



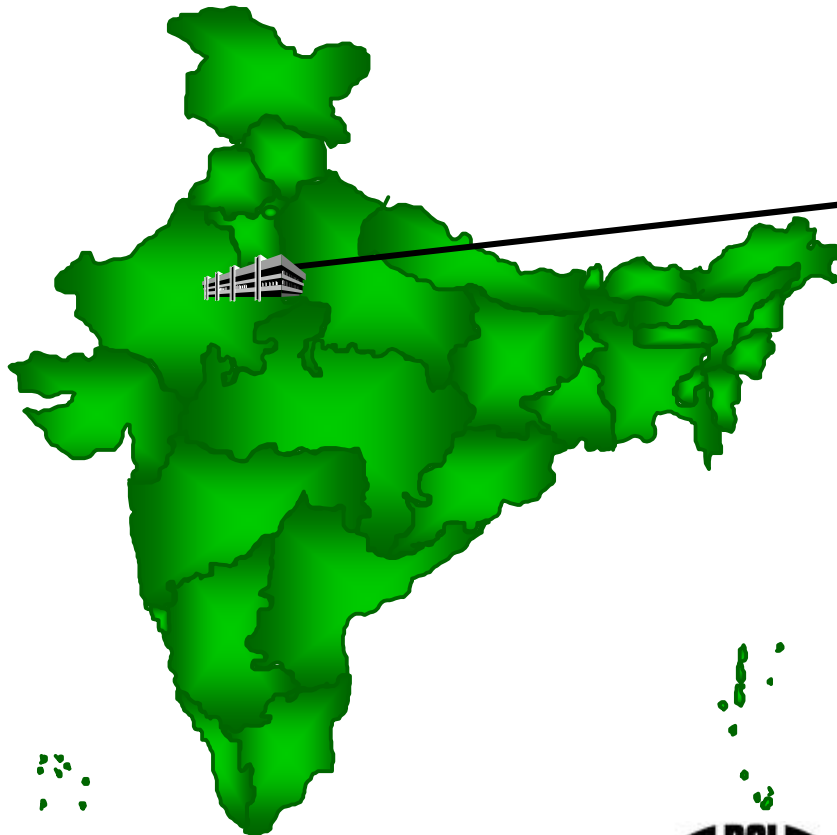
Carrier

A United Technologies Company

CARRIER AIRCONDITIONING & REFRIGERATION LTD.

30th November 2007

Factory Overview



Employees: 600

Space: 224,000 sq. ft.

Land Owned: 19.5 Acres



ACE Silver Certified*



ISO 14001 & OHSAS 18001 Certified*



UL Certification**

Products



WRAC



Bottle Cooler



Hi Wall Split



Freezer



Ducted Split



Bus Ac



Chiller



System

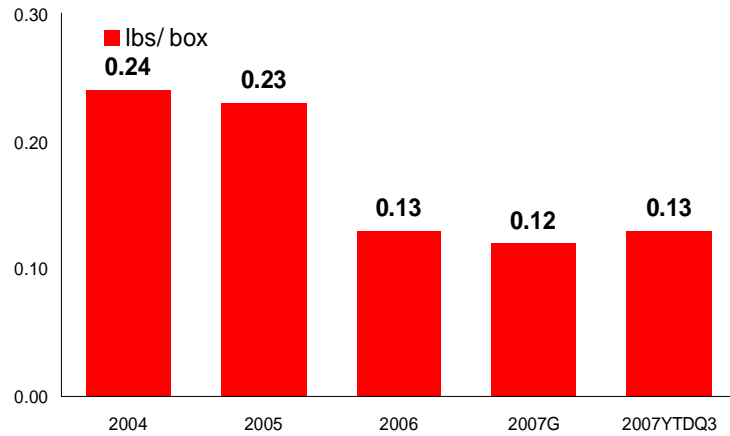
EHS Achievement

Achievements from Baseline 1997

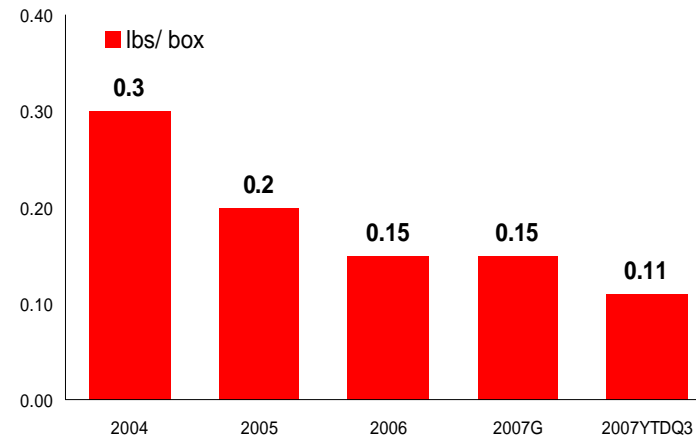
- 95 % reduction in Total Record able Incident Rate.
- 90 % Reduction in Air Emission
- 72 % Reduction in Energy consumption
- 76 % Reduction in Re-Cycled Waste
- 63 % Reduction in Water consumption
- 61 % Reduction in Non Re-Cycled Waste
- Ø 6.5 Million Man Hours with One Lost Workday Incident (April 2007)
- Ø 2002: ISO 14001 & 18001 OHSAS certification
- Ø 2003: Eco Profit Certificate (Energy & Water Conservation)
- Ø 2004: Non-Smoking Factory
- Ø 2004: Eco Profit Certificate (Energy & Water Conservation)
- Ø 2004 : Entire factory ACE SILVER with ACE-EHS integrated methodology.
- Ø 2005: Eco Profit Certificate (Energy & Water Conservation)

