Hindalco Industries Limited

Belagavi Works

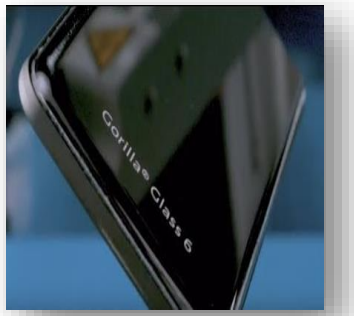
Hindalco Belagavi Overview

SPECIALTY ALUMINA (HINDALCO CHEMICALS)

- One of the leading manufacturer of Non-Metallurgical aluminas in the World as a producer of Value added Product & moving towards Super VAP.
- Two manufacturing sites in India i.e., Belagavi & Muri.
- Fully integrated operations to fulfil market fundamentals.
- Serving industry globally for the last 40 years.
- Customers spread over nearly 42 countries across the globe
- Key market segments include Water treatment chemicals, ceramics, refractories, glass and abrasives.

Specials Alumina Applications

01 DISPLAY GLASS



02 GRINDING MEDIA

03 GLAZES

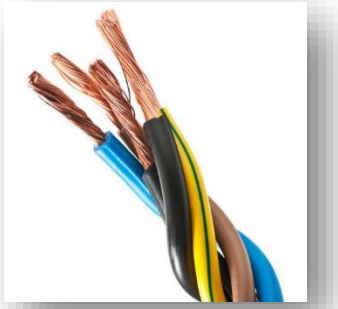
04 CASTABLES

