22ND NATIONAL AWARD FOR EXCELLENCE IN ENERGY MANAGEMENT – 2021 VEDANTA LIMITED, SMELTER PLANT 2, JHARSUGUDA

Team Details

Suresh Kumar Panda – Deputy Manager (Lead Energy)

Abhishek Kumar – Manager (Head Operations Potline-6)

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

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

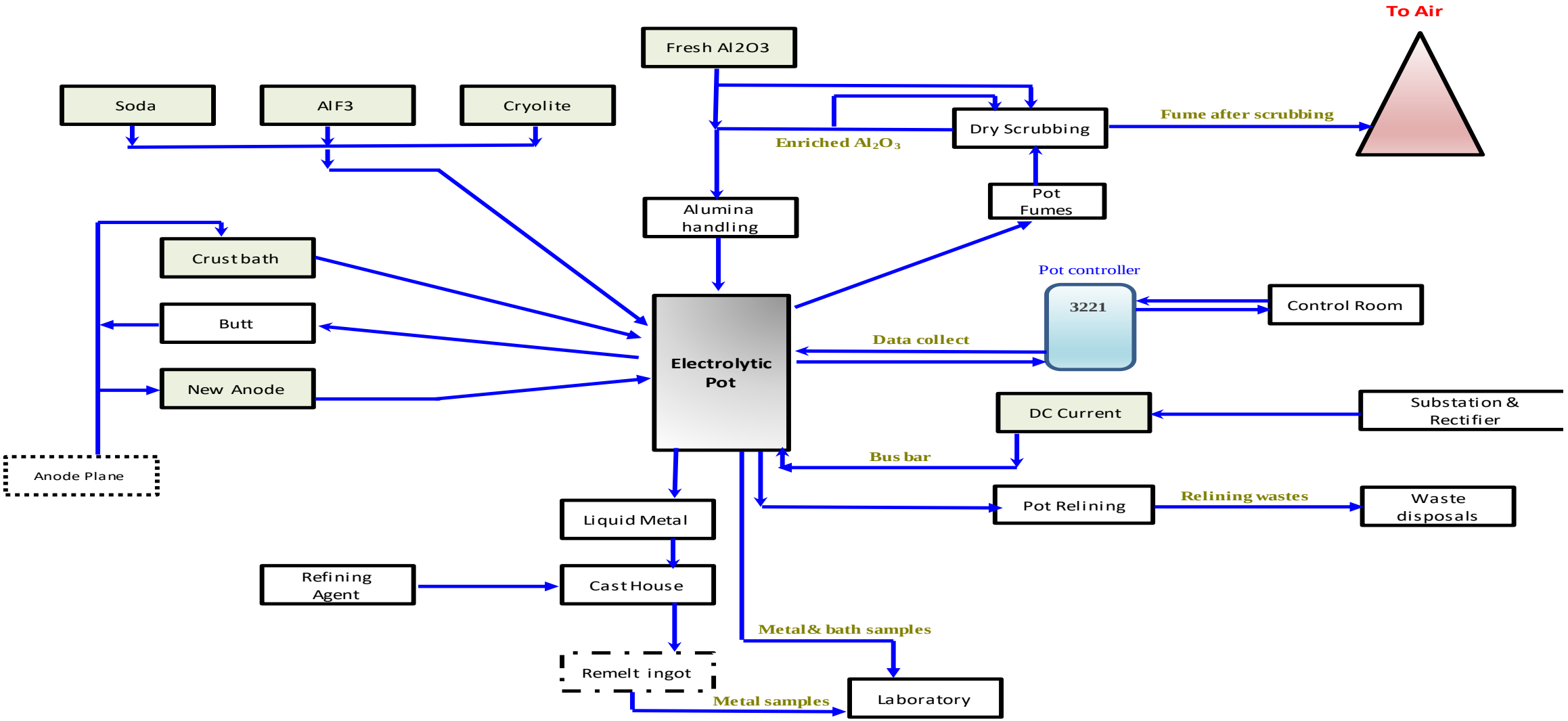
Smelter 2

