Ambuja Cement | ACC

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Mr.Prideep Joghee
-Head Production.
Mr. Sriganesh
- Head CCR Operation

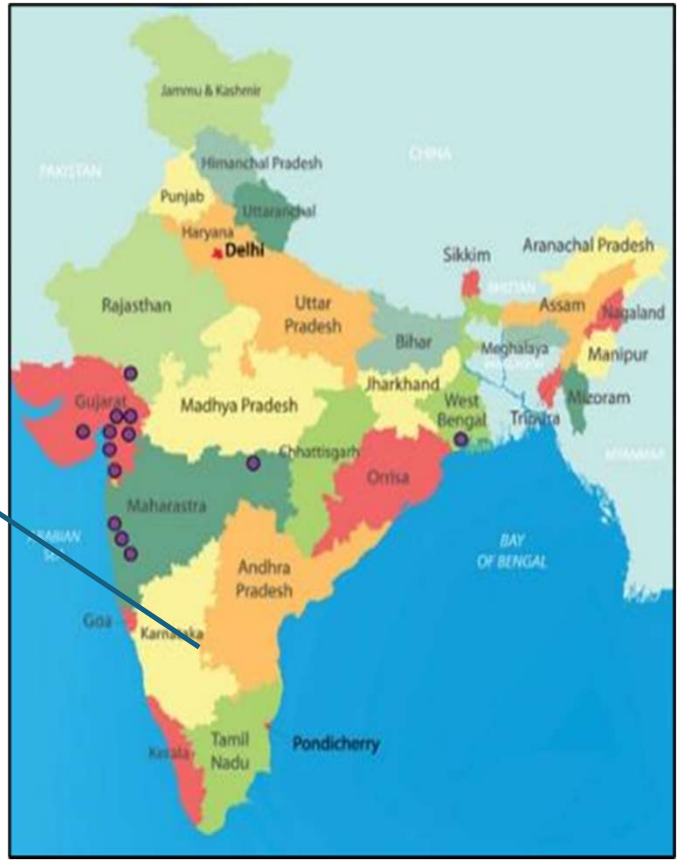
ACC KUDITHINI CEMENT WORKS

SOUTH | KARNATAKA| BELLARY | KUDITHINI

ACC KUDITHINI CEMENT WORKS

KCW -Overview

Plant name	**ACC- Kudithini**
Plant type	**Grinding Unit**
Plant capacity	**1.5 MTPA**
Commissioning	**12th Feb 2010**
Dist	**Bellary**
State	**Karnataka**



- A Greenfield Project : Kudithini Cement Works
- ACC Kudithini Cement Works located in Kudithini village.
- 25 kilometers from the district headquarters town – Bellary.
- Total project Cost Rs. 370 crores.
- Inaugurated on Jan 04, 2010
- Fully automated cement grinding plant
- Annual capacity 1.5 million tones .
- Cement Type – Composite, PPC/C+, OPC-43
- Clinker is supplied by ACC's modern cement plants at Wadi in Gulbarga district and dispatched by rail and road.
- Own railhead and siding with sophisticated unloading and handling facilities having at ACC Kudithini Cement Works.

Plant Overview – Major Equipments

Wagon Tippler

Reclaimer & Stacker

Clinker Silo (Cap: 60000 MT)

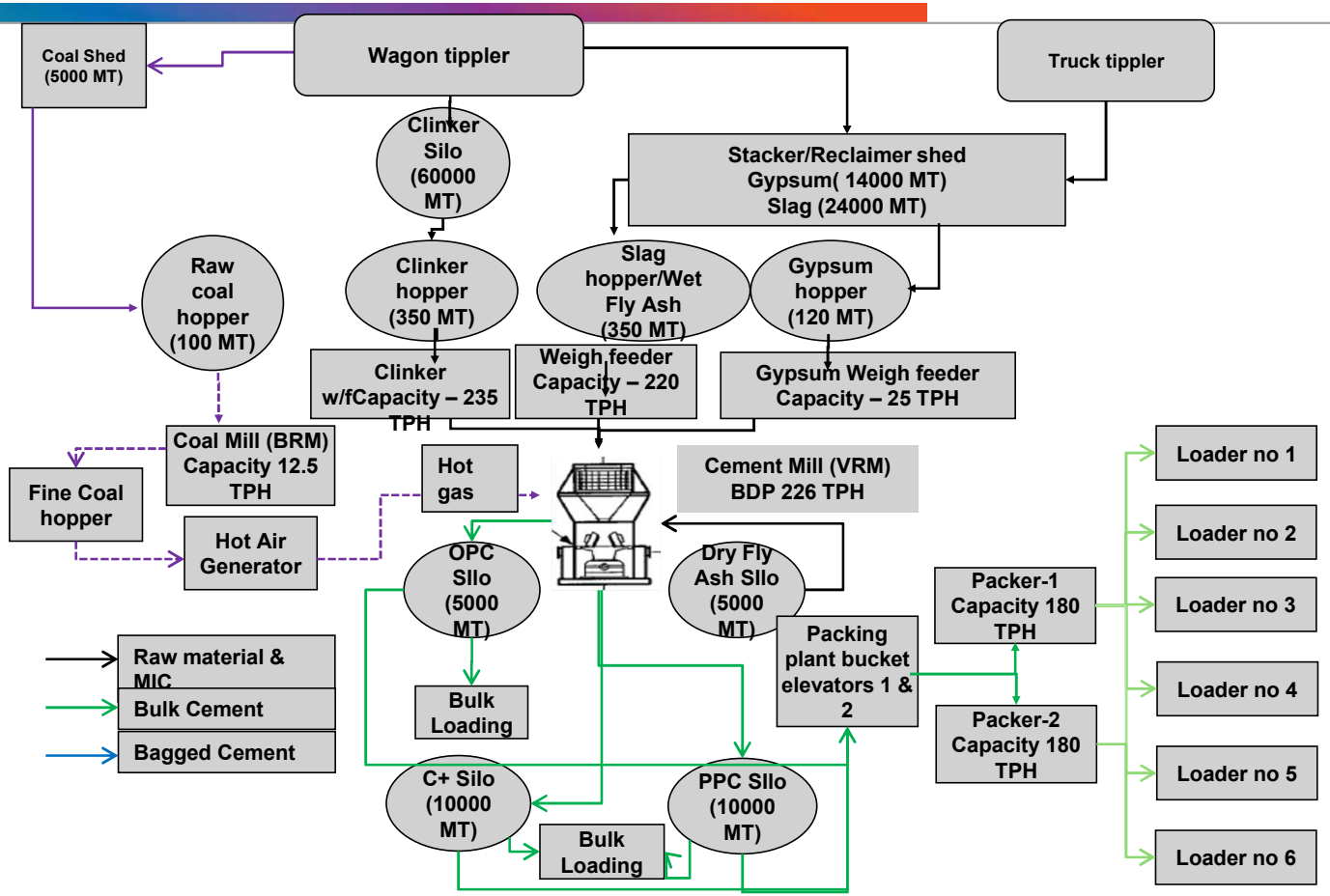
VRM(Cap : 250 TPH)

