23RD NATIONAL AWARD FOR EXCELLENCE IN ENERGY MANAGEMENT – 2022 VEDANTA LIMITED, SMELTER PLANT 2, JHARSUGUDA

Team Details

Shashi Kant Shah– AGM (Lead Process Potline)

Mohammed Ishan– Associate Manager (Lead Electrical Bakeoven)

K V D S Vinay Kumar – Assistant Manager (Energy Cell Coordinator)

OUR CORE PURPOSE & VALUES

CORE PURPOSE

Vedanta is a globally diversified natural resources company with low cost operations. We empower our people to drive excellence and innovation to create value for our stakeholders. We demonstrate world class standards of governance, safety, sustainability and social responsibility.

OUR VALUES







TRUST | ENTERPRENUERSHIP | INNOVATION | EXCELLENCE | INTEGRITY | CARE | RESPECT

SMELTER OVERVIEW


Pot Room

Smelter 1

- ✓ GP – 320 Prebake Technology
- ✓ No. of Lines – 2
- ✓ No. of Pots – 608
- ✓ Pot Amperage – 325 KA
- ✓ Design Capacity – 500 KTPA

- ✓ GAP – 2 Paste Plants (Outotec GMBH, Germany)
- ✓ Bake Oven – 4 Bake Furnaces
- ✓ Anode Rodding Plant

- ✓ Ingot Casting Mill – 3 Lines
- ✓ Wire Rod Mill – 2 Lines
- ✓ Billet Casting Mill – 1 Line
- ✓ Slab Casting – 1 Line

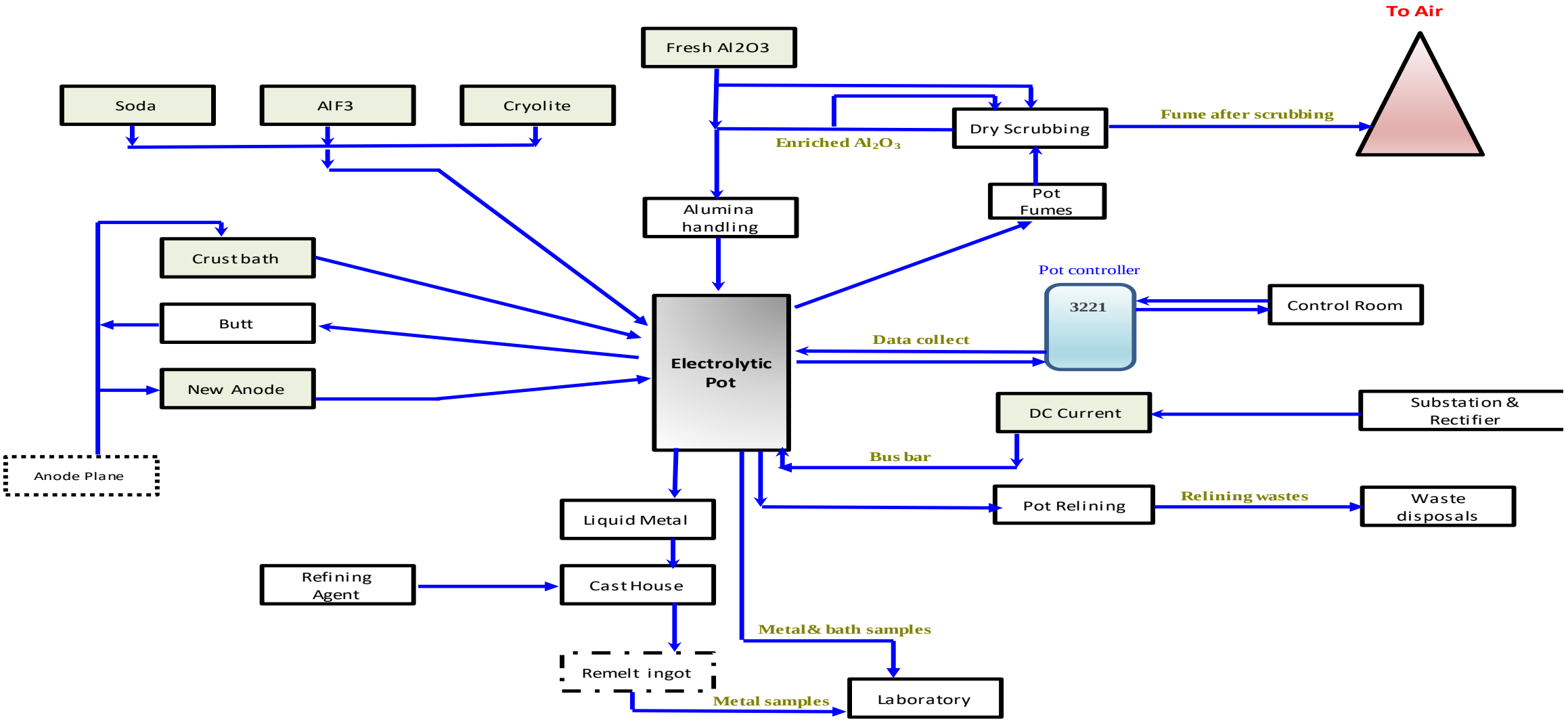
Smelter 2

- ✓ GP – 340 Prebake Technology
- ✓ No. of Lines – 4
- ✓ No. of Pots – 1322
- ✓ Pot Amperage – 340 KA
- ✓ Design Capacity – 1250 KTPA

- ✓ GAP – 2 Paste Plants (Outotec GMBH, Germany)
- ✓ Bake Oven – 6 Bake Furnaces
- ✓ Anode Rodding Plant

- ✓ Ingot Casting Mill – 4 Lines
- ✓ Wire Rod Mill – 2 Lines
- ✓ Billet Casting Mill – 3 Line
- ✓ Cast Bar Mill – 2 Lines
- ✓ SOW Cast – 1 Line

