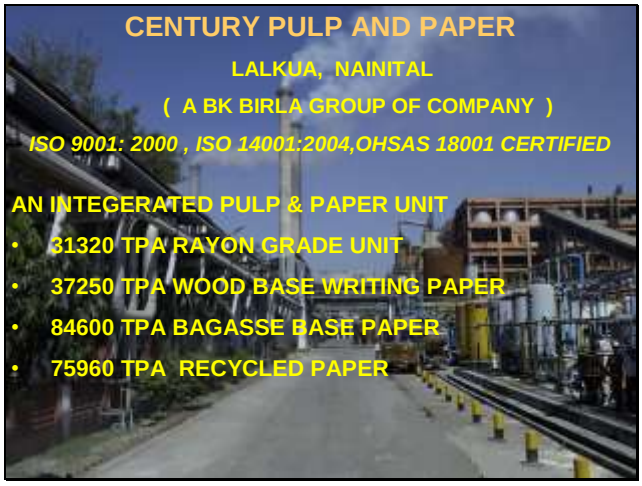
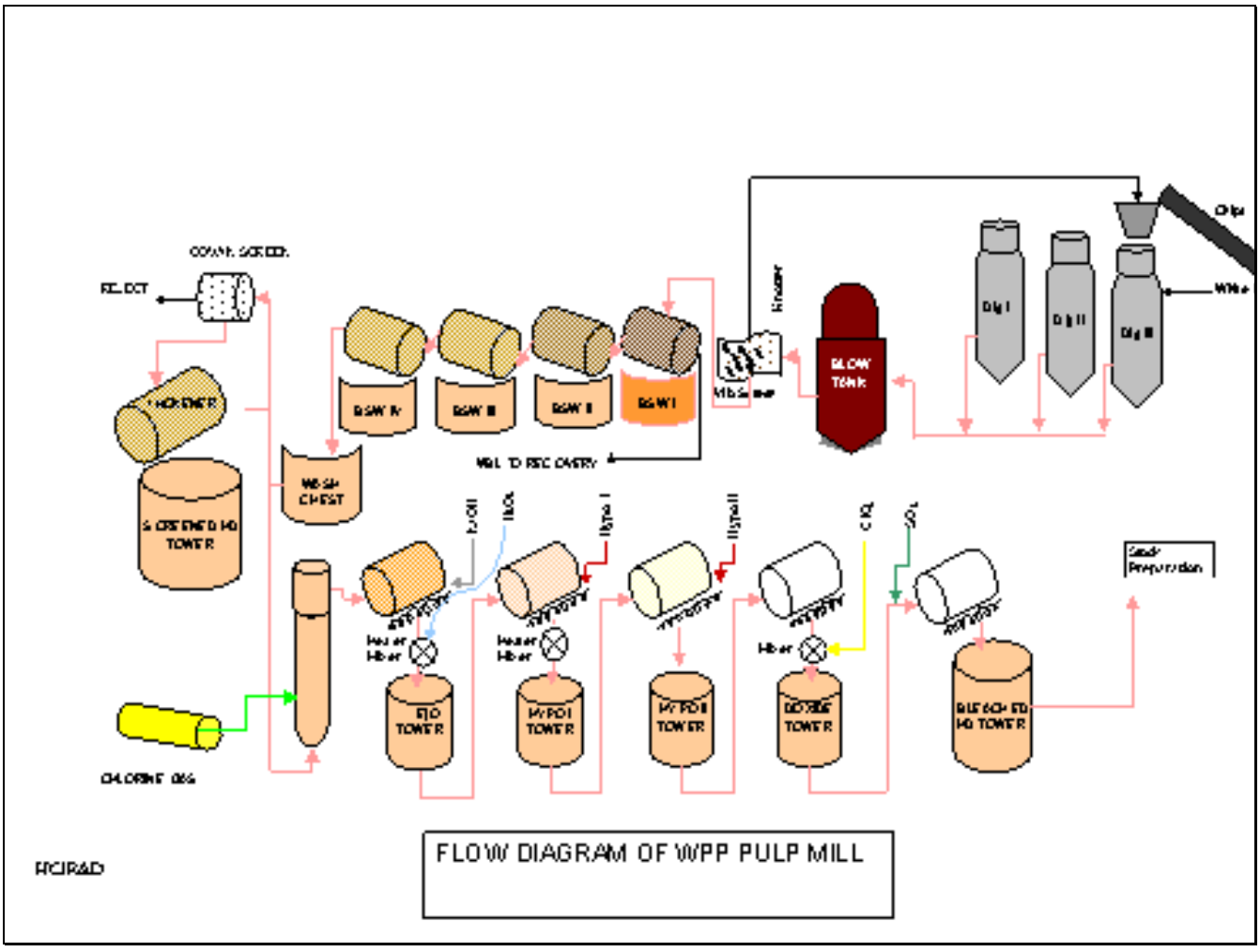