05 Electrical insulator

06 Advanced Ceramics

Specials Hydrate Applications

01 Cable Compounds



02 SMC

03 DMC

04 Mass transit

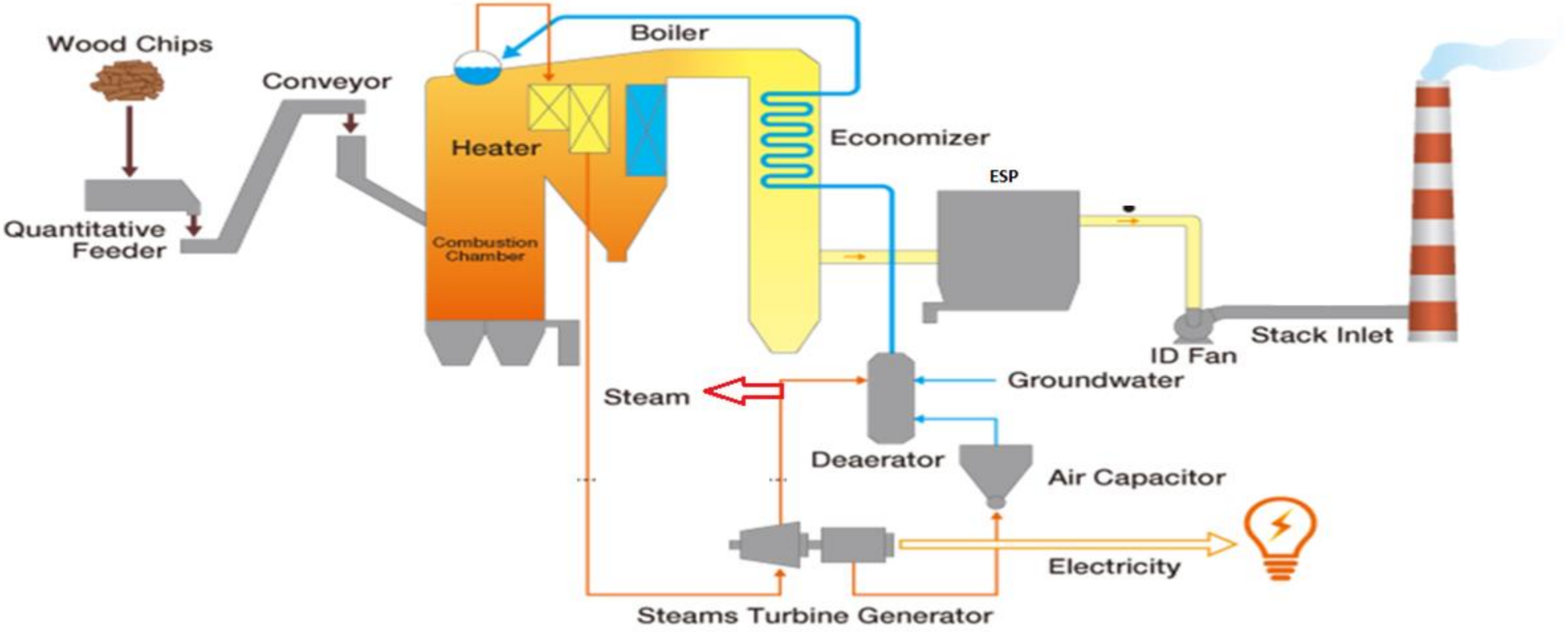
05 CATALYST CARRIER

06 Building Insulation

Biomass Co-gen Plant

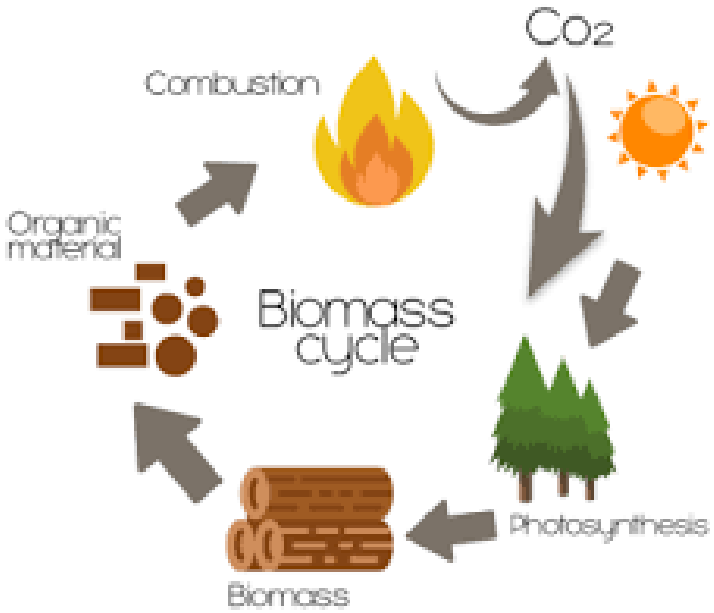
- *30 TPH High pressure Boiler of 65 Bar*
- *3.5 MW Extraction cum Back pressure Turbine-Triveni*
- *BOOT Model-Build Own Operate Transfer*
- *Feed- Agri By product*
- *Make-Thermax*

Biomass Co-gen Plant



Biomass Co-gen Plant

- ✓ *Reduced Cost & Environmental implication*
- ✓ *Carbon neutral, environment friendly*
- ✓ *Agricultural support to farmers by utilizing agro waste*
- ✓ *Ash generated is used for making manure and fertilizers*
- ✓ *Commercial use of ash done in making hollow bricks*



