EMAMI PAPER MILLS LTD,BALASORE UNIT

PRESENTED BY

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ABOUT THE ORGANISATION

Emami Paper Mills Ltd, Unit : Balasore

- Commissioned in the year **1983** with an initial production capacity of 15 TPD, Emami Paper has grown to become major eco-friendly paper mill in India producing with nearly **3,00,000 TPA** Writing printing, Newsprint, & Packaging Board along with **33.5 MW** co-generation Power Plant.

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OUR PRODUCTS

Packaging Board

News print paper

Writing & Printing paper

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PAPER MACHINES

Paper Machine #1:

Product: Writing & Printing
Capacity: 17,500 TPA
Speed: 350 MPM
Deckle Width: 2100 mm
Raw Material: 100% Waste Paper
Year of Installation: 1983

Paper Machine # 2

Product: Writing & Printing
Capacity: 37,500 TPA
Speed: 525 MPM
Deckle Width: 2900 mm
Raw Material : Purchased Pulp
Year of Installation: 1996

Paper Machine # 3

Product: Newsprint
Capacity: 85,000 TPA
Speed: 1120 MPM
Deckle Width: 3550 mm
Raw Material : 100% waste paper
Year of Installation: 2007

Paper Machine # 4

Product: Coated Board
Capacity: 160,000 TPA
Speed: 550 MPM
Deckle Width: 3600 mm
Raw Material : Virgin Pulp + waste paper
Year of Installation: 2015

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CO-GEN POWER PLANTS

Unit I:

Capacity: 5 MW
Fuel: 'Coal (Indian)
Boiler Type: AFBC
Boiler Capacity: 35 TPH
Steam Press: 65 kg/cm^2 (g)
Steam Temp: 490 Deg C
TG Type: Extract Cum Condensing

Unit II:

Capacity: 18 MW
Fuel: Coal & ETP Sludge
Boiler Type: AFBC
Boiler Capacity: 85 TPH
Steam Press: 65 kg/cm^2 (g)
Steam Temp: 490 Deg C
TG Type: Extract Cum Condensing

Unit III:

Capacity: 10.5 MW
Fuel: Coal & ETP Sludge
Boiler Type: AFBC
Boiler Capacity: 65 TPH
Steam Press: 65 kg/cm^2 (g)
Steam Temp: 490 Deg C
TG Type: Extract Cum Condensing

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IMPACT OF COVID-19

- Annual paper production reduced by almost 20%.
- Product mix realigned to improve the productivity.
- Auxiliary power consumption optimized to keep specific energy consumption under control