Bag House (Cap 14 Module)

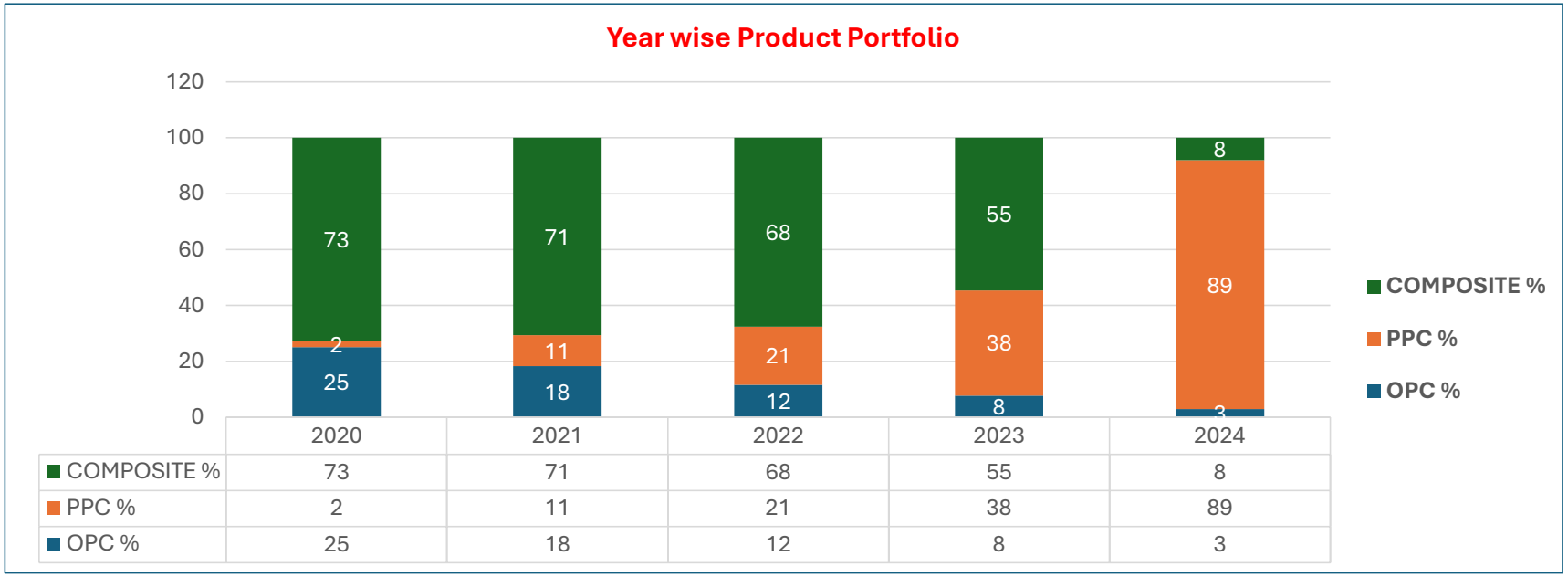
Packer(Cap :2 X 180 TPH

Cement Silo(cap:2X10K, 1X5K)