Biomass Co-gen Plant

Biomass Co-gen Plant

Steam

Total steam generation
-259200 MT/year

POWER

Total steam generation
-24120 MWh/year

CO2 Emission

Reduction in FO- 17280 MT
Reduction in Co2 emission- 54390 MT

From reduction in Power-
3100 MT Co2 emission

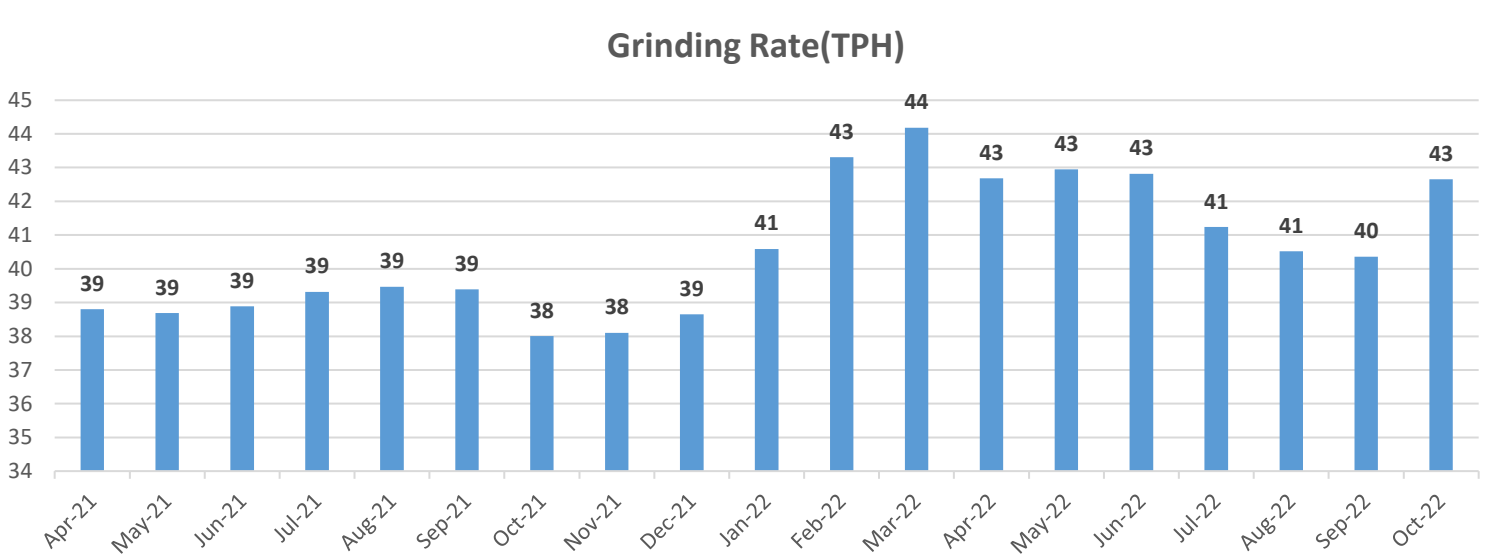
Monetary Impact

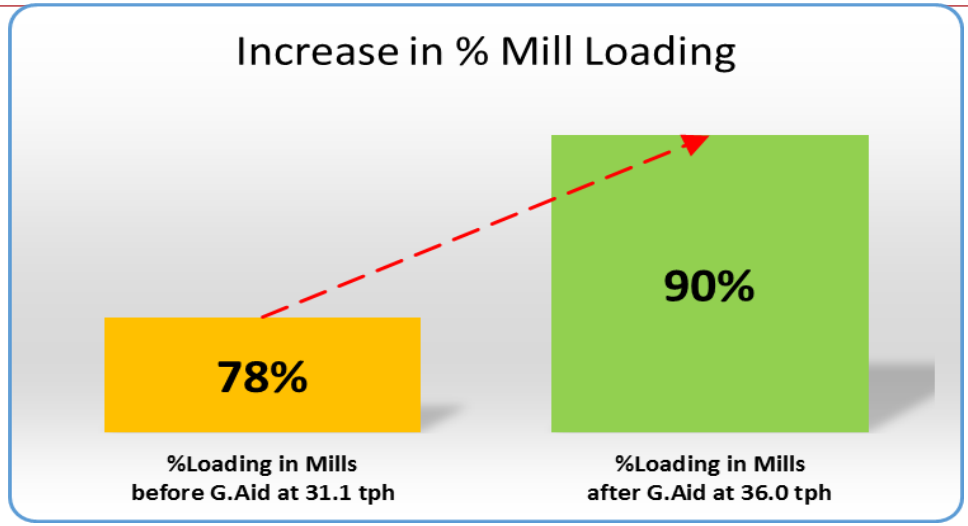
Steam Cost -1831 Rs/Ton

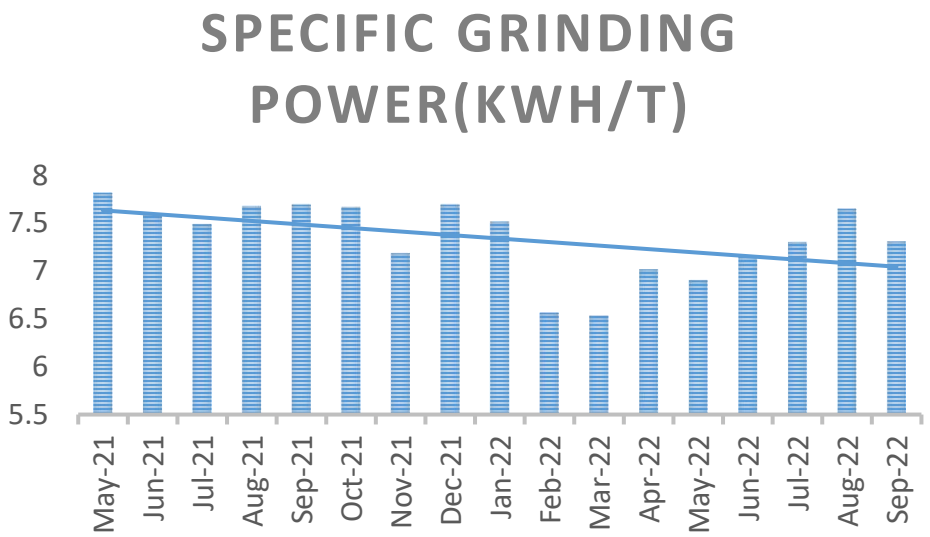
53% Lesser than Steam generated from FO

Power cost- Free

Reduction in Specific Grinding Energy by Process Optimization







- The major bottleneck in the past for increasing the plant hydrate production was the limitation in the grinding circuit
- With the help of Grinding Aid, we are now able to maintain an avg. grinding rate ~37 t/h but presently we are using imported bauxite having lower bond work index resulting in higher grinding rate without grinding aid and we can achieve 43 TPH

