Excellence in Water Management 2007

ASHOK LEYLAND

HINDUJA GROUP

Ashok Leyland : A Brief History

- 2nd Largest Commercial Vehicle Manufacturer in India – aspiring to become MARKET LEADER
- Established in 1948
- Six Manufacturing facilities across India and joint ventures abroad
- Annual Turnover of Rs. 8300 Crores
- About 12000 employees
- All manufacturing plants in India are certified for ISO14001 & TS16949
- Vehicles and Engines - Complying to Euro Norms
- Launching First hybrid electric vehicle of India
- Market leader in CNG Powered bus

Ashok Leyland, Hosur – II

- Established in 1994
- Spread over 234.4 acres
- Manpower – around 1000
- Annual turnover of 1630 crores
- TS 16949/ ISO 14001 Certified

Greenery:

- No of Trees – around 19000
- Garden Area – 1,70,000 Sq.m.

Rain Water Harvesting:

- Total storage capacity 70,000 KL/season

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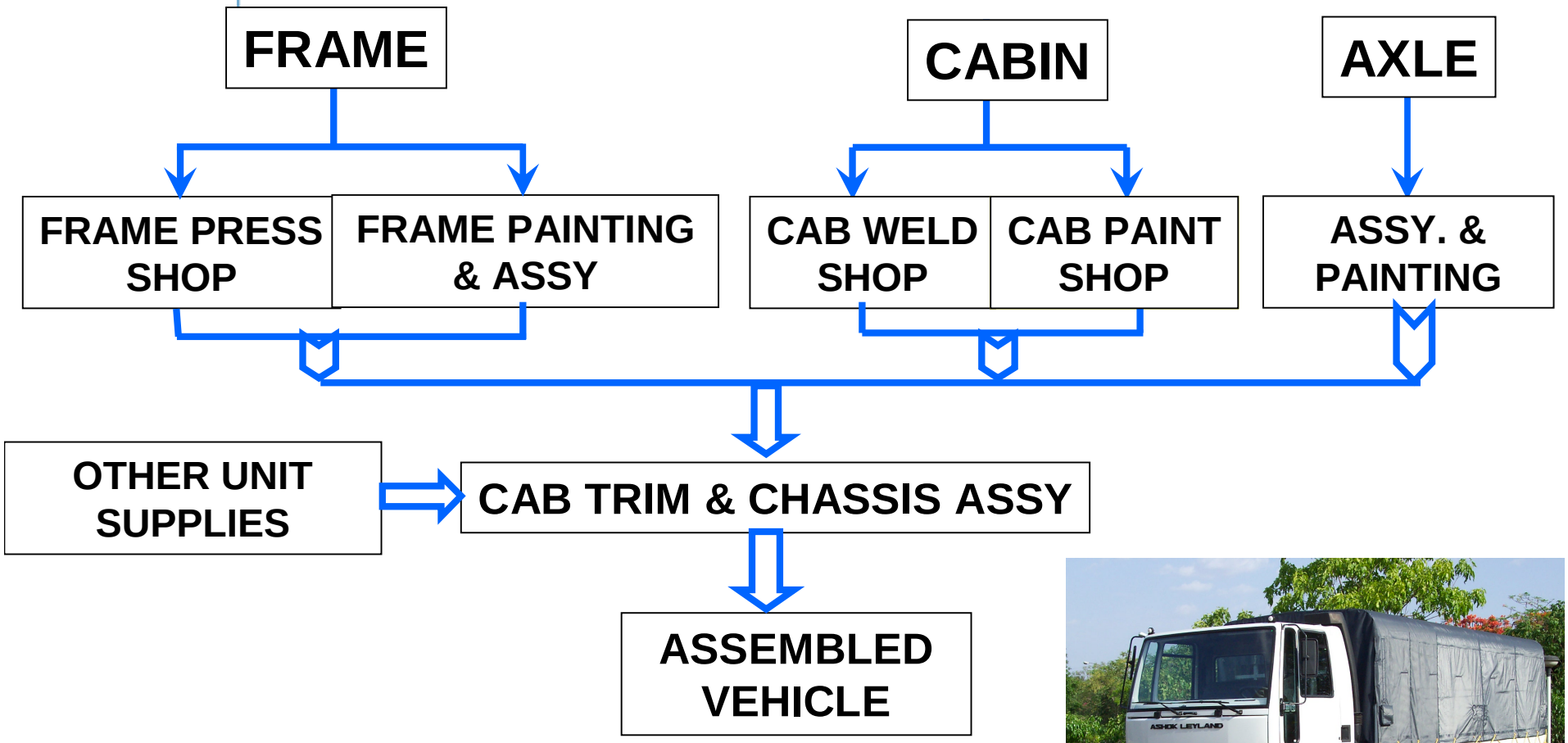
Plant Block Diagram