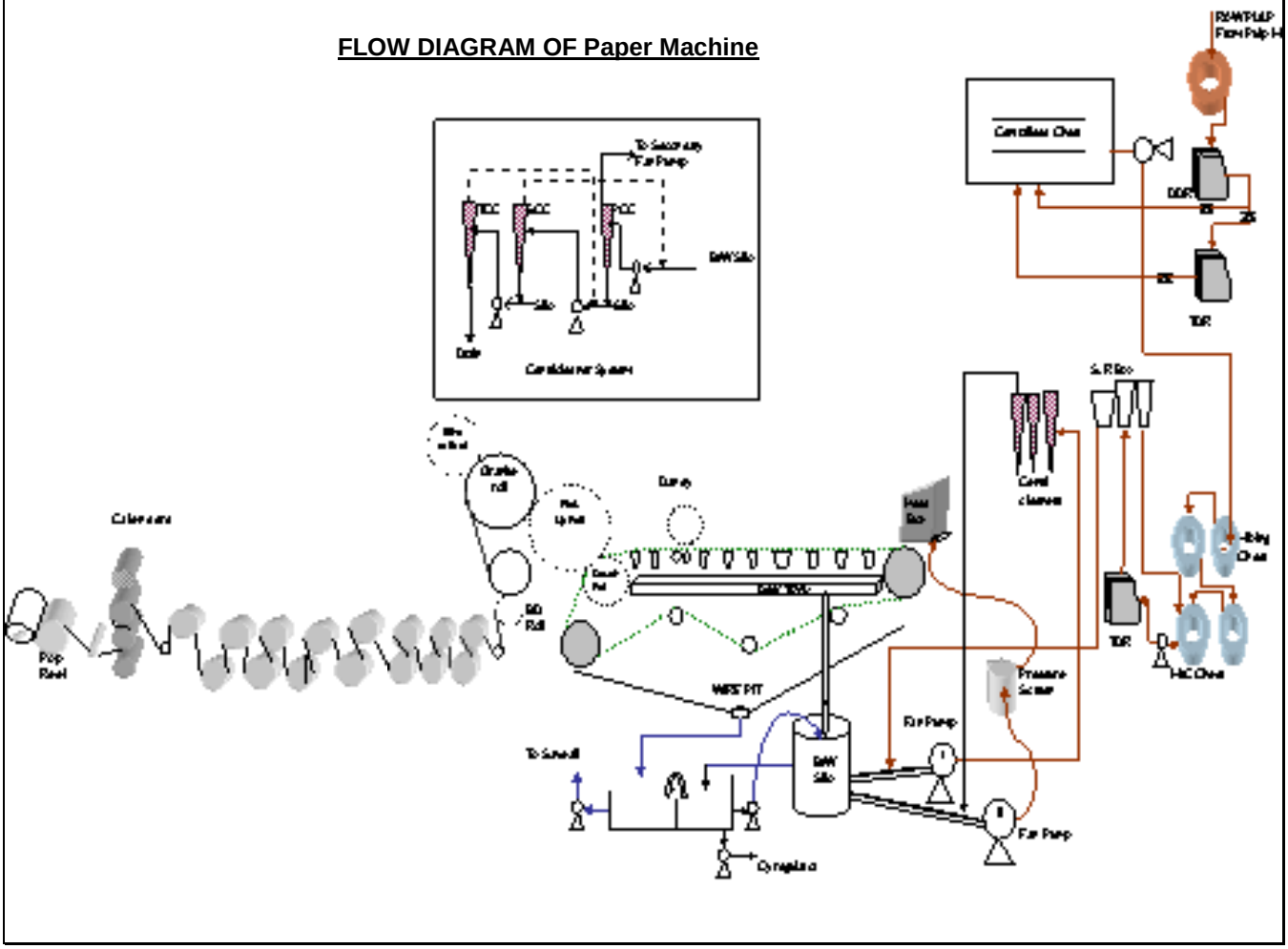
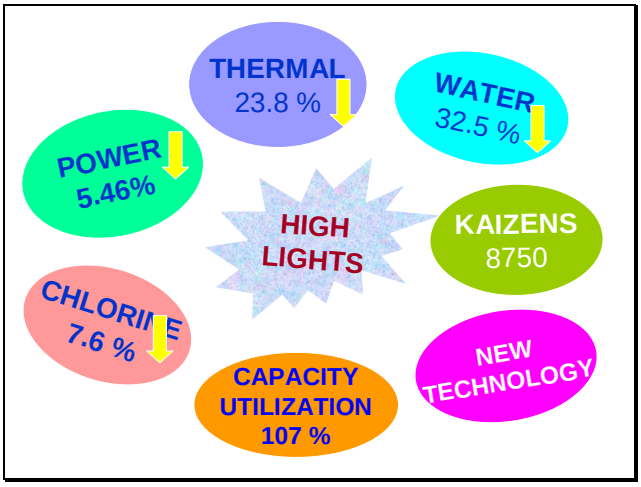