Process Flow Diagram

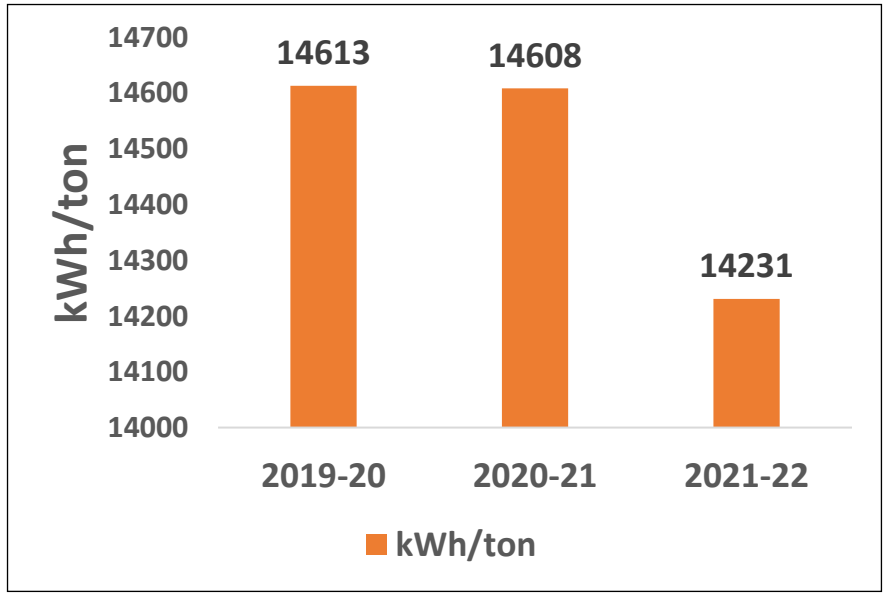


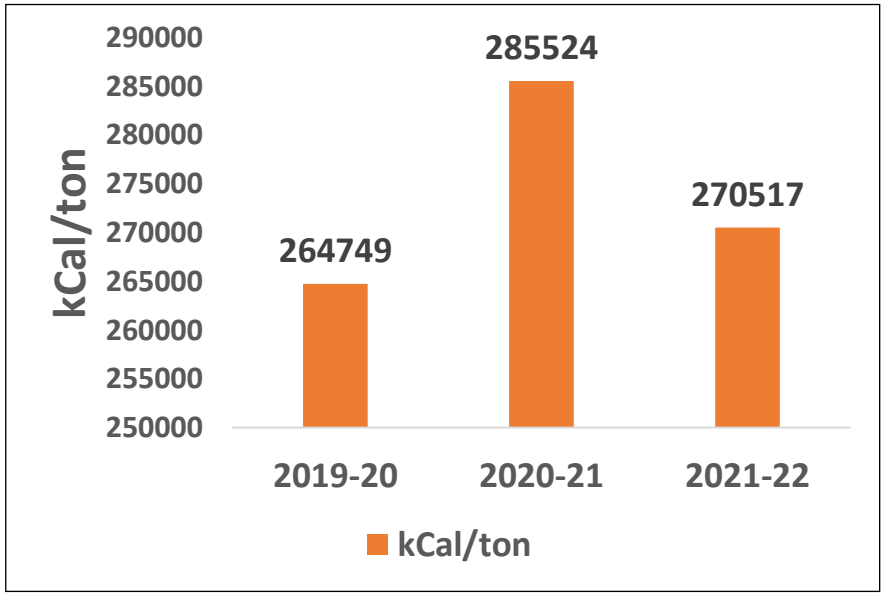
Energy consumption overview

	Electrical Energy Million kWh	Thermal Energy Million kCal	Production (Hot Metal) MT
FY 2019-20	11741.085	212714.15	803456
FY 2020-21	12681.923	247870.31	871591
FY 2021-22	16258.724	309057.571	1142469

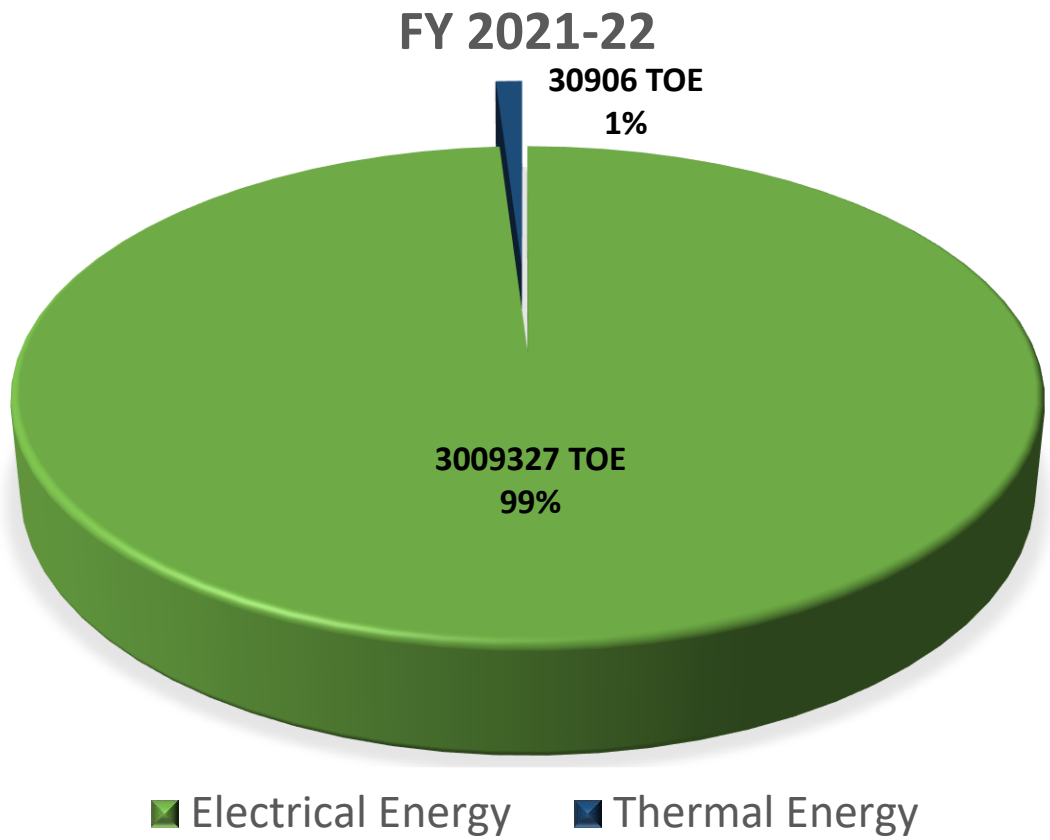
Energy Sources:

- **Electrical Energy: CPP, Grid**
- **Thermal Energy: HFO, Propane**

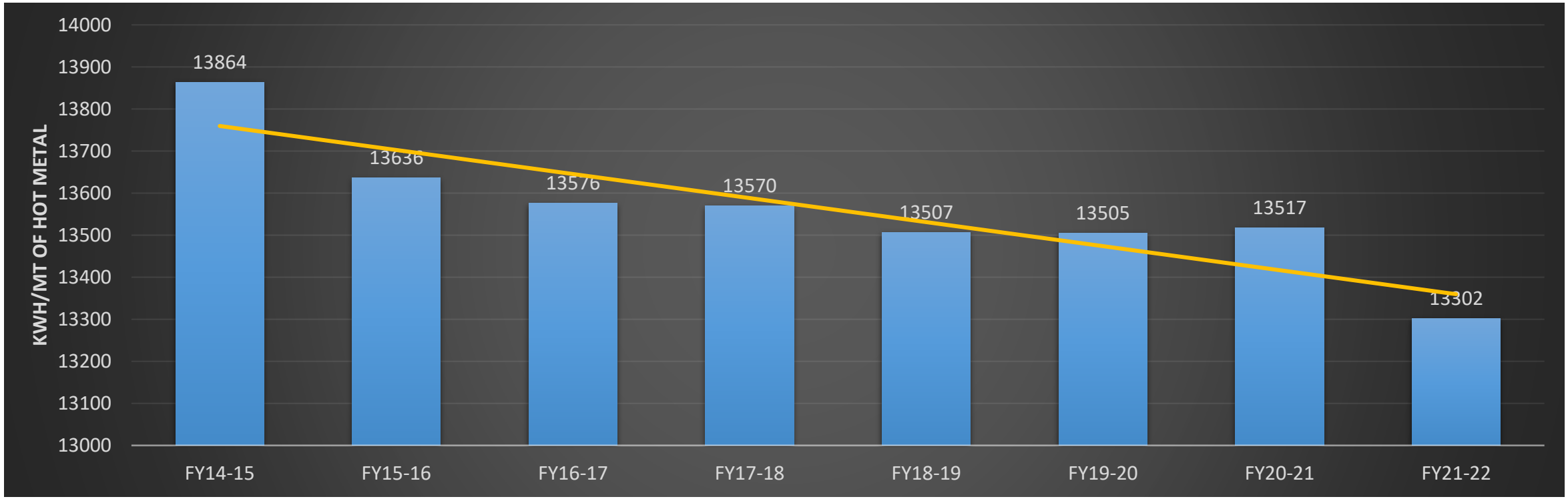




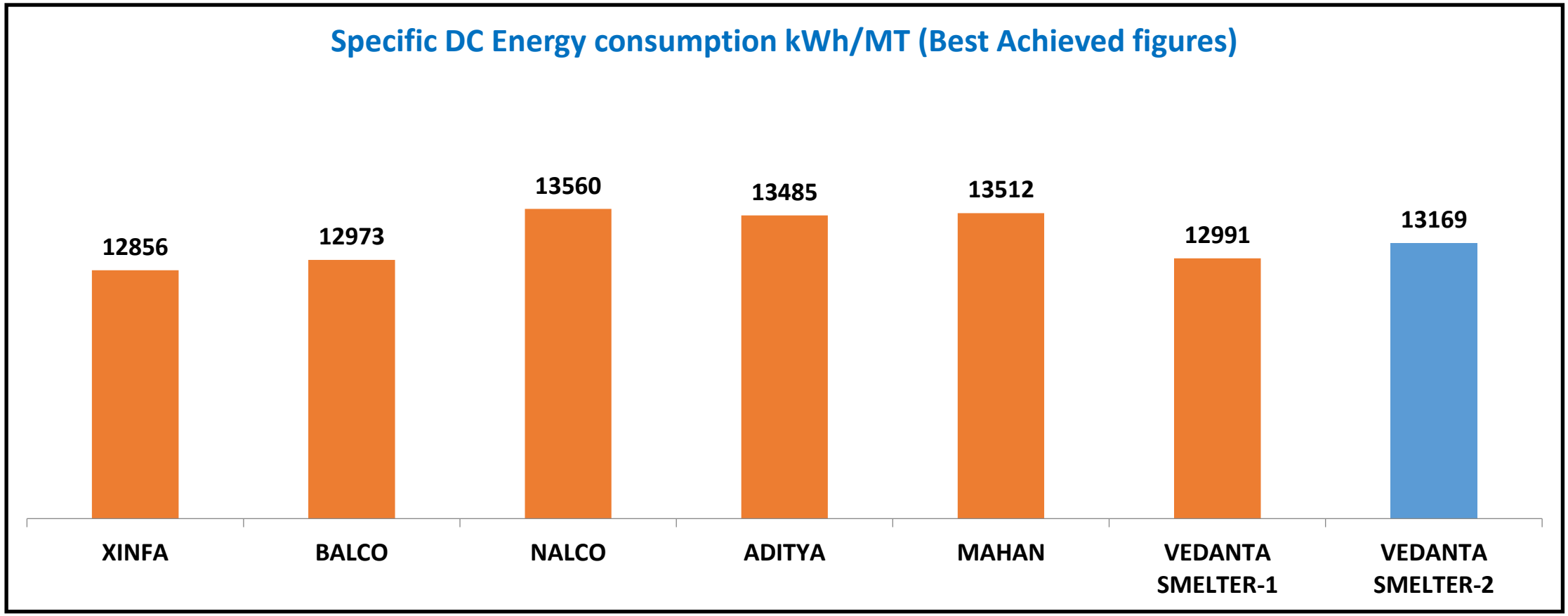
Energy consumption overview



Specific DC Power Cons. Trend (KWH/MT AL)