Application of MaxHT in Digester LSH

Bottleneck

- Dig LS heaters were getting heavily scaled during very short course of operation at 6-8 days with various bauxite blend
- Maintaining plant flow was becoming difficult in such condition resulting into frequent flow cuts and hence, hydrate production loss
- LS heater maintenance cost had gone up drastically

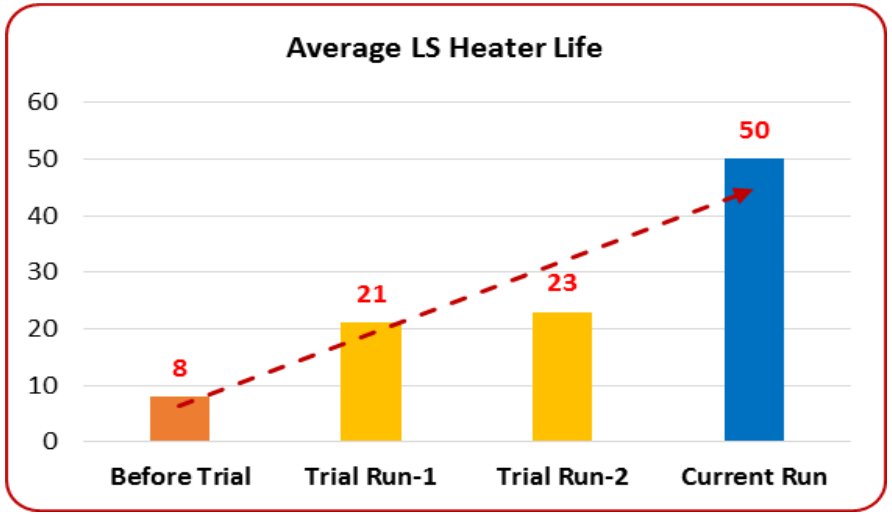
Max HT Trial

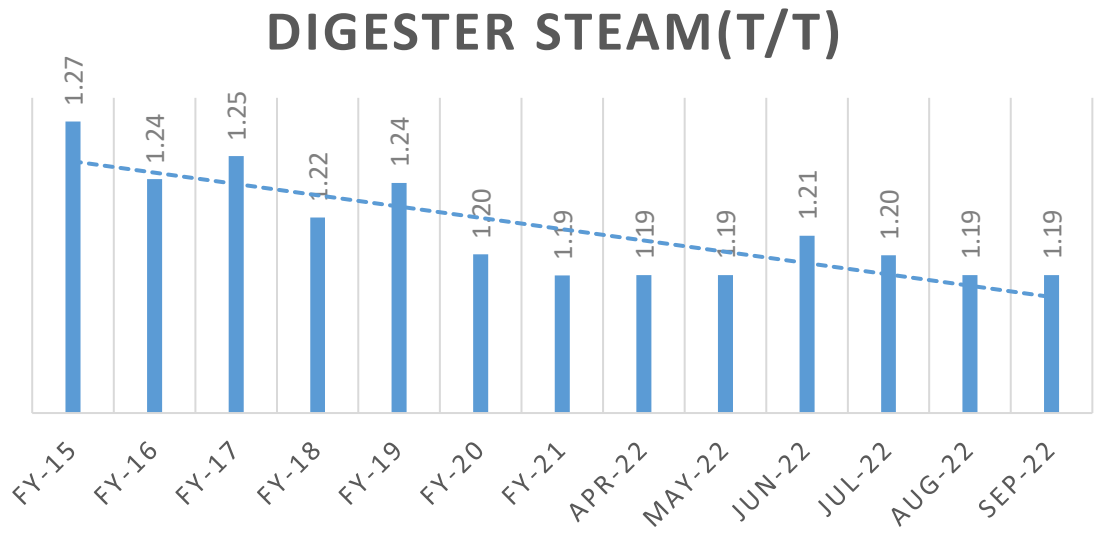
- On 27th Sep'19 M/s Solvay scale inhibitor aid Max HT trial had been started and two successful trial runs were completed
- LS heater performance got significantly improved and heater operating life increased at 21-23 days

Cont. Usage

- Chemical aid made commercialized for continuous use
- Further operating life of LS heater has been increased at 50 days with sustained operation

Net savings ~ Rs. 2.2 Cr/yr.





