

CII National award for excellence in Energy management-2022

JK Paper Ltd.

Unit: CPM



*some of life's
best moments
come on paper...*

Mr. G N Rao
Mr. Hemant Patil
Mr. Shijith K N

GM Power plant
Chief. Manager E&I
Sr. Manager OE&PND

1.1 About JKCPM

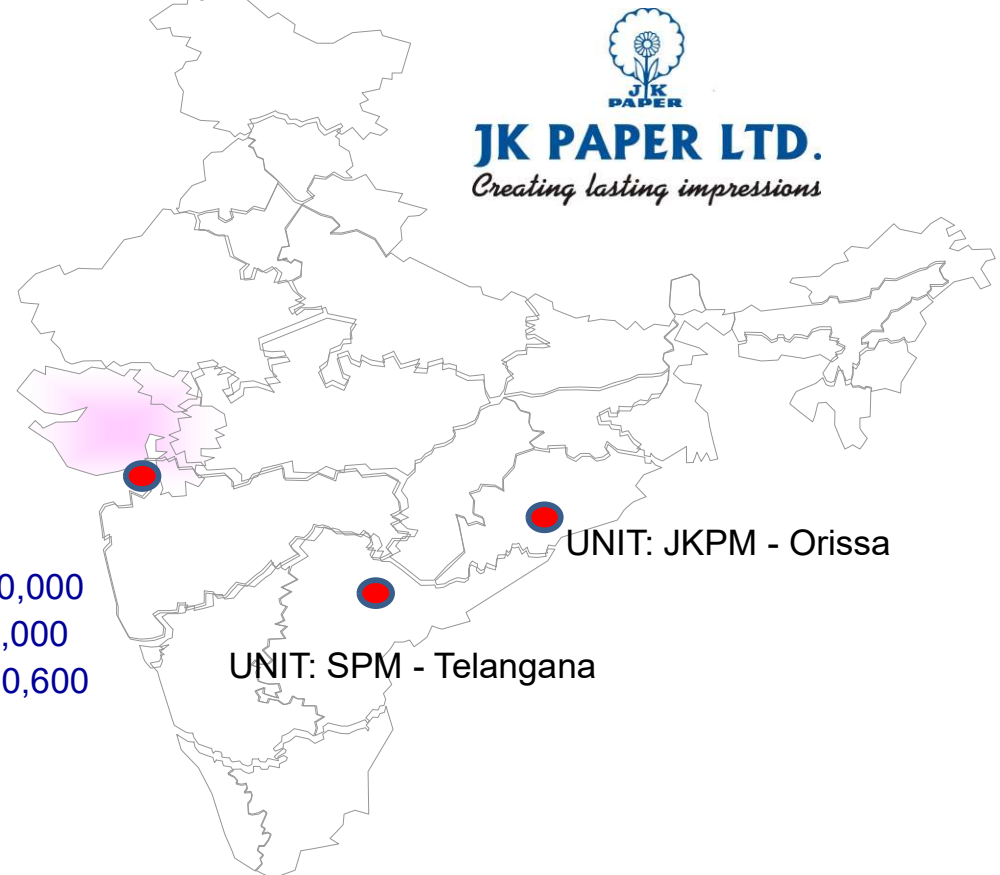


JK Organization: A reputed & diversified group in business for over 125 years with a turnover of \$4.0 billion.

JK Paper Ltd. is the leading player in manufacturing of office paper, coated paper and packaging board segments with total installed capacity of 7.61 Lac TPA.

Unit: CPM One of the three integrated pulp and paper manufacturing units of JK Paper Ltd. located at Fort Songadh (Gujarat).

UNIT: CPM - Gujarat
 Pulp (tpa) 150,000
 Paper (tpa) 66,000
 Pkg. Board (tpa) 270,600



UNIT: SPM - Telangana

UNIT: JKPM - Orissa

Energy conservation is the foundation of energy independence.

JK PAPER *Creating Lasting Impressions*



1.2 About JKCPM

-
- 1968
 - Mill established
 - 1992
 - JK Acquired CPM
 - 1995
 - Re-started PM1&2
 - 2007
 - PM#4 (Board)
 - 2021
 - PM#5 (Board)
 - New Pulp mill
 - New Power plant



PM 1



PM 2



PM 4

PM 5, PULP & NEW POWER PLANT



Machine	Capacity TPA	Speed	GSM	Product
PM 1	26000	360	68-180	W&P Paper
PM 2	40000	380	68-210	W&P Paper
PM 4	100000	420	190-430	Packaging Board
PM 5	170000	600	160-440	Packaging Board
Pulp Mill	150000 BDMT/Annum			
LFB	950 BLDS/day.			
CFB	150 TPH (Running) ,70TPH (S/B), 50TPH (S/B)			
TG sets	28MW,18MW (Running), 12 MW x 2 (S/B)			

Conservation is a state of harmony between men and land.



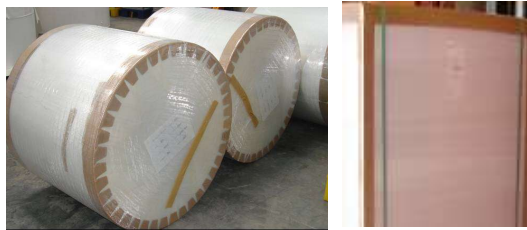
2. Products group and end uses

Products

End Use



1. Cut size multi purpose office paper



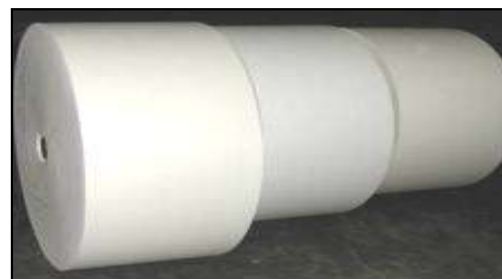
2. Packaging Boards

For FMCG, Cigarettes, Pharma, Liquor, Food and consumer durables



3. S S Maplitho Paper (Writing & Printing Paper)

Textbooks, Diary, Notebooks
Share Certificates, Ledger Book



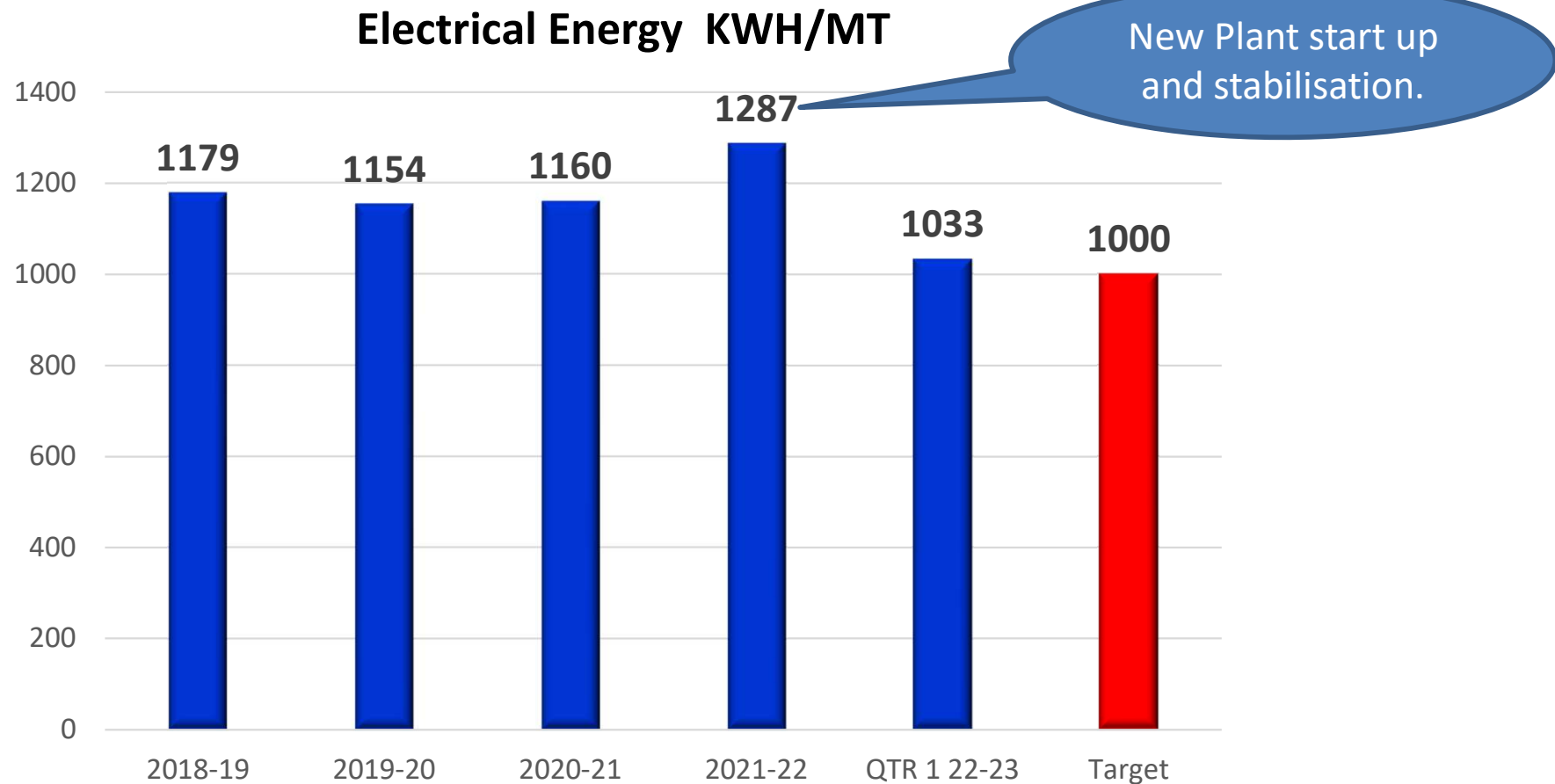
4. Security Paper (MICR Cheque Paper)

Cheque Books, Demand Draft



Conservation: It doesn't cost. It saves.