EH&S Environment Performance

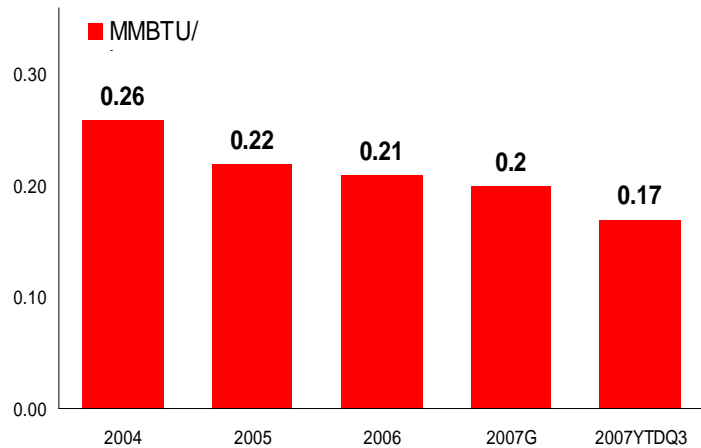
Air Emissions



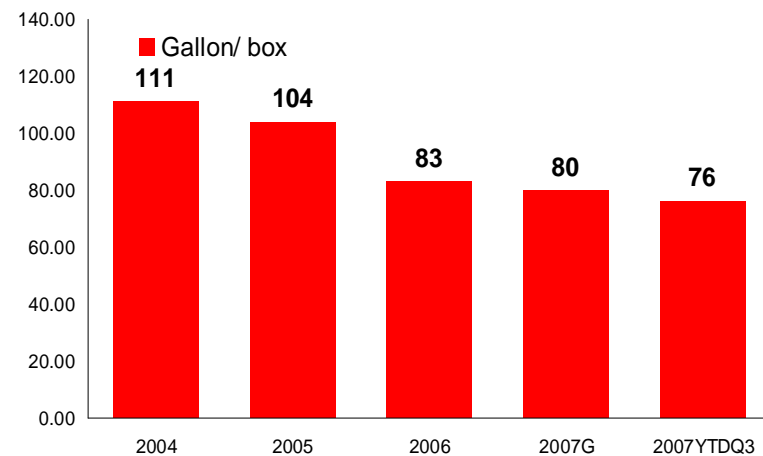
Non Recycle Waste



Energy Use



Water Use



Water Source

Ground Water

3 Bore well- Water Depth – 110 Feet

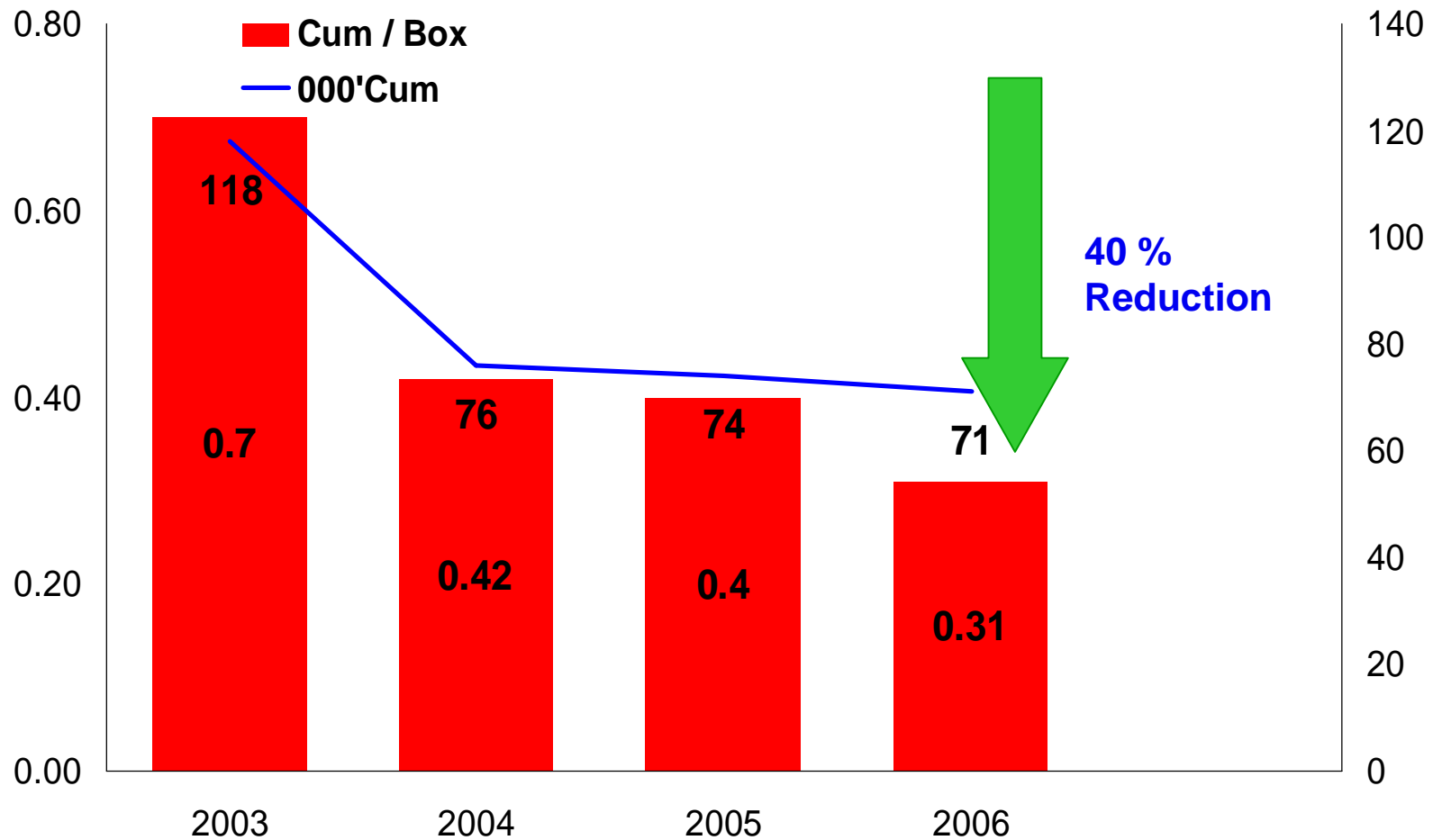
Rain Water

Treated Water



Note : CARL is situated outside municipal limit & not in industrial area hence no other water supply