Plant Flow Diagram



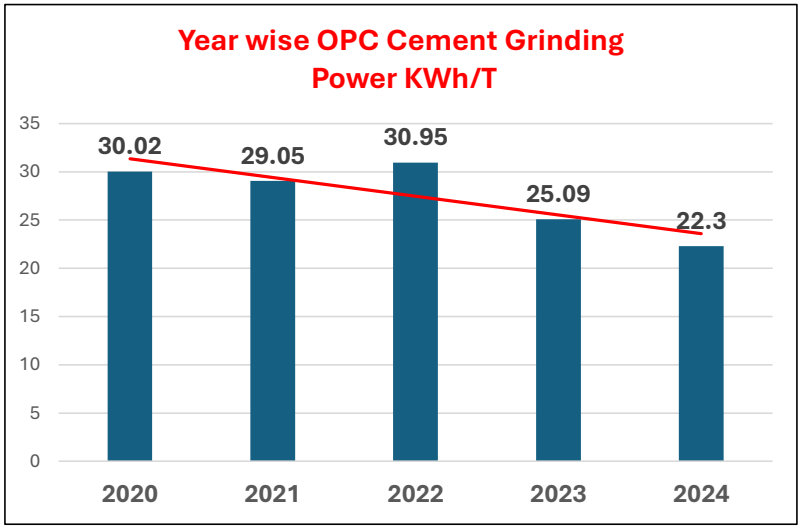
Year wise Product Portfolio

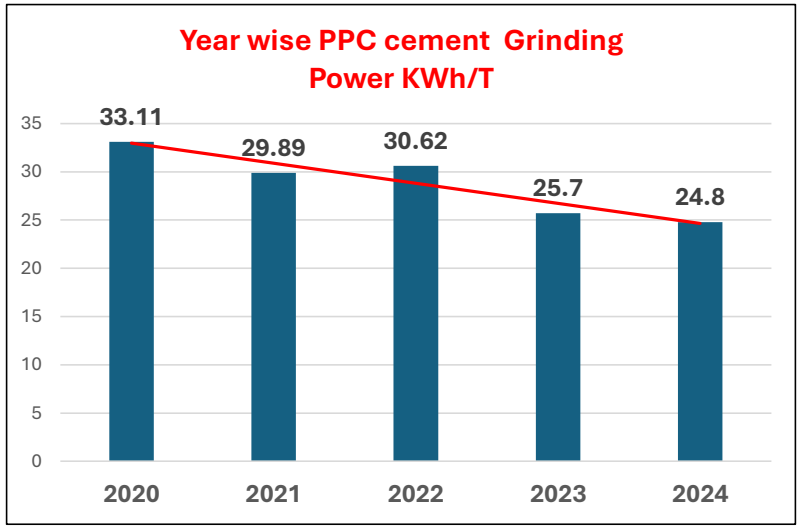


	2020	2021	2022	2023	2024
COMPOSITE %	73	71	68	55	8
PPC %	2	11	21	38	89
OPC %	25	18	12	8	3

❖ Product portfolio trend of year wise shows that Plant switched over to PPC up to 90 % in 2024, As per market requirement. OPC cement Production reduced from 25 % to 3 % .

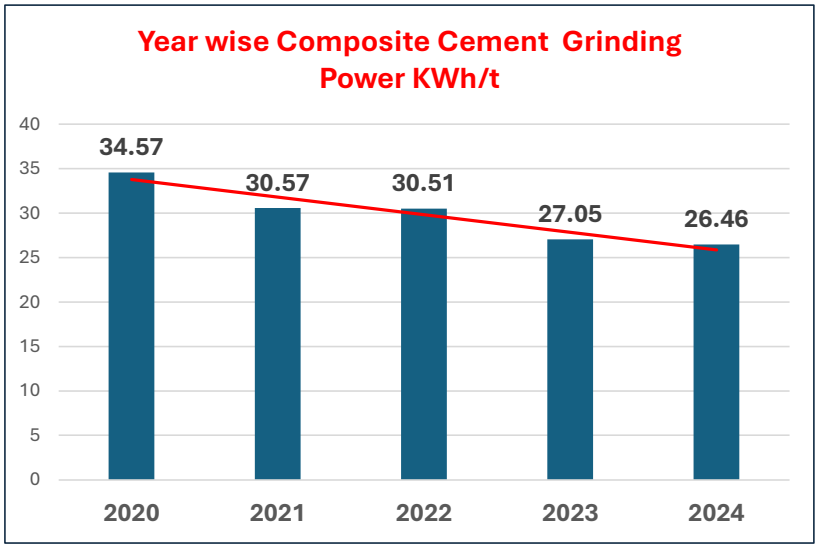
Sp. Energy consumption trend

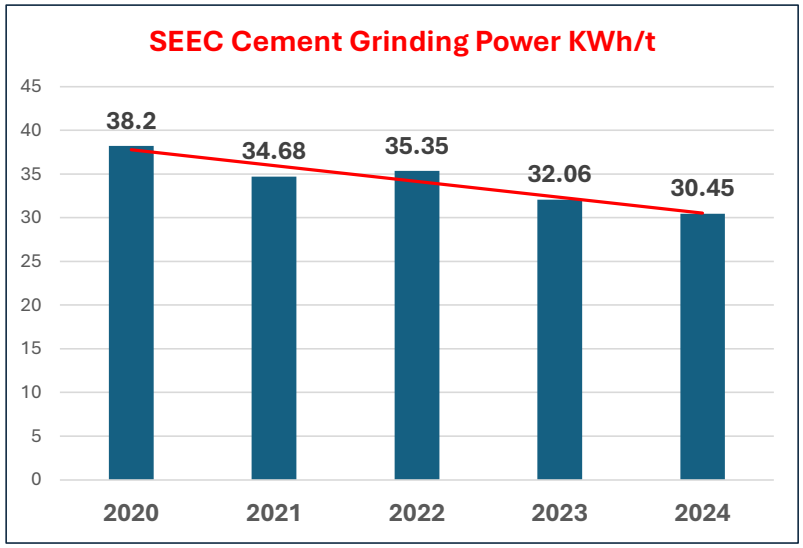




- The graph is showing that SEEC Specific Electrical energy consumption reduced from 30 KWh to 22.3 KWh **(ie 25.6 % Reduction) in** OPC .
- In PPC cement SEEC reduced from 33.1 KWh/t to 24.8 KWh/t (**ie 25.1 % Reduction**)

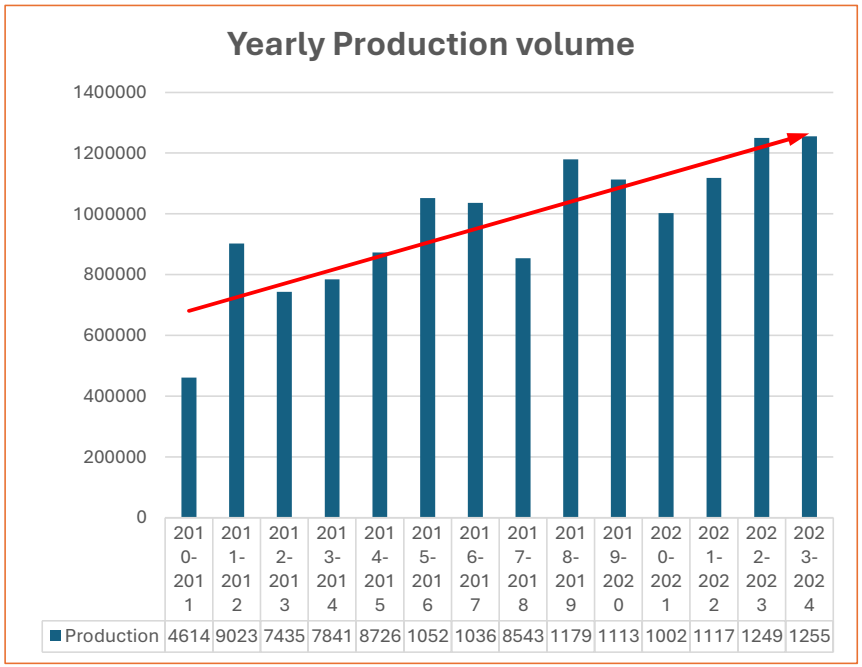
Sp. Energy consumption trend cont...