3.1 SEC trends – Electrical energy



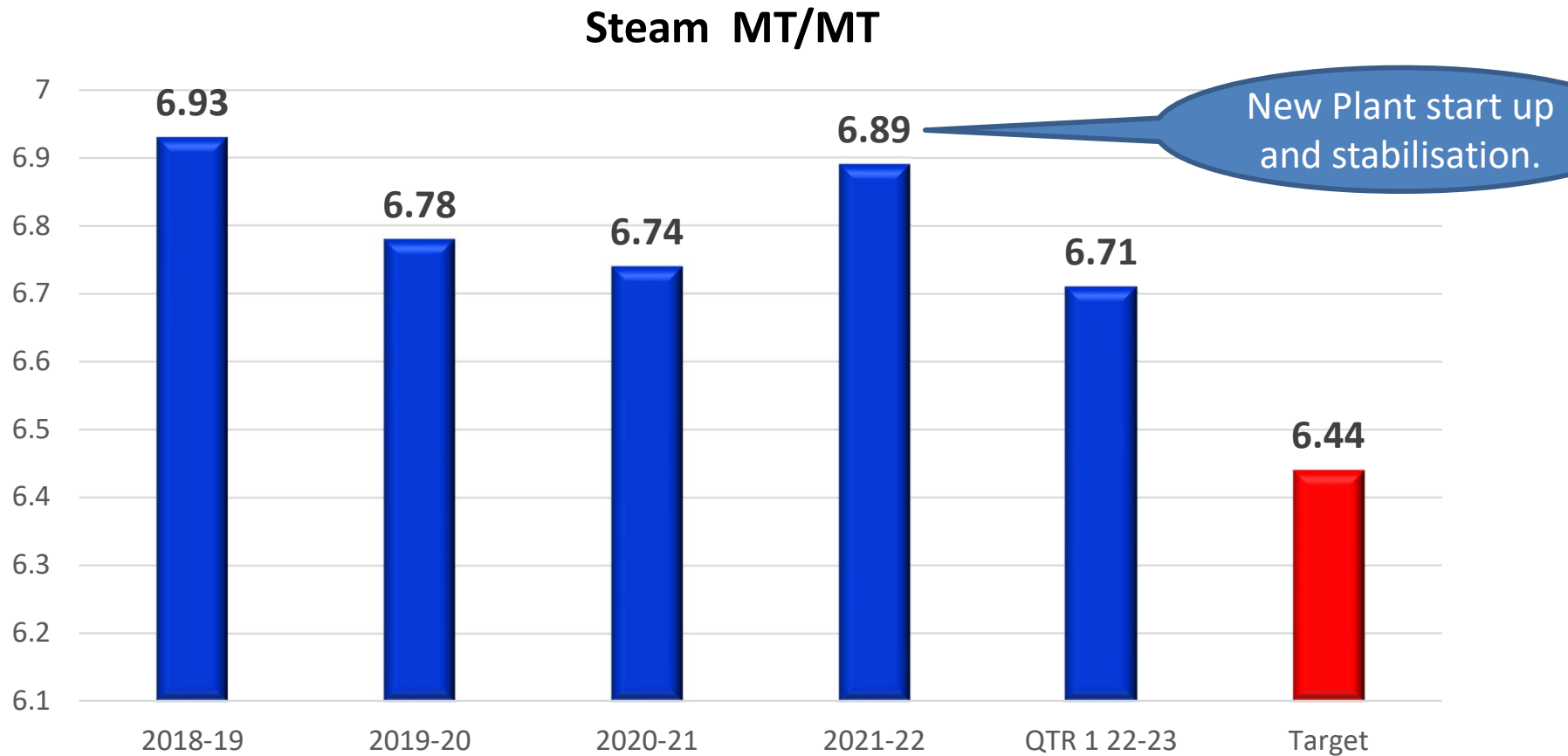
Benchmark	Value	Reference
National	1400	CPPRI study
Global	1200	CPPRI study
Competitor 1	1186	CII Energy award



Energy saved is energy generated.



3.2 SEC trends – Steam

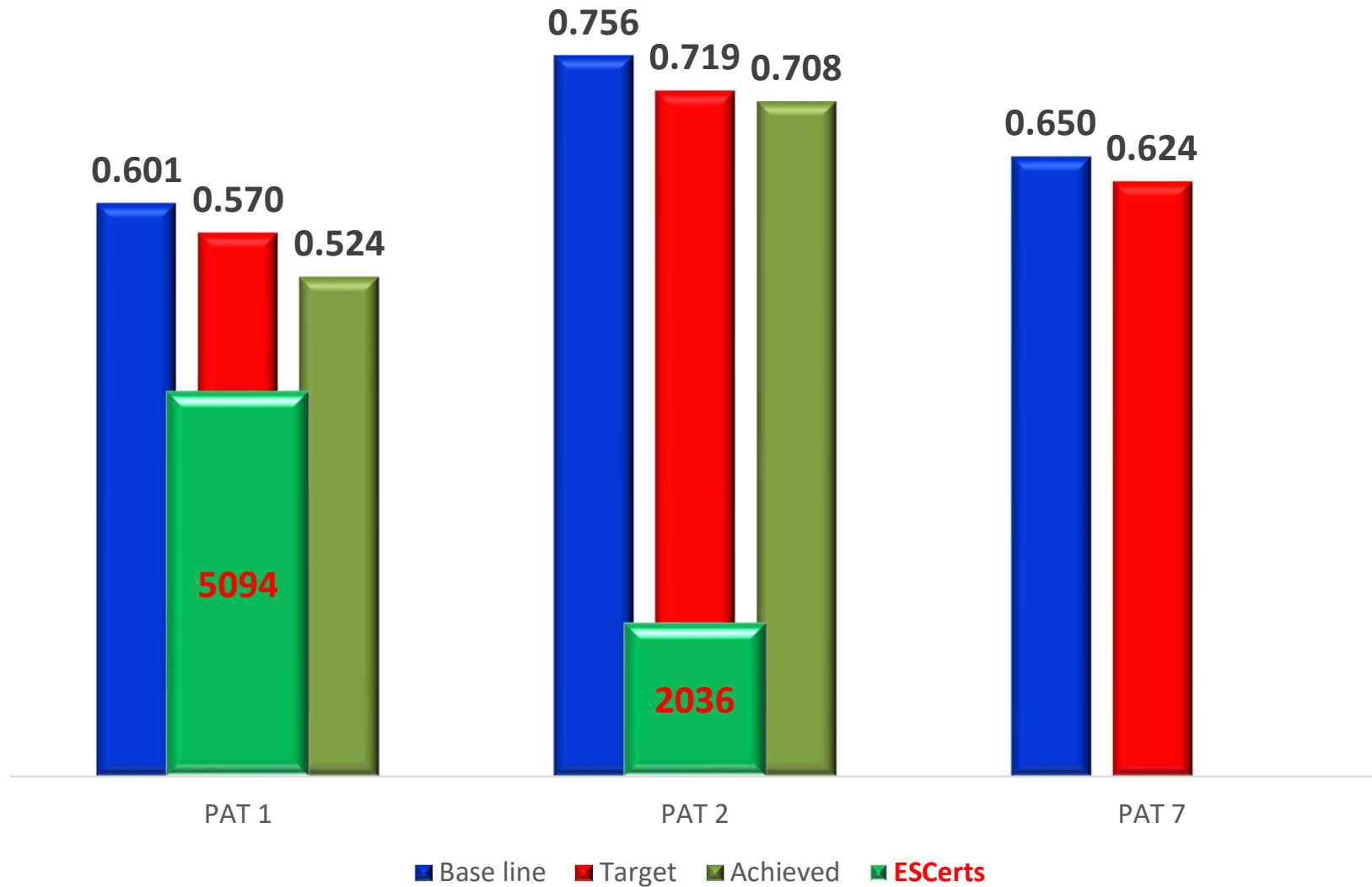


Bench Mark.	Value	Reference
National	12	CPPRI study
Global	7	CPPRI study
Competitor 1	5.66	CII Energy award

The less you burn, the more you earn!