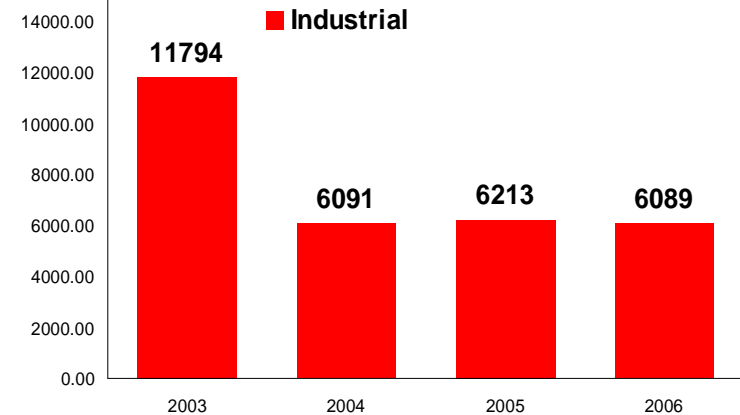
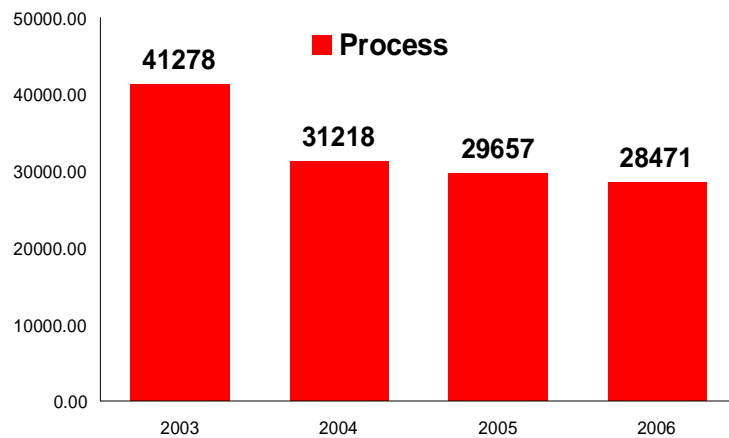
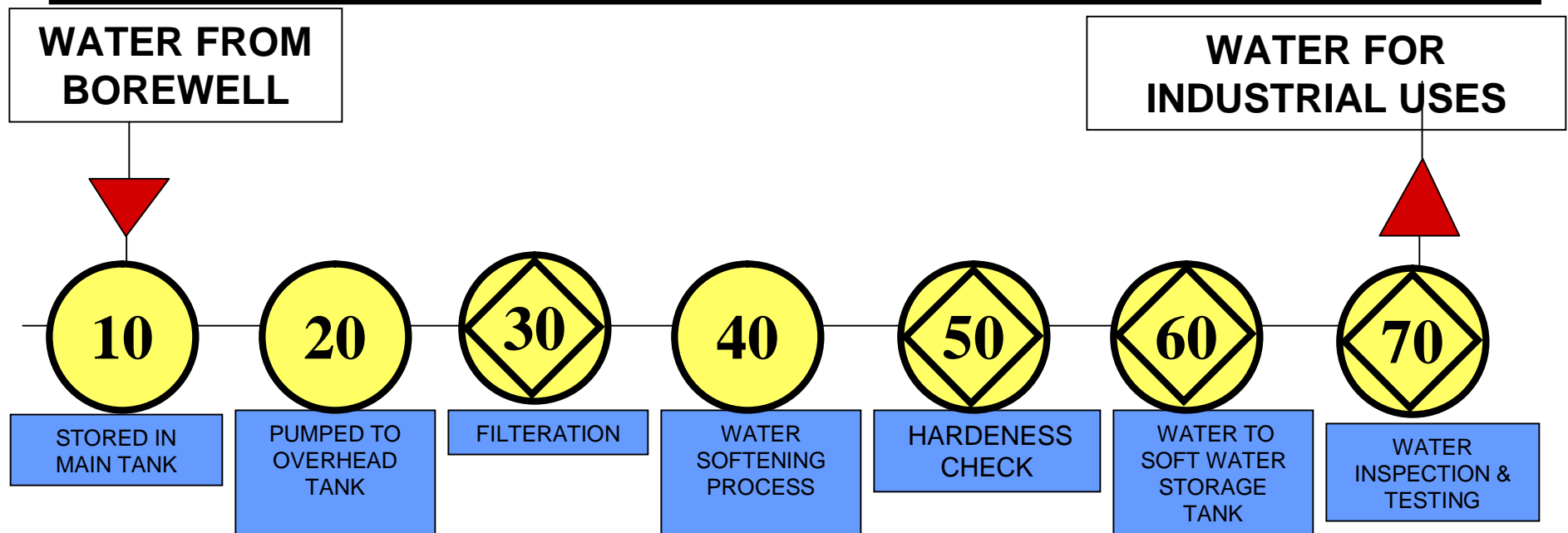
Water Consumption (Domestic, Trade & Industrial)



Ø 40 % Reduction in Water consumption.