- ✓ 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

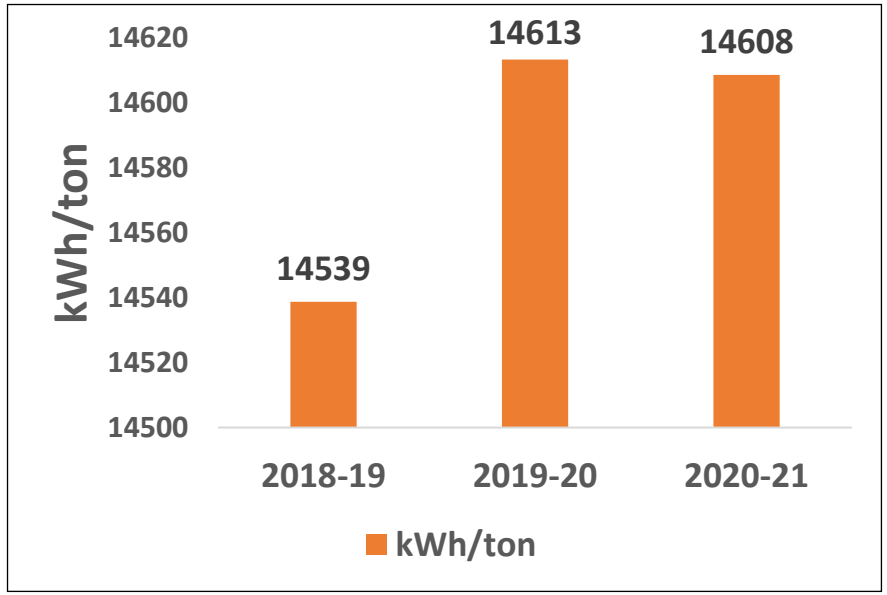


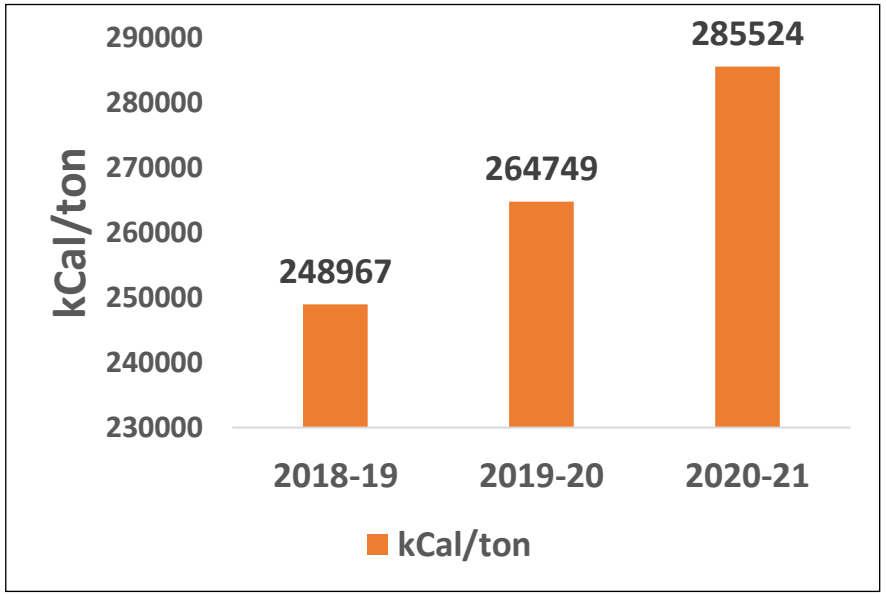
Energy consumption overview

	Electrical Energy Million kWh	Thermal Energy Million kCal	Production (Hot Metal) MT
FY 2018-19	12268.694	210094.62	843863
FY 2019-20	11741.085	212714.15	803456
FY 2020-21	12681.923	247870.31	868124

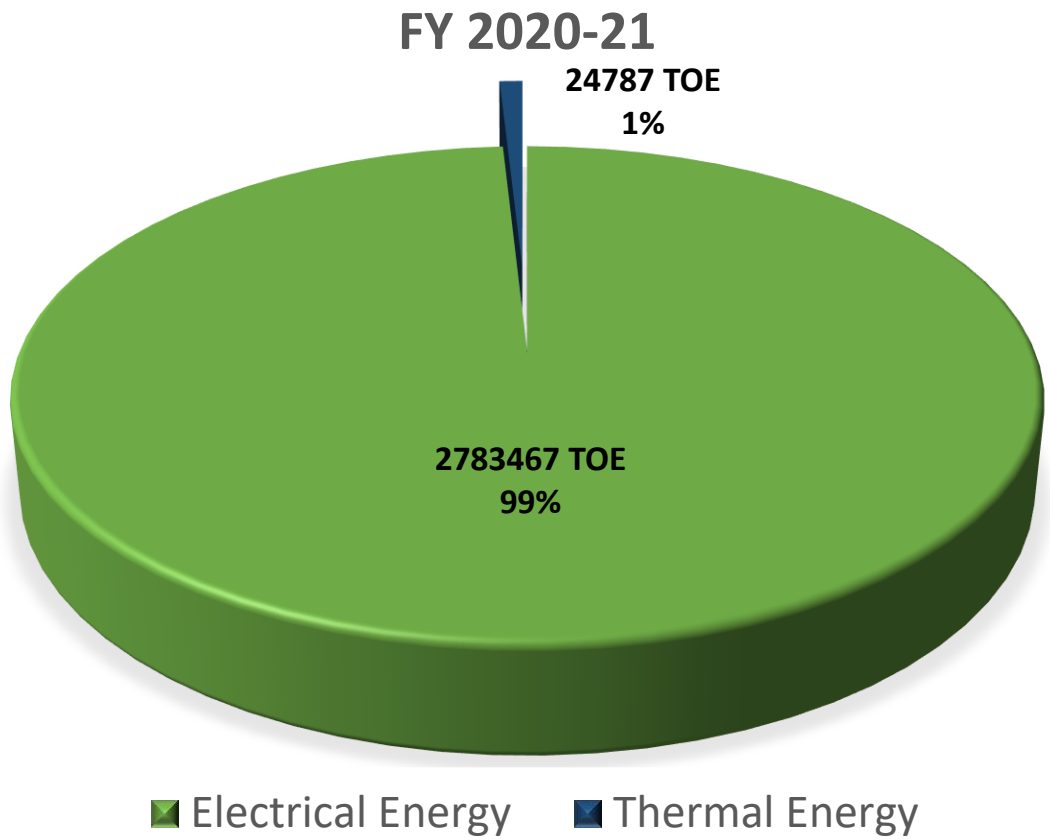
Energy Sources:

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

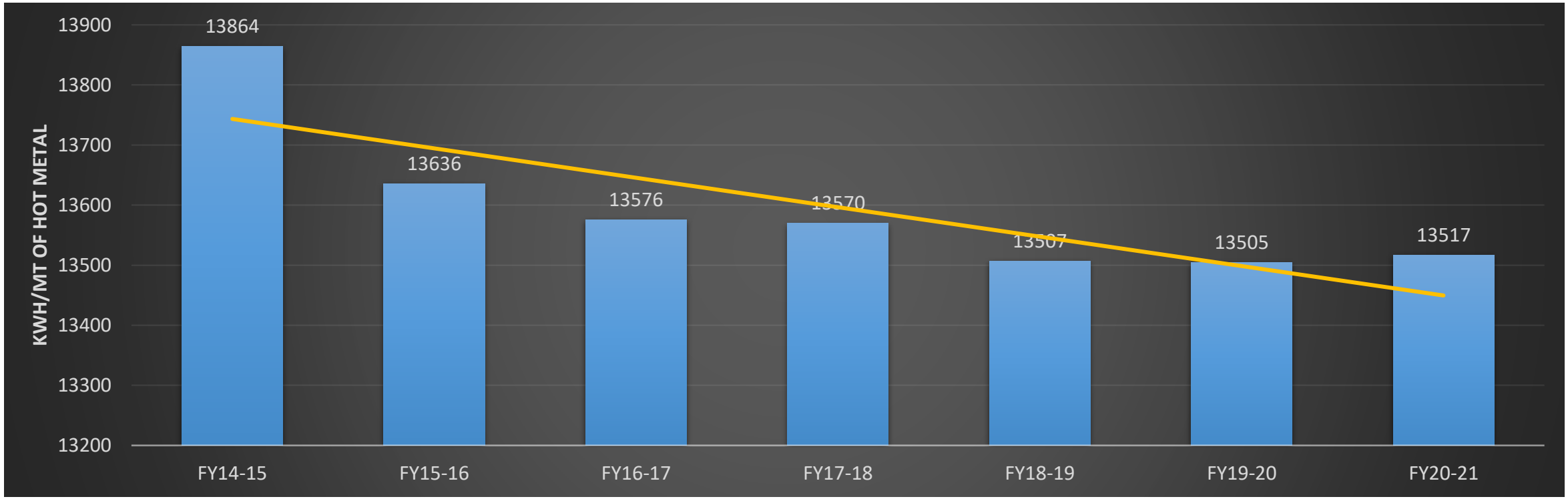




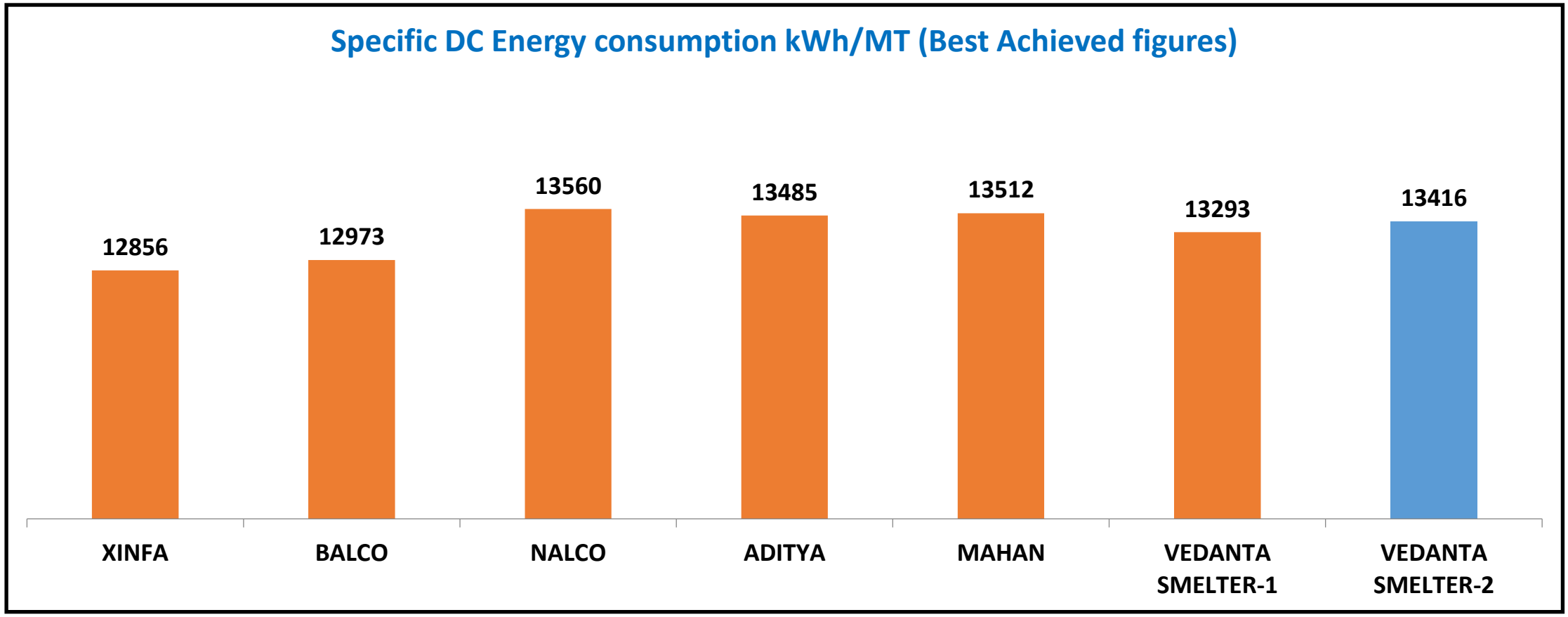
Energy consumption overview



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



Specific DC Power Benchmarking



List of Major EnCon Projects 2021-22

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	293.95	0	4648
2	Replacing conventional lights with LED lights	2.11	0	11.29
3	Optimization voltage at lighting transformers	1.614	0	0
4	Replacement of bag filters at Green Anode Plant	1.428	0	1.4
5	Reduction in specific HFO consumption of Bakeoven furnaces	0	2501.856	0
6	Improvement of suction efficiency of FTP ID fans by arresting air ingression points	1.411	0	0