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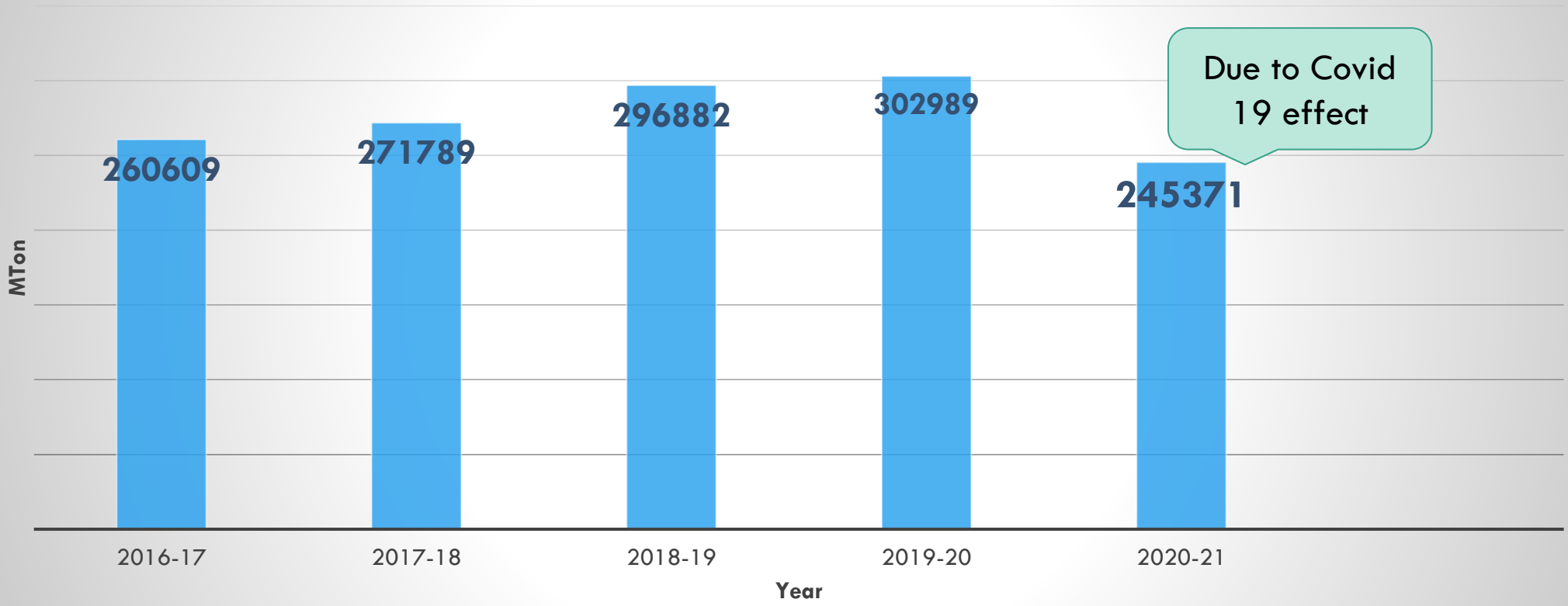
PAPER PRODUCTION



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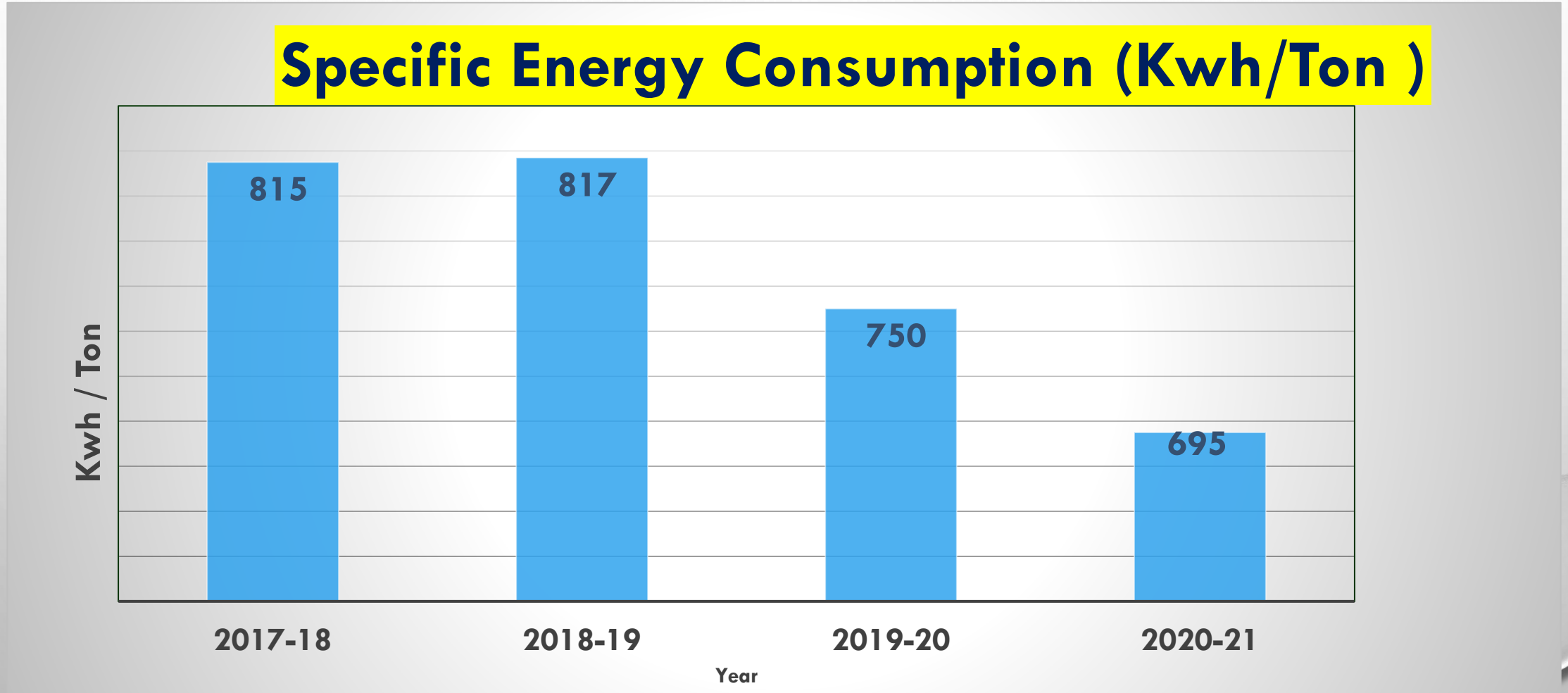
SPECIFIC ENERGY CONSUMPTION(POWER)