Ø 55 % Reduction in Water Usages Per Box Produced

Process Map – Industrial Water

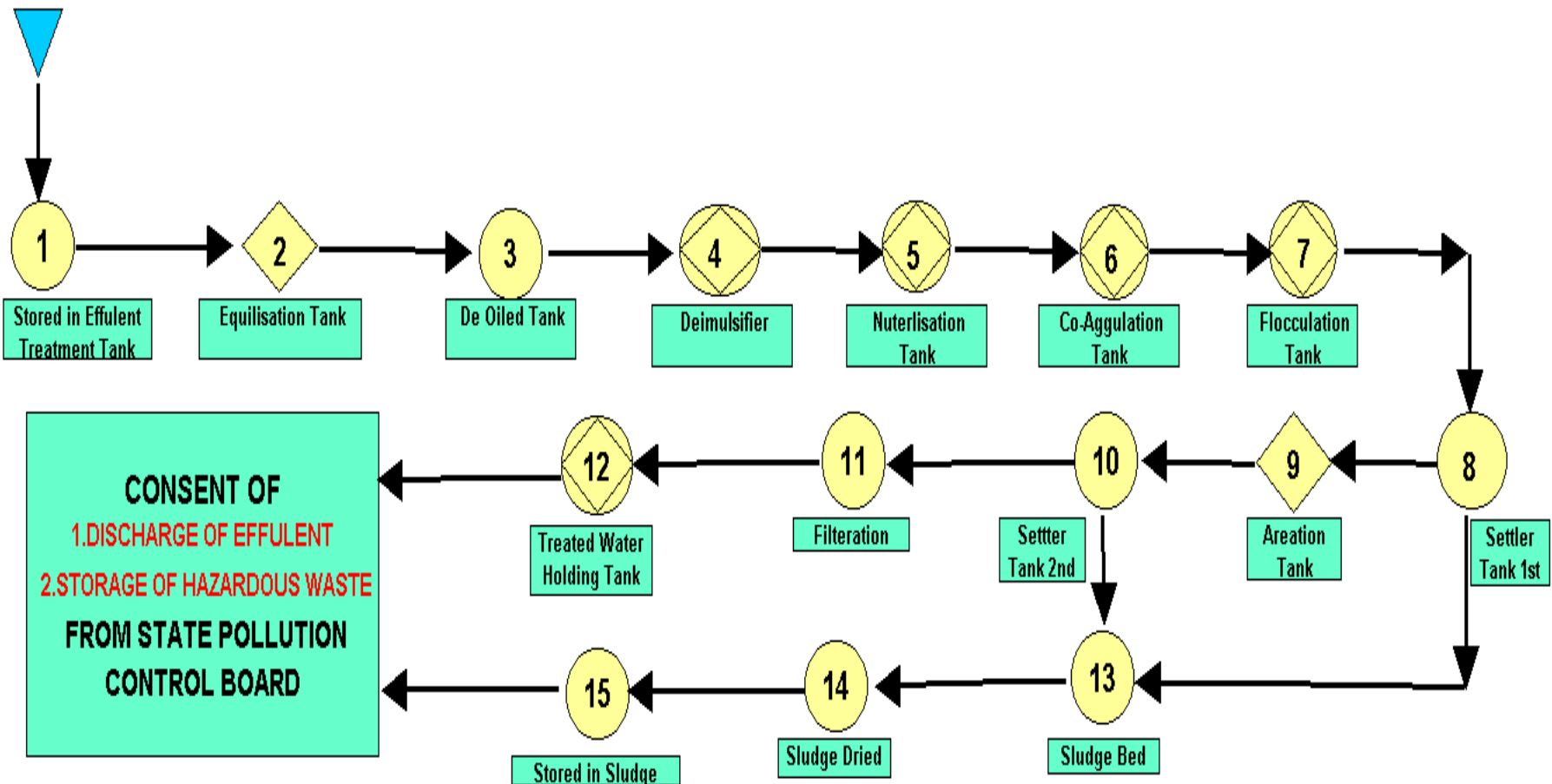


31 % Reduction in Process Water consumption 48 % Reduction in Industrial Cooling Water

