



Excellence in Water Management

By. K.G.Kandaswamy

E.I.D.-Parry (India) Limited
Pudukkottai
(Tamilnadu)





Our Profile



E.I.D. Parry (India) Ltd., is part of the flagship company of \$ 2 billion turnover Murugappa Group

- **Pioneers in:**

- Ø Sugar from 1842: **218 years old**
- Ø Five Sugar factories with co-gen in Tamilnadu & Pondicherry

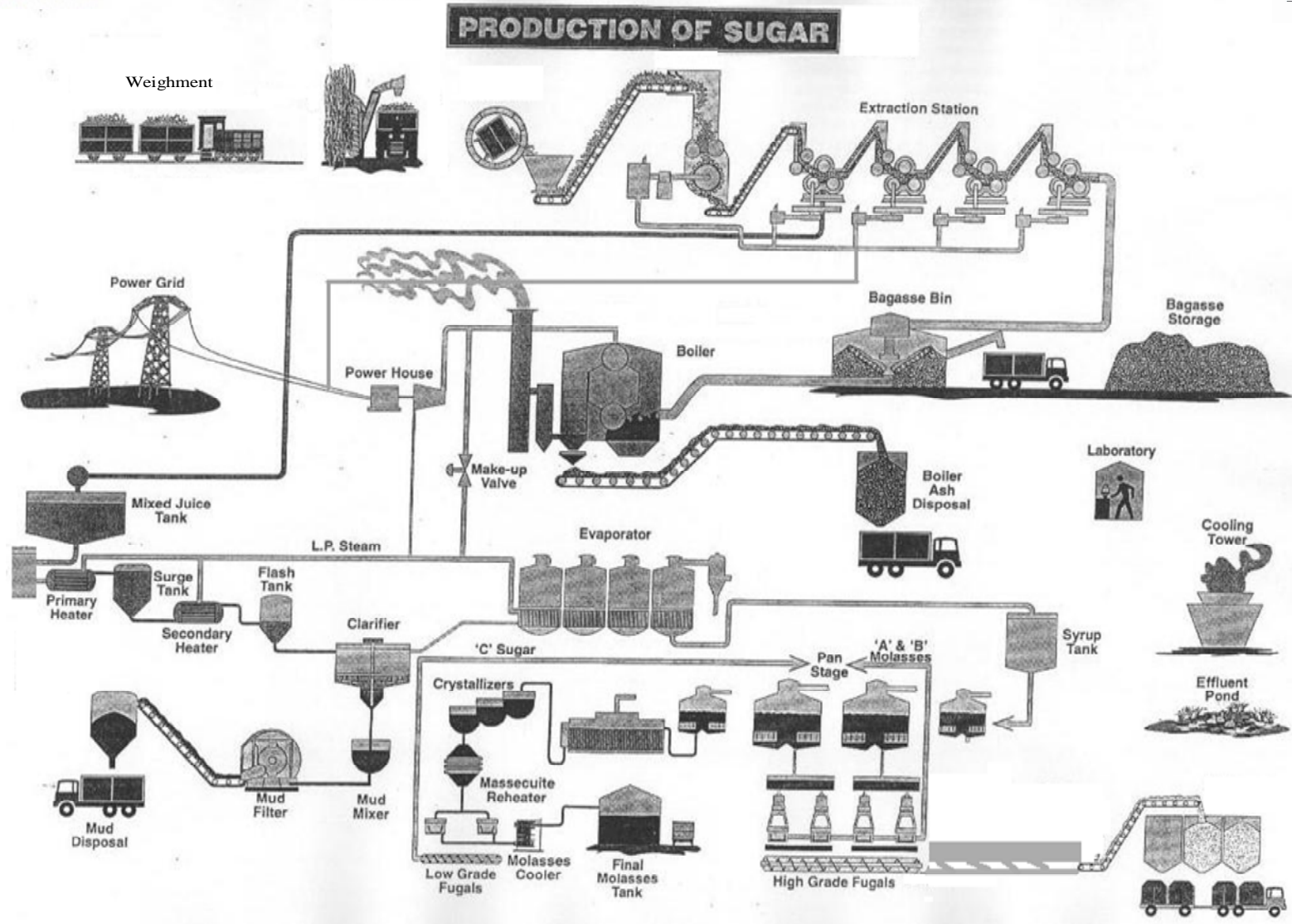
- **About the Participating Factory**

- Ø 3000 TCD sugar with 18.5 Mw power plant
- Ø Fully automated with Autonomous work team concept
- Ø An ISO14001 :2004 & OHSAS 18001 :2007 certified Company
- Ø CDM –registered under UNFCCC