7	VFD installation in Casthouse-2 Pump house	1.302	0	3
8	Optimise PID controller of furnace firing at Furnace no. - 5 of Bakeoven	0	317.265	0
9	Reduce discharge pressure of cooling water system from 6.5 to 4 kg/cm2 at Casthouse-2	0.652	0	0
10	Reduction of blower room temperature in potline FTPs	0.519	0	0

Total 31 EnCon projects are planned in FY22 with and investment of 4687.72 Million INR.

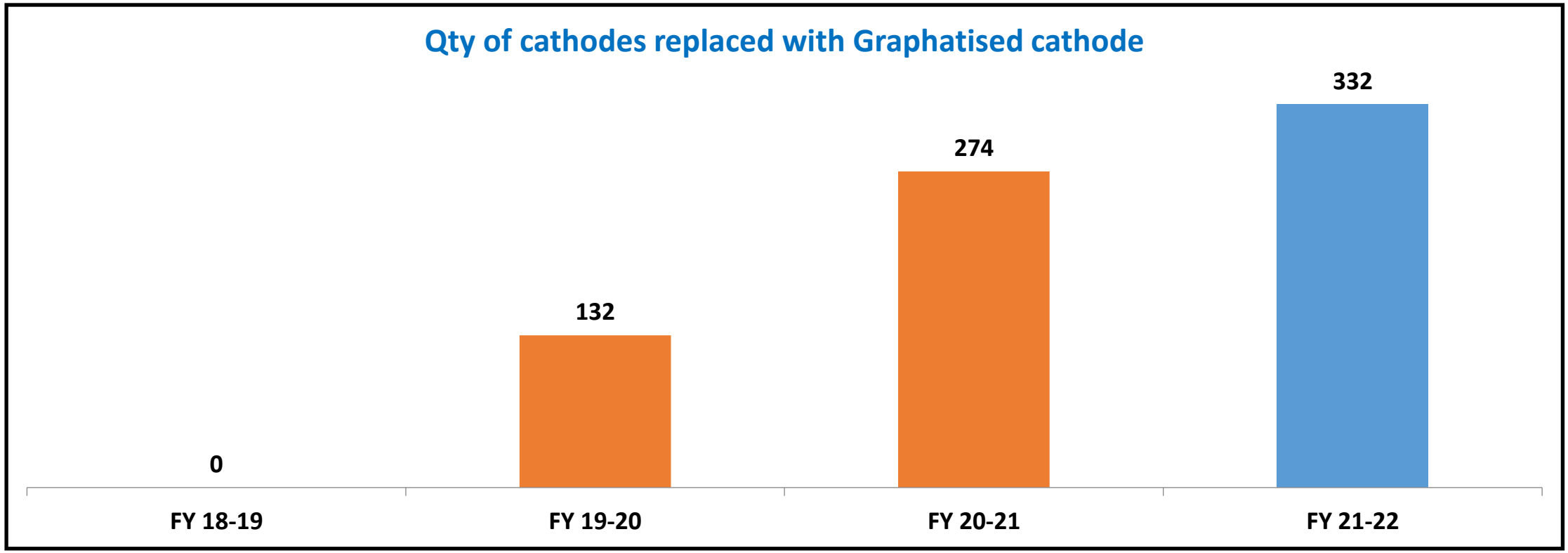
Total Electrical energy savings = 306.392 Million kWh
Total Thermal energy savings = 2819.121 Million kCal

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 2018-19	15	5.091	15.025	0	57.387
FY 2019-20	17	1733.746	36.529	37.5	125.789
FY 2020-21	17	3844.45	43.589	1257.3	112.32