Specific DC Power Benchmarking



List of Major EnCon Projects 2022-23

S.No	Title of project	Annual Electrical saving (Million kWh)	Annual Thermal saving (Million kCal)	Investment (Rs in Million)
1	Replacement of Non ES pots by 100% graphatised cathodes	183.944	0	3640
2	Replacing conventional lights with LED lights	1.315	0	5.39
3	FTP-3,4 By pass duct replacement to stop draft loss	0.999	0	6.00
4	Elimination of Hot Well Pump	0.288	0	1.0
5	Overhauling of 22 kw GUG-5,6 HPP Motor	0.211	0	0.05
6	Installation of VFD in Shot Blast Turbine Motor	0.180	0	1.50
7	Old BR/CR motor to be replaced with IE3 motor	0.114	0	0.472
8	Installation of VFD in Cold Well Pumps	0.132	0	4.00
9	2nos VFD installation in Cooling ramp	0.023	0	1.60

Total 15 EnCon projects are planned in FY23 with and investment of 3660 Million INR.

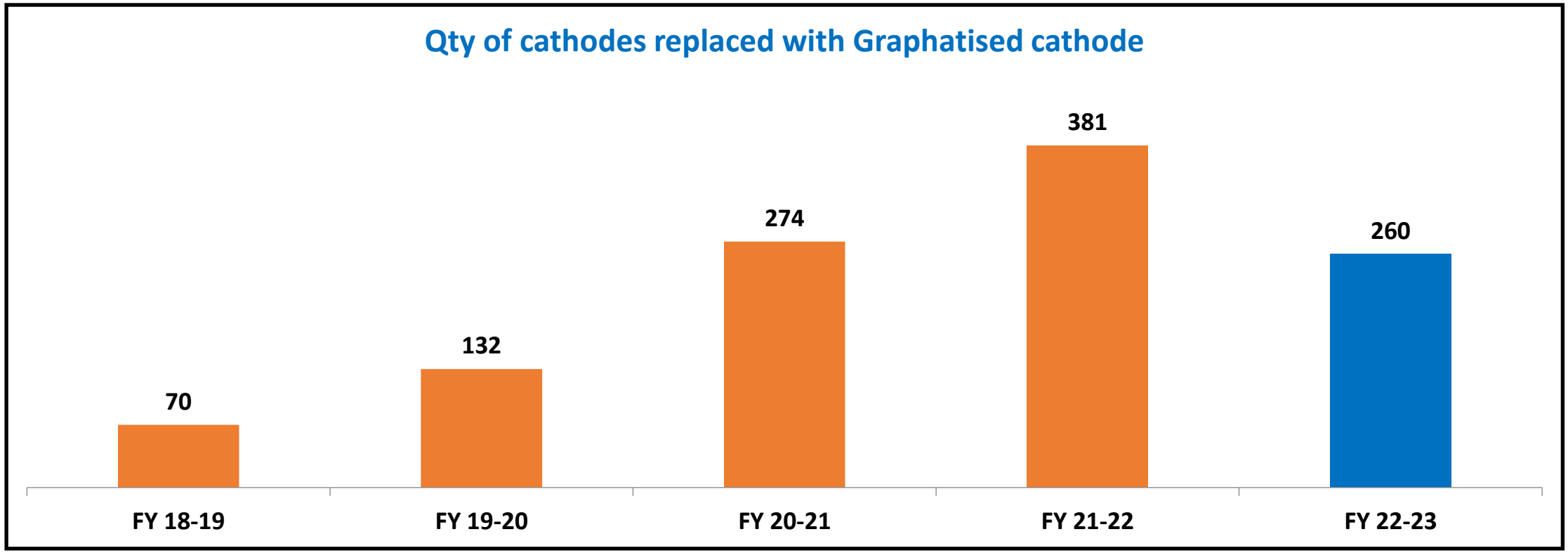
Total Electrical energy savings = 187.206 Million kWh

Energy Saving Projects Summary

Year	No of Energy Saving Projects	Investments (INR Million)	Electrical Savings (Million kWh)	Thermal Savings (Million kCal)	Savings (INR Million)
FY 2019-20	17	1733.746	36.529	37.5	125.789
FY 2020-21	17	3844.45	43.589	1257.3	112.32
FY 2021-22	19	5345.99	316.149	0	1210.87

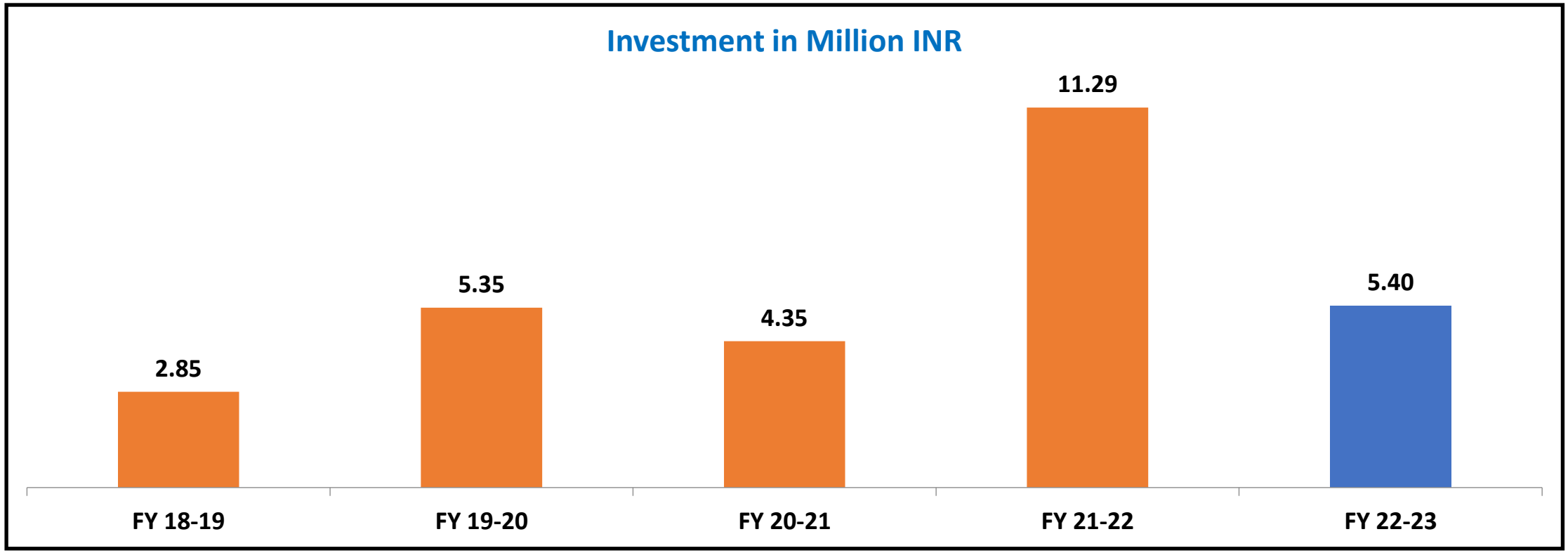
A total of 53 Energy saving projects are being implemented in last three years with a total investment of 10924 Million INR.