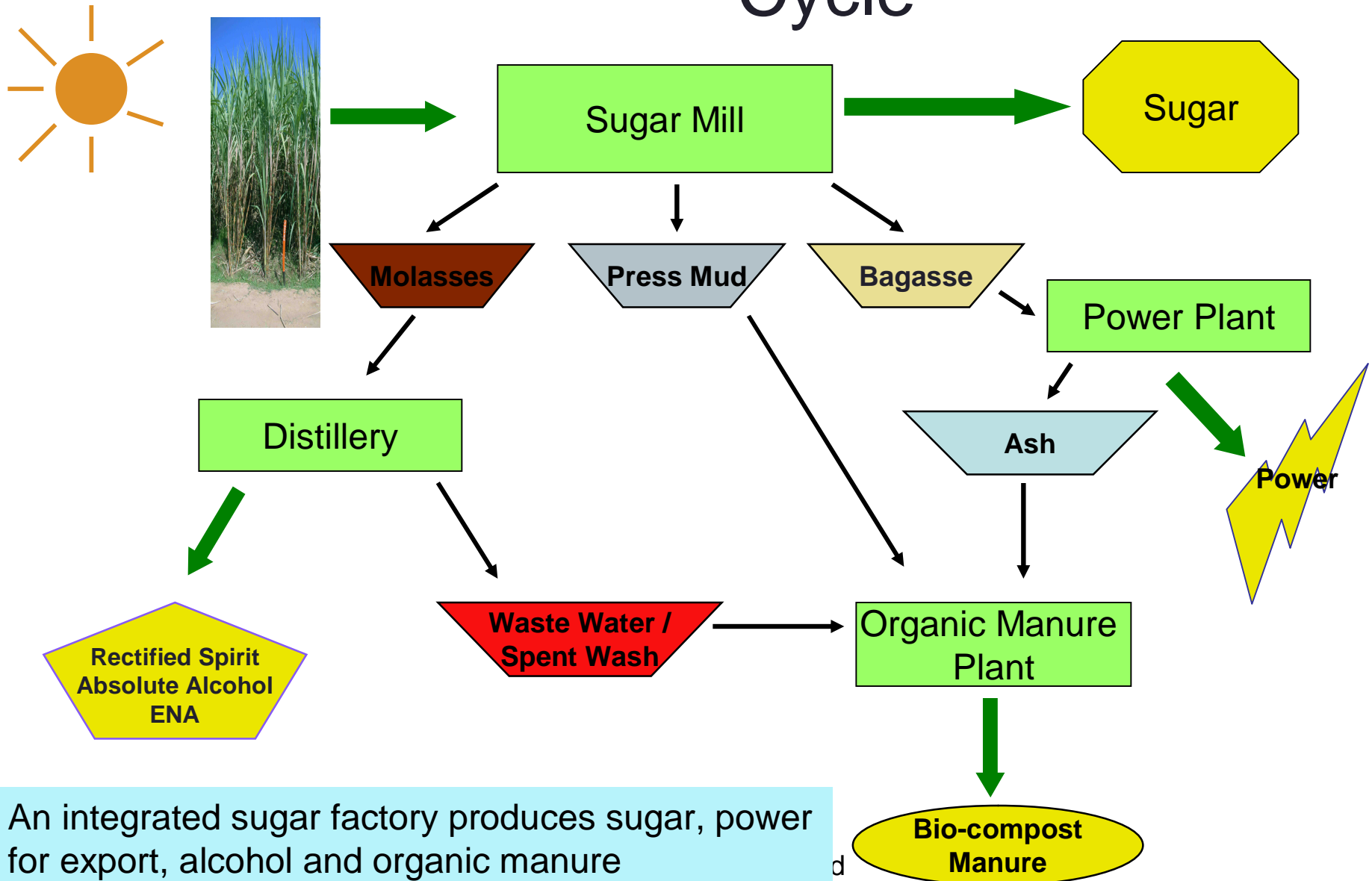
E.I.D.,-Parry (India) Limited



Our Processes



Sugar Manufacturing – A Virtuous Cycle





Futurity preservation of Environment



- Full fledged Activated Sludge Aerobic process waste water Treatment system
- Complied with Pollution Control Board norms and continuously got renewed the consent order for Operation since 2000
- Charter on Corporate Responsibility issued by MOEF – Fully complied by generation of effluent by 100 Lts./ MT of cane
- Rain water harvesting pits and collecting sumps inside the factory
- Air-cooled condensers in place of cooling towers
- Pneumatic ash handling system
- 95 meter chimney with ESP with online stack monitor.
- Greenery development in and around the factory.