Optimization of Filter Press operation

Bottleneck

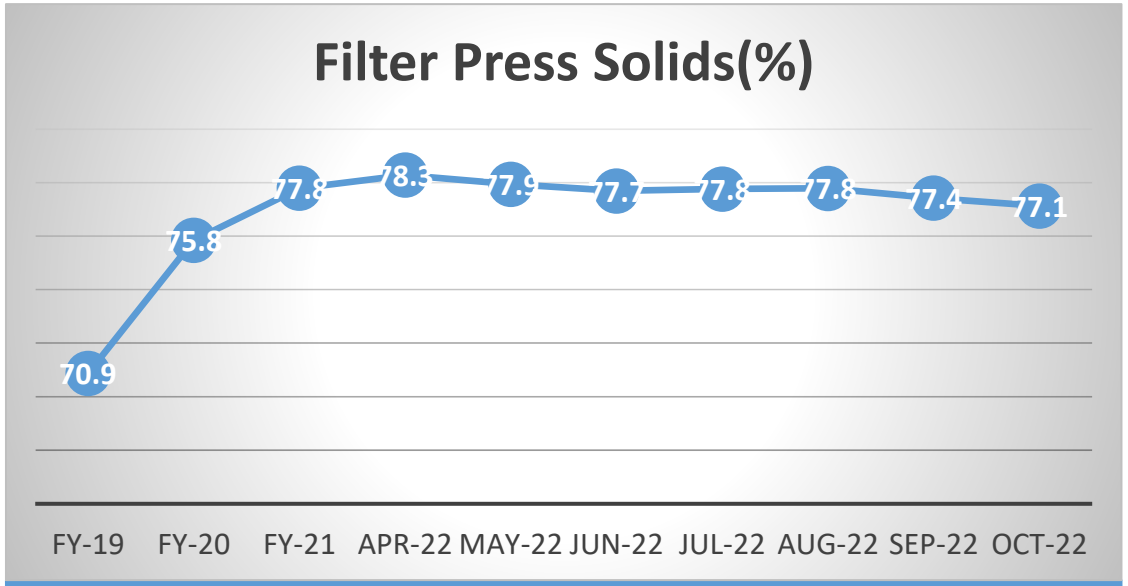
- Not getting sufficient % of solids from drum filter cake (~69 %)
- Power consumption is high for drum filter compared to filter press.

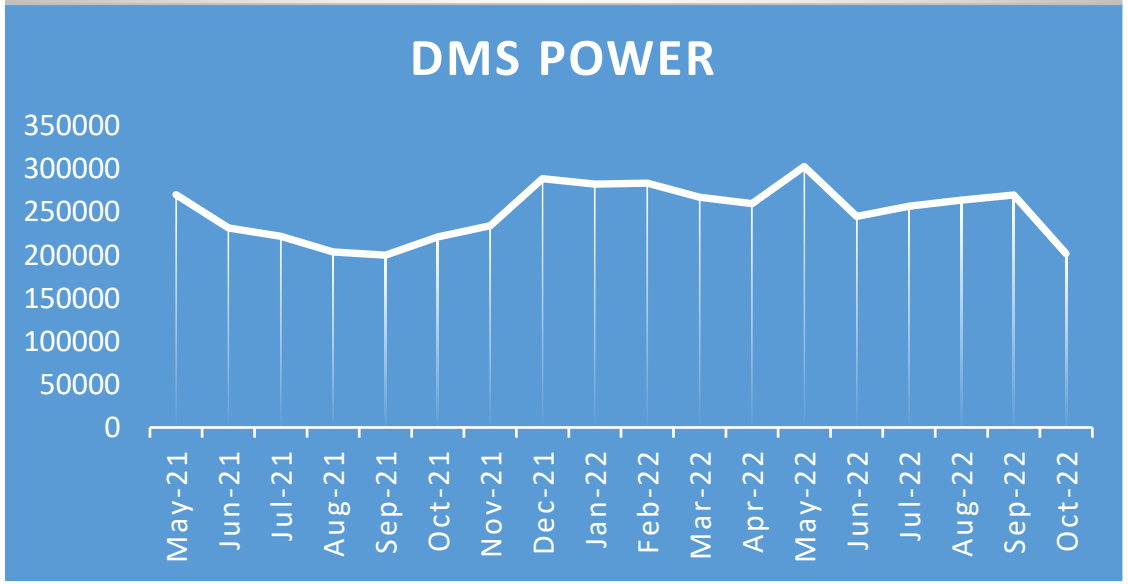
Operating Two Filter press continuously

- After commissioning of 2nd filter press, two filter press were operated continuously based on requirement, hence drum filter operation was completely stopped.