List of Water Saving Projects with cost benefits:

Sl. No	List of water saving projects	Cost Benefits	
		Savings in Lakhs /Annum	Pay Back in Months
1	Construction of Check Dam	5.54	4.3
2	De-silting of Existing Ponds to enhance the water storing capacity	3.6	6.7
3	Blocking the storm water drain and utilizing the collected water for garden	0.8	2.3
4	Conversion of Existing culverts in to water storage pond	0.18	13.3
5	Diverting the storm water drain into unused pits	0.18	3.6

List of Water Saving Projects with cost benefits:

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6	Recycling of cabin leak test spray water	1.32	1.4
7	Adopting Sprinklers for garden watering	2.16	2.8
8	Reuse of RO reject water as scrubber wash water by laying pipe line to interconnect RO outlet and paint desludge pit	0.9	3.3
9	Re circulation of water from rinse operations in degreasing and phosphating process	1.8	0.7

List of Water Saving Projects with cost benefits:

Sl. No	List of water saving projects	Cost Benefits	
		Savings in Lakhs /Annum	Pay Back in Months
10	Reduction of water through flow control technique	1.84	3.3
11	Conversion of gland to mechanical seal to eliminate the leakage of water from the gland of the pump	0.05	24
12	Integrated water supply for gardening to eliminate the usage of raw water (from bore wells)	3.78	1.6

List of Water Saving Projects with cost benefits:

Sl. No	List of water saving projects	Cost Benefits	
		Savings in Lakhs /Annum	Pay Back in Months
13	Providing push cock taps in place of angle cock	0.07	25.7
14	Changing the existing long body taps of wash basin with foam type taps	0.4	7.2
15	Reduction of evaporation loss in cooling tower, by optimization of cooling tower operation	0.05	9.6
16	Introduction of sensor water taps in canteen for hand washing area	0.01	24

WATER SAVING PROJECTS

Project – I :

Rain Water Harvesting through Pumping from Downstream side to Upstream side

Objective :

- **To make optimum use of rain water at the place where it falls**
- **Recharging the groundwater table**