Need & Initiatives of water Management

• Scenario in 2000-03

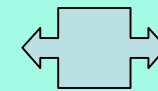
- Operating 6 bore wells
- No recycle /reuse of water
- Purchase of water
- Effluent generation –
180-200 Ltrs / Mt of Cane.
- No rain water harvesting
- Employee awareness –low

• Initiatives

- Formation of WCT (Water conservation team)
- Water made it as significant resource
- WCT introduced two way control measures

Administrative Measures

- System
- Awareness
- KFA lined to performance



Eng /Tech Measures

- Rectification/ treatment
- Reuse /recycle
- water conservation Projects

Last four year efforts

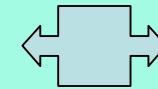
• Administrative measures

- System
 - SOP for all water usage activities
 - Daily / monthly Water monitoring report
 - Part of ISO14001
- Awareness
 - Training on conservation
 - Poster & slogan
 - Mass communication Thro' Theater skill Programs

• Eng/ Tech. Measures

- Effluent /waste water study
 - Internal /external Agencies
 - Lab /pilot studies
 - Rerouting /recycling
- New Projects on Water conservation

Direct



In-Direct

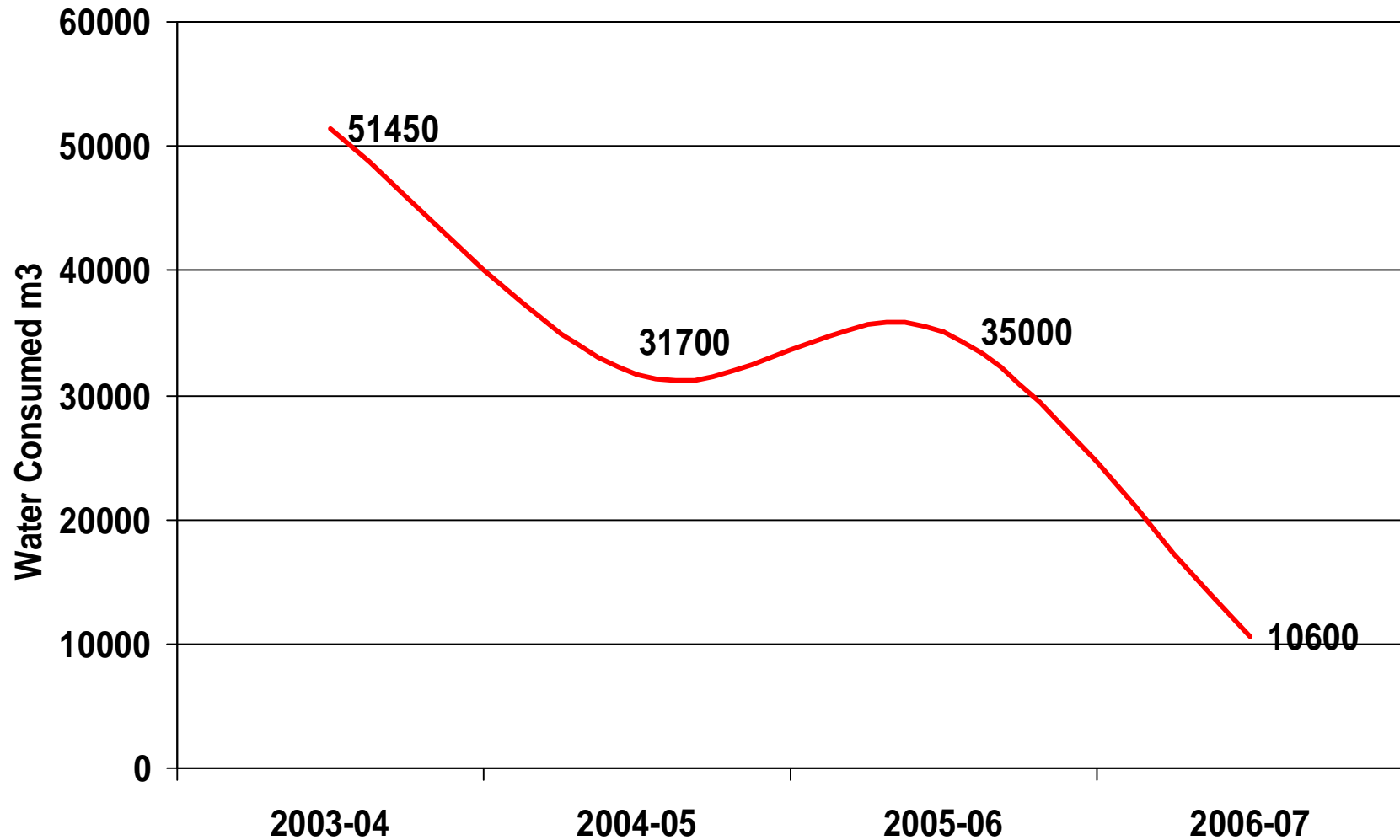


- Identified Proj.-7
- Major - 3
- Minor – 4

- Identified Proj.- 2
- All are Major



Total Ground Water Consumption

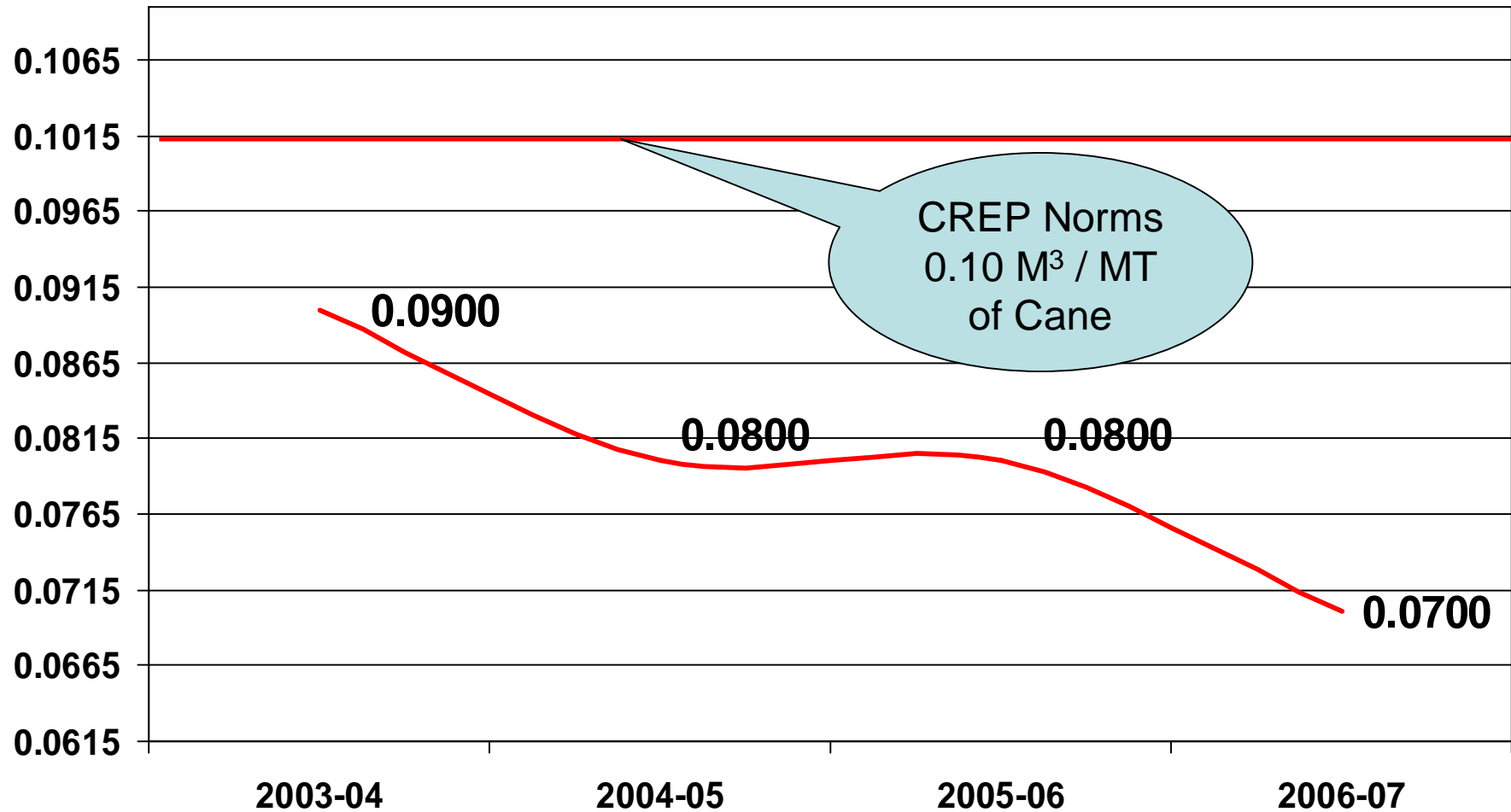


E.I.D.,-Parry (India) Limited





Waste water discharge per ton of cane crushed



Project title : Quality improvement of 2nd body Evaporater condensate water

Nature of Project : Major –Two stage implementation

**Stage : 1. Providing External catch all (additional)
2. Fan less cooling tower with storage facility**

Project Brief :

Providing catch all :The condensate from second body, which contains slight sugar traces were eliminated by way of providing additional External catch all. The catch all will entrap the sugar from the condensate This will improve the quality of condensate and avoid the decomposition of water on storage .

Fan less cooling Tower :

The 80 deg C , condensate free of sugar traces is taken to two stage Fan less cooling tower and brought to 32 deg C and is stored in the open concrete tank having a capacity of 800 cum .