Graphatised Cathode Implementation



Target is to complete Graphatised cathode implementation in 100% Pots by FY25

Conversion of lights to LED



Continuous investment done in replacement of conventional lights to LED.

Procurement of spares for conventional lights is stopped

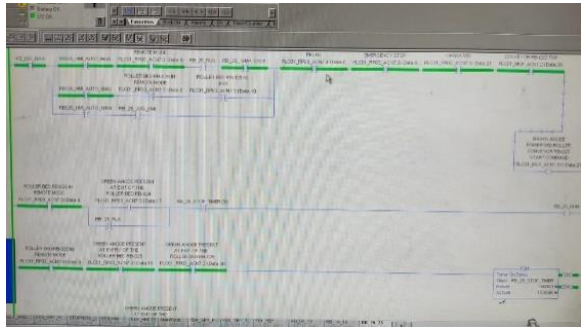
ELIMINATION OF IDLE RUNNING OF EQUIPMENTS

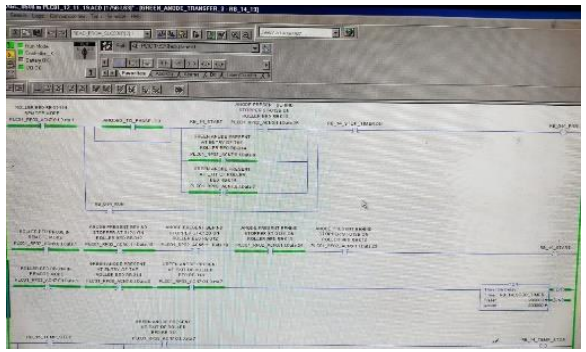
- R&T Group of GAP: Both R & T group used to run the entire time regard less whether the downstream equipment not operational. PLC logic is implementer in R & T group if downstream equipment is not running for 30mins due to any plant breakdown or maintenance job they will automatically stop

- Coke conveying belt of GAP: Load cell is installed for coke conveying belt 101A, On an average running hours of conveyor reduced by 1hr.

- Bakeoven: Idle running of HPP, RB-14 conveyor in grouping CC-2, RB-25 conveyor in ungrouping CC_2 is eliminated by implementing logic in PLCs.