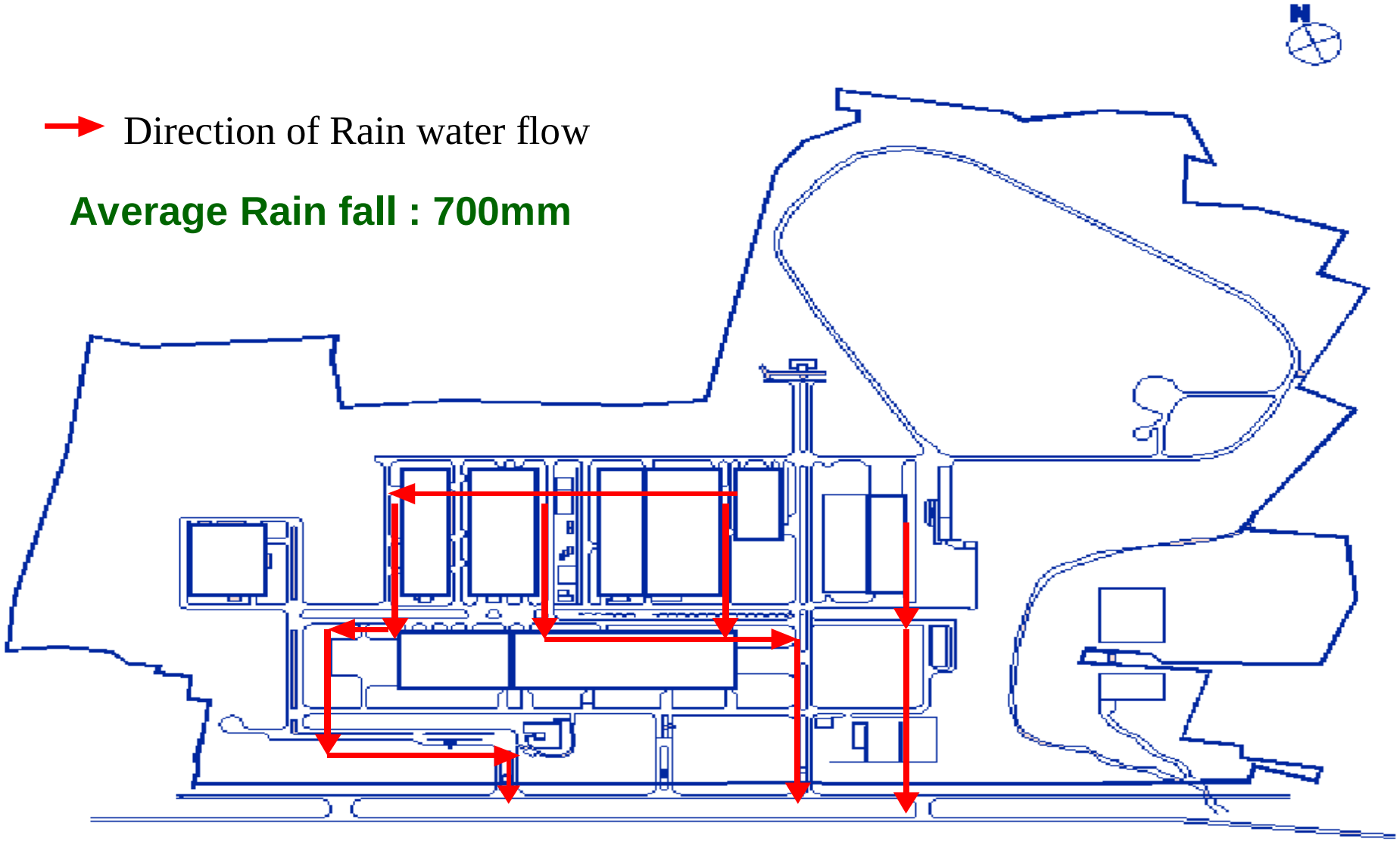
The Challenge at Ashok Leyland

- Ø Continued drought in South India in the recent years.
- Ø Alarming Depletion of ground water
- Ø To cater the additional requirement of water for the increased volume of production
- Ø Need to explore the possibilities of holding the rain water

