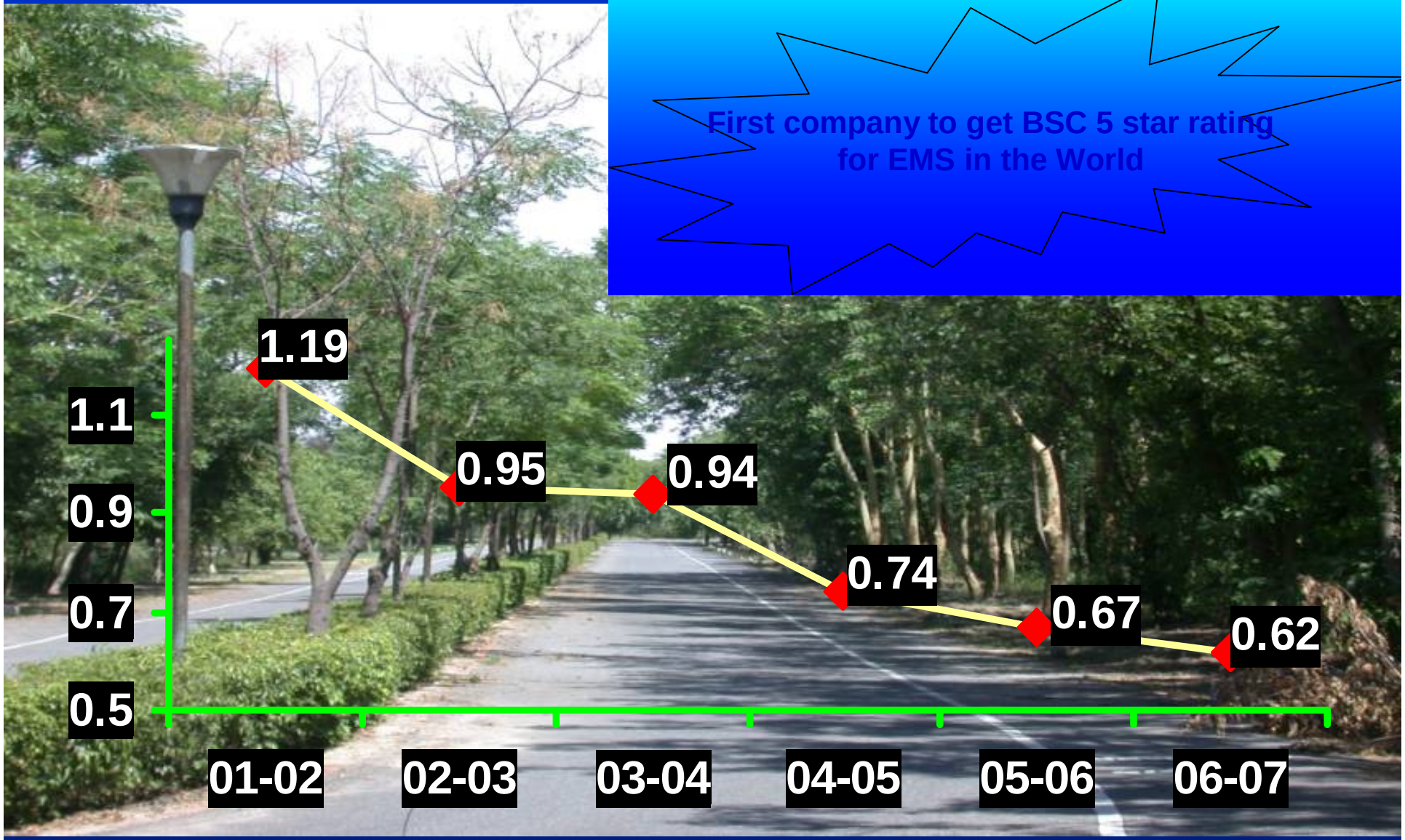
Benchmark in Fertilizer industry
for water consumption



Set the benchmarks

Waste Water Generation (M^3 / MT)

First company to get BSC 5 star rating for EMS in the World



Driving Forces

Our systems & processes are well established as per recognized and certified management systems.

- v **BSC 5 Star Environment Sustainability Guidelines**
- v **ISO 14001, OHSAS 18001 & ISO 9001 System**
- v **Responsible Care Guidelines & RC 14001 System**
- v **GRI & ISO 14031 guidelines for Environmental Performance Reporting**

Responsible Care

Global Reporting Initiative

TATA CHEMICALS LIMITED

ISO 14001:2004


Certificate of Registration

Tata Chemicals Limited

Fertilizer Business

ISO 14001 : 2004

Manufacture of fertilizer grade urea.

OHSAS 18001:1999


Certificate of Registration

Tata Chemicals Limited

Fertilizer Business

OHSAS 18001:1999

Manufacture of fertilizer grade urea.

ISO 9001:2000


Certificate of Registration

Tata Chemicals Limited

Fertilizer Business

ISO 9001:2000

Manufacture and marketing of fertilizer grade urea.


Five Star Environmental Sustainability Audit

This is to certify that

TATA CHEMICALS LTD (FERTILISER DIVISION)

after an extensive evaluation by a British Safety Council auditor, has been awarded a rating of Five Stars.

India's Best – Sp water consumption (M^3/MT)

	TCL	Indo Gulf	CFCL	KSF	NFCL	Engro Pakistan
03-04	5.2	_	_	_	6.34	_
04-05	4.82	5.23	_	6.62	5.99	_
05-06	4.87	_	5.12	_	5.55	_
06-07	4.62	5.2	5.4	_	5.53	6.3 (2006)

2007- 08 Target = 4.55 M^3/MT of Urea

Statutory Standard = 15.0 M^3/MT of Urea

India's Best – Sp Effluent generation (M^3/MT)

	TCL	Indo Gulf	CFCL	KSF	NFCL	Engro Pakistan
03-04	1.04	_	_	_	0.8	_
04-05	0.74	0.66	_	0.82	0.74	_
05-06	0.67	_	_	_	0.73	_
06-07	0.62	0.7	1.0	_	0.94	1.3 (2006)

2007- 08 Target = 0.6 M^3/MT of Urea

Statutory Standard = 5.0 M^3/MT of Urea

Per capita consumption

To monitor and reduce per capita consumption

- Flow meters installed in the domestic supply lines to township
- Treated effluent from plant is being used in place of fresh water for township horticulture
- Awareness session on natural resource conservation
- Regular Quiz contest for township (ISO-14001 certified) residents and school students.
- Township sewage water is treated and used for horticulture
- Per Capita consumption– 200 Lt (Town) & 59 Lt (Plant)

Feathers in Our Cap……

- 5 Star Rating by British Safety Council in Environment Management System 2006, 2005, 2004
- ICMA–Aditya Birla Award For Best Responsible Care Company 2006, 2004
- FAI Environment Protection Award 2005-06
- Greentech Environment Excellence Platinum Award 2004-05, 2003-04
- "Energy Efficient Unit"–CII National Award for Energy Management 2006-07, 2004-05

Responsible Care®
Good Chemistry at Work

TATA CHEMICALS LIMITED

Feathers in Our Cap……

- Sarva Shreshtha Suraksha Puraskar – NSC 2006-07
- National Energy Conservation Award – Ministry of Power 2005-06
- “Award for Excellence in Natural Gas Conservation” – GAIL 2004-05
- Golden Peacock Environment Management Award 2005-06

At Babrala We are Proud of…….

THANK YOU