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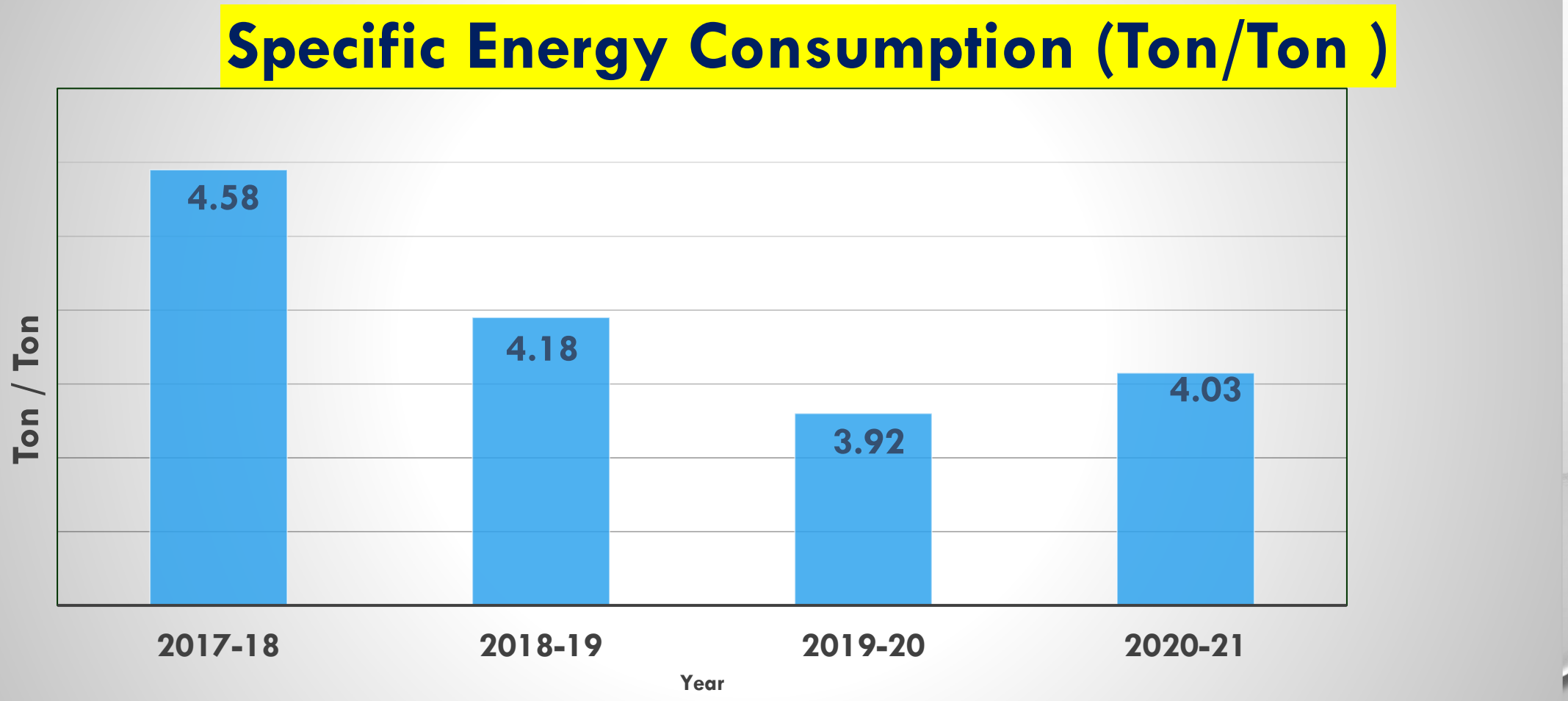
SPECIFIC ENERGY CONSUMPTION(HP STEAM)