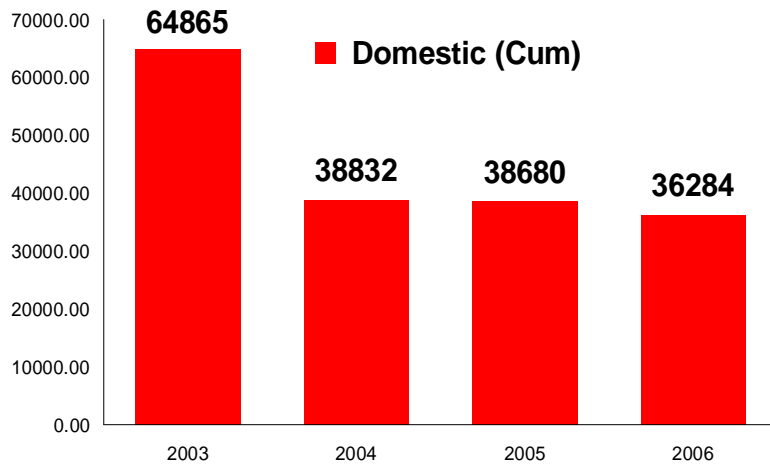
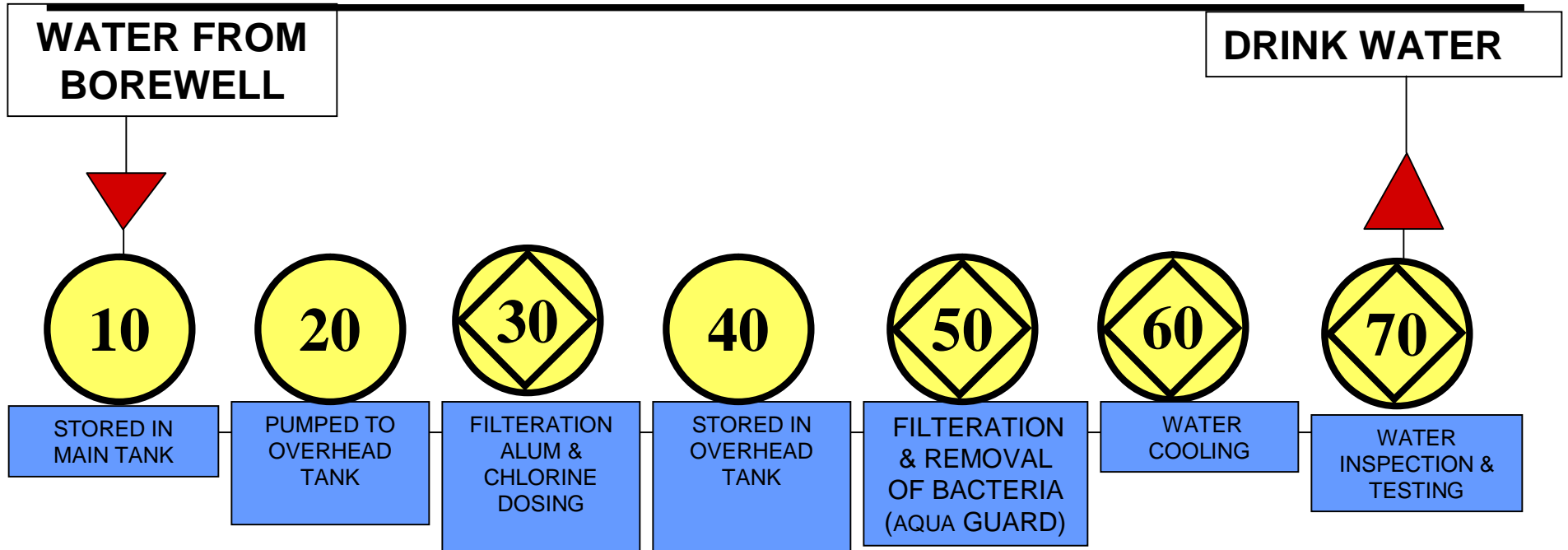
Industrial Effluent Treatment Process

Process For Trade Effluent Treatment - FLOW CHART

Effluent from Paint Shop



Process Map –Domestic Water

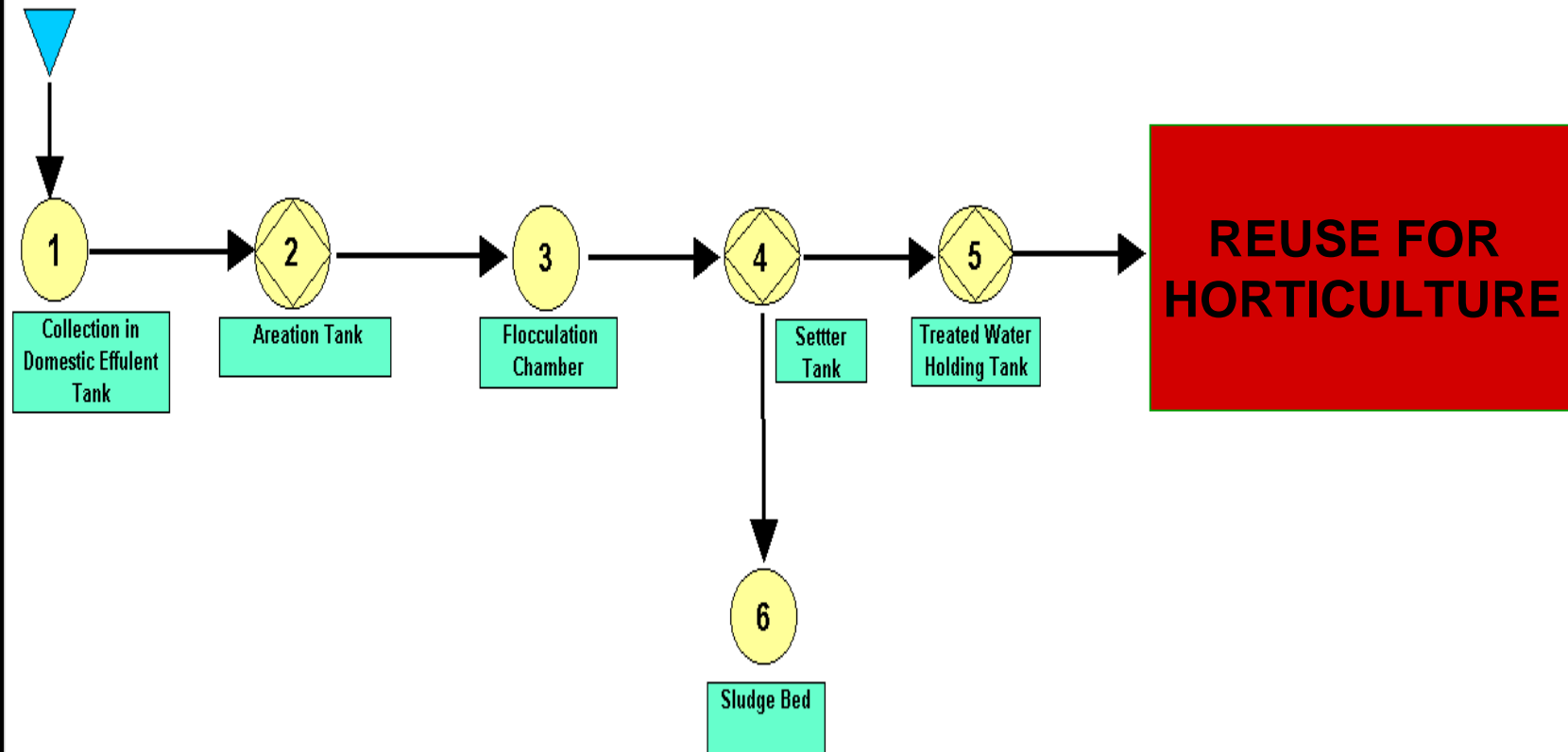


Ø44 % Reduction in Domestic Water consumption.