3.3 PAT performance

SEC Trends in MTOE/MT of Normalised production



Energy efficiency is a journey, not a destination.



4.1 Energy saving projects 2022-23

Power reduction target (Major projects): >500kW

S.N.	Title of Project	Target Saving TPH	Investment (Rs. Lacs)	Payback (in months)	Target date
1	VFD for CFB#5 DM make up pumps	10	5	16	Completed in Jun'22
2	Power plant CT fan VFD control in auto with outlet temp.	15	0	0	Completed in May'22
3	PM#1,2 vacuum pump replacement	270	160	13	Mar'23
4	Optimization of power for pumping mill water	75	30	8	Dec'22
5	Effluent pumping power optimization using VFD	100	50	10	Dec'22
	Total	470	245		

Steam reduction target: >7 TPH Steam

S.N.	Title of Project	Target Saving TPH	Investment (Rs. Lacs)	Payback (in months)	Target date
1	Heat recovery optimisation from return condensate.	4.00	3	1	Completed May'22
2	PM#4 steam optimisation through advance process control	1.80	30	3	Sep'22
3	Heat recovery from CBD & deaerator vent	0.11	4	5	Completed Jun'22
4	PM#1 Steam & condensate system retrofit	0.93	320	22	Dec'22
	Total	6.84	357		

Conserving energy TODAY will make TOMMOROW brighter.

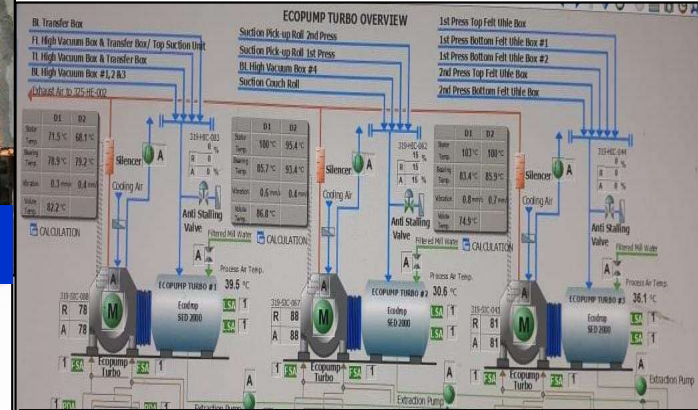
4.2 EE technologies adopted in Major Expansion Project



High Pressure –Cogen PP



Centralised HVAC



Turbo Vacuum Blowers



DDS technology digester



Centrifugal Compressors



IE 3 Motors



HT VFD for feed Pump

Conserving energy TODAY will make TOMMOROW brighter.

5.1 Energy Saving Projects 2021-22

S.N.	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs million)	Annual Thermal Saving		Annual Thermal Cost Saving (Rs million)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Payback (Months)	Comments
				Quantity	UOM					
1	Installation of Online EMS	188889	0.85				0.85	0.94	13.2	
2	Installation of VFD Pump PM/C	81664	0.37				0.37	0.25	8.2	
3	Installation of High Efficient Motor	67849	0.31				0.31	0.20	7.9	
4	Replacement of Vacuum Pump Motors 200 KW	63072	0.28				0.28	0.06	2.5	Saving of 8 KWH
5	Replacement of Vacuum Pump Motors 55 KW	19710	0.09				0.09	0.05	6.8	Saving of 2.5 KWH
6	Replacement of Refiner Motor at PM1	551880	2.48				2.48	2.00	9.7	
7	Stopping CFB#4 & TG#4 after Plant load optimisation and taking partial load on GRID	9648000	19.3				19.30	0.00	0.0	
8	Stopping of condensate transfer pump (Old plant to new) by gravity flow	62100	0.28				0.28	0.15	6.4	
9	PM#2 fan pump RPM & discharge pressure control based on machine draw through VFD	46202	0.21				0.21	0.00	0.0	
	Total	10729366	24	0	0	0	24	4		



5.2 Energy Saving Projects 2020-21

S.N.	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs million)	Annual Thermal Saving		Annual Thermal Cost Saving (Rs million)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Payback (Months)	Comments
				Quantity	UOM					
1	VFD for head box level control at PMC2 :	55000	0.25				0.254	0.6	28.4	
2	Reducing frequency of TG3 and TG4	441000	2.03				2.033	0.00	0.0	
3	Operation of UTM Pulper with sheet break at PMC1-2	36500	0.17				0.168	0.00	0.0	
4	Putting interlocks in four nos of stock chest agitators at PMC2	241000	1.11				1.111	0.20	2.2	
5	Reducing machine crawl speed from 60MPM to 15MPM at PM2	87000	0.40				0.401	0	0.0	
6	Replacement of 1000 RPM Refiners with 750RPM refiners / 3 nos	105000	0.48				0.484	1	24.8	
	Total	965500	4	0	0	0	4	2		



5.3 Energy Saving Projects 2019-20

S.N	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs million)	Annual Thermal Saving		Annual Thermal Cost Saving (Rs million)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Payback (Months)	Comments
				Quantity	UOM					
1	Usage of existing CT as dedicated CT for Evaporator condenser -Steam saving due to increased vacuum.			1434.5	MkCal	2.04	2.04	4.00	23.5	
2	VFD for Evaporator liquor transfer pump	220500	0.99				0.99	0.90	10.9	
3	Use of CFB#3 CBD water for DM water heating			903.9	MkCal	1.52	1.52	0.05	0.4	
4	VFD for Mill water supply pump	306600	1.38				1.38	0.60	5.2	
5	TG#3 bleed steam for CFB#4 DM make up water heating			3389.6	MkCal	5.7	5.7	0.78	1.6	
6	Process optimisation by using High capacity Pre-heater in Evaporator.			1403.3	MkCal	2.36	2.36	0.52	2.6	
7	Replacement of lights with LED	47838.3	0.215				0.215	0.50	27.9	
8	Energy efficient motors	71257.2	0.32				0.32	0.67	25.1	
9	Refiner tackle replacement in Board Machine	396000	1.78				1.78	0.45	3.0	
10	In Board machine New designed deflaker installed in broke line and refiner bypassed for power saving.	713424	3.21				3.21	1.40	5.2	
11	Chest Pump and Agitator interlock with level	154560	0.7				0.7	0.05	0.9	
	Total	1910180	9	7131	0	12	20	10		