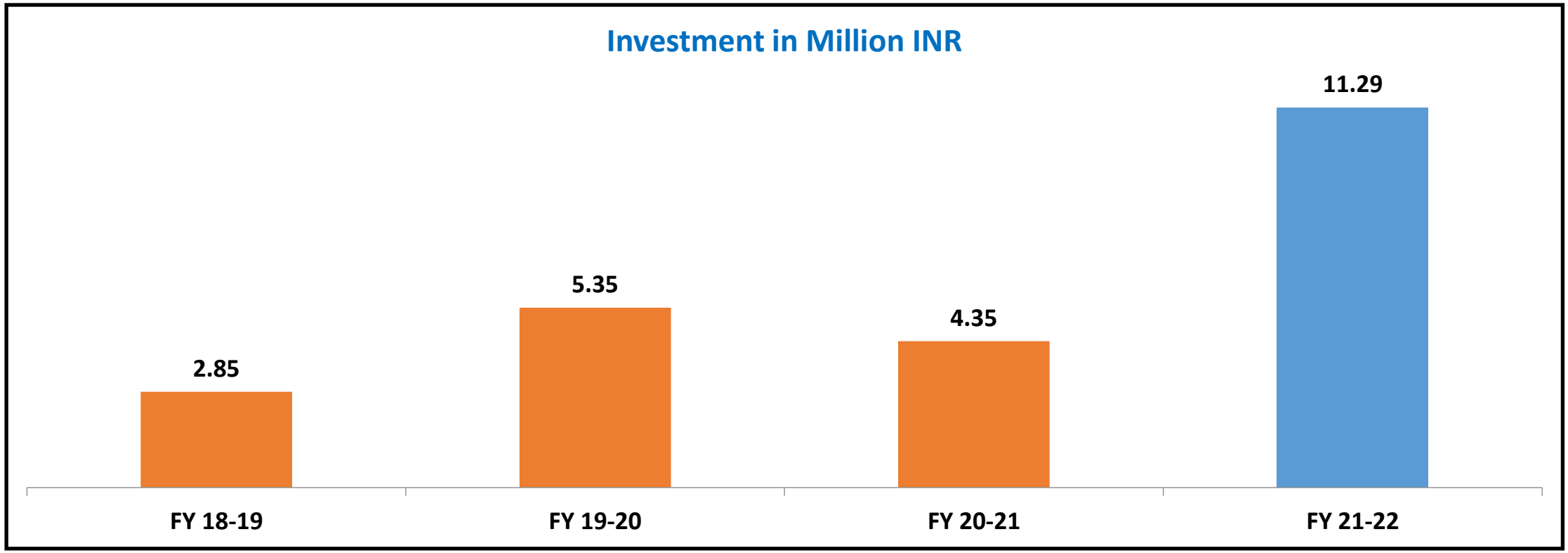
A total of 49 Energy saving projects are being implemented in last three years with a total investment of 5583 Million INR.

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

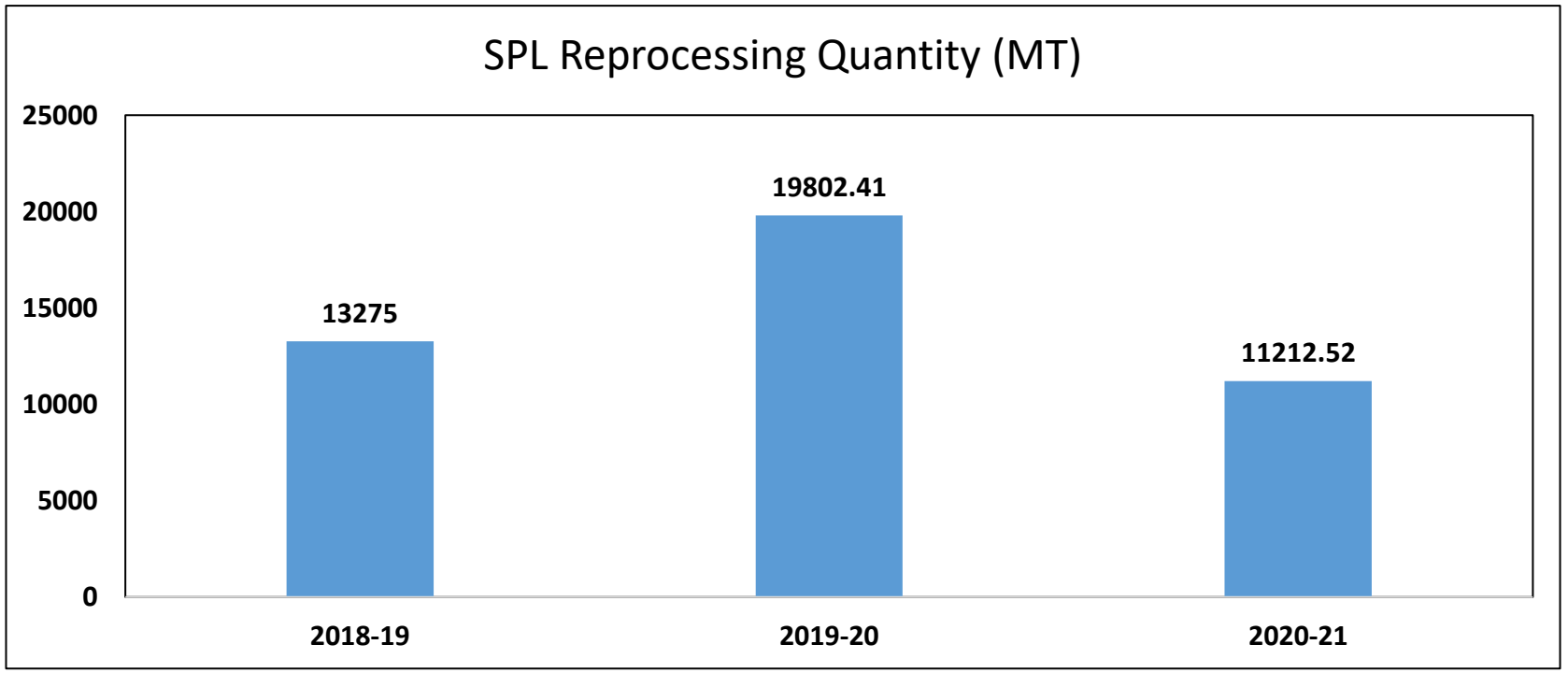
Interconnection Of Cold Well Pump With Filter Feed Pump In Rectifier Pump House