CENTURY PULP AND PAPER
LALKUA
ENERGY CONSERVATION MEASURES
V. K. Gururani , Shankariya


CENTURY PULP AND PAPER
LALKUA, NAINITAL
(A BK BIRLA GROUP OF COMPANY)
ISO 9001: 2000 , ISO 14001:2004,OHSAS 18001 CERTIFIED
AN INTEGERATED PULP & PAPER UNIT
• 31320 TPA RAYON GRADE UNIT
• 37250 TPA WOOD BASE WRITING PAPER
• 84600 TPA BAGASSE BASE PAPER
• 75960 TPA RECYCLED PAPER


BLOW Tank
FLOW DIAGRAM OF WPP PULP MILL

FLOW DIAGRAM OF Paper Machine





LOSS IDENTIFICATION COMMITTEE

- HIGHLIGHT PROCESS INEFFICIENCIES
- CHECK LOSSES OF ALKALI,FIBRE,WATER, CHEMICAL AND STEAM
- ARRANGE CORRECTIVE MEASURES

ANNUAL SAVING IN POWER UTILISATION WITHOUT INVESTMENT

ONLY MENTAL ENERGY

S.NO.	SCHEMES	INVESTEMENTS (Rs IN LACS)	SAVINGS (Rs IN LACS)
1.	REDUCED TG FREQUENCY	0	76.20
2.	OPTIMISE TG VOLTAGE	0	3.62
3.	OPTIMISE RGP VOLTAGE	0	2.49
4.	PUT OFF 12.5 MVA TR SET	0	3.02
	TOTAL	0	85.43