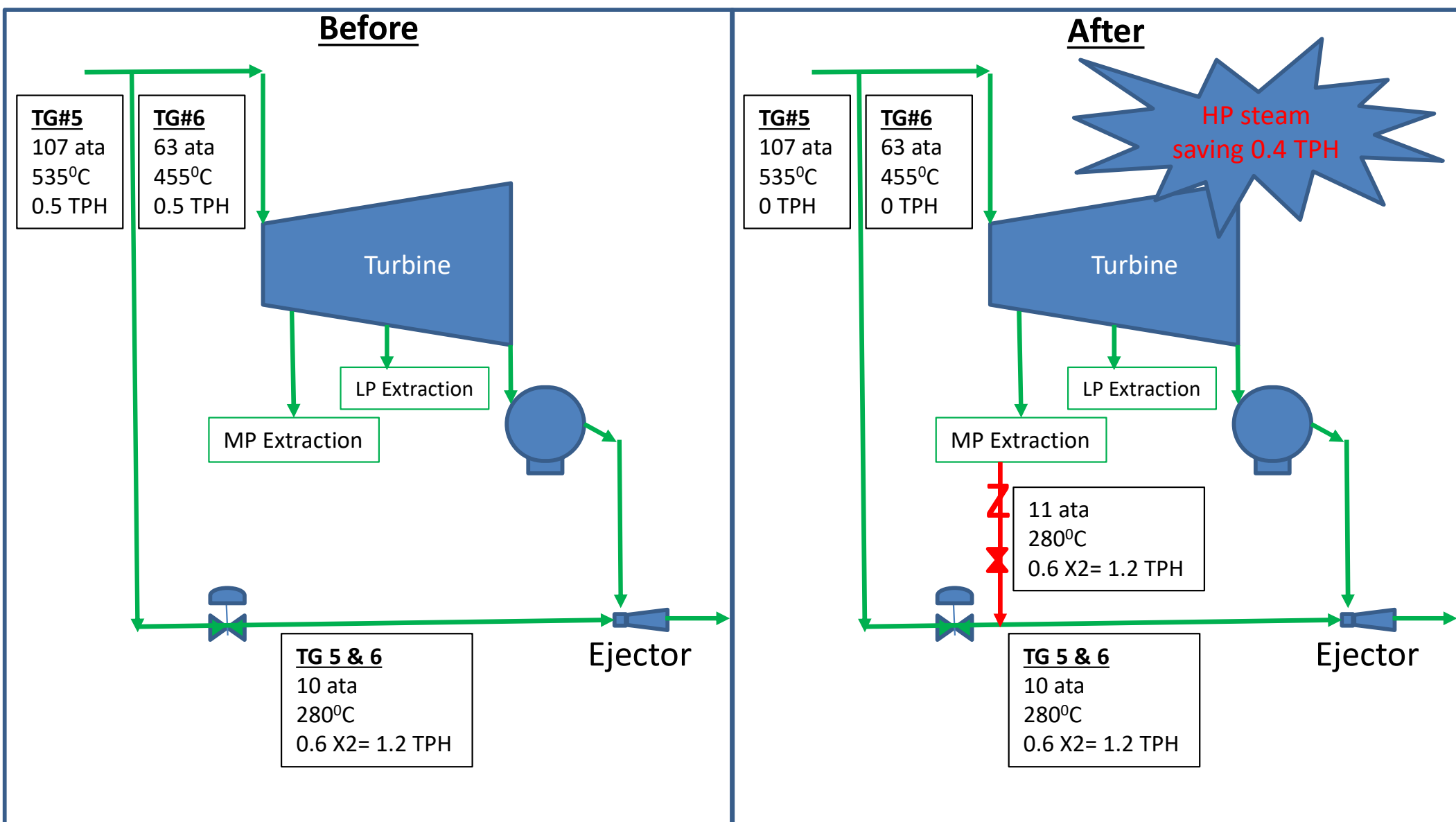


5.4 Energy Saving Projects 2018-19

S.N	Title of Project	Annual Electrical Saving (kWh)	Annual Electrical Cost Saving (Rs million)	Annual Thermal Saving		Annual Thermal Cost Saving (Rs million)	Total Annual Savings (Rs million)	Investment Made (Rs million)	Payback (Months)	Comments
				Quantity	UOM					
1	Modification of SCBL tank of Recovery Boiler			130.9	MkCal	0.23	0.23	0.68	35.5	Coal saving against steam from RB
2	Energy saving by replacement of TG#4 CT fan blades	41400	0.17				0.17	0.50	35.3	
3	Power saving due to Installation of various LED lights in place of conventional light fitting at Plant & COLONY area	85000	0.383				0.383	1.4	43.9	
4	VFD for SA fan in CFB#4	207000	0.932				0.932	0.1	1.3	Used available VFD
5	Power saving by replacement of old Inefficient motor with EE motors in the plant	900000	3.6				3.6	5.6	18.7	
6	Energy saving by replacement of Old CHP crusher fluid coupling and correct capacity motor	52560	0.21				0.21	0.43	24.6	
7	PM#2 speed-up	582190	2.329				2.329	22	113.4	Only energy
8	Board machine speed -up by dryer drives replacement & Refiner tackle replacement	3776489	15.106				15.106	7.4	5.9	
	Total	5644639	23	131	0	0.23	23	38		



6.2 Innovative Project – MP Extraction steam as TG Aux steam



Saving is 80 lacs/Annum from measures 1&2 , coal cost @9000/MT



The greenest power is the power you don't have to produce.

JK PAPERCreating Lasting Impressions



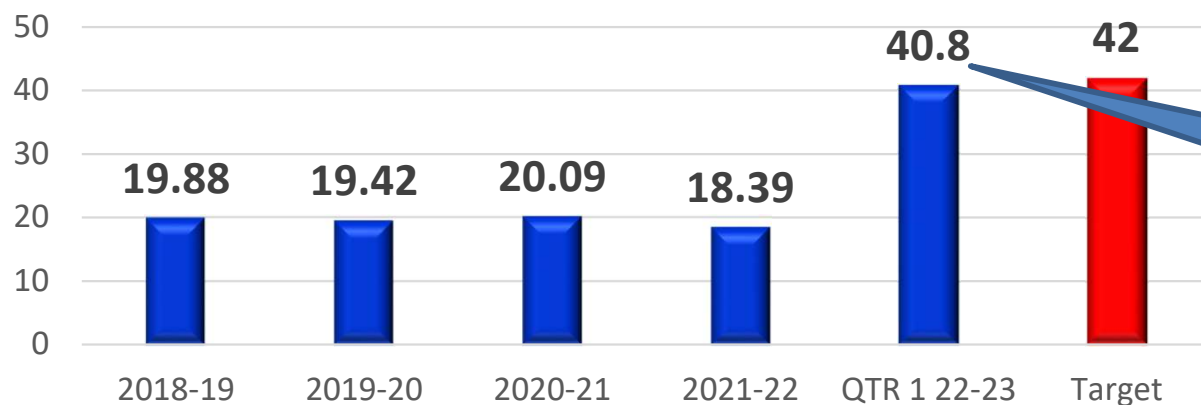
7. Renewable Energy

Year	Total Power (MWH)	Proportionate Power from LFB steam (MWH)
2019-20	151539	29423
2020-21	138274	27775
2021-22	225192	41418
2022-23 (Qtr. 1)	82338	33598



% of Power generated using Steam from LFB

Renewable %



New LFB with dedicated 18MW TG commission in Jan-22

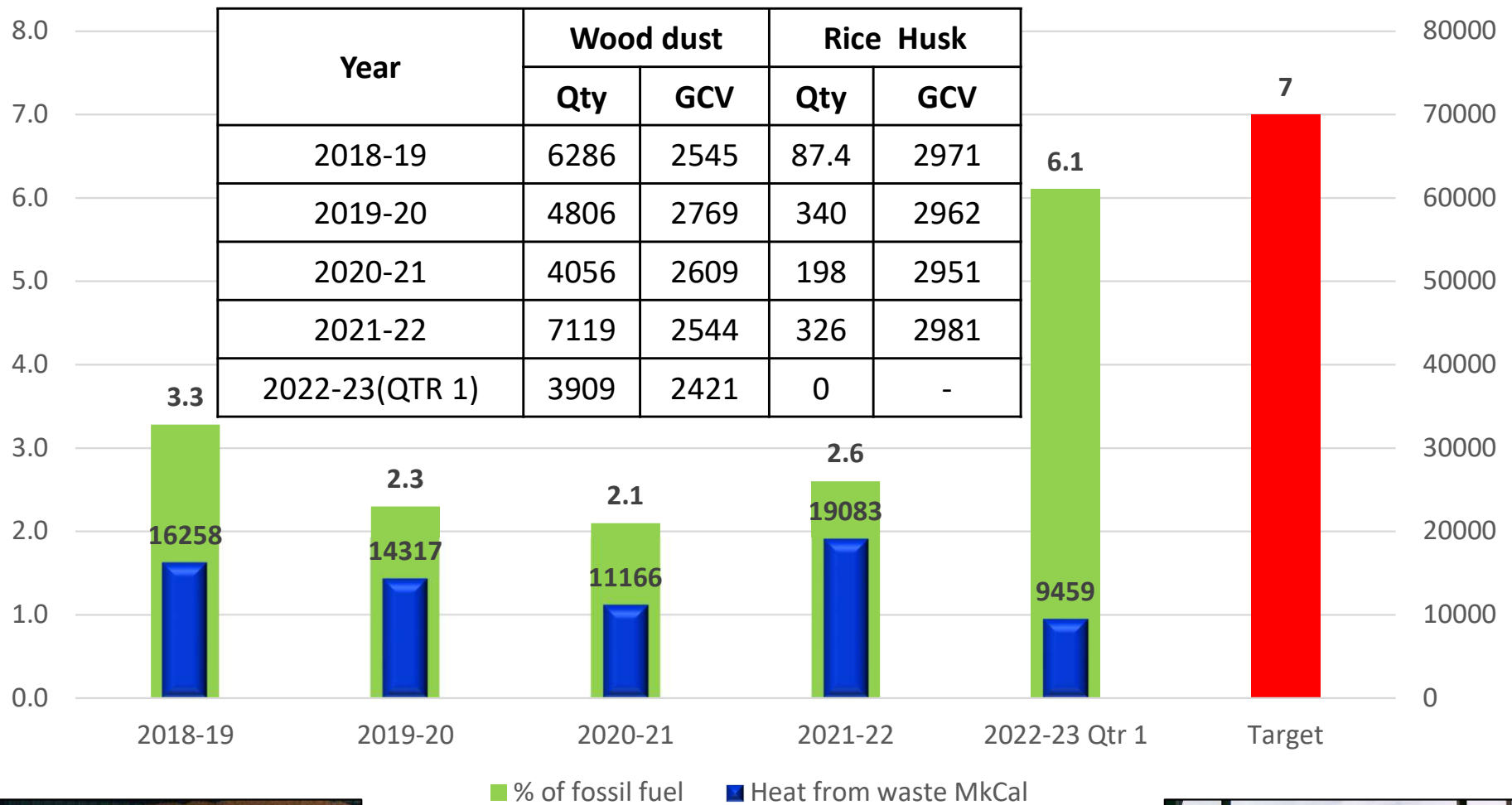


Burn fossil fuels today; become a fossil tomorrow.