Direction of Rain water flowing away from the factory

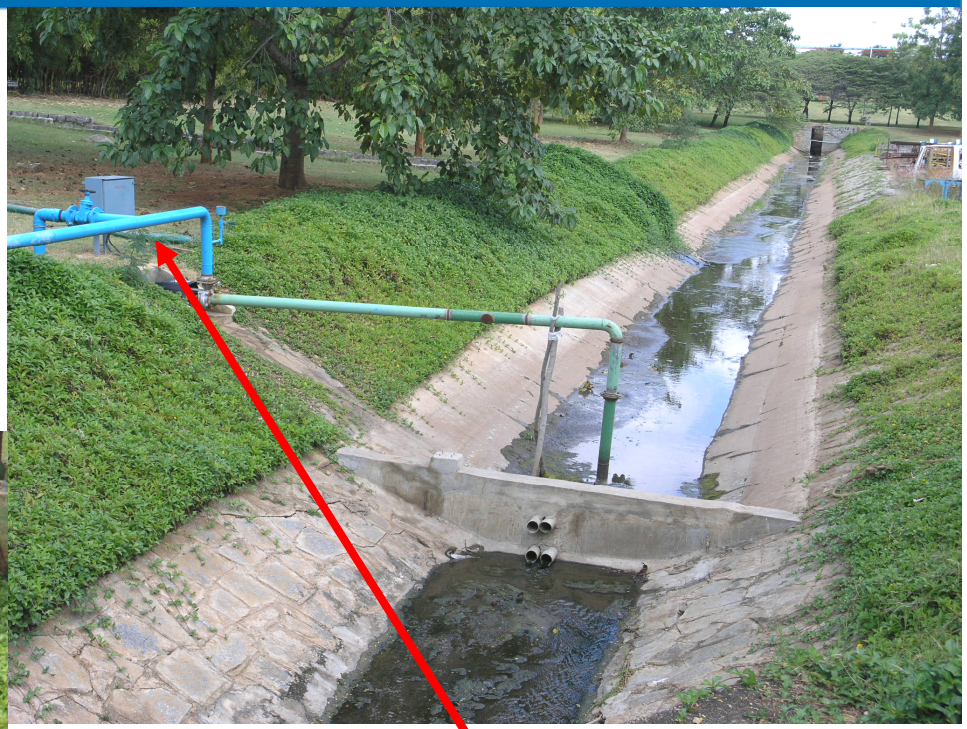
Direction of Rain water flow

Average Rain fall : 700mm



Rain water harvesting

Pipeline to Artificial Pond



Pump installed at Open canal

View after project 1 triggering further improvement

- During heavy downpour, the pond gets filled up.
- The overflow water gushes out through open canal

TO CONSIDER THE CONSTRUCTION OF CHECK DAM TO CAPTURE THE OVERFLOW

View of Check dam

RESULTS

As a result of Rain water harvesting projects, the ground water table has improved drastically, thereby depleted open well started yielding 100kL / Day

The water from the open well was utilized for Process and for garden

Innovative Project

Project :

New Liquid surface conditioner PL-X in Cabin Paint Shop

Objective :

Water Conservation through alternative surface activation chemical in Pre treatment area

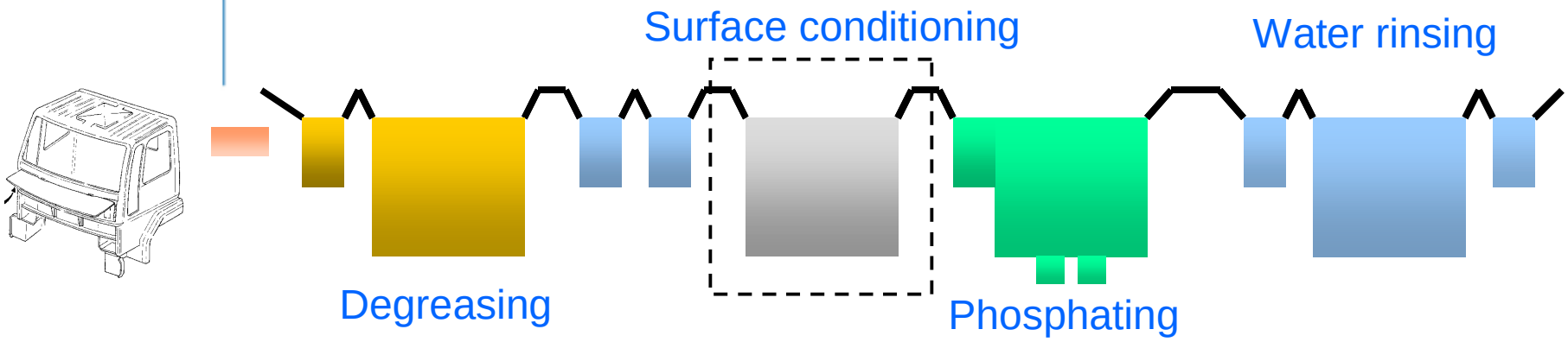
Present status :