EC MEASURES IN ELECTRICAL

- PROVISION OF LOAD TRANSFER FROM GRID TO TG WITHOUT INTERRUPTION TO UTILIZE SOURCES
- PREVENT IDLE RUNNING OF EQUIPMENTS BY
  - ✓ INTERLOCKING OF PUMPS & AGITATORS
  - ✓ EFFECTIVE CONTROLS LIKE ONE PB FOR A GROUP OF EQUIPMENTS
  - ✓ SWITCH OFF EQUIPMENTS THROUGH TIMERS
- INSTALLATION OF VFD FOR VARIABLE FLOW / THROTTLED VALVES
- DELTA - STAR FOR LIGHTLY LOADED MOTORS
- NEUTRAL COMPENSATORS FOR UNBALANCE LOADS
- LED"S FOR INDICATING LIGHTS
- LOW LOSS HRC FUSES
- USE OF ENERGY SAVERS FOR LIGHTING CIRCUITS
- USE OF PHOTO CELLS FOR STREET LIGHTS
- SPLITTING OF CIRCUITS FOR BETTER CONTROL

ELECTRICAL ENERGY SAVINGS

	2004-05	2005-06	2006-07	2007- 08
NO OF SCHEMES	34	111	75	71
SAVINGS / ANNUM				
KWH (LACS)	37.29	84.26	29.23	79.89
Rs (LACS)	76.58	175.15	59.08	159.68
INVESTMENT	84.20	94.30	42.21	374.0

COST OF ELECTRICITY Rs 2.10

Rs 393.9 lacs

ENERGY CONSERVATION MEASURES IN THERMAL

- EFFICIENT MEANS OF HEATING
- EFFICIENT HEAT TRANSFER
- OPTIMIZATION OF BOILERS FOR COMBUSTION, FLUE GAS TEMPERATURE, EXCESS AIR
- INCREASED UTILISATION OF PITH
- MINIMIZE THERMAL LOSSES & WASTAGES
- THRUST ON WASTE HEAT RECOVERY

ENERGY CONSERVATION MEASURES IN PROCESS

- CAPACITY MATCHING WITH THE REQUIREMENT
- PREVENT IDLE RUNNING OF EQUIPMENT
- USE OF CONTINUOUS PROCESS INSTEAD OF BATCH PROCESS
- UPGRADATION OF TECHNOLOGY
- USE OF HIGHER EFFICIENCY EQUIPMENT
- THRUST ON WASTE HEAT RECOVERY

THERMAL ENERGY SAVINGS

	2004-05	2005-06	2006-07	2007-08
NO OF SCHEMES	12	14	10	5
SAVINGS PER ANNUM				
EQ COAL (Eq)	20438	57891	27106	27681
Rs LACS	387.8	1235.7	505.05	512.1
INVESTMENT	444.47	2981.7	1159 1	277.82

COST OF COAL Rs 1850/TON

Rs 2253 lacs

TOTAL ENERGY SAVINGS FOR LAST 3 YEARS

	2004-05	2005-06	2006-07	2007-08
INVESTMENT (LACS)	528.9	3076.0	1201.3	1025.84
KWH (LACS)	37.29	84.26	29.23	79.89
COAL EQ. (TONS)	20438	57891	27106	27681
Rs LACS	464.4	1410.8	564.1	671.8

Rs. 5303 lacs → **Cumulative Savings** Rs2647 lacs

COMPARISION WITH NATIONAL STANDARDS

ENERGY (POWER & STEAM) CONSUMPTION NORMS
(as recommended by CPPRI under EC ACT 2001)