JK PAPER *Creating Lasting Impressions*



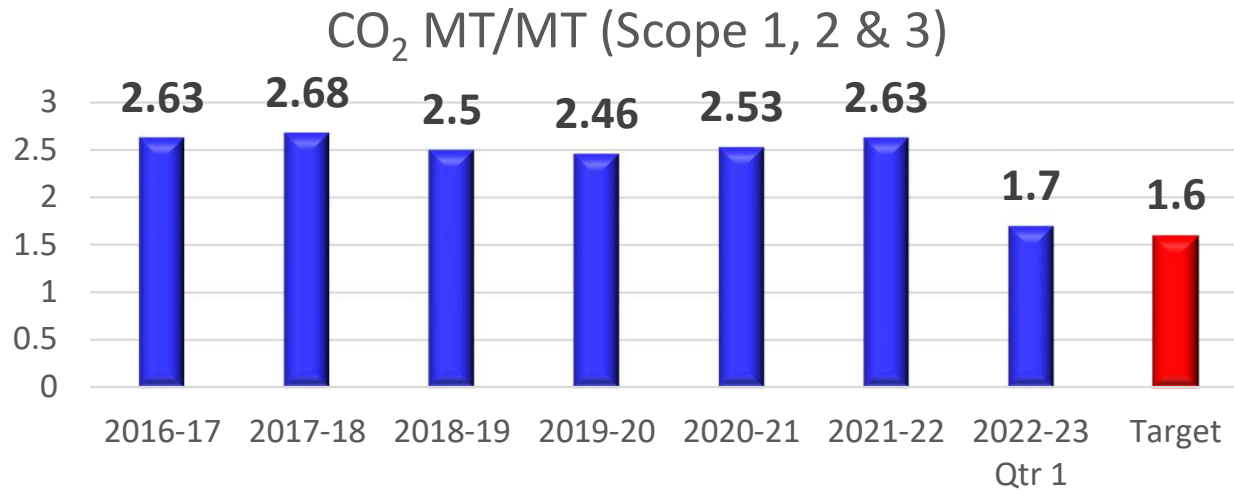
8. Energy from waste



100% Wood dust generated from chipper and rice husk from near by rice mills used in boiler for steam generation.



9.1 GHG- Emission intensity & reduction initiatives



Solar based lift irrigation



Solar/hybrid roof top



Major Projects

1. ASRS for FH storage.
2. Solar based lift irrigation & solar street lights in near by area as part of CSR initiative.
3. Methanol firing in Rotary lime kiln.
4. Barks ,wood log chips and other leaves feeding in Boiler (After shredding)
5. Solar/Hybrid roof top plant -1MW.
6. Hybrid (Wind + Solar) power through group captive >2MW.
7. Biogas plant for canteen/GH food waste.

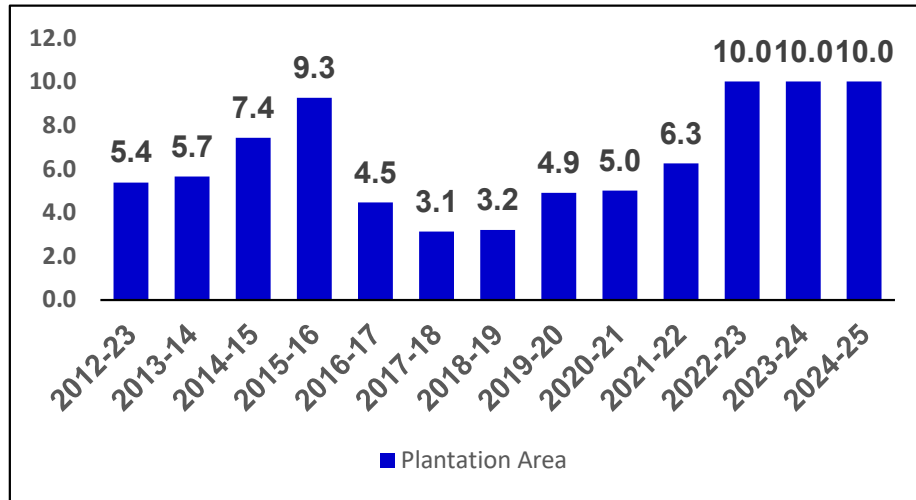
Other initiatives – Small drops make an ocean

1. Promoted cycle for commute inside plant and from colony/near by places to plant.
2. E Auto for plant internal commute.
3. Electric Forklifts for finished goods handling.

Be bright, turn to solar light.

9.2 GHG- Carbon sequestration

Plantation Area covered (in 'Thousand Ha)



Key Highlights:

- 73,000 Ha plantation done till 2021-22.
- 10000 Ha/yr Plantation is 3000 Ha higher than harvesting area required for own use.
- Reduce average distance of raw material procurement to 200km.
- World class R&D in plantation.
 - Developed High yield & Short rotation plants
- 33 Cr plants distributed.
- Increase in income/ha for farmers

Over the last few years Company has transformed in to carbon positive

Description	UOM	Qty
Pulp production	BDMT/yr.	159750
Total Biomass @ 71%	MT/yr.	650411
Total carbon @ 50%	MT/yr.	325205
Total CO2 Sequestered (carbon * 44/12)	MT/yr.	1192420
Carbon sequestered/MT		3.55
Paper and Board Production	MT/yr.	336000
CO2 emissions intensity (scope 1,2&3)	MT/MT	2.4
Total CO2 Estimated emission	MT	806400
Net CO2 emission	MT	-386020
Net Emission intensity	MT/MT	-1.15

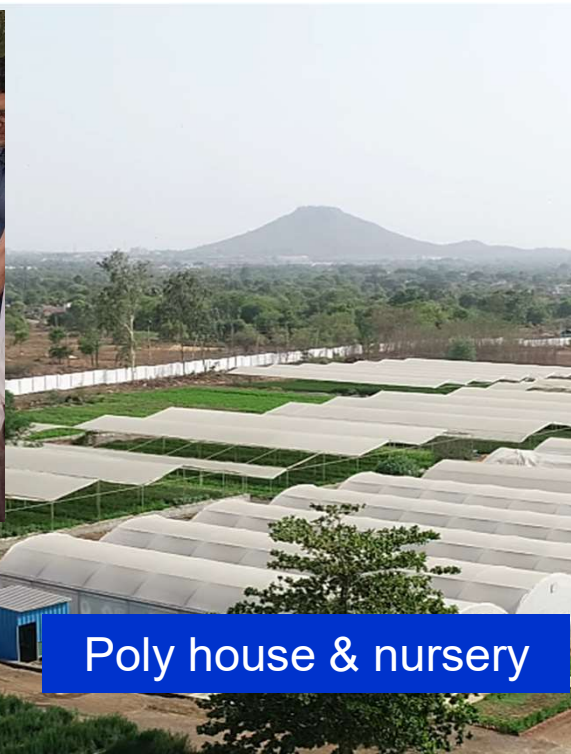
Do mother Earth a favour, be an energy saver.