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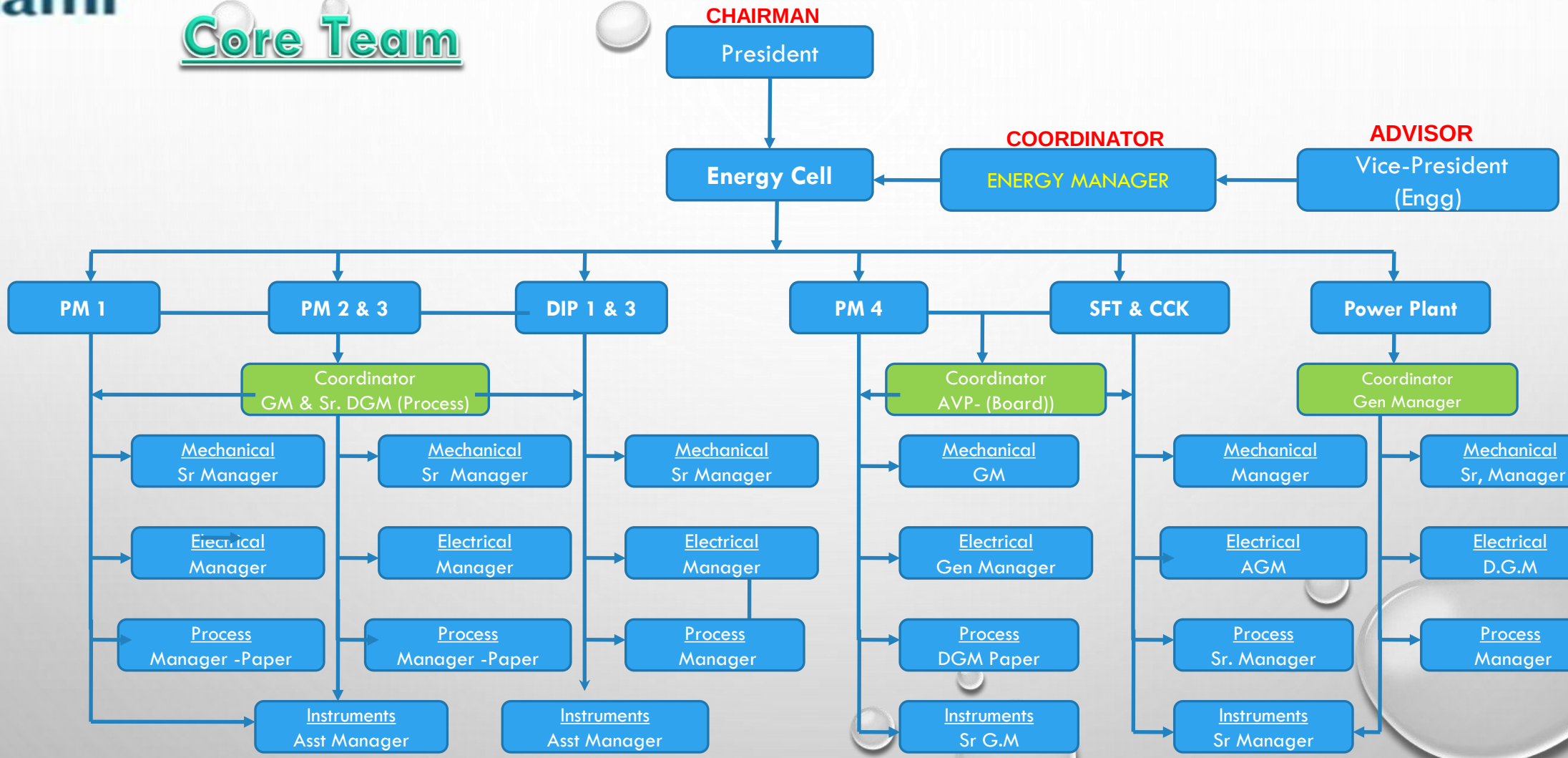
ENERGY CONSERVATION CELL