Domestic Effluent Treatment Process

Process For Domestic Effluent Treatment - FLOW CHART

Domestic Effluent from Canteen & Toilets



Water Saving Projects

Nos Of Water Saving Project : 21

Water Saving : 43K cum

#	Water Saving Project	Year	Annual Water Saving		Investment	Payback (Yrs)
			Cu-Mt	Saving In Rs	Rs	
1	Use of STP Water for Horticulture	2003	14040	126360	220000	1.7
2	Introduction of Closed loop water system in Air Compressor water circuit	2003	120	1080	12000	11.1
3	Water Leak Repair Program	2003	240	2160	5000	2.3
4	Outsourcing Compressor Mfg (Elimination of Pre Treatment/Leak Testing water)	2003	9600	86400	0	n/a
5	Outsourcing Compressor Mfg	2003	4200	37800	0	n/a
6	Merger of Daman Factory into Gurgaon facility	2004	6360	57240	0	n/a
7	Modification in DG Set cooling tower circuit (Closed Loop)	2005	240	2160	15000	6.9
8	TPM schedule for Check and maintain water piping system	2005	524	4713	12000	2.5
9	Auto flush system in sanitary facilities	2005	175	1571	25000	15.9

Water Saving Projects

#	Water Saving Project	Year	Annual Water Saving		Investment	Payback (Yrs)
			Cu-Mt	Saving In Rs	Rs	
10	Introduction of low orifice bushes in taps of Toilets/Wash basin	2005	262	2357	2000	0.8
11	Install flow meters and hours meters	2005	349	3142	5000	1.6
12	Introduction of new chemical in Paint shop Pre treatment line	2005	3240	29160	0	n/a
13	Paint Shop pre treatment line pump interlocks with conveyor	2006	769	6921	2500	0.4
14	Replacement of leak testing tanks	2006	120	1080	0	n/a
15	Convert Air Compressor from Water cooled to Air cooled	2006	600	5400	0	n/a
16	Installation of auto float system in day water tank to prevent overflow	2006	1620	14578	15000	1.0
17	Replacement of leaking water cooler with new water cooler	2006	324	2916	0	n/a
18	Water Leak Repair Program	Continual	120	1080	0	n/a
19	Educate Employees to use water sparingly	Continual	90	810	0	n/a
21	Auto Cycle timer in Air Cooling Plant to stop water pumps during idle hours	2006	220	1976	5000	2.5
			43211	388903		

SUMMARY OF BACKGROUND

Carrier India is committed towards EH&S policy by ensuring adequate protection of Natural Resources by making them integral parts of our business plan.

With the commitment of senior management & active involvement of factory staff & employees to implement Water Conservation Program.

CARL has executed a Work Culture to make it integral part of business.

To achieve this success different projects were worked out & implemented successfully.



Water Saving – Reuse

Before

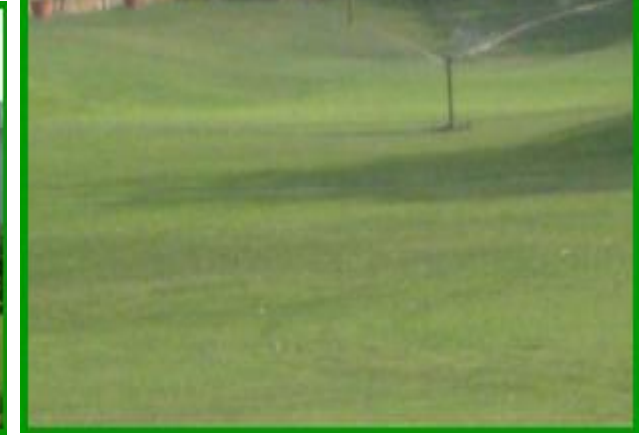


- Ø Submersible Pump Used For Pumping The Water
- Ø Pump Rating – 7.5 KW
- Ø Pump Running 6 Hrs/Day
- Ø Water Consumption 38 cum/Day