9.3 GHG- Earth & Environment



Earth day



Poly house & nursery



Environment day-Plant



Environment day-Colony



Greenery inside plant

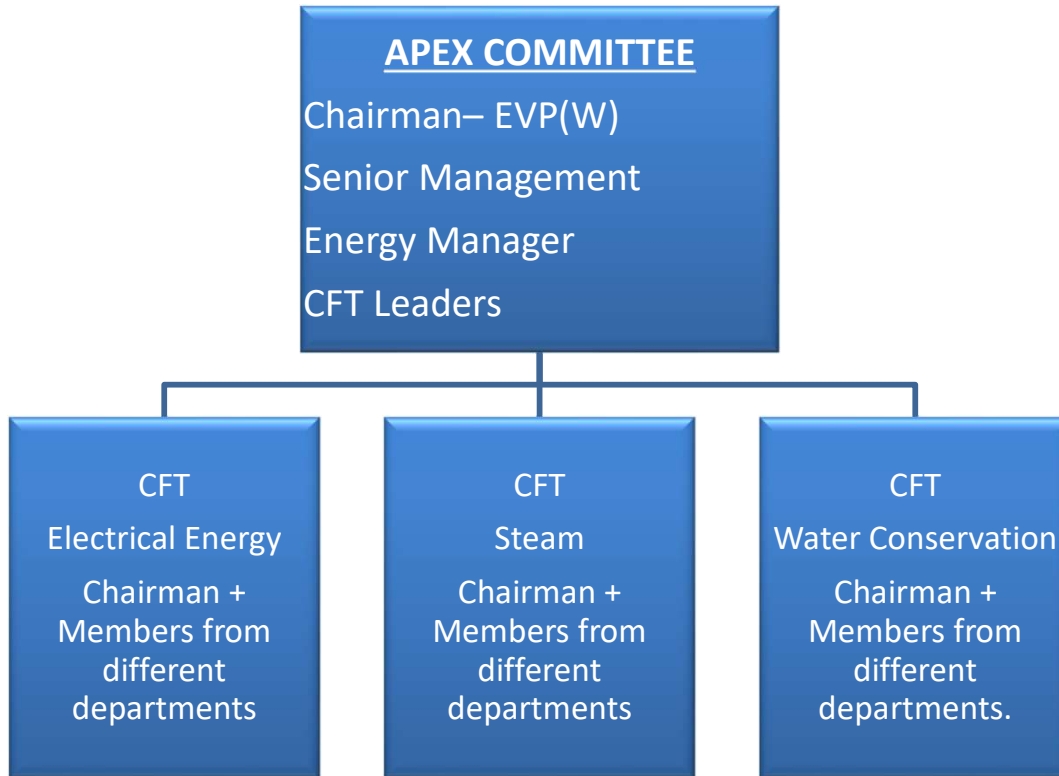


Awareness –next gen

He who plants trees, loves others besides himself.

10.1 Energy Conservation Methodology

Energy Cell - Structure



Target

Steam & Power

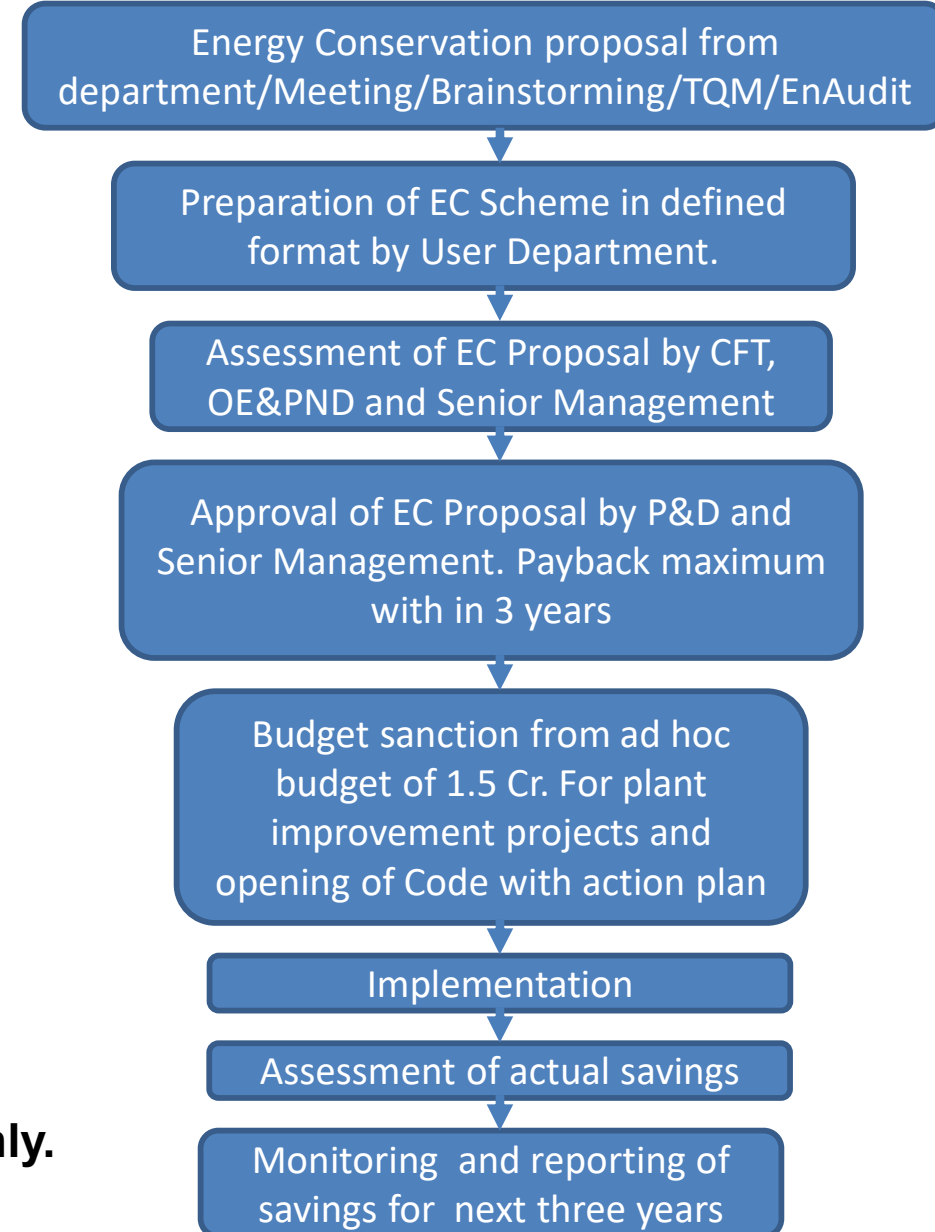
5 % reduction from Q4 of 21-22.

Water

10% reduction from Q4 of 21-22

- ❖ **APEX and CFT review meetings are held monthly.**
- ❖ **Projects are reviewed weekly with OE team.**

Steps -EnCon Idea Implementation



10.2 Energy conservation/Trainings/Idea Generation Campaign



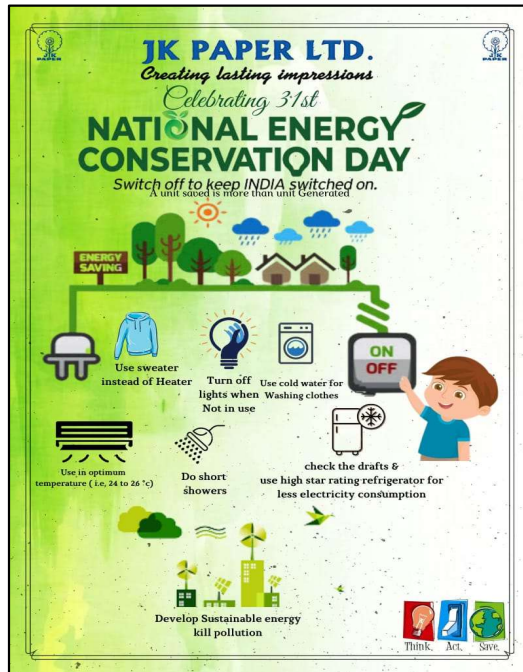
IDEA CAMPAIGN 2.0
"Everything begins with an Idea"

Bumper Prizes

- First Prize:** Microwave Oven
- Second Prize:** Smart Water Air Cooler
- Third Prize:** Mixer Grinder with Juicer
- Next Top 6 Prize:** Bluetooth Speaker
- Top 50 Idea:** JK Paper Polo Tshirt

Complimentary Gift: JK Logo Pen

Gear up for the upcoming Idea Campaign



JK PAPER LTD.
Creating lasting impressions
Celebrating 31st
NATIONAL ENERGY CONSERVATION DAY
Switch off to keep INDIA switched on.
A unit saved is more than unit Generated

ENERGY SAVING

- Use sweater instead of Heater
- Turn off lights when Not in use
- Use cold water for Washing clothes
- Use in optimum temperature (i.e. 24 to 26 °c)
- Do short showers
- check the drafts & use high star rating refrigerator for less electricity consumption

Develop Sustainable energy
kill pollution

Think. Act. Save



Save energy, feel energetic.