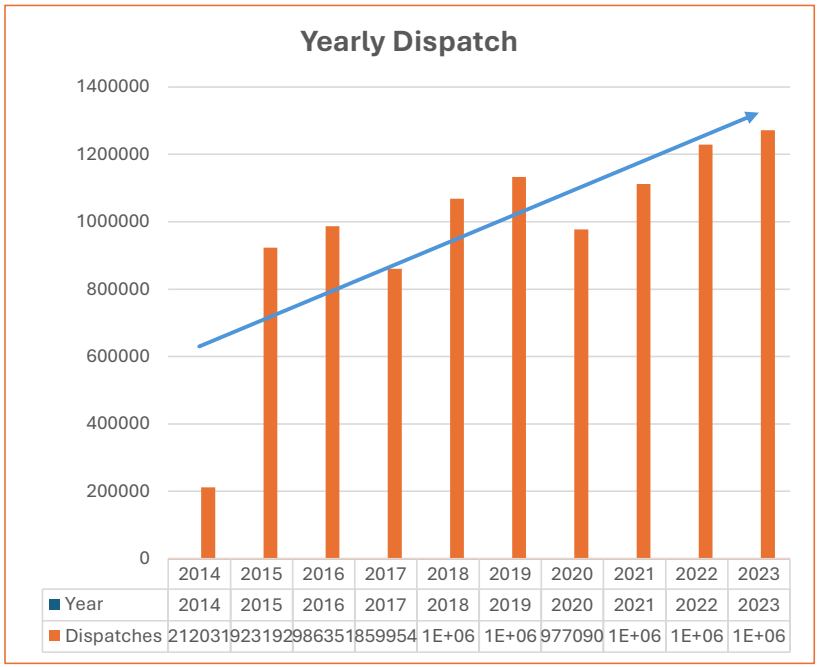




- The graph is showing that SEEC of Composite cement Specific Electrical energy consumption, reduced from 34.6 KWh to 26.5 KWh **(ie 23.4 % Reduction)** .
- Overall, SEEC of Cement reduced from 38.2 KWh/t to 30.5 KWh/t (**ie 20.1 % Reduction**)

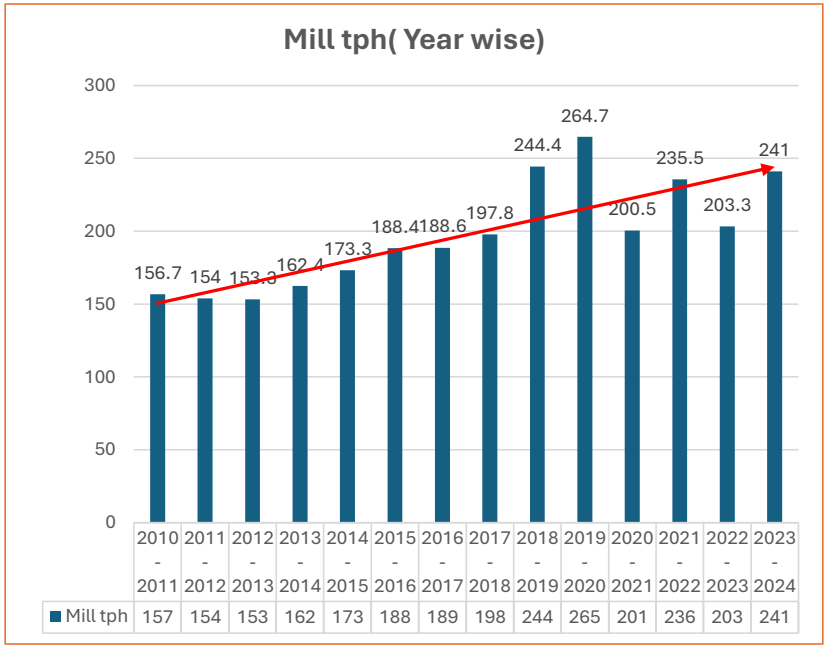
Production volume, Dispatches & Mill Kpi's

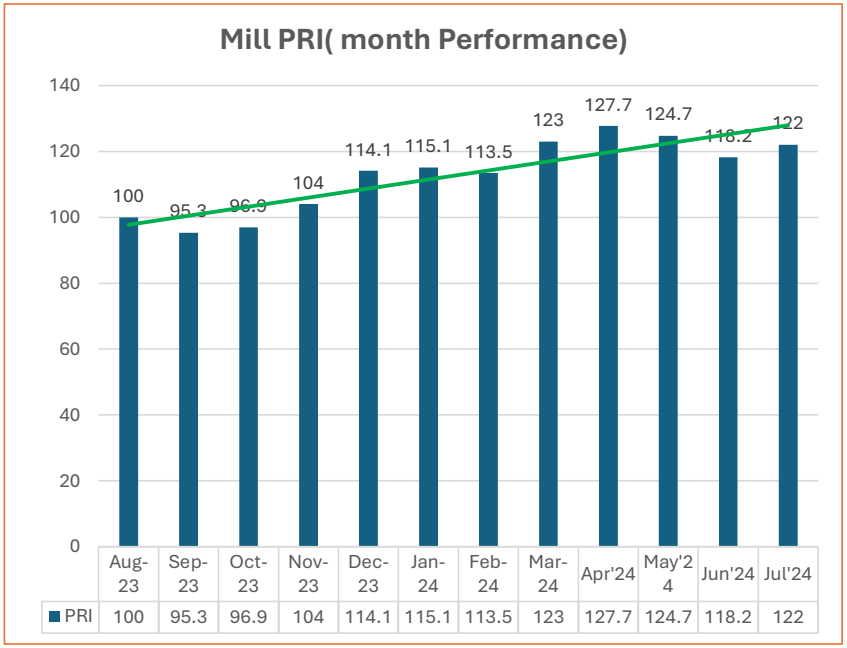




- Production & dispatch trend shows that significant improvement in volume since last 5 years and Overall, 1Miot to 1.25 Miot increased (ie **25 %**) in cement volume.

Cement Mill Kpi's





❖ Mill TPH & PRI trend shows that continual improvement on sustainable basis.