WITH IN BATTERY LIMITS
- ELECTRICAL kwh/T 1197.71
- STEAM T/T 9.15

OUTSIDE BATTERY LIMITS
- ELECTRICAL kwh/T 124.64
- STEAM T/T 1.20

TOTAL
- ELECTRICAL kwh/T **1323.35**
- STEAM T/T **10.35**

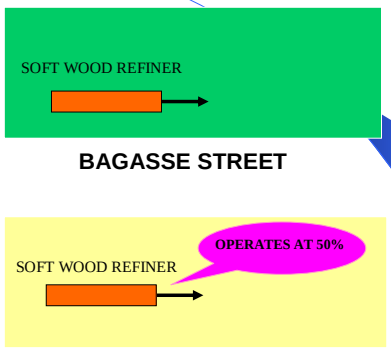
1213 Kwh/t

6.93 T/t

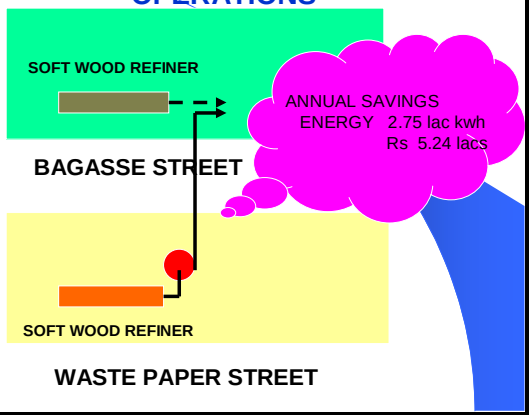
INNOVATIVE SCHEMES

- Optimization of soft wood refiner operations
- Deflaker chest level interlock
- DOCC filter
- Utilization of biomass waste
- Repl. of worm & gear arrangement by geared motors

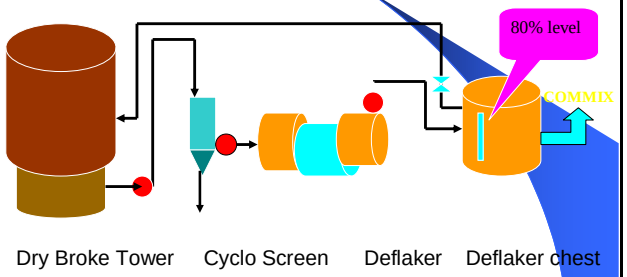
OPTIMIZATION OF SOFT WOOD REFINER OPERATIONS

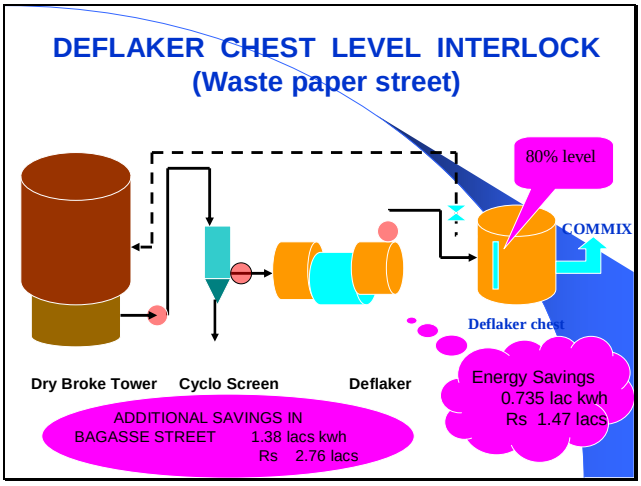


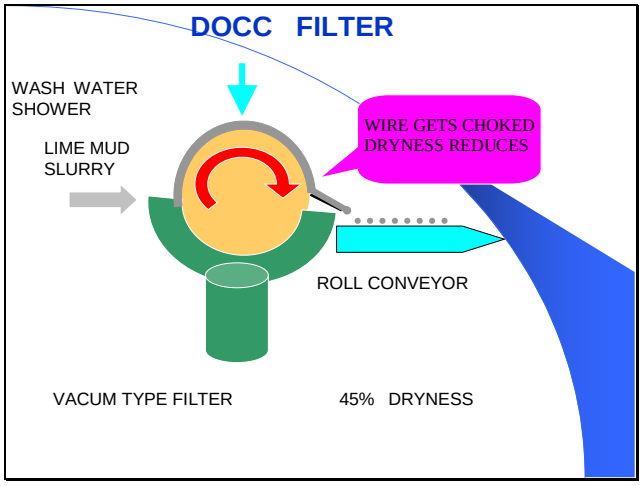
OPTIMIZATION OF SOFT WOOD REFINER OPERATIONS