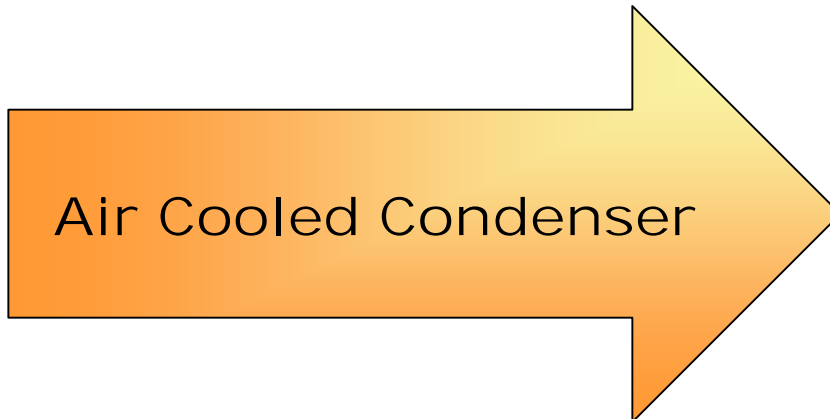
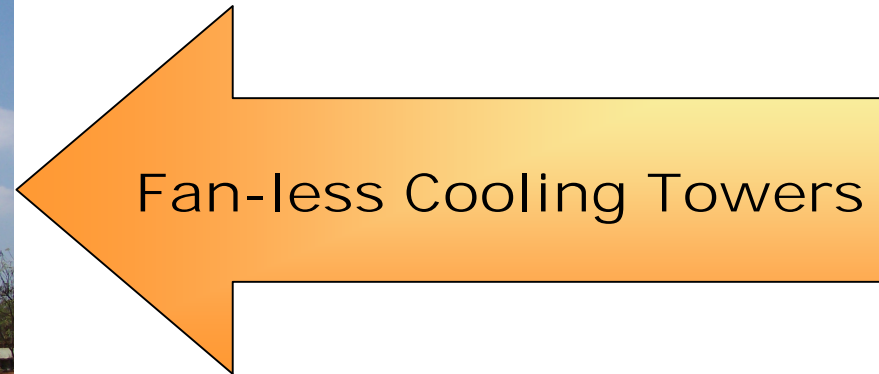
Quality of the 2nd Body condensate after the Project

Sl no	Details	Before	After
1	Generation of condensate cum /hr	20	20
2	pH	6.5	7 +
3	COD in ppm	260-280	60-80
4	BOD in ppm	25-30	Less than15
5	TDS in ppm	1200	160
6	Septic in storage	10-16 hrs	Non septic up to 72 hrs



Catch all

Water Conservation Measures



Project title : Utilization of 2nd body Evaporater condensate water

Nature of Project : Major – linked Project

Utilization areas :

- 1. Replacement of Ground water for Flocculent preparation**
- 2. Replacement of Ground water for Cooling of crystalliser & Mill house cooling Tower .**
- 3. Replacement of Ground water for Gardening and Bath room**

Project Brief :

Supply lines from Raw water tank to Flocculent Preparation , crystalliser mill house cooling Tower and domestic (Except canteen) were re-routed to condensate cooling water sump . On line pH monitor & temperature gauges were installed

A system to monitor the performance of the equipment & quality of condensate was introduced.

Ground water reduction : 160 Cum /day

Project title : Reuse of condensate water for Ash quenching

Nature of Project: Major- linked Project

Project Brief :

The condensate from second body having slight sugar traces were eliminated by way of providing additional External catch all, which improved the quality of condensate and avoided the decomposition of water on storage . This water replaced the ground water consumption to the level of 9000 Cum /annum for Ash quenching .

PVC lines were laid from the condensate storage tank to Ash collection point and lined with Ash silo

Investment Rs. In Lakhs	Annual water Savings (m3)	Savings Rs. In Lakhs	Pay Back Period (Months)
0.1	9000	0.05	24

Project title : Reducing Boiler Feed Water to optimise steam consumption

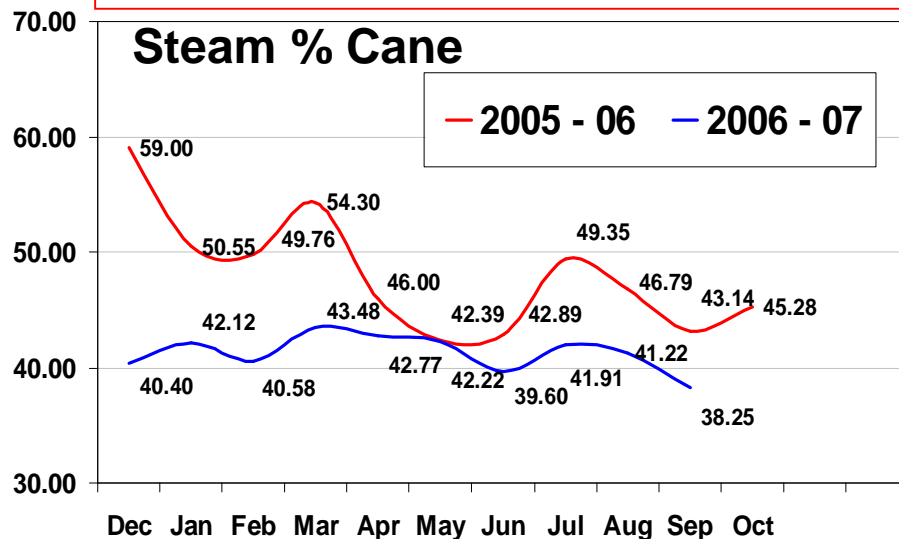
Nature Of Project : Major – Water & Energy saving Project