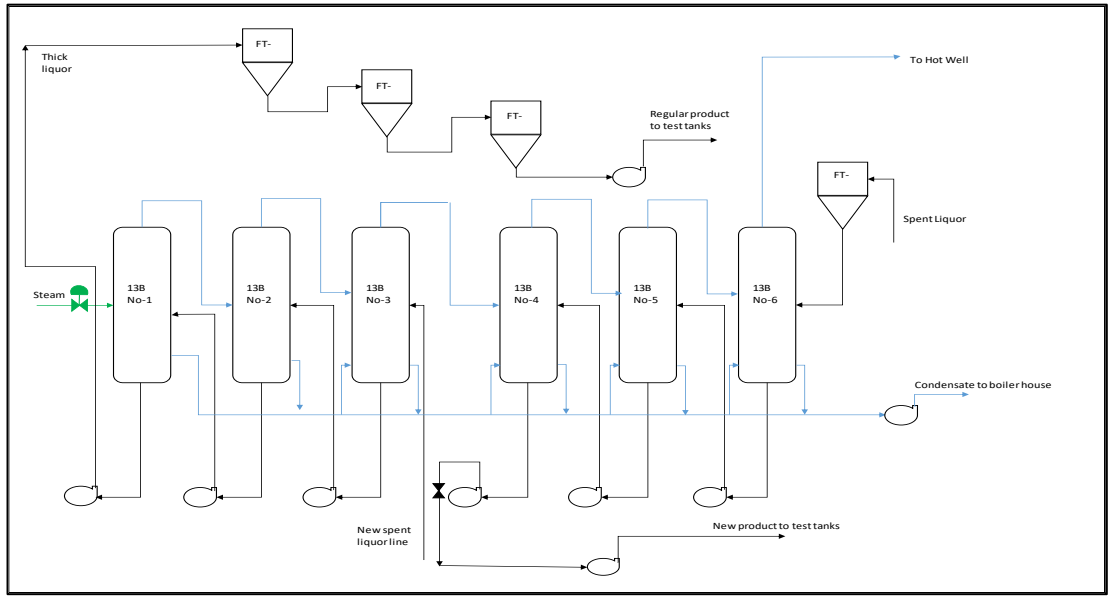
Cont. Usage

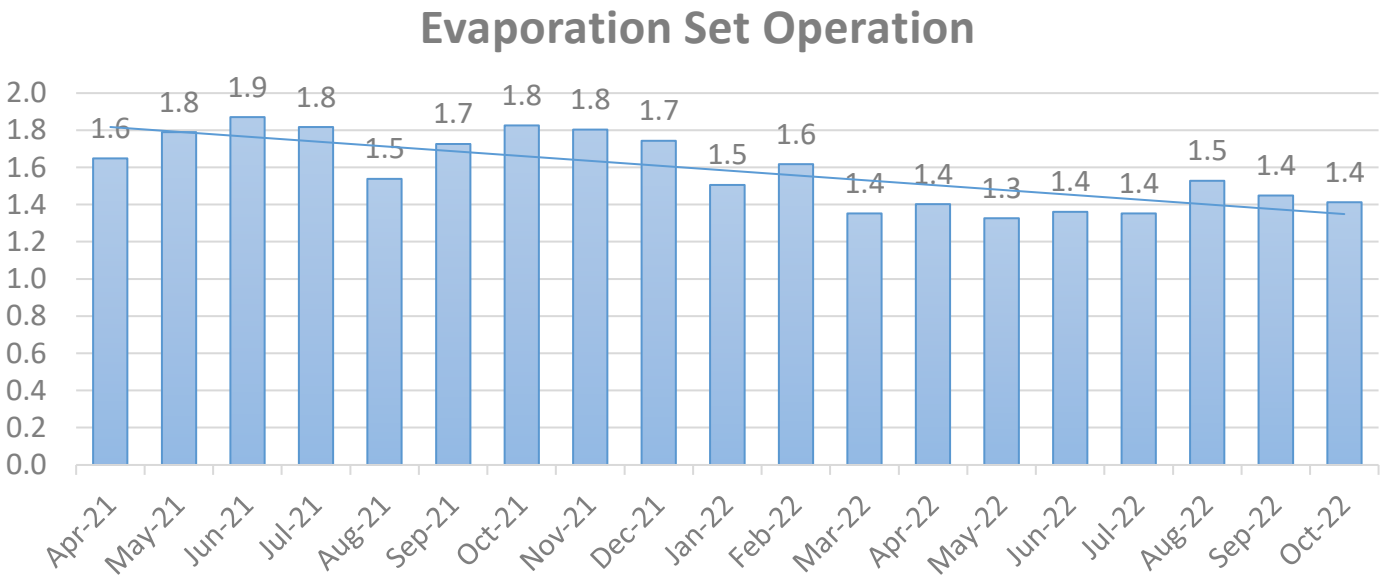
- Average Cake % solids was achieved 77.7 % against the design of 73.5 % by operating both filter press
- Reduced liquor with residue
- Average power consumption reduced by ~10000 KWh