Core Team



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DETAILS OF THE PROJECT IMPLEMENTED IN 2018-19

SN	PARTICULARS OF THE JOB	Saving (Million KWh)	Investment (Rs Million)
1	Modification of vacuum system in paper machine 2 by installing one new vacuum pump and stopping two old vacuum pumps.	0.67	2.3
2	Modification of vacuum system in paper machine 1 by installing one new vacuum pump of 200 kw and stopping old vacuum pump of 250 kw.	0.32	1.3
3	Reduction of self- power for power plant 2 by installing VFD in boiler ID Fan.	0.12	0.53
4	Stopping of 5 kw PV-3 motor in PM-2 by interconnecting PV-2 & PV-3.	0.19	0.05
5	By process study and optimization in PM-1 flat box vacuum pump (45 kw) was stopped permanently by line modification.	0.17	0.02
6	In PM-2 warm water pump (7.5 kw) stopped and all shower lines are connected to booster pump-2.	0.042	Nil
7	In PM-2 60 m3 agitator stopped for around 16 hrs per day by system study.	.061	Nil

DETAILS OF THE PROJECT IMPLEMENTED IN 2019-20

SN	PARTICULARS OF THE JOB	Saving (Million KWh)	Investment (Rs Million)
1	In PM-3 stopping of Vacuum pump no 10 by optimizing vacuum system	1.6	0.1
2	Down sizing of UTM dilution water pump in PM-2	0.09	1
3	PP-3 condenser cooling water pumping system modification	0.72	0.7
4	Central centrifugal air compressor operating pressure reduced from 7kg/cm2 to 6 kg/cm2	0.7	0
5	Cooling tower fan blade angle increased from 6 to 9 degrees which resulted in increase in cooling effect and improvement in condenser vacuum & power generation from TG	8.4	3.0

DETAILS OF THE PROJECT IMPLEMENTED IN 2020-21

SN	PARTICULARS OF THE JOB	Saving (Million KWh)	Investment (Rs Million)
1	ETP clarifloculator-2 overflow water directly taken to UASBR .	0.08	0.05
2	Cooling tower blow down and RO reject water recycle pit pump lifting arrangement modified and downsized.	0.1	0.1
3	Under sizing of cooling tower-2 side stream filter pump.	0.04	0.1
4	In SFT impeller trimming of pulping water tower pump.	0.06	0
5	Power Plant 1 Raw water pump stopped permanently by bore well line modification.	0.05	0.1
6	PP-1 RO water pump stopped permanently by interconnecting the line with PP-2 Swas pump.	0.07	0.05
7	ETP back water pump of 32 kw was replaced with 11 kw motor	0.14	0.05
8	In SFT interconnection of delivery lines of pumps of 101-PU-024 and 101-PU-054 during CGB run in Board Machine.	0.06	0.05
9	Stopping of Compressor cooling water Pump(15 Kw) by interconnecting it with TG-3 Auxiliary cooling water line	0.10	0.05