- In Rectifier pump house we are having 3nos LT motors and 2nos of HT motors for circulating raw water to rectifier units.
- Each motor is rated 350kW. All 3nos of LT motor are having VFD
- Both HT motors are running at 348kW.
- We have connected the filter feed pump header line with Coldwell header line.
- Through this connection by running 2nos of filter feed pumps at 100kW capacity we are able to compensated one HT motor.
- There is a direct saving of 148kW on daily basis.

This resulted an annual saving of 129.65MWH

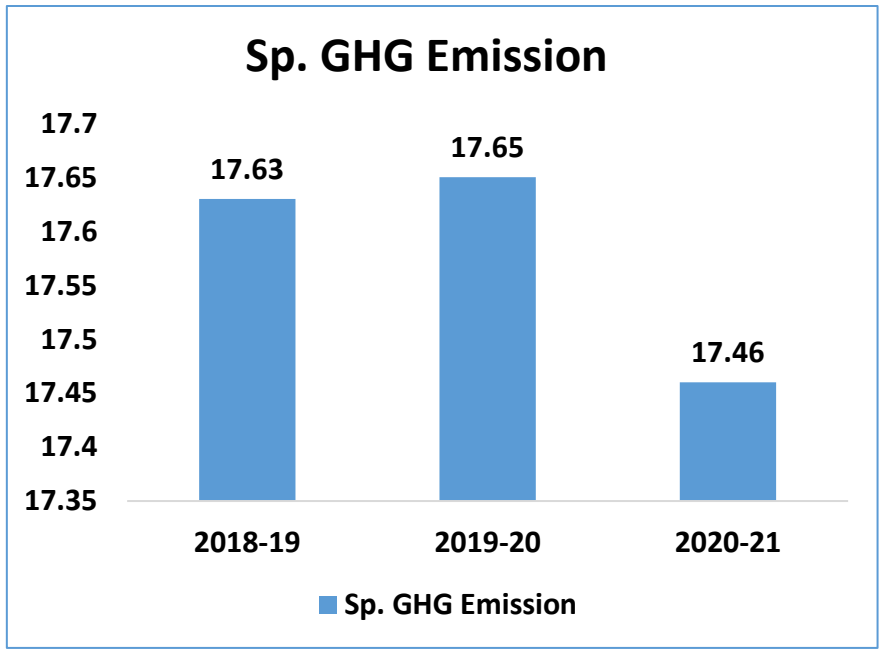
WASTE MANAGEMENT

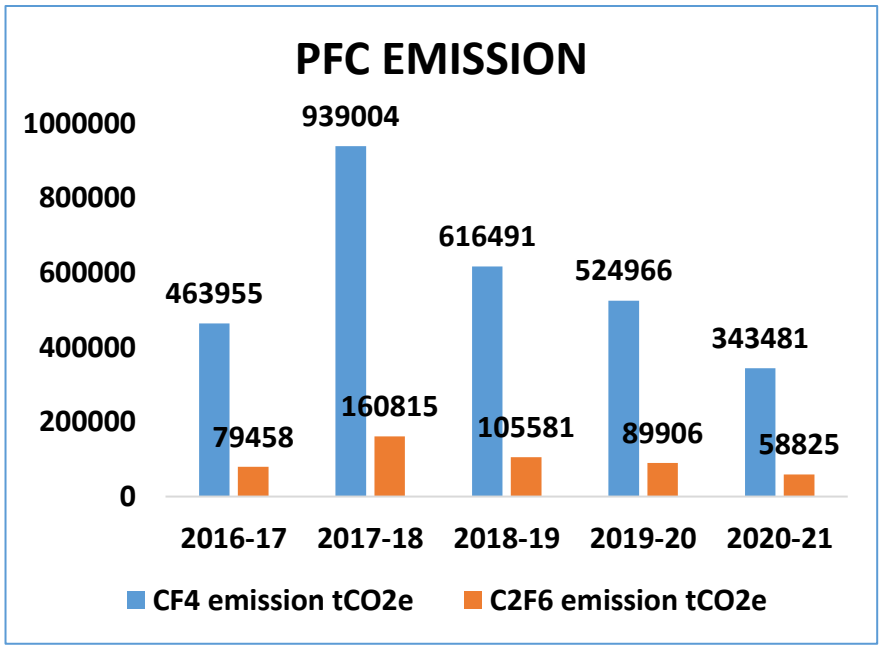
Sl No	Year	Type of waste generated	Quantity of waste generated (MT/year)	Disposal Method
1	2018-19	Spent Pot lining	13275	Disposed through State PCB authorised agency
2	2019-20	Spent Pot lining	19802.41	
3	2020-21	Spent Pot lining	11212.52	