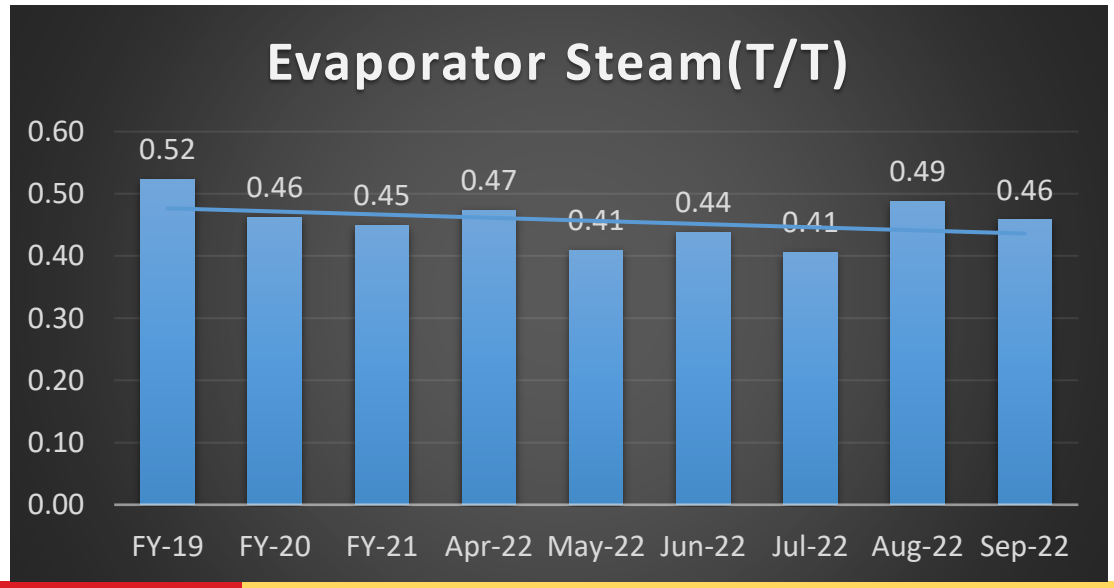




Focus on Reducing the Specific Oil Consumption in Evaporator (t/t)







1. Control on dilution in the system:
   - Monitoring and control on wash water on Pan filter and preventing excess dilution.
2. Improvement in evaporation rate after process optimization

Replacement of LT reciprocating compressor with HT centrifugal compressor (7500Nm3/Hr-800KW 4.5 Kg/cm2 11KV)-Bayer Plant

Power savings
29 lakh units per annum

Cost savings
203 lakhs per annum

CO2 Emission reduction
380 MT

Installation of Natural Gas (NG) fired Hot Air Generator for SFD-1 & 2

- Power and Oil efficiencies are low in Steam and Electric Heaters
- Frequent Steam heater leakages and Electrical heater coil failure caused SFD's downtime.
- Forced stoppage during boiler house shutdown due to steam unavailability

- Reduction in FO usage- 740 MT/yr
- CO_2 Emission reduction of 4000 MT/Yr

Replacement of Reciprocating Compressors with energy efficient Centrifugal Compressors

- Replaced 7 no's of LT RC 1800 Nm3/Hr 200KW with 2 Nos. of Centrifugal compressors 6000 Nm3/Hr & 650KW 4000 Nm3/Hr 450KW

- Energy: Specific energy consumption reduced by 0.122 kW/Nm3 to 0.115. Decrease in specific power by 6%.
- Availability: Maintenance cost was reduced, and machine availability increased.
- Total kW saved- 564480 kW
- CO_2 Emission reduction of 244 MT/Yr

PAT Performance

PAT Cycle – 1 2014 – 15

Target: 0.231 Toe/t
Achieved: **0.224Toe/t**
ESCerts Received – 2637 Nos

PAT Cycle – 2 2018 – 19

Target: 0.2288 Toe/t
Achieved: **0.247 Toe/t**
ESCerts to be purchased – 4567Nos

PAT Cycle – 7 23-24

Baseline: 0.247 Toe/t
Target : **0.239 Toe/t**
Act FY22 : 0.249 Toe/t

Next step towards Green Energy sourcing :