After



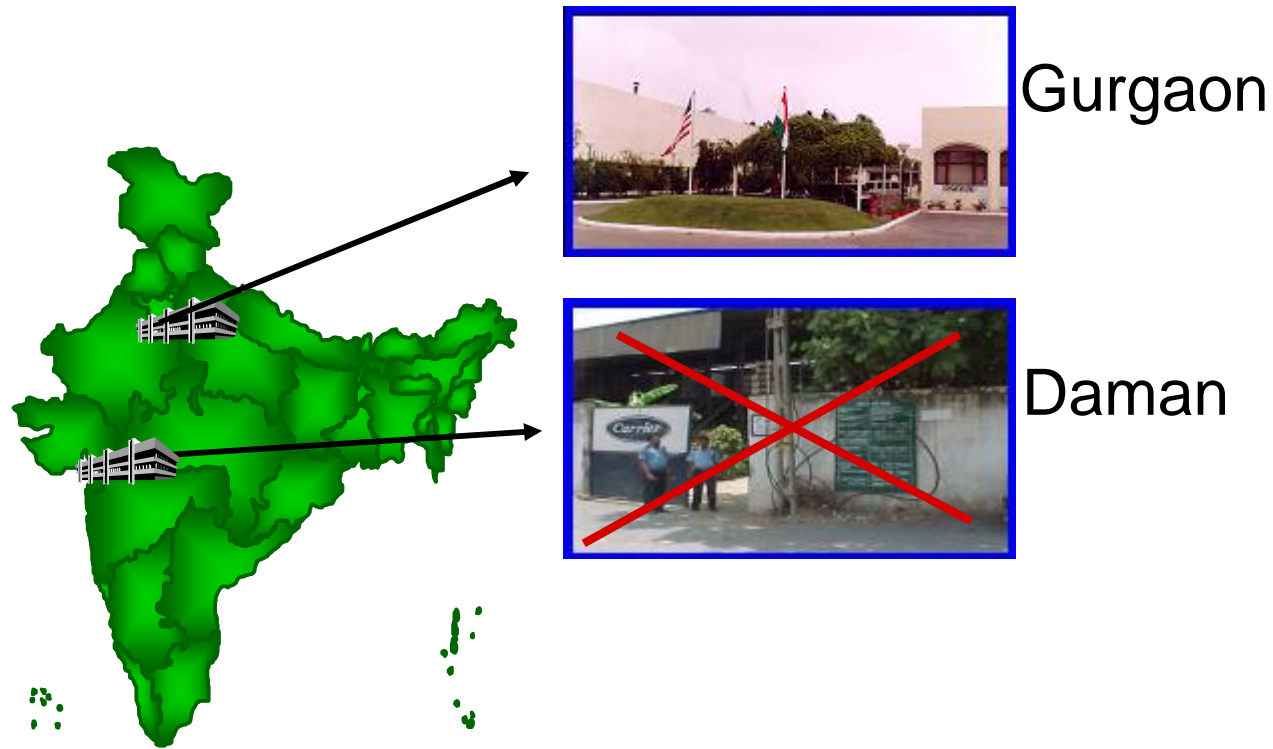
- Ø Use Of Treated Water for Horticulture
- Ø No Extra Pump Required
- Ø Water Saving 38 cum/Day



- Ø Use Of Treated Water for Irrigation in surroundings villages
- Ø Electricity & Ground Water Saving for villagers

Saving Approx 14000 CUM Per Year

Water Saving – Factory Consolidation



Saving Approx 6400 CUM Per Year

Water Saving – Strategic Outsourcing

Before



Reciprocating Compressor Mfg

After



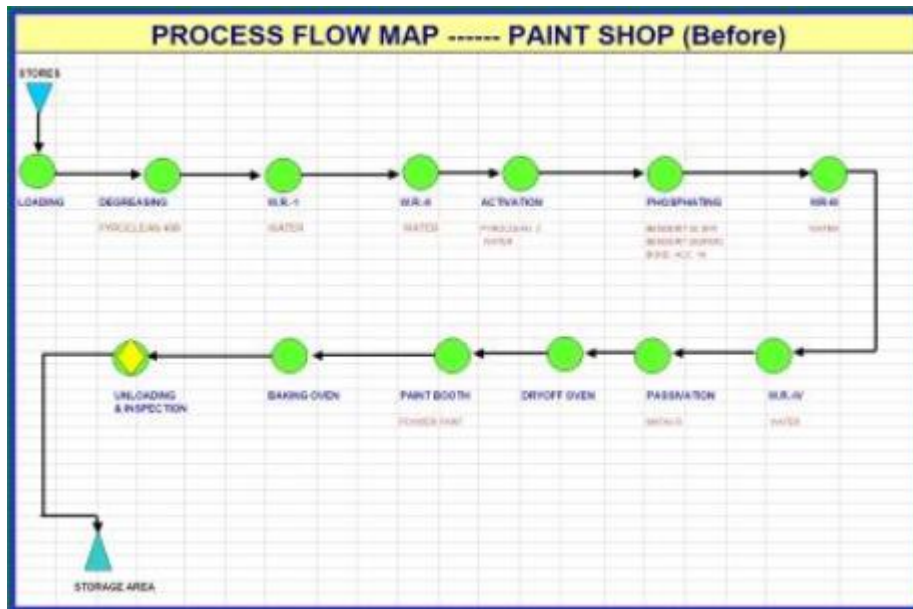
Rotary Compressor - Import

Technology Change : Gurgaon reciprocating compressor mfg facility closed – Elimination of Pre Treatment Line, Compressor Leak Testing & Domestic needs

Saving Approx 13800 CUM Per Year

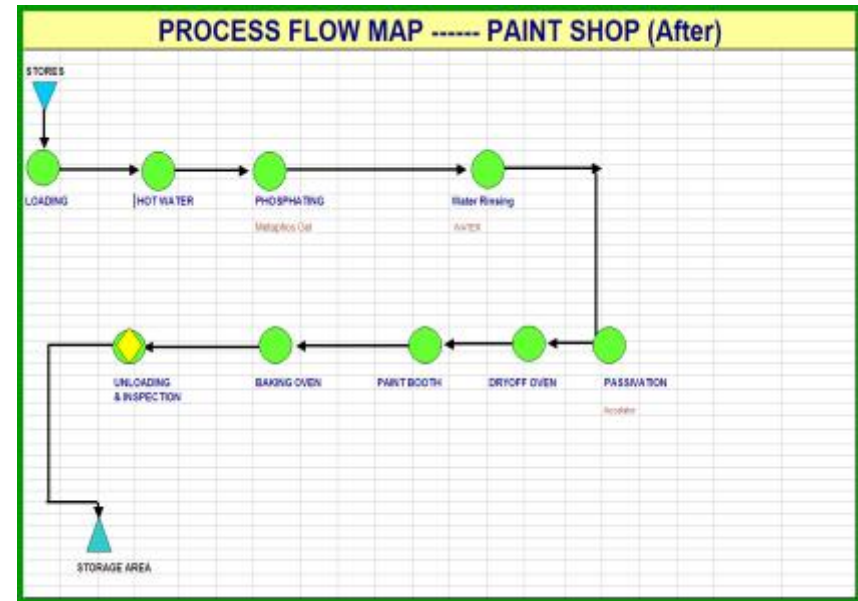
Water Saving – Process Improvement

Before



Pre-Treatment Line – 8 Tanks Process

After



Pre-Treatment Line – 4 Tanks Process

Process Change : 3 in 1 Chemical used instead of 3 different chemicals resulting in reduction of 3 water rinsing tanks & 1 Activation tank.