Innovative Project

PROJECT TITLE

UPGRADATION OF TG-3 CONDENSER COOLING WATER CIRCULATION PUMP

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Project Presentation

IDEA GENERATION

- ON STUDY OF THE CONDENSER OEM DATA, COOLING TOWER SYSTEM AND OTHER OPERATIONAL PARAMETERS WE FOUND THAT THE REQUIRED HEAD FOR CONDENSER CIRCULATION WATER SYSTEM (CCWS) FOR TG-3 IS **16 MTR**. REQUIRED FLOW WAS 2320 M3/HR.
- EXISTING PUMP SUPPLIED BY OEM WAS OF **30 MTR** HEAD AND 2200 M3/HR FLOW. SO IT WAS CONSUMING MORE POWER (210 KWH) WITH LESS FLOW DUE TO THE OVER DESIGN OF PUMP DISCHARGE HEAD.
- WE INTERNALY CALCULATED THE REQUIRED HEAD AND FLOW PARAMETERS, THE POWER CONSUMPTION FOUND LESS ABOUT 100 KWH/HR.

Project Presentation

FORMULATION

- WE DISCUSSED WITH PUMP SUPPLIER TO SUPPLY NEW PUMP WITH LESSER HEAD OF 16 MTR AND WITH A HIGHER FLOW OF 2500 M3/HR. M/S KIRLOSKAR AGREED TO SUPPLY THE REQUIRED PUMP.
- MOTOR WITH LOWER RATING (160 KWH) WAS PROCURED.
- PUMP AND MOTOR CIVIL FOUNDATION, SUCTION AND DELIVERY PIPING WAS MODIFIED ACCORDINGLY.

Project Presentation

COMPARISON

BEFORE MODIFICATION

- MODEL-UP 350/54
- HEAD-30 MTRS
- CAPACITY- 2200 M3/HR
- SPEED-980 RPM
- RATED KW-260
- RUNNING KW-210

AFTER MODIFICATION

- MODEL-UP 500/51
- HEAD-16 MTRS
- CAPACITY- 2500 M3/HR
- SPEED-760 RPM
- RATED KW-160
- RUNNING KW-110 (MAXIMUM)

UNIQUENESS OF THE PROJECT AND TAKE AWAY

- EACH AND EVERY CIRCULATING WATER SYSTEM TO BE AUDITED AND STUDIED FOR THE ACTUAL REQUIRED FLOW, VELOCITY AND HEAD.
- UNDERSTANDING THE ACTUAL NEED OF THE SYSTEM AND THOROUGHLY MONITORING THE OPERATIONAL PARAMETERS, BY WHICH WE CAN IDENTIFY THE GAPS IN PERFORMANCE.
- BASED ON THE FINDINGS REQUIRED MODIFICATIONS TO BE DONE IN THE SYSTEM TO ACHIEVE THE ENERGY SAVINGS.

WASTE UTILIZATION

PRIMARY PAPER SLUDGE IS FED INTO THE BOILER AS SECONDARY FUEL WITH 50% DRYNESS ACHIEVED THROUGH SCREW PRESS

2017-2018				2018-2019				2020-2021			
Name of the Fuel	Quantity of waste Fuel used (MT/year)	GCV of fuel (kCal/kg)	Heat Value (million kcal/year)	Name of the Fuel	Quantity of waste Fuel used (MT/year)	GCV of fuel (kCal/kg)	Heat Value (million kcal/year)	Name of the Fuel	Quantity of waste Fuel used (MT/year)	GCV of fuel (kCal/kg)	Heat Value (million kcal/year)
Primary Sludge	43505	1900	82660	Primary Sludge	29476	1900	56004	Primary sludge	10843	1900	20602

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PAT PERFORMANCE

	Specific Energy (Toe/Ton)			E-scerts achieved
	Baseline	Target	Achieved	
PAT Cycle-1	0.555	0.528	0.462	6859
PAT Cycle-2	0.443	0.419	0.37	6520

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THANK YOU!

EMAMI PAPER MILLS LTD

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