❖ Hybrid Plant :(Wind+ Solar)

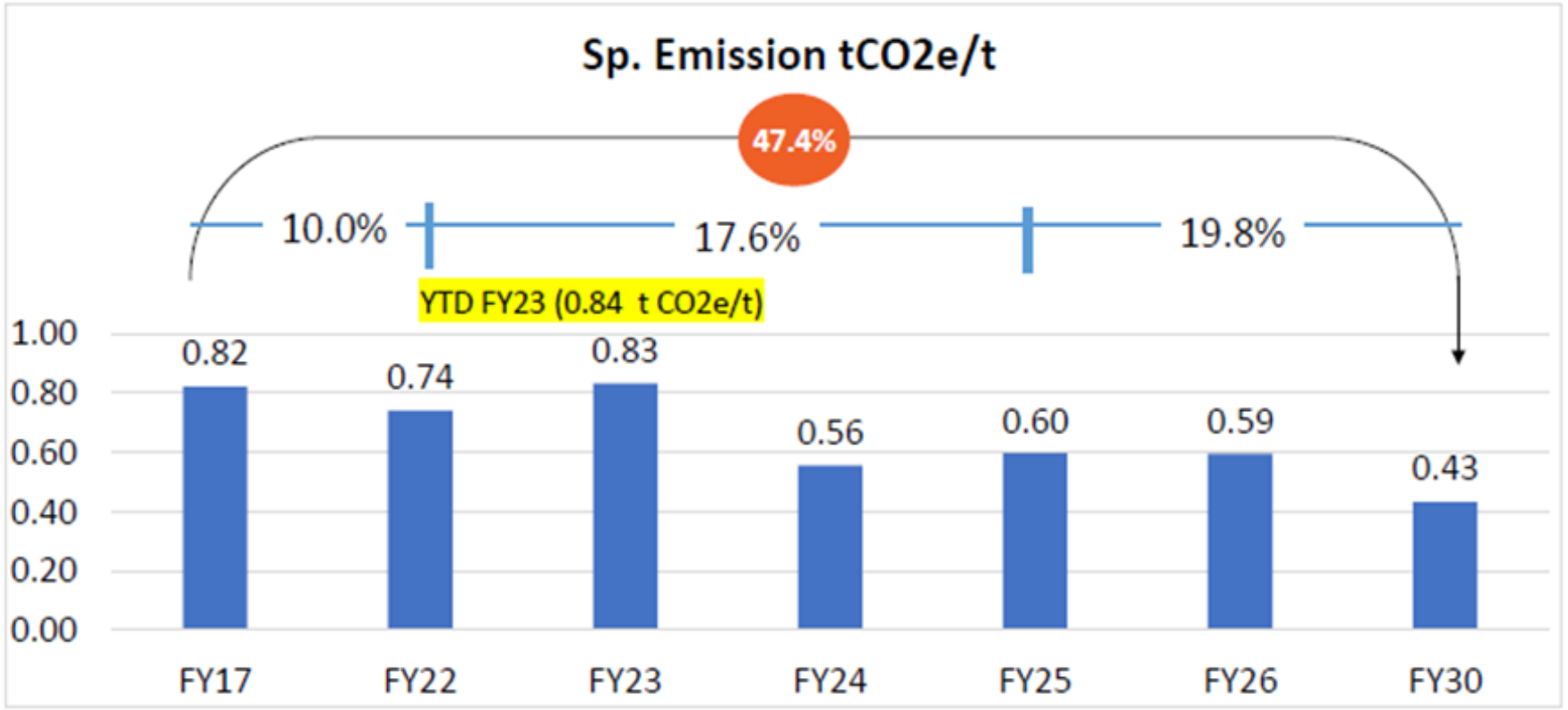
- Capacity : 30 MW (21+9)
- Units : Rs 80 Lakhs PM
- Investment : Rs 250 crores
- Savings : Rs 24 to 30 Cr / Annum
- Expected commissioning by : Sept 2023

Belagavi Decarbonization Roadmap

% Redn from FY17 Base →

Improvements

1. RE Hybrid (30 MW)
2. Biomass (33 TPH + 4 MW) upto 66 TPH in FY30.



		FY22	FY23	FY24	FY25	FY26	FY30
Power from Biomass	MU		12	24	24	24	24
RE Power	MU	26	0	73	83	83	95
Steam(Biomass)	TPH	0	33	33	33	33	66


THANKYOU!