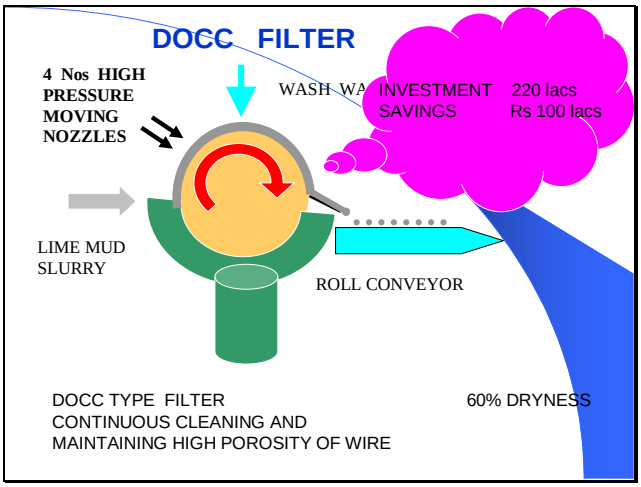


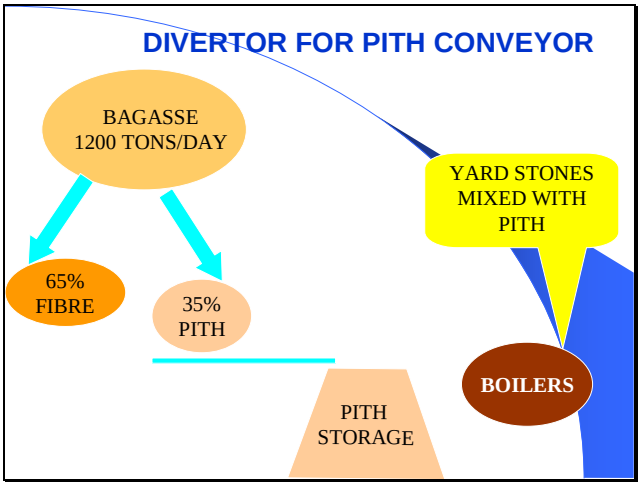
DEFLAKER CHEST LEVEL INTERLOCK (Waste paper street)

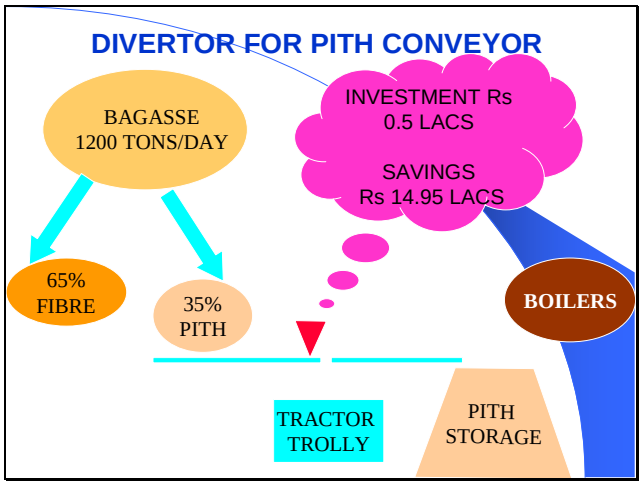



DEFLAKER CHEST LEVEL INTERLOCK
(Waste paper street)
80% level
COMMIX
Deflaker chest
Dry Broke Tower
Cyclo Screen
Deflaker
Energy Savings
0.735 lac kwh
Rs 1.47 lacs
ADDITIONAL SAVINGS IN
BAGASSE STREET 1.38 lacs kwh
Rs 2.76 lacs