Offsite & Onsite energy consumption details

Offsite RE consumption details

		Offsite			
Year	Source, Solar, Wind,	Total offsite Installed capacity (MW)	Capacity Addition(MW)	Total Generation (million kWh)	Share % W.R.t overall consumption
FY 21-22	Solar	NA	NA	40.8	60.2 %
FY 22-23	Solar	NA	NA	4.1	9.2 %
FY 23-24	Solar	NA	NA	0.0	0.0 %
FY 24-25	Solar			0.0	0.0 %

Onsite RE consumption details

Year	Source, Solar, Wind,	Total offsite Installed capacity (MW)	Capacity Addition(MW)	Total Generation (million kWh)	Share % W.R.t overall consumption
FY 21-22	Solar	0	0	0.00	0.00
FY 22-23	Solar	0	0	0	0.00
FY 23-24	Solar	0	0	0.00	0.00

FY 24-25(October'24 onwards) , KCW plant is plan to utilise 100 % Solar Power from ADANI GREEN ENERGY LIMITED, KHAVDA,

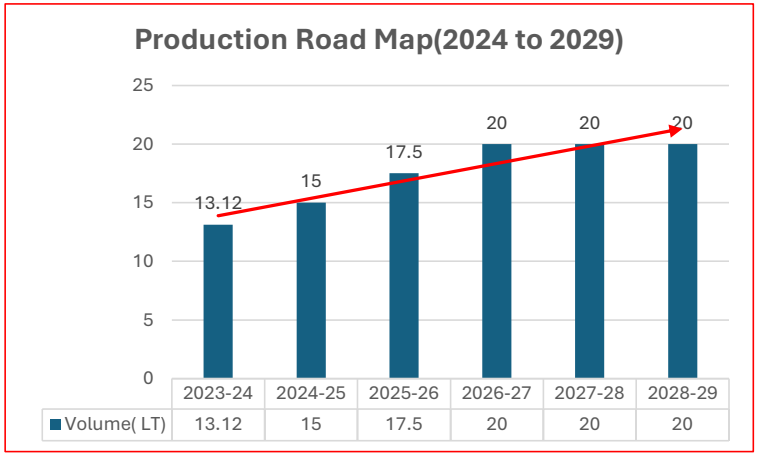
KCW Plant Vision - 2024 to 2029

KCW - "Shikhar @ 2.0 MioT"

KCW's aspiring to achieve Production & dispatch volumes @ 2.0 MioT in 2026-27.

Fostering key initiatives:

1. Key De-bottleneck projects to improve the PRI.
2. Switching over to PPC & other Premium products.
3. Reducing Prod cost to push more volumes.
4. Optimizing Raw mix cost.

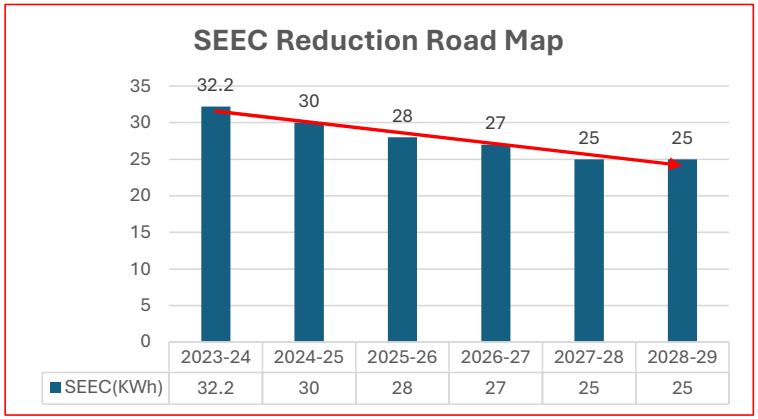


KCW "Power @ 25 KWh/t "

KCW aspiring SEEC @ 25 KWh/T by the year 2027-28.

Fostering key initiatives:

1. Installing & Optimizing VFD output.
2. Reducing start / stops of Mill & Aux equipment's.
3. Packing power reduction.
4. Adopting CoP & CII best practices.



KCW Vision – KPI's

Plant KPIs	Unit	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
Cement Production Volume	kT	1312	1500	1750	2000	2000	2000
Clinker Factor	%	59.56%	62.40%	62.00%	61.00%	60.00%	60.00%
SEEC Total	kWh/t Cement	32.2	30.0	28.0	27.0	25.0	25.0
MTBF	hrs	237	250	250	250	250	250
NAI	%	92.8	95	95	95	95	95
Total Gypsum	%	3.46%	4.00%	4.00%	5.00%	5.50%	5.50%
Flyash	%	27.64%	33.60%	34%	34.0%	34.5%	34.5%

KCW Plant Vision Summary with timelines - Roadmap

Results

2024-25	2025-26	2026-27	2027-28	2028-29
Prod. Volume 1.5 MTPA. **SEEC <30 KWh/T** **NAI >95** **MTBF>235**		Prod. Volume 1.75 MTPA SEEC <28 KWh/T NAI>95% MTBF>250 Hrs		Prod.Volume 2.0MTPA SEEC <25 KWh/T NAI>95% MTBF>250 Hrs

Efforts

2024-25	2025-26	2026-27	2027-28	2028-29
• ***Key Projects:*** • Product Bucket elevator Upgradation. • Higher Capacity roto scale for DFA feeding • Truck Tippler upgradation. For raw material unloading • New Hopper & Belt conveyor for Raw material feeding. • Plant security automation system. • AI automation @ PP	• **"S" Roller Upgradation for VRM** • Replacement of VRM Main drive motor. • Firefighting system upgradation. • DSCQP& CCM Jobs. • Hydraulic truck loading system in place of hanging wire rope type loading system. • VFD for critical Drives • Dedusting sys.upgrad	• Mechanized wagon Loading System for Cement Rake • Replacement of obsolete controllers of Raw material weigh feeders. • Replacement of obsolete XRF. • CCTV surveillance system upgradation. • Plant Borewell Waterline replacement .	• Reclaimer track replacement. • Gypsum crusher refurbishment. • ABB DCS server upgradation. • Main weigh bridge upgradation (Man less weigh bridge).	• Wagon tippler Clamp arm replacement. • Coal crusher rotor & casing replacement. • Coal Mill & HAG refurbishment.