Project Brief

- Sugar Industries are operating with quintuple effect Evaporator using live steam of 44 % of cane(co-gen) .
- In conventional Evaporators, the heat transfer coefficient (HTC) is less than the New Generation Radial flow evaporators . The technology developed by SRI-Australia has certain uniqueness .
 - The juice feed entry systems.
 - Juice removal systems and level control.
 - The vapor entry and vapor flow through the calendria.
 - Condensate removal.
 - Venting the calendria on non-condensable gases.
 - Steam lines in the calendria.
- Resulting which steam % cane has reduced to 40 % for co-gen
- 4% steam reduction contributing reduction in boiler feed water qty

Contribution of WCT for Technology

- Steam & power are major captive generation activities in sugar industry
- Conservation of both will be revenue
- WCT – Searched for steam economy evaporators during the time of Plant expansion
- Identified the Radial flow Evaporator Technology in place of Robert type evaporators
- Sourced out literature and had correspondence with the Know how suppliers
- Mr Peter write –technology author have been invited for technical meet at Pudukkottai
- First this kind of technology introduced in India .



Benefit out this technology

- Bore well operation reduced from 16 hrs to max. 5 hrs
- Water treatment chemical in RO Plant
- reduced
- increased Power Export by 2 %

Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct

E.I.D.,-Parry (India) Limited





Ground water consumption Chart In Cum /annum



Sl. No	Details	Year of imple.	Before imple.	After imple.	Net benefit as of now
1.	Ash quenching	2004-05	9000	nil	9000
2	Dry cleaning	2004-05	6000	nil	6000
3	Reduction in steam consumption.	2006-07	40,000	nil	40,000
4	Utilization of 2 nd body condensate	2006-07	50,000	nil	50,000
5	Sealed water pumping system plus other measures	2004-2007	12,000	nil	20000
	Total		1,17,000	nil	1,17,000