10.3 Energy Monitoring Reports

EMS Report Shift wise

JK Paper				
Time Slice Report :	End of Day			
Report Generation Date :	03-08-2022			
Parameter :	Wh Import			
Node	A 02-08-2022 06:00:00 to	B 02-08-2022	C 02-08-2022	Total
CHIPPER	2118.875	2259.375	2140.375	6518.625
ETP ZERO DISCHARGE	145.25	242	146.75	534
ETP Zero Discharge Phase 2	39.875	116.594	18.594	175.063
PULPMILL	1184	1304	1504	3992
D- Stage MCC	154.898	154.758	139.109	448.765
R/B TRAF0 (GSB-2)	63	60	63	186
R/B TRAF0 -II+ODL TRAF0-J	1450.688	1460.312	1393.25	4304.25
R/B INCOMER-I (LT)	9	9	9	27
R/B INCOMER-II (LT)	496	520	440	1456
R/B FEED PUMP 1	0	0	0	0
R/B FEED PUMP2	0	0	0	0
B/P-2/MW-35/GodaPump-2	451	477	395.5	1323.5
C/S-1	124.75	174.125	179.875	478.75
C/S-2	61.813	66.5	69.75	198.063
C/S-3	168.75	177.25	159.75	505.75
OLD MUD FILTER	389.5	591	553.5	1534
PM-1	0	0	0	0

Electrical Energy- 10/20/Monthly/yearly

J K PAPER LTD Unit CPM				
POWER CONSUMPTION UPTO THE MONTH OF JUNE 2022				
Particulars	Unit	Actual		
Production PM 1 (PDG)	MT	6706		
Production PM 2 (PDG)	MT	9791		
Total Production (PDG)	MT	16497		
Board Production PM 4 (PDG)	MT	23810		
Board Production PM 5 (PDG)	MT	39365		
Pulp Production				
Pulp Production for Paper	BDMT	12115		
Pulp Transfer to PM 4	BDMT	11171		
Pulp Transfer to PM 5	BDMT	15653		
Pulp Transfer to Market	BDMT	0		
Total Mill Pulp Production	BDMT	38939		
Total Power (Gen. + Pur.)		in KWH	Run.Hrs	in MW
GEB	KWH	2562192	2184.0	1.17
TG-1	KWH	0	0.0	0.00
TG-2	KWH	0	0.0	0.00
TG-3	KWH	127512	28.0	4.55
TG-4	KWH	210513	27.0	7.80
TG-5	KWH	45840000	2160.0	21.22
TG-6	KWH	33597700	2163.5	15.53
Total Power (Gen. + Pur.)	KWH	82337917	2184.0	37.70
TG generation	%	96.89		

Power Consumption	KWH	KWH/T PDG.	Norms
- Paper	22724128	1377	1200
- Packaging Board	13140364	552	490
- New Packaging Board	22821814	580	540
- Pulp trf.to Board	23086144	861	733
- RLK & PGP	108931	7	18
- SPCC Plant	456535	28	
- Project	0		
TOTAL	82337917	1033	

EMS report- 10/20/Monthly/yearly

Energy Consumption and Generation Report				
		From Date: 01-08-2022		
		From Time: 06:00:00		
		To Date: 11-08-2022		
		To Time: 06:00:00		
Generation				
1	GEB import	409104		
2	TG-1	0		
3	TG-2	0		
4	TG-3	0		
5	TG-4	0		
6	TG-5	5050400		
	TG-6	3575100		
	Total Generation	9034604		
	Total Consumption	8937972.46		
	Difference	96632		
% Error	1.069571446	M.F. Error	1.01081135	

No.	Plant Name	Plant Consumption in KWH	Plant Consumption in KWH after error adjustment	Remarks
1	Old Chipper	1533.00		
2	Old Pulp Mill	56010.52		
3	Only ODL Plant	0.00		
4	Old Evaporator	1791.91		
5	Old Recovery	1584.35		
6	Total Causticizing	18022.71		
7	Total PM-1	370968.88		
8	Total PM-2	453176.49		
9	Total Stock Preparation-1	69372.19		

Steam- 10/20/Monthly/yearly

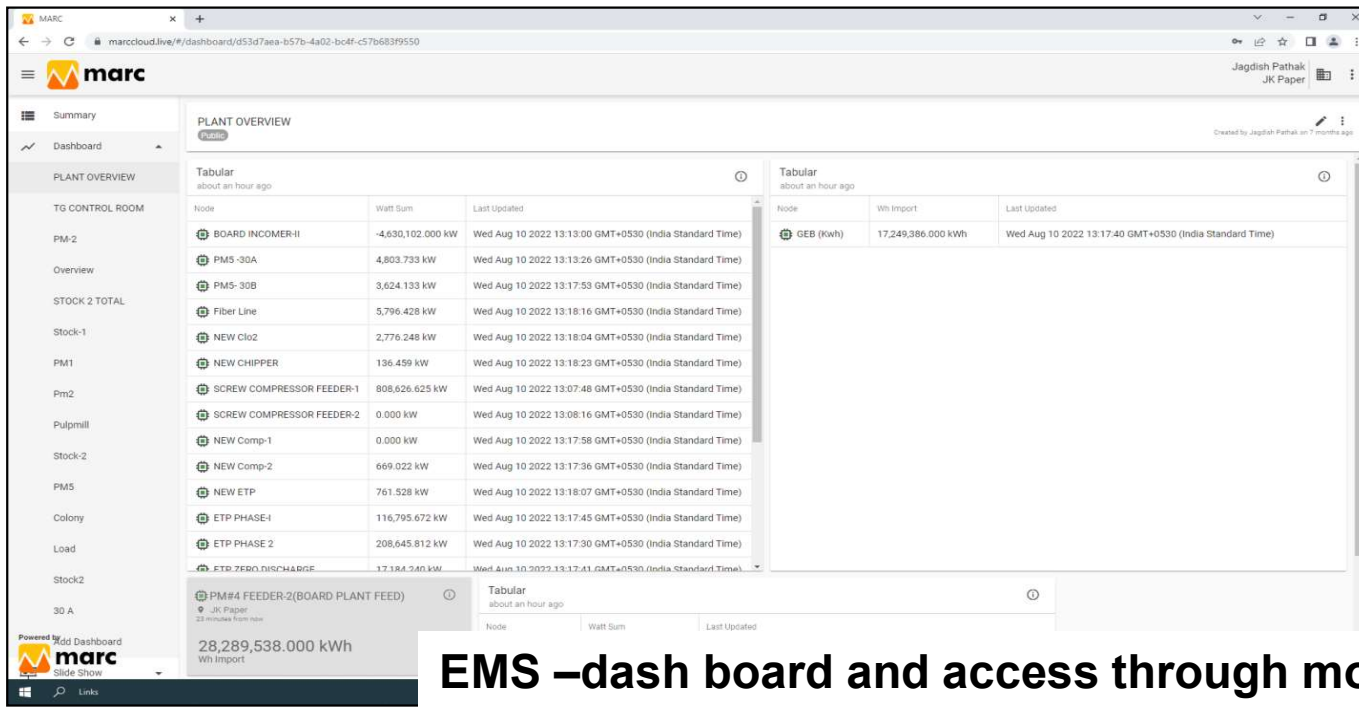
J K PAPER LTD Unit CPM				
STEAM CONSUMPTION UPTO THE MONTH OF JUNE 2022				
Particulars	Unit	Actual		
Production PM 1 (PDG)	MT	6706		
Production PM 2 (PDG)	MT	9791		
Total Production (PDG)	MT	16497		
Board Production PM 4 (PDG)	MT	23810		
Board Production PM 5 (PDG)	MT	39365		
Pulp Production				
Pulp Production for Paper	BDMT	12115		
Pulp Transfer to PM 4	BDMT	11171		
Pulp Transfer to PM 5	BDMT	15653		
Pulp Transfer to Market	BDMT	0		
Total Mill Pulp Production	BDMT	38939		
Steam Generation from CF Boilers				
Coal Fired Boiler No. 1	MT	0		
Coal Fired Boiler No. 2	MT	0		
Coal Fired Boiler No. 3	MT	1858		
Coal Fired Boiler No. 4	MT	1634		
Coal Fired Boiler No. 5	MT	297028		
Steam Generation from CFBs	MT	300520		
Steam Generation from LFB 1	MT	0		
Steam Generation from LFB 2	MT	249202		
Total Steam Generation	MT	549722		

Steam Consumption	T	T/T PDG.	Norms
- Paper	167976	10.18	9.20
- Packaging Board	102130	4.29	3.51
- New Packaging Board	123246	3.13	3.53
- Pulp trf.to Board	156101	5.82	5.71
- SPCC Plant	269	0.02	
- Project	0		
TOTAL	549722	6.90	

Energy misused, cannot be excused.



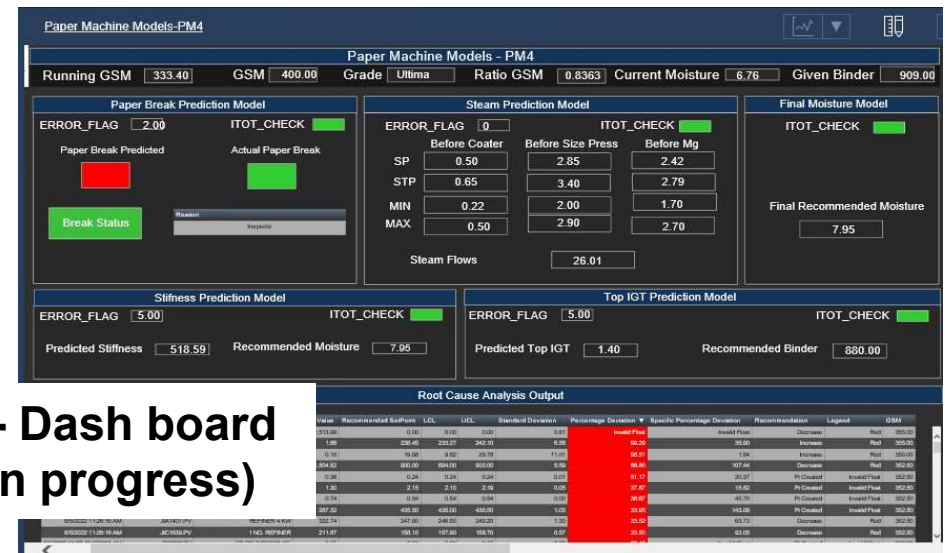
10.4 Energy monitoring.