This resulted an annual saving of 170 MWH in FY22

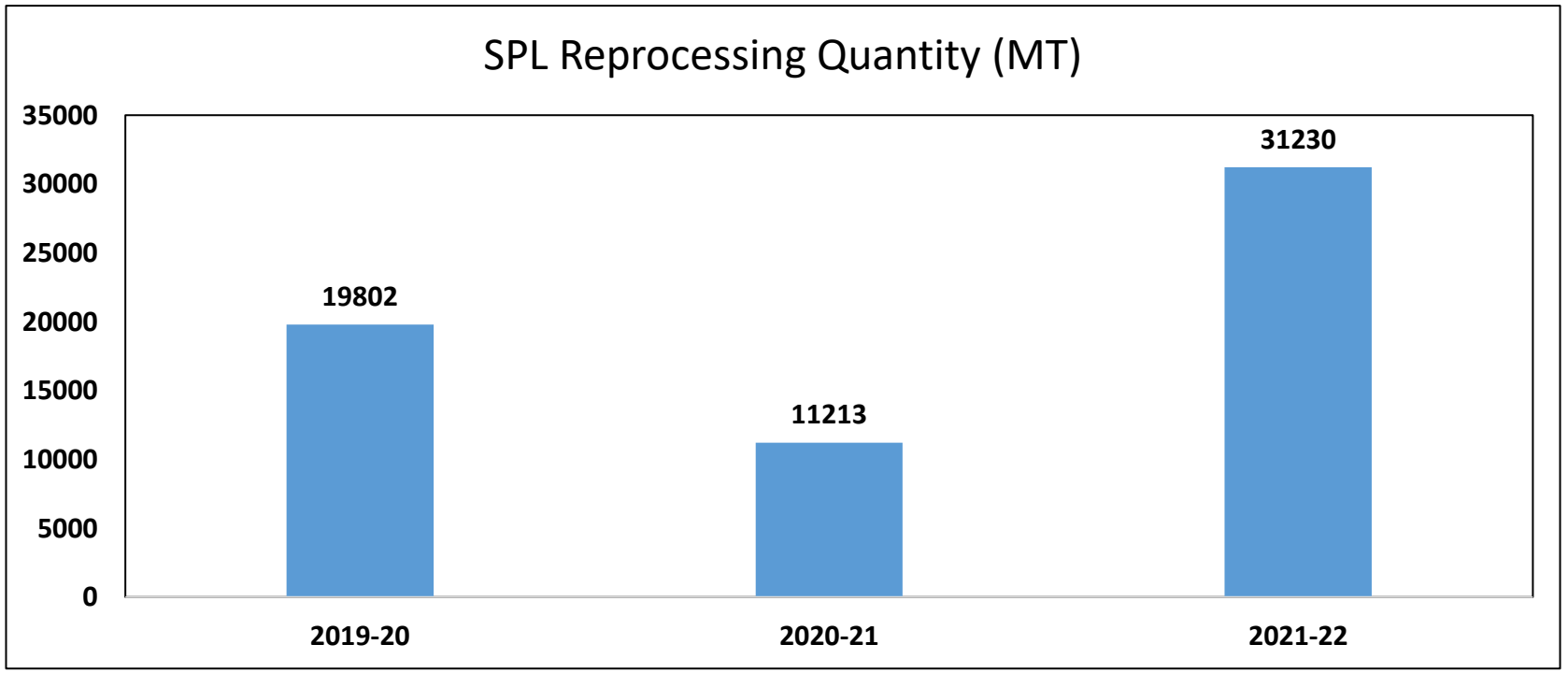




PLC logic of RB-14 conveyor

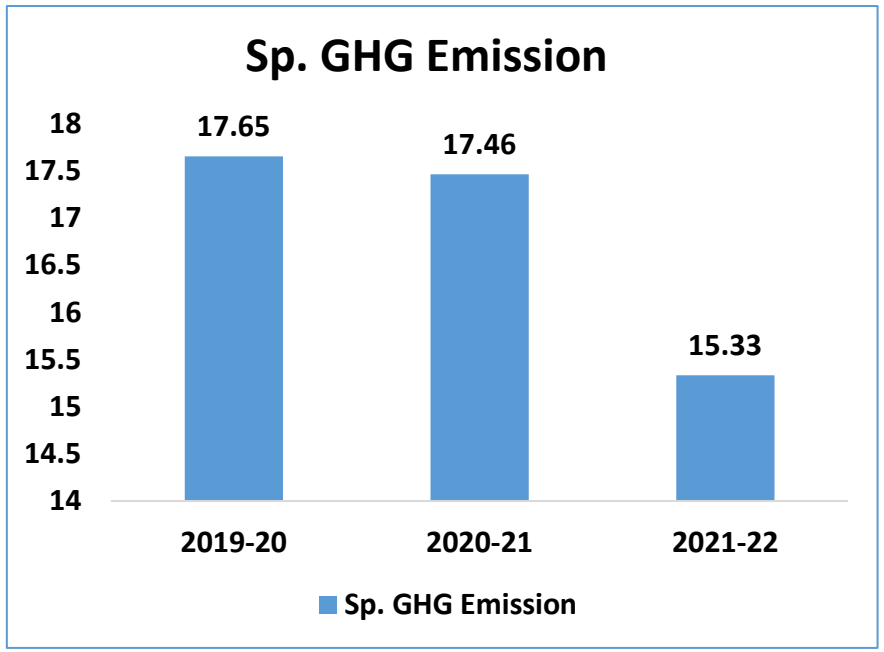
WASTE MANAGEMENT

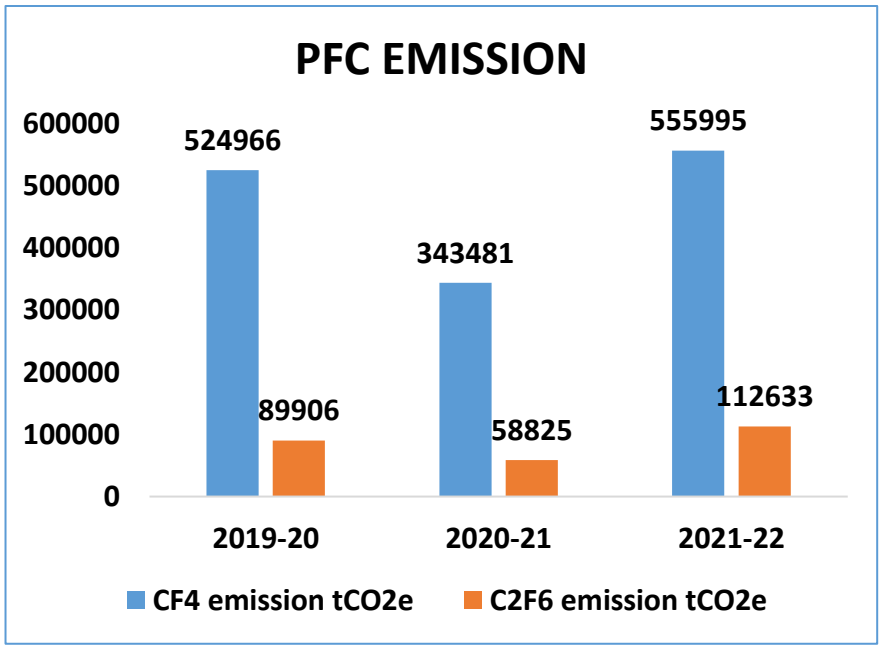
Sl No	Year	Type of waste generated	Quantity of waste generated (MT/year)	Disposal Method
1	2019-20	Spent Pot lining	19802.41	Disposed through State PCB authorised agency
2	2020-21	Spent Pot lining	11212.52	
3	2021-22	Spent Pot lining	31230	