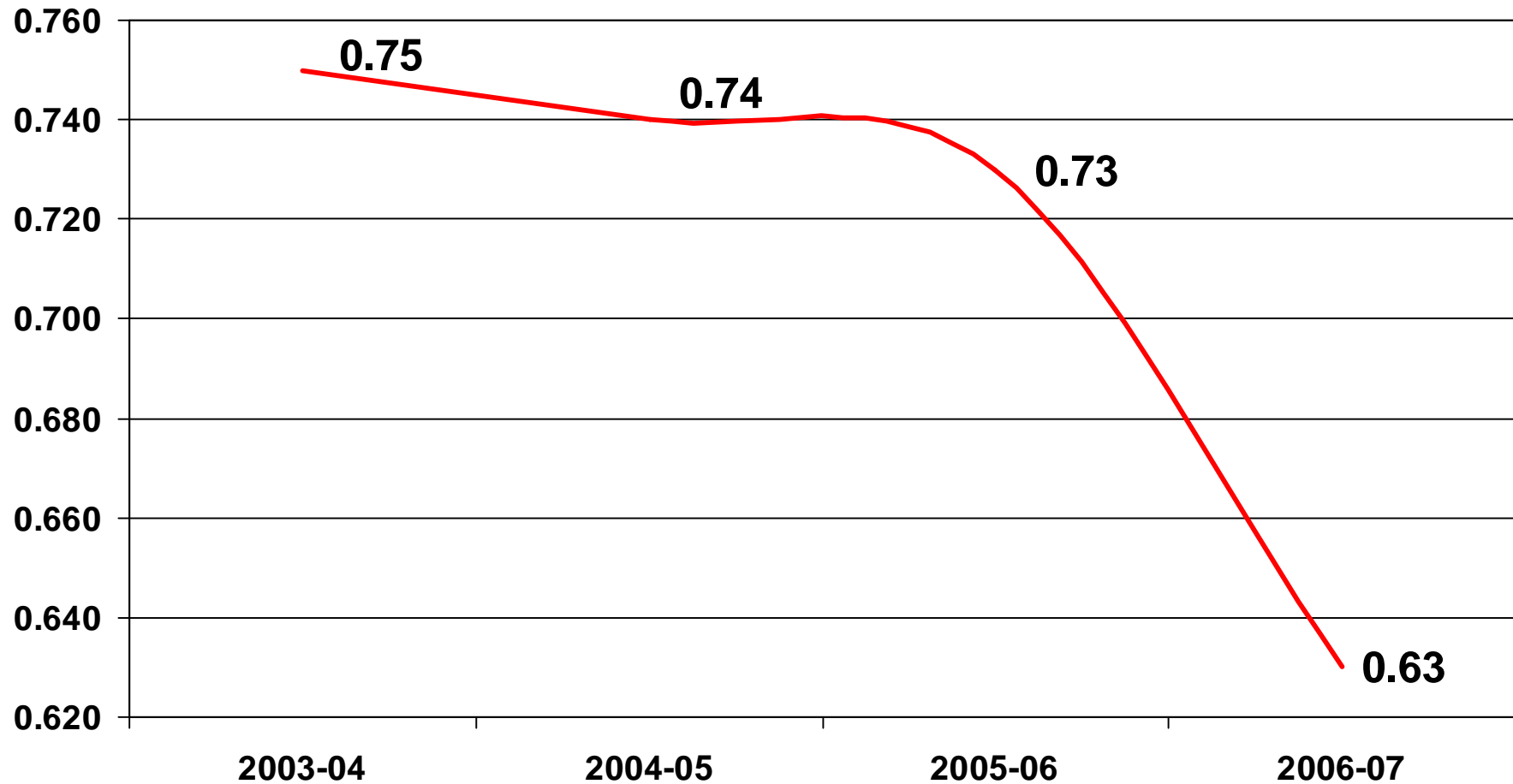
Reduction in Ground-water Consumption

Year	Cane Crushed	Water Required*		Recycled From Condensate	From Borewell	
		Quantum	% on Cane		Quantum	% on Cane
2003-04	603994	452996	0.75	401546	51450	0.085
2004-05	427445	316309	0.74	284609	31700	0.074
2005-06	499618	364721	0.73	329721	35000	0.070
2006-07	733368	462022	0.63	451422	10600	0.014