Water consumption in surface activation process presently 3,120 m^3/year

Target :

To reduce the water consumption to 620m^3/year,resulting in net saving of 2,500m^3/year

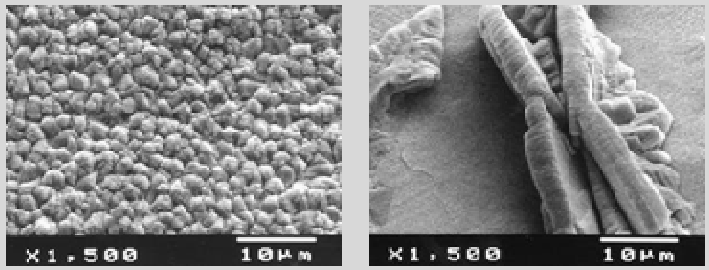
Conventional Surface Conditioner Bath



Helps to achieve low temperature and high paint performance phosphate System.

The stability of the Ti colloid is poor & it requires draining & replenishment of bath

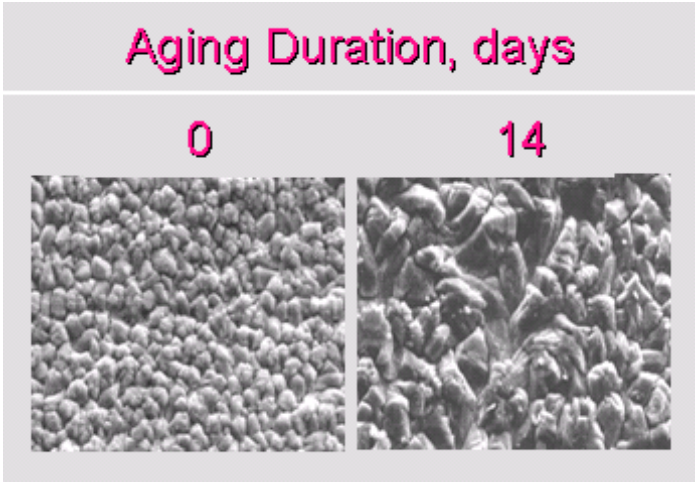
Phosphate Crystal Structure



Aging duration: Solid vs Liquid Surface Conditioner

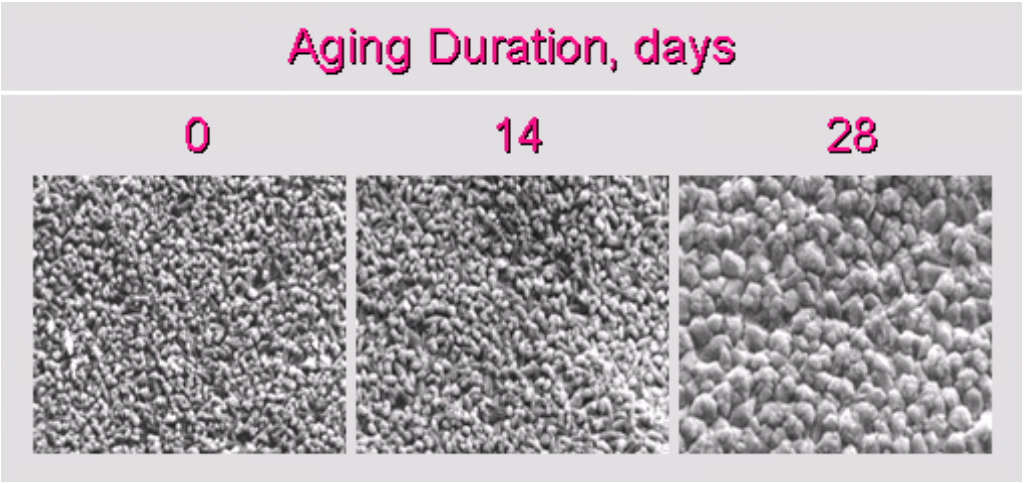
- Solid Surface Conditioner

Chemical	Nipafin ZS
Type	Solid
Draining freq.	Weekly
Water used	60 KL



- Liquid Surface Conditioner

Chemical	PL - X
Type	Liquid
Draining freq.	Monthly
Water used	60 KL



Comparison of Solid & liquid Surface Conditioner

Nipafin-ZS	PL X
Solid type	Liquid type
Shorter bath life	Longer bath life
Good Phosphate coating	Superior phosphate coating
Fine Crystal morphology	Finer crystal morphology
Longer phos process time	Shorter phos process time
Auto drain required	Auto drain not required
Hash marks can be seen	Hash marks cannot be seen
Poor phosphatibiliy on hard to react steel	Good phosphatibiliy on hard to react steel

Results and Standardization

Comparison of Solid & liquid Surface Conditioner

Water saved through the project (Raw + DMW): 2706 KL

Waste water reduction through the project: 2706 KL

Sludge content reduction: Approx. 1125 kg per annum

DM water consumption @ Rs. 150 / KL	Rs. 3,60000 per annum
Water consumption @ Rs. 20 / KL	Rs. 6120 per annum
Waste water treatment @ Rs. 7 / KL	Rs. 18942 per annum
Energy savings @ Rs. 3.67 / unit	Rs. 14006 per annum
Chemical consumption @ Rs. 69 / kg	Rs. 103170 per annum

Potential savings per annum, Rs. 5 lakhs

Employees & Community Involvement in Water Conservation

(A). Activities carried out for awareness on water conservation in Plant:

(i). Display Boards:

- Instruction on “How to avoid the Wastage of water”
- Consumption details on monthly basis
- Slogans on Water Conservation

(ii). Training Programme on water conservation, rain water harvesting

(iii). Handouts on methods of water conservation

(iv). Conducting various competitions like slogan, essay on water conservation topics

Employers & Community Involvement in Water Conservation:

(B). Cross Functional Team (CFT) on "Resource Conservation " has been formed by the top management in the unit level .

(i). The objective of the team is

(a). To identify the water conservation initiatives in all areas.

(b). To educate all employees on the need of conservation of water and to inform for execution of any projects arising out.

(c). To evaluate the projects for technical, economical and operational feasibility.

(d). To execute & implement the project.

(e). To monitor the "benefits of implemented projects".

(ii). Monthly review by unit head on the reduction trend on water consumption and sustainance.

METHODOLOGY PLANNED

- **To improve the quality of treated water through process improvement.**
- **To identify the ways of utilising the treated water for Process and industry**

Water Monitoring & Reporting System - Methodology

Review of water consumption & water conservation projects:

1. Water consumption, water conservation projects & quantification of savings are regulary reviewed once in a month by Unit Head.

Monitoring and Reporting System:

On a monthly basis, the following are checked.

(i). Water consumption is being monitored each hour and controlled at workmen level, The details of daily consumption is updated in the ERP for awareness and control.

(ii) Water requirement plan is released weekly and adhered for better control

(iii) On monthly, the consumption is analysed for deviation and area of reduction are explored. The projects are evaluated for ROI and implemented with top management concurrence.

List of certifications

- **Certifications :**
  - TS 16949
  - ISO 14001 – 2000
  - Moving towards ISO 18001-OSHAS
- Other meritorious award :
  - State Government Safety Awards - 2002 for
    - Highest reduction in accident
    - Longest Accident free period

  - v CII National Award on " Energy Efficient Unit – 2003"
  - v Won "Leadership and Excellence in SHE – 2003, 2004, 2005, 2006, CII (SR)
  - v CII National Award on "Excellent Water Efficient Unit – 2004"

On going projects

1. Installation of 250 kl/d RO Plant for treated effluent water aiming to reuse for our process towards zero discharge.

2. Installation of secured land fill facility at our site towards scientific disposal of hazardous waste as per CPCB norms to avoid chances of polluting the ground water table.