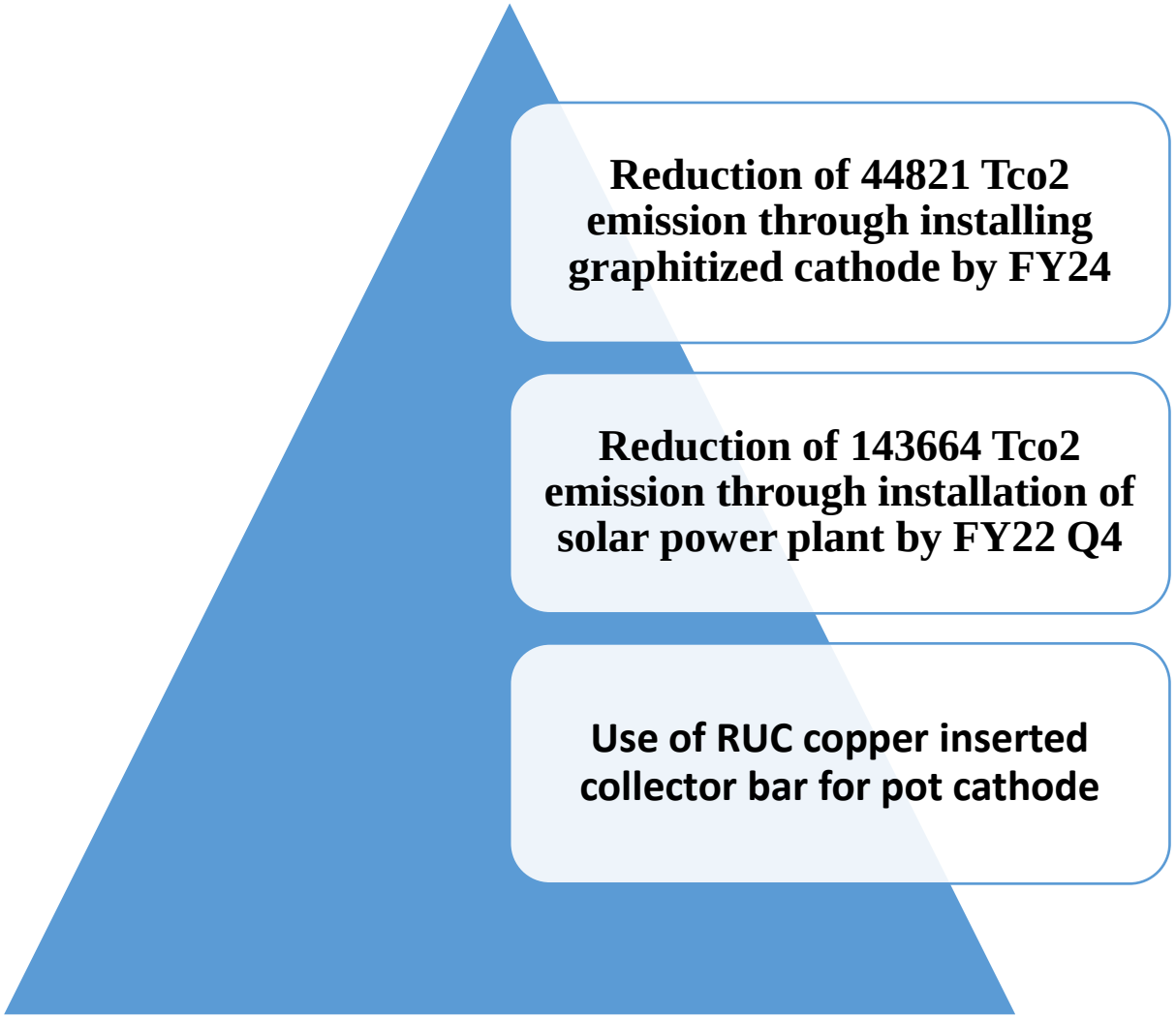
GHG Inventorisation

Year	Scope 1 emissions CO_2e (MT)	Scope 2 emissions CO_2e (MT)	Scope 3 emissions CO_2e (MT)	CO_2e MT
2018-19	2,18,01,821	26,24,891	7,70,588	2,51,973,00
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



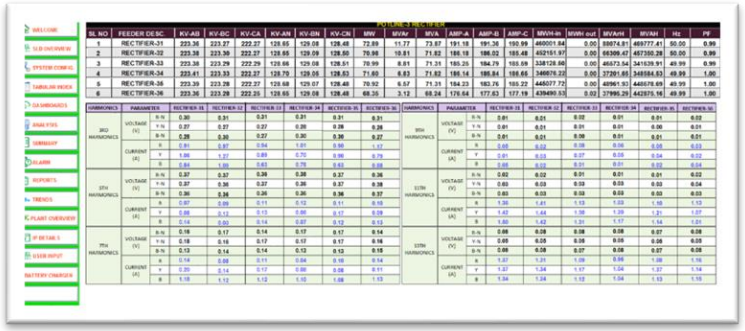


Long-term Action Plans for CO2 emission reduction

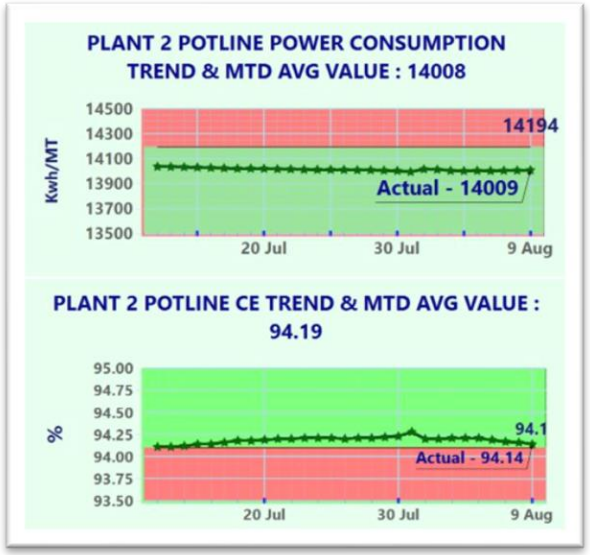


GHG emissions data is publicly disclosed in the Vedanta group sustainability report

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.