Quantity excludes Canteen usage



Specific water consumption in m3 / ton of cane crushed

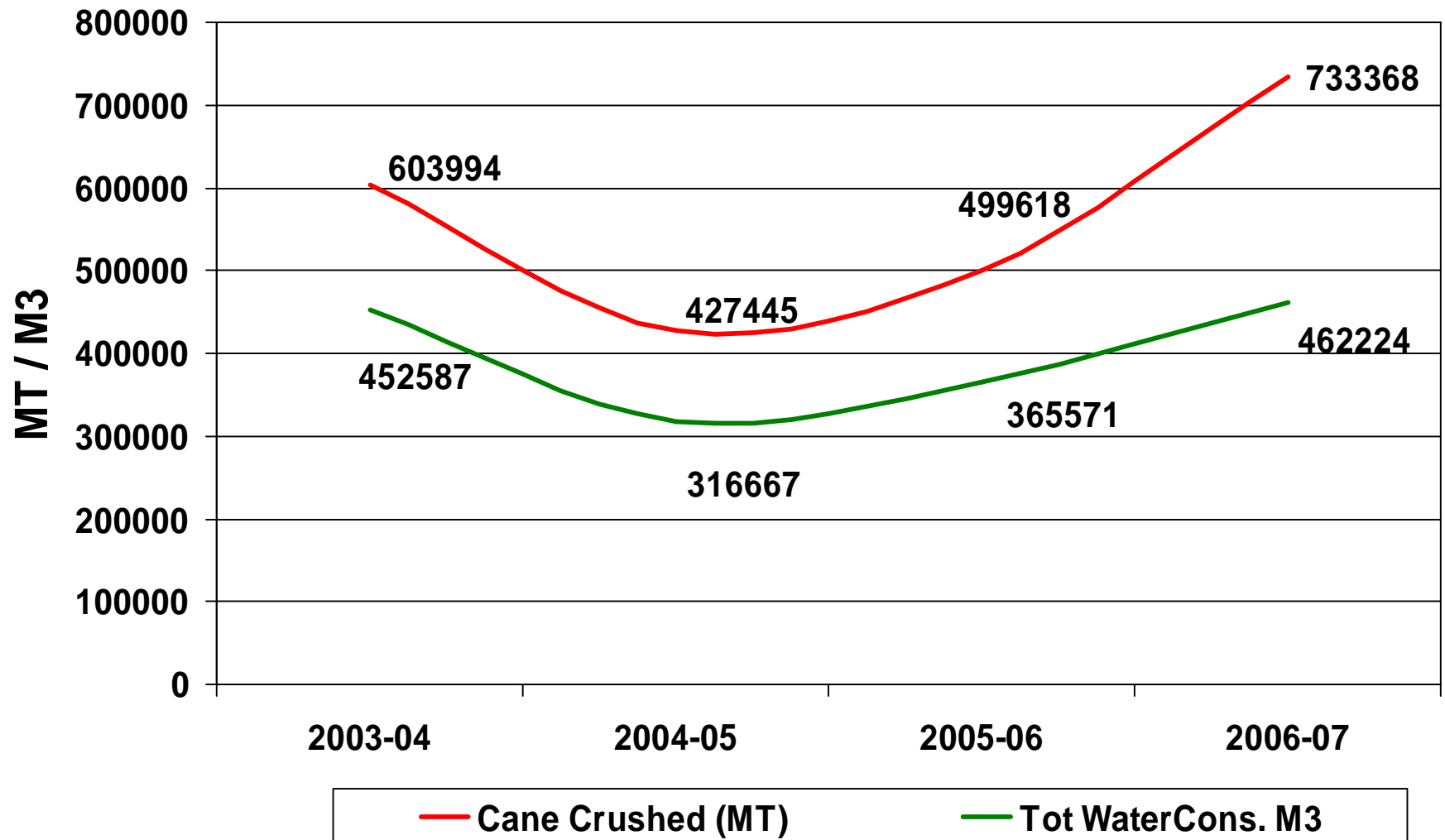


E.I.D.,-Parry (India) Limited





Cane crushed & total water consumed



E.I.D.,-Parry (India) Limited



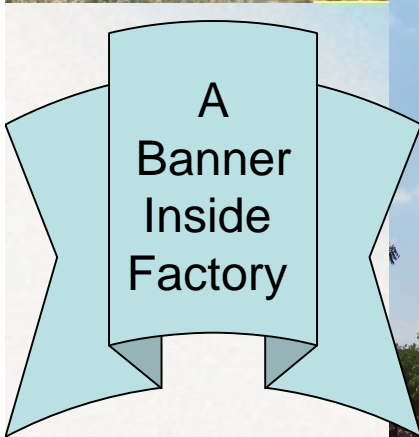


Cane water – a waste??????

A change in sugar industry scenario

- innovative and energy conservative approach

- Segregation of condensate water
 - characteristic wise
- Cooling to different temp. grades
 - fan less cooling tower
- Recycle for all process needs
 - reduce ground water drawl



•Ground water –
•made available for our future



More on Water conservation

1. Water points inside factory numbered & Provided caution notice
2. Sealed condensate pumping system. This minimized the line losses in condensate return to the boiler.
3. Air cooled condenser in place of cooling tower
4. Dry cleaning in mill house
5. Rain water harvesting inside the factory & nearby villages
6. Greenery development in around the factory

Way back in 2003

No of bore well
in operation - 6

• Water drawl - 400
cum/day

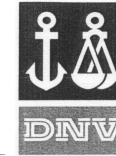
• Quantity of
effluent - 200 lit/ T of
Cane

In 2006-07

No of bore well
In operation - 1

water drawl - 200
cum/day

Quantity of
effluent - 70 lit/ T of
Cane



**DET NORSKE VERITAS
MANAGEMENT SYSTEM CERTIFICATE**

**DET NORSKE VERITAS
MANAGEMENT SYSTEM CERTIFICATE**

Certificate No. 2928-2007-AE-IND-RvA

Certificate No. 00023-2004-S-BOM

*This is to certify that
the Environmental Management System
of*

*This is to certify that
the Occupational Health and Safety Management System
of*

E.I.D. PARRY (INDIA) LTD.

E.I.D. PARRY (INDIA) LTD.

at
Aranthangi Sugar Factory, Kurumbur - 614 622, Pudukottai District, Tamil Nadu, INDIA

at
Aranthangi Sugar Factory, Kurumbur - 614 622, Pudukkottai Dist., Tamil Nadu, INDIA

*has been found to conform to the Environmental Management System Standard:
ISO 14001:2004*

*has been found to conform to the Occupational Health and Safety Management System Standard:
OHSAS 18001:1999*

This Certificate is valid concerning all activities related to:

This Certificate is valid for the following product or service ranges:

MANUFACTURE AND SUPPLY OF SUGAR AND POWER

MANUFACTURE AND SUPPLY OF SUGAR

Original Certification date:
2004-02-12

Place and date:
Chennai, 2007-04-26

Original Certification date:
2004-09-10

Place and date:
Chennai, 2004-11-10

This Certificate is valid until:
2010-02-12

This Certificate is valid until:
2007-09-10

*Compliance to the Standard in respect to the indicated scope is
verified by the DNV approved registered Team Leader:*

M.A. Sambasivan
Lead Auditor



for the Accredited Unit:
DNV CERTIFICATION B.V.,
THE NETHERLANDS

D.R.S. Moorthy
Management Representative

Lack of fulfillment of conditions as set out in the Appendix may render this Certificate invalid.

NV 5011/1.1

*Compliance to the Standard in respect to the indicated scope is
verified by the DNV approved registered Team Leader:*

R. Ramesh
Lead Auditor



for the Certification Unit:
DNV CERTIFICATION SERVICES,
REGION INDIA

Krishnakumar N.R.
Country Manager
Region India, Sri Lanka, Bangladesh & Nepal

Lack of fulfillment of conditions as set out in the Appendix may render this Certificate invalid.

DNV CERTIFICATION SERVICES, 203, SAVITRI SADAN I. 11, PREET VIHAR COMMUNITY CENTRE, NEW DELHI 110 092

E.I.D.,-Parry (India) Limited

Eco-friendly initiatives



Closed Conveyor system

95 M Chimney with ESP






Future Focus

**Not only for ZERO Discharge ,
Also
making money from cane water**

“The difficulty lies not so much in developing new ideas as in escaping from old ones”
John Maynard Keynes, economist.





**Around 200 nos of Rain water
harvesting pits in four village
in the last two years
around factory**

**Rain Water Harvesting: Creation of
sump pits – voluntary work by our team**

Promoting Awareness in Schools On caring for the environment





**Tree planting by
Environmental minister
19.2.07**

**Environmental minister
visit to our ETP plant
19.2.07**



E.I.D