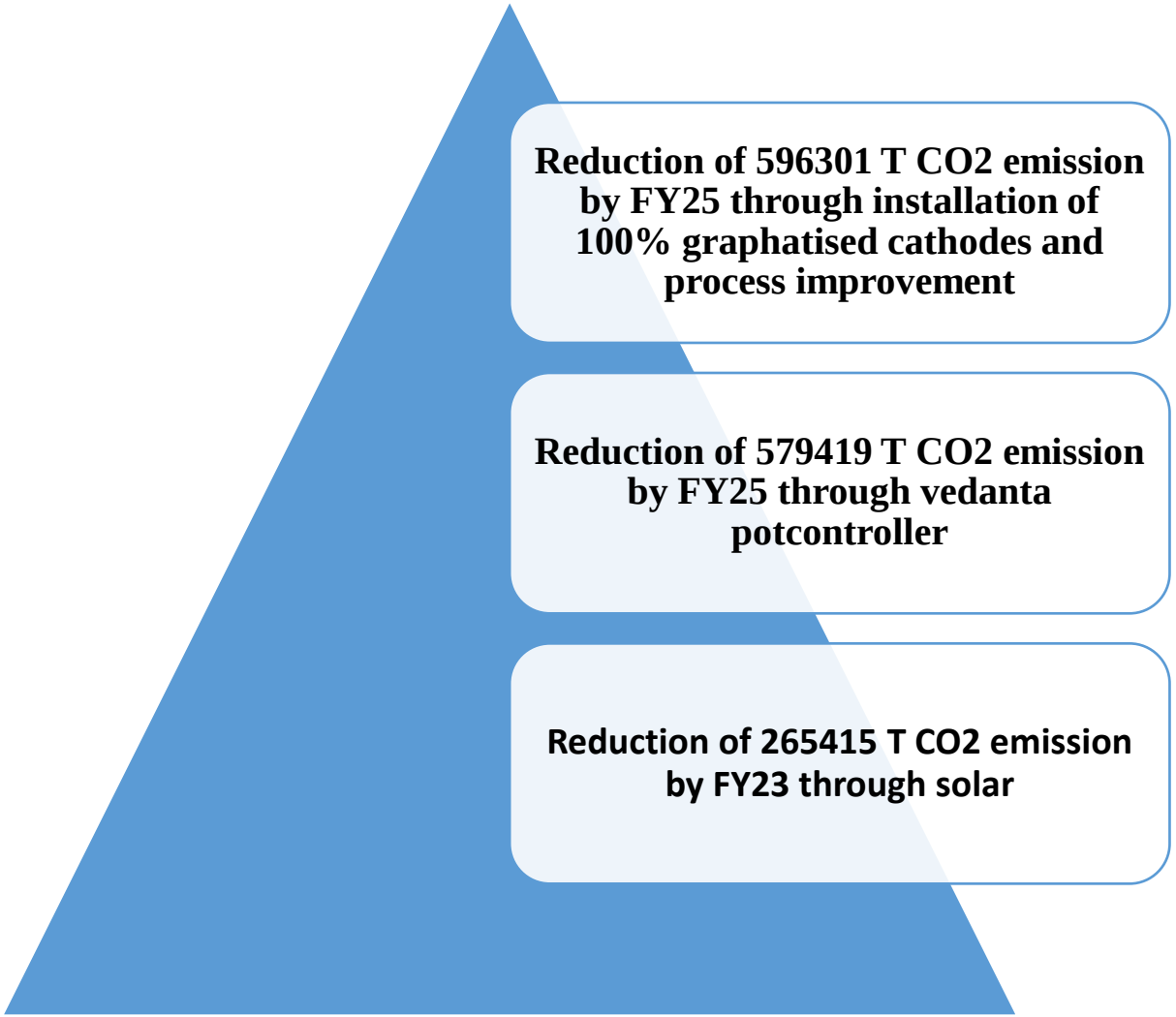
GHG Inventorisation

Year	Scope 1 emissions CO_2e (MT)	Scope 2 emissions CO_2e (MT)	Scope 3 emissions CO_2e (MT)	CO_2e MT
2019-20	2,28,93,187	8,02,665	3,77,712	2,40,70,583
2020-21	2,39,26,260	5,10,837	3,39,940	24,437,097
2021-22	2,38,95,350	19,56,916	50,05,928	3,08,58,194



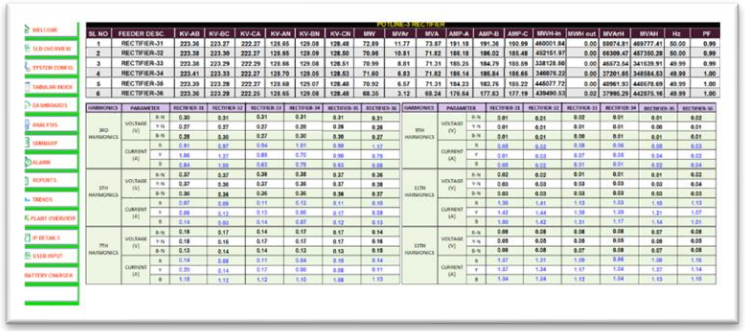


Long-term Action Plans for CO2 emission reduction

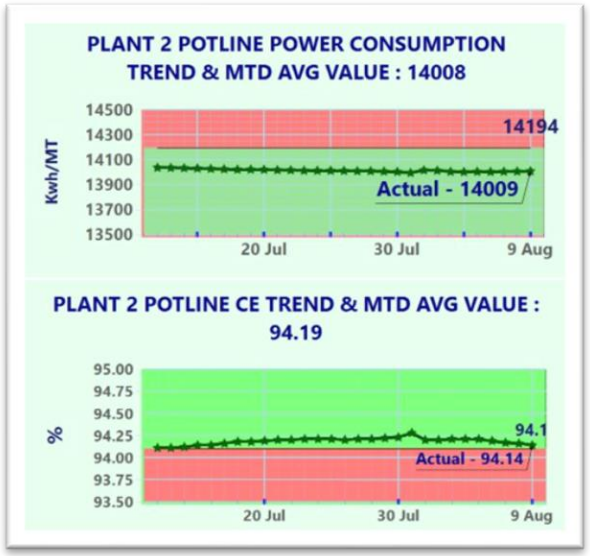


GHG emissions data is publicly disclosed in the Vedanta group sustainability report

TEAMWORK, EMPLOYEE INVOLVEMENT & MONITORING



- Electrical energy is centrally monitored through EnMS system.
- Total 410 nos Energy meters from 400kV level to 11kV are integrated in it.