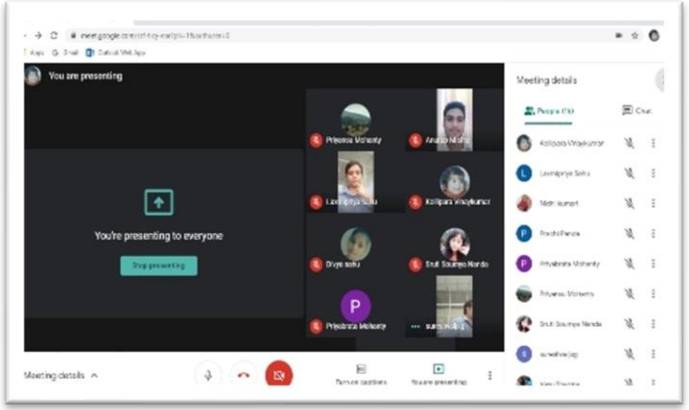


Digital dashboards used in war room

- 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.

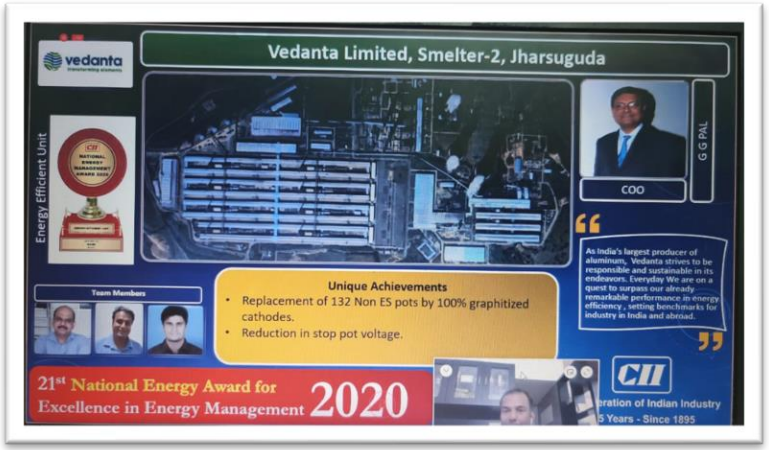
National Energy Conservation Week Celebration

- 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

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

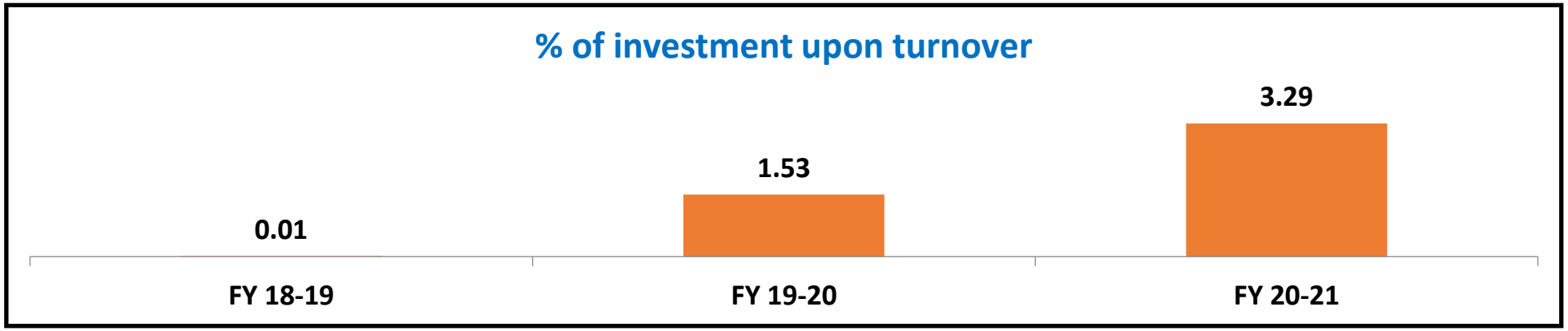
Got Gold Award in SEEM Energy Awards 2020.

Implementation of ISO 50001

ISO 50001

- Certification upgradation done to ISO50001:2018 in FY20-21.
- All the EnCon projects are identified and have been driven by EnMS Team under ISO50001

INR 384.4 crores invested in Energy conservation projects in FY20-21, which is 3.29% of turnover.



ROAD MAP FOR ENERGY SAVING IN FUTURE AHEAD

- Graphatised Cathode Implementation in 100% Pots by FY25
- Installation of solar power plant with a capacity of 100MW by FY22
- Use of RUC copper inserted collector bar for pot cathode.
- 100% implementation of LED
- Advance pot controller upgradation

THANK YOU!