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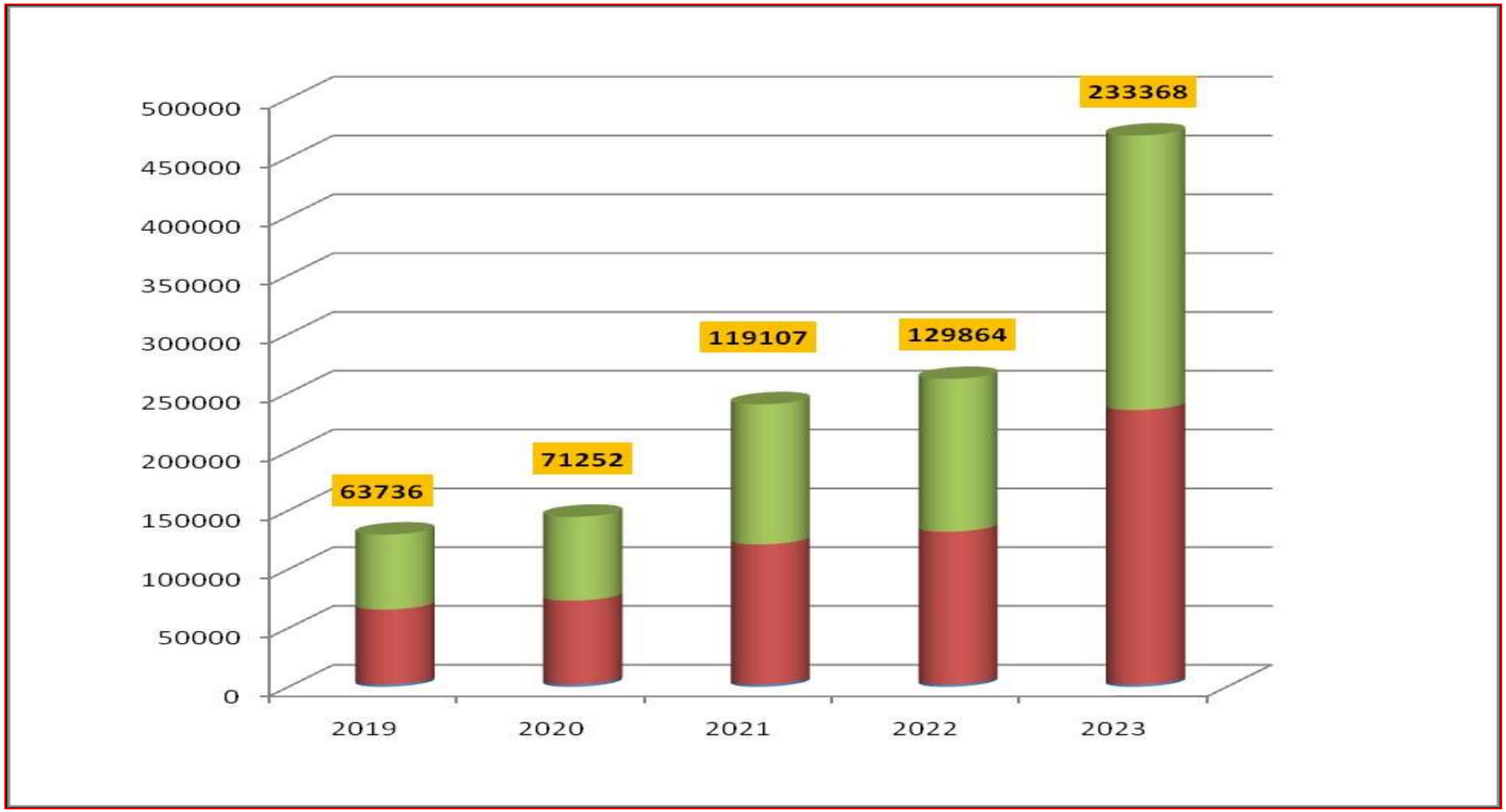
Revenue generation from the waste material



External Bench marking of Cement Grinding by VRM

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Table 25: Benchmarking of Cement Mill Section VRM-PPC

Sr. No.	Parameter	Unit	Plant 1	Plant 2	Plant 3	Plant 4	Plant 5	Plant 6	Plant 7	Plant 8	Plant 9	Plant 10
	Overall SEC	kWh/MT Cement	18.80	19.70	21.18	22.28	22.30	22.33	22.55	24.95	25.85	26.8
1	Product variety	PPC										
2	Make	-	Loesche	FLS	Loesche	Peiffer	Pfeiffer	Pfeiffer	Pfeiffer	Loesche	Pfeiffer	Loesche
3	Type / Model	No	LM 53.3+3S	OK 39.4	LM 56.3+3	MPS 5600 BC	MBR 6000 C6	MPS 5600 BC	MPS 5600 BC	LM 46.2+2	MVR 5000C4	LM 56.3 + 3 CS
4	Design output	TPH	280	265	305(OPC)	180 (PSC)	412	300	230	115(OPC)	200	305 (PPC) @ 3400 Blaine
5	Operating output	TPH	320	300	286 - OPC, 342 - PPC	330 (PPC)	412	400	324	147.4 - OPC, 163- PPC	195	290 @ OPC, 373 @ PPC, 270 @ CC
6	Final Product Blaine	m^2/kg	330	350	350/ 300	360	360	350	335	350/ 300/ 300/ 380	350	310/ 360/ 380
7	Final Product residue (% residue on 45 mics)	%	14	14	18-20	-	10	16	12	18-20	34	<15
8	Fly ash Addition	%	32.0	34.5	31.8	32	35.0	35.0	34.9	31.4	0	PPC 34.5%, CC 25.8%
9	Clinker factor		0.66	0.63	-	0.62	0.6	0.63	0.58	-	-	-

Parameter	ACC-KCW
Overall SEEC	28.5
Product Variety	PPC
Make	Loesche
Type/Model	LM 56.3+3CS
Design Output	PSC @185TPH
Operating output	PPC- 310, OPC-300, CC- 270
Final Product Blain	OPC-270, PPC-340,CC-340,
Final Product residue	PPC<14, OPC<23
Fly ash addition	PPC-34%, CC-25%
Clinker factor	PPC-0.62, OPC-0.90