Digital dashboards used in war room

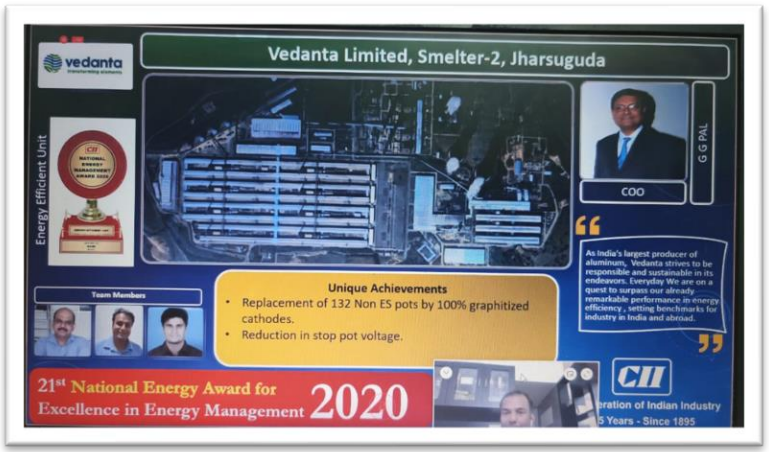
- Energy performance discussed in war rooms on daily basis.
- Monthly review meetings done at Department level and SBU level by respective heads.
- Monthly MR Review is done where ISO 50001 requirements and ongoing energy saving projects are reviewed.
- EnMS ISO 50001 awareness training and Internal auditor trainings was conducted in FY 20-21.
- Employee involvement from all the levels is ensured for effective implementation of energy saving measures.

National Energy Conservation Week Celebration

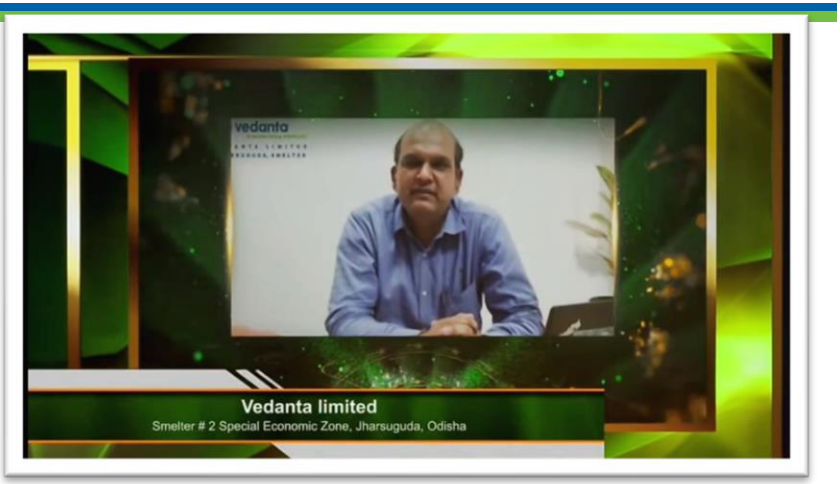
- Energy awareness campaign in plant by different departments
- Online quiz competition for Vedanta employee
- Awareness training for school children
- e-paper presentation for school
- Best energy conservation idea competition for contract partner,

AWARDS

CII Energy Efficient Unit FY 18-19



CII Energy Efficient Unit FY 19-20



SEEM Energy Awards Gold Award FY 19-20

Confederation of Indian Industry

22nd National Award for
Excellence in Energy Management 2021

This is to certify that

Vedanta Limited, Smelter-2, Jharsuguda

has been recognized as

"Energy Efficient Unit"

This acknowledgement is based on the evaluation by panel of judges at the "National Award for Excellence in Energy Management" held during 24 - 27 August 2021.

K S Venkatagiri

Ravichandran Purushotham

CII Energy Efficient Unit FY 20-21

We Vedanta Limited, Smelter-2, Jharsuguda have participated in 20th, 21st & 22nd National Award for Energy Excellence in Energy Management and secured Energy Efficient Unit award.

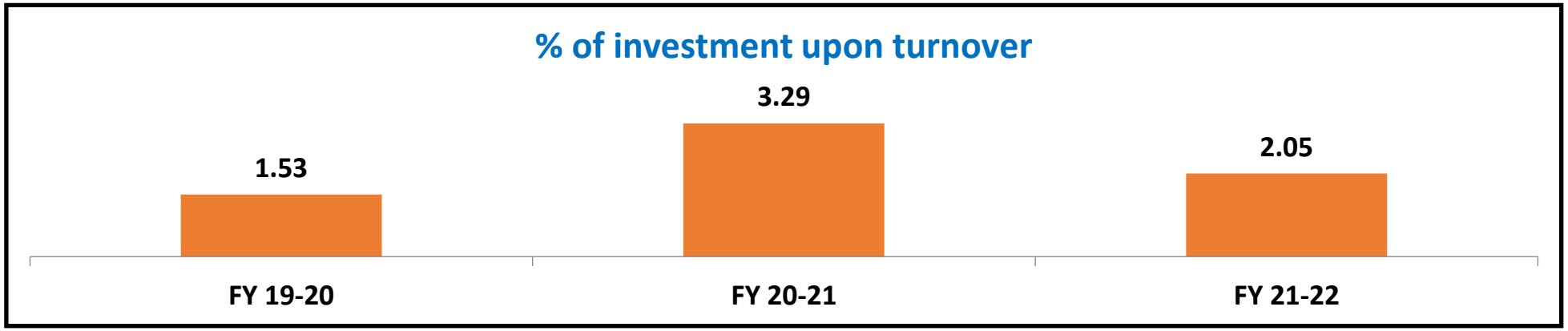
Got Gold Award in SEEM Energy Awards 2020.

Implementation of ISO 50001

ISO 50001

- Recertification done to ISO50001:2018 in FY21-22.
- All the EnCon projects are identified and have been driven by EnMS Team under ISO50001

INR 534.6 crores invested in Energy conservation projects in FY21-22, which is 2.05% of turnover.



ROAD MAP FOR ENERGY SAVING IN FUTURE AHEAD

- 100% Graphatised Cathode Implementation in 100% Pots by FY25
- Installation of solar power plant
- Use of RUC copper inserted collector bar for pot cathode.
- 100% implementation of LED
- Implementation of Vedanta Pot controller

THANK YOU!