Saving Approx 3200 CUM Per Year

Water Saving – Other Projects Executed



Auto Flush System



Auto Float System



Auto Cyclic Timer

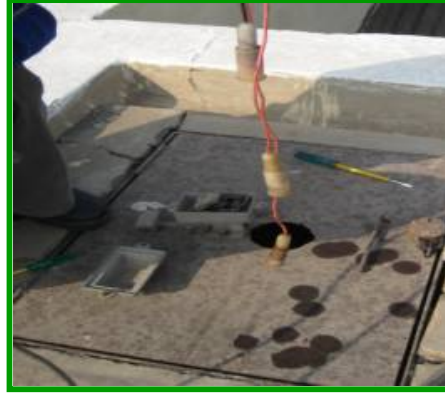


Closed Water Loop system, Interconnection of water pipe lines, DG Set & Air Compressor Cooling System

Water Saving – Other Projects Executed



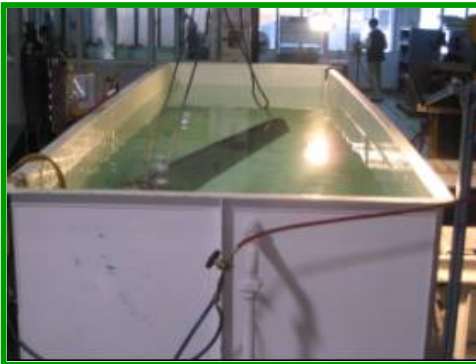
Temp Controller



Water Level Sensor



Low Orifices Tap



New Leak Testing Tank



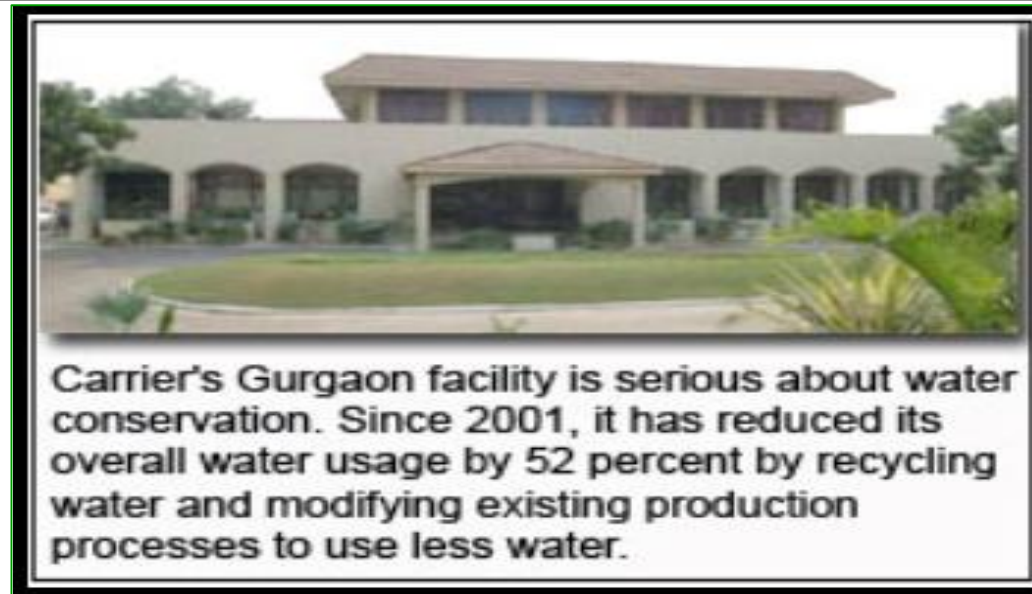
Water Flow Meter



Closed water loop for Cooling



Carrier India Won UTC Award For Water Conservation



UTC News Letter Clipping

Carrier Facilities in India and Brazil Receive UTC EH&S Awards

(FARMINGTON, Conn., July 25, 2007) – Springer Carrier Ltda. of Canoas, Brazil, and Carrier's facility in Gurgaon, India have been named recipients of the 2006 Environment, Health & Safety (EH&S) award from UTC.

"I would like to offer my congratulations to the RLCI business, and particularly to the teams at both sites for their innovative and diligent efforts," said Rich Guimond, Carrier's vice president of EH&S. "Both teams demonstrated exemplary use of ACE tools in their quest to achieve EH&S excellence."

CONCLUSION

Water Management is a core value in our business operations. CARL believes that Water Conservation is everyone's moral responsibility. Since we are committed to achieve **UTC Environmental Goals** & keeping in views the **National Interest** towards protecting our **Natural Resources**, every employee in CARL is responsible towards achieving the goals. CARL has succeeded in meeting all the targets by changing the behavior of workmen through ACE culture.

**WORKING TOGETHER FOR A
BETTER WORLD INSIDE AND OUTSIDE**

Future Action Plan

- Reuse Treated Industrial Water for process
- Explore possibility to use Treated Industrial Water for Fire Hydrant
- Use of Pre-Coated sheets to reduce water consumption in Paint Shop
- Rain Water Harvesting
- Use of special sheets to eliminate powder coating.
- Employee awareness program
- Replace Air Cooling Plant with Chillers

Question Time