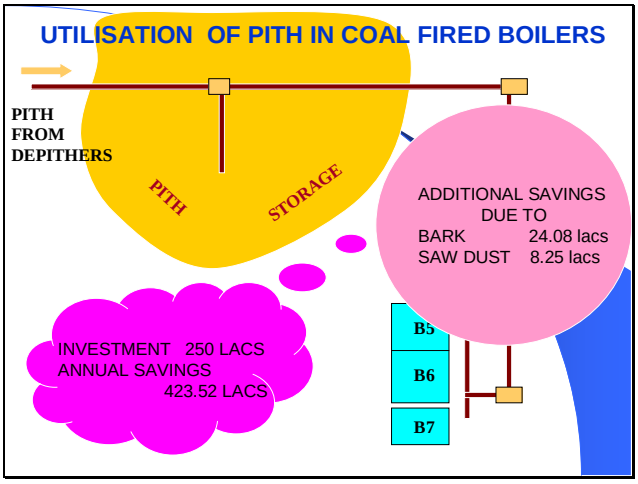

DOCC FILTER
WASH WATER
SHOWER
LIME MUD
SLURRY
WIRE GETS CHOKED
DRYNESS REDUCES
ROLL CONVEYOR
VACUM TYPE FILTER
45% DRYNESS


DOCC FILTER
4 Nos HIGH
PRESSURE
MOVING
NOZZLES
WASH WA
INVESTMENT 220 lacs
SAVINGS Rs 100 lacs
LIME MUD
SLURRY
ROLL CONVEYOR
DOCC TYPE FILTER
CONTINUOUS CLEANING AND
MAINTAINING HIGH POROSITY OF WIRE
60% DRYNESS


DIVERTOR FOR PITH CONVEYOR
BAGASSE
1200 TONS/DAY
YARD STONES
MIXED WITH
PITH
65%
FIBRE
35%
PITH
BOILERS
PITH
STORAGE


DIVERTOR FOR PITH CONVEYOR
BAGASSE
1200 TONS/DAY
INVESTMENT Rs
0.5 LACS
SAVINGS
Rs 14.95 LACS
65%
FIBRE
35%
PITH
BOILERS
TRACTOR
TROLLY
PITH
STORAGE

UTILISATION OF PITH IN COAL FIRED BOILERS



❖REPLACEMENT OF WORM & GEAR ARRANGEMENT BY GEARED MOTORS FOR 42 NOS SURFACE AERATORS

SURFACE AERATORS WERE DRIVEN BY 15 Kw MOTORS ALONGWITH REDUCTION GEAR BOXES. REDUCTION WAS THROUGH WORM & PINION ARRANGEMENT WHICH HAD LOW EFFICIENCY.

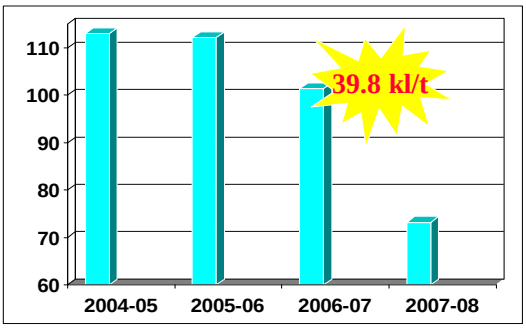
These were replaced by GEARED MOTORS resulting in a savings of 2.96 kw each due to high efficiency.

Investment Rs 70.00 lacs

Annual savings Rs 21.77 lacs

WATER CONSUMPTION TREND

KL/TON



WATER CONSERVATION ACHIEVED THROUGH 8 MAJOR SCHEMES IMPLEMENTED IN LAST THREE YEARS

- Recycling of bleaching back water
- Recyling of sheeting M/c. back water
- Recirculation of lime kiln cooling water
- Reclamation of paper M/c. & stock back water