Source of Data CII (Energy Bench marking-2023)

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Encon Projects implemented

Sl No0.2ot	year	SEEC Reduction Initiatives	Efficiency Related	Investment Lacs	Total Power saving KWh/t	Total Cost Savings Rs/t
1	2021-22	Plug in Air compressor leakages and air compressor network	Efficiency Related	4	0.2	1.45
2	2021-22	Replacement of 70w, 125w 250w discharge lamp in process area to with 40w,60w ,80w LED lamp	Efficiency related	14.2	0.25	1.81
3	2021-22	Install vfd at dust bag filter fan	Efficiency related	50	0.26	4
			Total	68.2	0.71	7.26
1	2022-23	Optimization of Compressor usage by segregating the air for packer and silo areation	Efficiency Related	17	0.25	1.82
2	2022-23	False Air leakage arresting inside Mill and Baghouse area	Efficiency Related	1	0.2	1.45
3	2022-23	Modification in Wagon tipler Airlside to reduce the idle running of Fan for circuit empty	Efficiency Related	2	0.2	1.45
4	2022-23	Reduction in water pump power	Efficiency Related	0	0.05	0.363
			Total	20	0.7	5.082

Encon Projects implemented cont..

Sl No	year	SEEC Reduction initiatives	Efficiency Related	Investment Lacs	Total Power saving KWh/t	Total Cost Savings Rs/t
1	2023-24	Increase in Mill PRI	Efficiency Related	0	0.05	0.363
2	2023-24	Reduction in Packing Plant Power Cons	Efficiency Related	0	0.05	0.363
3	2023-24	Full utilisation of Reclaimer designed Capacity	Efficiency Related	0	0.02	0.1452
4	2023-24	Optimisation of Compressors	Efficiency Related	0	0.1	0.726
5	2023-24	Conventional Street lights and Shed lights replaced by LED lights	Efficiency Related	30	0.25	1.815
6	2023-24	511-BC3 belt upgradation from 800mm to 900mm	Volume Impact Related	16	0.05	0.363
7	2023-24	Apron feeder pan modification	Efficiency Related	140	0.271	1.9602
8	2023-24	Replacement of water cooled blower with air cooled blower	Efficiency Related	6	0.01	0.0726
9	2023-24	compressor energy optimization(single compressor used instead of two compressor for unloading 2 flyash bulkers at a time)	Efficiency Related	0	0.01	0.0726
10	2023-24	Motorized valves instead of pneumatic operated valves for Wagon tippler,clinker silo,Coal mill,Hopper building circuits.	Efficiency Related	2	0.01	0.0726
11	2023-24	Increase in Mill PRI by process optimization & improving mill reliability)	Efficiency Related	0	0.05	0.363
12	2023-24	Reduction in Packing Plant Power Consumpion by carring out various energy conservation measures.	Efficiency Related	0	0.05	0.363
13	2023-24	VFD installations for silo bag filters	Efficiency Related	25	0.451	3.267
			Total	219.00	1.37	9.95

List of Major Encon project planned in FY 2024-25

Number	Cluster	Plant	Level	Domain	Initiative	TL	Owner	Dept	FY_24 (Baseline)	Budget FY25	UoM	Savings (in crs.)	Capex (Crs.)	Capex Status
I_498	South	Kudhitini	L6	SEEC Grinding	DP based auto purging for Bag filters to reduce the purging air losses and thereby reducing the compressor power.	Samson Wesley	samson.wesley@adani.com	Production	32.4	28	KWh/t	0.01	-	Approved
I_499	South	Kudhitini	L6	SEEC Grinding	Provison of Level cut off sensors for all over head utility water tanks to avoid pumping power losses.	Rajalingam	rajalingam.chokkalingam@adani.com	E&I	32.4	28	KWh/t	0.02	-	Approved
I_502	South	Kudhitini	L6	SEEC Grinding	Minimizing MTTR (down time of belt conveyor) by providing LED light interlock during malfunction of Belt pull cord contact..	Prideep Joghee	prideep.joghee@adani.com	Production	-	-	NAI	0.05	-	Approved
I_504	South	Kudhitini	L6	SEEC Grinding	Reducing electrical energy by installing VFD and optimizing the output of Bag filter drives based on dust laden of incoming raw materials.	Raja lingam	rajalingam.chokkalingam@adani.com	E&I	32.4	28	KWh/t	0.52	1.64	Approved
I_507	South	Kudhitini	L6	SEEC Grinding	Optimizing the mill feed circuit and downstream circuit timings to minimise the idle power.	Prideep Joghee	prideep.joghee@adani.com	Production	32.4	28	Kwh/t	0.05	-	Approved