EMS –dash board and access through mobile app.



IT-OT pilot plant – Dash board (Implementation in progress)



You can not manage what you don't measure.

J K PAPERCreating Lasting Impressions



10.5 Kaizens , Participation, recognition & team work

Total Kaizen status	Restorative	Renovative	Innovative	Total	Total Savings (Rs. In Lakhs)
2020-21	188	72	7	267	292
2021-22	129	68	16	213	188.59

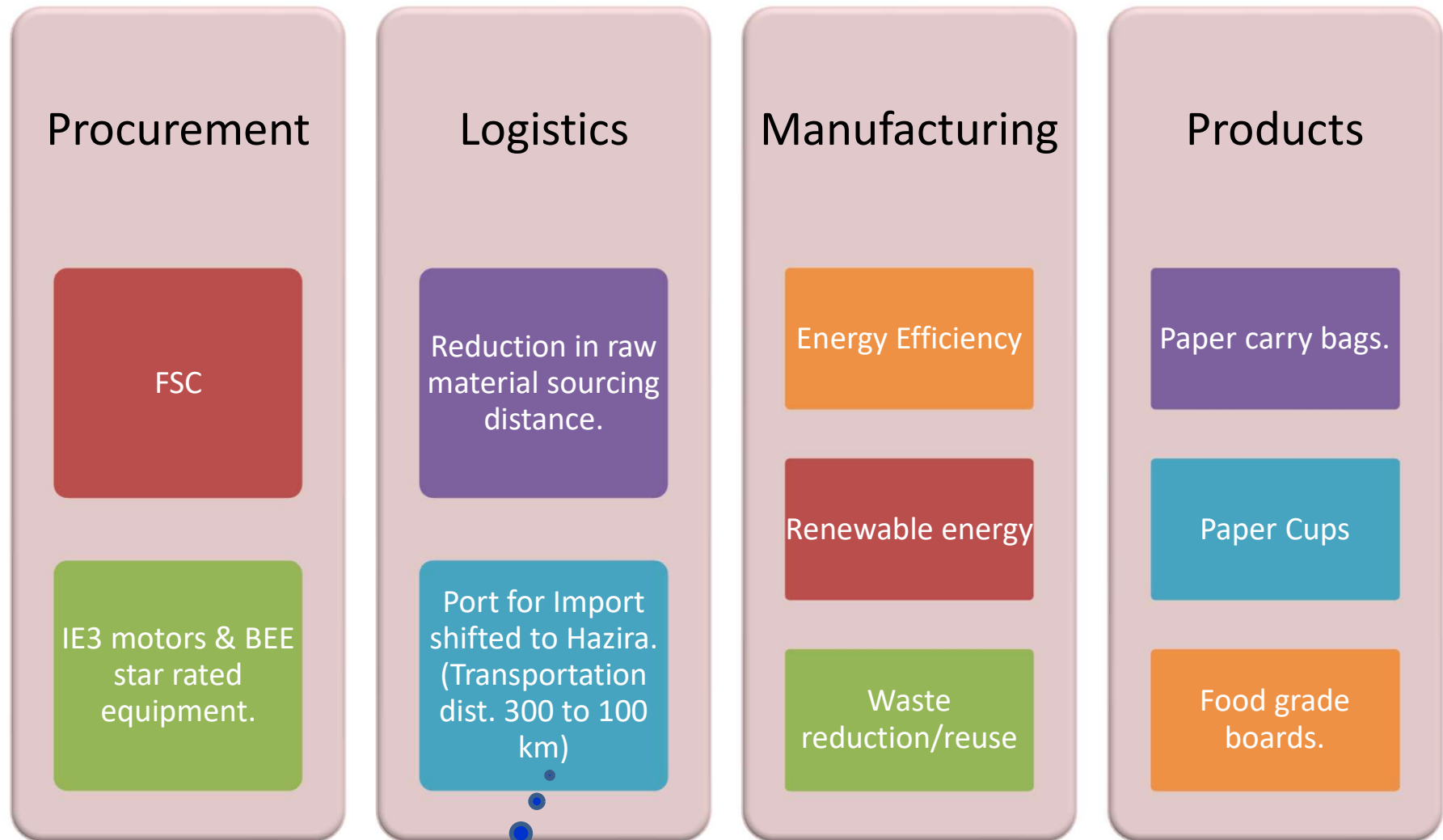
Rewards & Recognition



Kaizen Participation



11. Green Supply Chain



Approx reduction in CO₂ /Yr -
120MT

Know energy conservation, no monetary loss.

12. Certifications

MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 179792-2015-AQ-IND-RVA Initial certification date: 25 June 2015 Valid: 28 January 2021 - 24 June 2023
 Expiry date of last certification cycle: 24 June 2020
 Date of last recertification: 30 November 2020

This is to certify that the management system of **J K Paper Limited**
Unit:CPM
 P.O.: Central Pulp Mills, Fort Sonagadh, District: Tapi - 394 660, Gujarat, India

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Development and manufacture of pulp, paper & coated board

Place and date:
 Chennai, 28 January 2021



For the issuing office:
 DNV GL - Business Assurance
 ROMA, No. 10, GST Road, Alandur,
 Chennai - 600 016, India

Signature of Management Representative

ISO 9001 -2015

MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 154973-2014-AE-IND-RVA Initial certification date: 21 May 2005 Valid: 28 January 2021 - 30 May 2023
 Expiry date of last certification cycle: 30 May 2020
 Date of last recertification: 30 November 2020

This is to certify that the management system of **J K Paper Limited**
Unit:CPM
 P.O.: Central Pulp Mills, Fort Sonagadh, District: Tapi - 394 660, Gujarat, India

has been found to conform to the Environmental Management System standard:
ISO 14001:2015

This certificate is valid for the following scope:
Development and manufacture of pulp, paper & coated board

Place and date:
 Chennai, 28 January 2021



For the issuing office:
 DNV GL - Business Assurance
 ROMA, No. 10, GST Road, Alandur,
 Chennai - 600 016, India

Signature of Management Representative

ISO 14001 -2015

MANAGEMENT SYSTEM CERTIFICATE

Certificate No: 10000364372-HSC-UKAS-IND Initial certification date: 29 June 2007 Valid: 16 June 2020 - 28 June 2022

This is to certify that the management system of

J K Paper Limited Unit:CPM
 P.O.: Central Pulp Mills, Fort Sonagadh, District: Tapi - 394 660, Gujarat, India

has been found to conform to the Occupational Health and Safety Management System standard:
ISO 45001:2018

This certificate is valid for the following scope:
Development & manufacture of pulp, paper & coated board.

Place and date:
 London, 16 June 2020



For the issuing office:
 DNV GL - Business Assurance
 4th Floor, Vero Building, 30 Stamford
 Street, London, SE1 9LQ, United Kingdom

Signature of Management Representative

ISO 45001 -2018

CW Code: SCS-CW-003746
 Valid from: 21 June 2021 Expiry date: 20 June 2026

This certificate itself does not constitute evidence that a particular product supplied by the certificate holder is FSC-certified (or FSC Controlled Wood where applicable). Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claims are clearly stated on sales and delivery documents. The scope of this certificate is considered accurate on the date of issuance. The current validity and scope, including the full list of products, shall be verified on <http://links.fsc.org>. The certificate shall remain the property of SCS, and the certificate and all copies or reproductions of the certificate shall be returned to SCS immediately upon request. Where a certificate covers more than one site, the covered products and processor activities are performed by the network of Participating Sites, and not necessarily by each of them.



FSC

Maggie Schwartz, Director, Chain of Custody
 SCS Global Services
 2000 Powell Street, Ste. 600, Emeryville, CA 94608 USA

Printed: 19 Jun, 2021

Initiated ISO-50001 certification process

Energy serves you the way you deserve

J K PAPER *Creating Lasting Impressions*



13. Awards & Accolades

KAIZEN COMPETITION -CII



BEST PAPER IN PAPEREX



GREEN TECH- SAFETY AWARD



3M COMPETITION -CII



BEST EMPLOYER BRAND- GUJARAT



TPM –JH CIRCLE





THANK YOU!

Save energy, save money, save nation, save the planet!

J K PAPER *Creating Lasting Impressions*

29