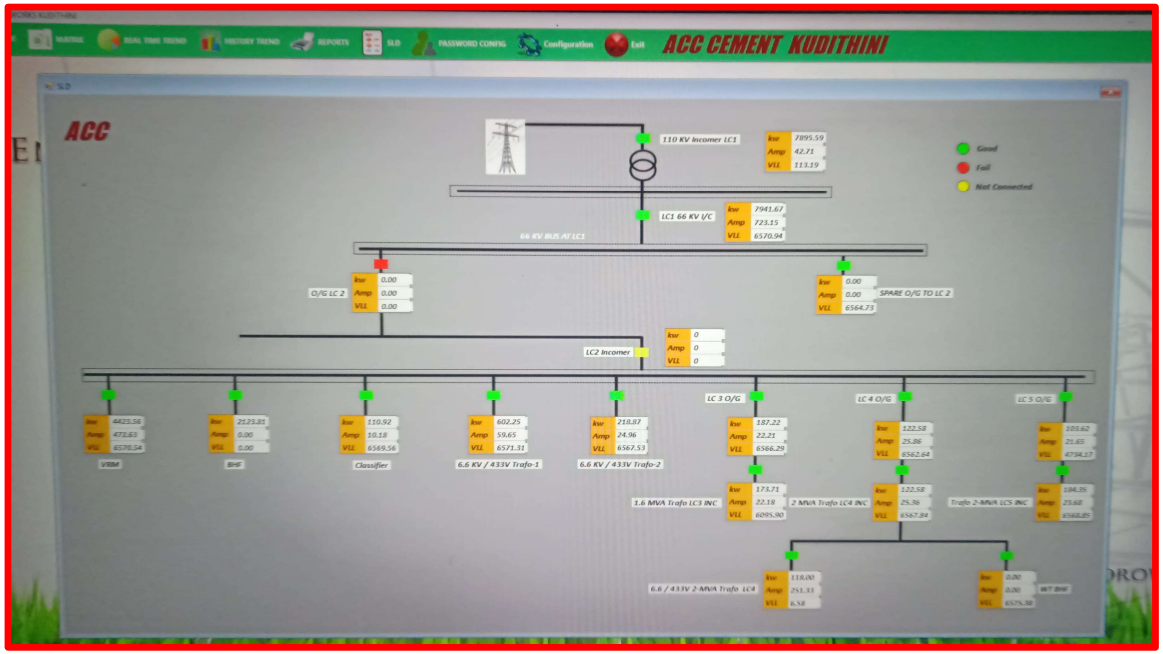
GHG & Net Zero Commitments

- **The Company is committed to reduce its carbon footprint. It is a signatory to SBTi to be Net Zero by 2050. ACC Limited commits to reduce Scope 1 GHG emissions 21.3% per tonne of cementitious material by 2030 from a 2018 base year.**

- **ACC Limited also commits to reduce Scope 2 GHG emissions 48.4% per tonne of cementitious material within the same timeframe.**

These includes:
1) Improved technology
2) Energy efficiency
3) Use of renewable energy
4) Use of green energy like WHRS
5) Use of alternate fuels
6) Use of alternate raw materials
7) Reduction in clinker factor and having larger share of green products in its portfolio

Existing EMS system @ KCW



FeederName	StartKwh	EndKwh	Consumption	Start Runhr	End Runhr	Total
LC2_PMCC-1	20005982.4	20017473.9	11491.5	57511.3	57533.3	22.00
LC2_PMCC-2	15038217.3	15043798.3	5581	55559.6	55581.6	22.00
LC2_L61-FN1-M1	135983.3	136364.2	380.9	9032.5	9039	06.55
LC2_L61-MD1-COALMILL	62040.34	62320.76	280.42	0	0	00.00
LC2_S51-BL1 SCREW BLOWER VFD	392495.1	392495.1	0	19785.1	19785.1	00.00
LC2_L61-CX1-M1(AIR COMP)	122526.3	122526.3	0	1799.33	1799.33	00.00
LC2_S51-PQ2.M1	703247.62	703738.82	491.2	0	0	00.00
LC2_S51-PQ1.M1	413710.56	414202.27	491.71	0	0	00.00
LC1-(LIGHTING TRANSFORMER)	206098.3	206189.6	91.3	58665.5	58687.5	22.00
LC2_S51-FA2(DILUTION AIR FAN)	4492.21	4536.6	44.39	0	0	00.00
LC2_U61-CX1	419313.76	419317.31	3.55	0	0	00.00
LC2_S61-CX3	878070.91	878070.91	0	0	0	00.00
LC2_S61-CX5	819328.77	819352	23.23	0	0	00.00
LC2_S61-CX4	375831.9	377592.83	1760.93	0	0	00.00
LC2_S91-BE1.M1	23168.18	23437.27	269.09	0	0	00.00
LC2_S61-CX2	496822.56	497449.12	626.56	0	0	00.00
LC2_S31-CX1	0	0	0	0	0	00.00
LC2_U91-BE1.M1	1904956.4	1905991.9	1035.5	35895.4	35914.2	18.58
LC2_WELDING(MILL BLDG)	21152.1	21152.1	0	1459.42	1459.42	00.00
LC2-(LIGHTING TRANSFORMER)	243214.77	243773.44	558.67	0	0	00.00
LC2_PACKAGE AC	1340478.5	1340899.2	420.7	57299.3	57321.3	22.00
LC2_S61-CX1	308228.86	309162.98	934.12	0	0	00.00
LC2_MCC-01(RFA)	9664352.9	9671219.4	6866.5	51058.2	51079.1	20.59
LC2_S31.FN3	567679.9	568075.8	345.9	20943.5	20960.4	16.59
LC2_U91-MI1 SILO	101600.66	102096.75	496.09	0	0	00.00
LC2_S31-BC1-VFD	0	0	0	0	0	00.00
LC2_S31&S61	199597	199676.5	79.5	54923.5	54945.5	22.00
LC2_S61-PU2	0	0	0	0	0	00.00
LC2_S31.FN4	525778.2	526414.7	636.5	13513.3	13531.1	17.58
LC2_S61-FN3	1125012.8	1125577.1	564.3	26888.6	26906.1	17.55
LC2_S61-FN2	962956.6	963391.1	434.5	33787.1	33804.4	17.03
LC2_S61-PUE	850181.9	850680.5	498.6	36113.2	36131.1	17.59
LC2_S61-PU1	12667.5	12670.1	2.6	1618	1618.31	00.31
LC2_MCC-05(IF-A)	182395.2	182449.3	54.1	18666.4	18667.1	00.57
LC2_S51-FA1	2130.2	2133.3	3.1	9783.54	9805.5	21.11
LC2_MCC-4B	0	0	0	0	0	00.00
LC2_MCC-03	251317.9	252647.87	1329.97	0	0	00.00
LC2_U91-FN2	598806.9	599118.6	311.7	48129.1	48148.4	19.01

- Present EMS system is connected with all drives & reports can be displayed on real time basis & every hourly/ shift wise/Daily monitoring system is in place.

ACC KCW Plant awarded Gold rating in 5S AWMS.

KCW- Safety Achievements

- INCIDENT FREE DAYS – 3667 (2nd best in AAA Cement Business).
- ZERO HARM: 6.58 Million Man.hrs (1st best across AAA Cement Business)

Recognition on AAA Corporate level for Best performing Plant in Safety

Achievement in Quality

- **ACC - KCW awarded "Certification of excellence" by BIS for Zero Product failure**

adani

Cement

Prideep Joghee
Prideep.joghee@adani.com

Thankyou