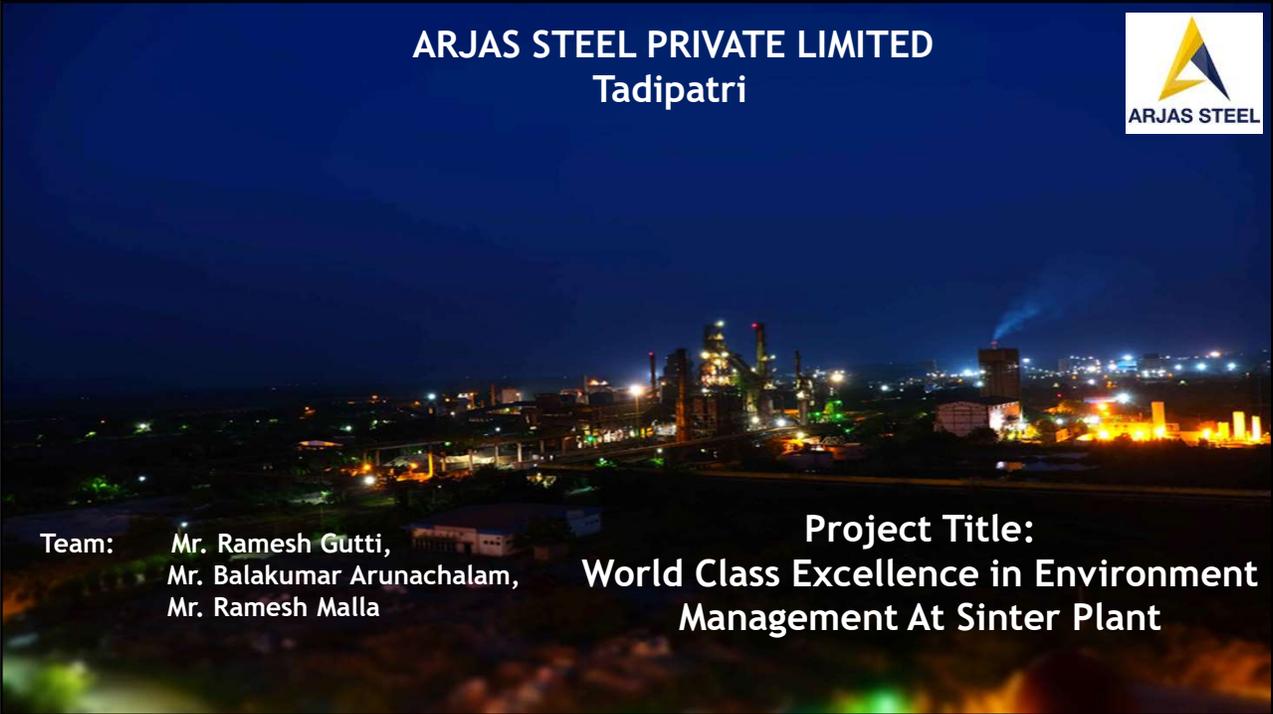


ARJAS STEEL PRIVATE LIMITED
Tadipatri

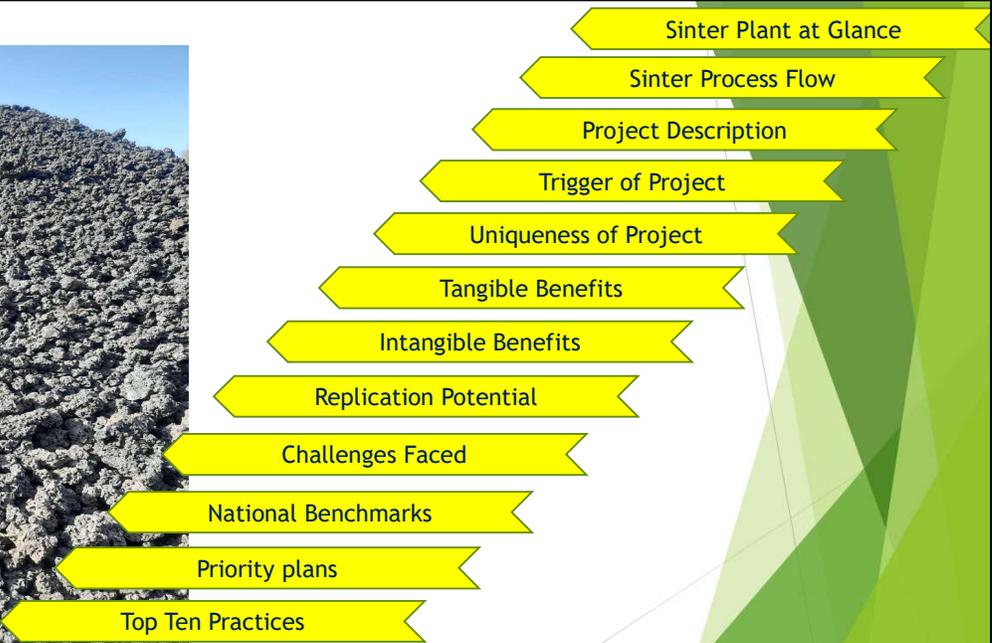


Team: Mr. Ramesh Gutti,
Mr. Balakumar Arunachalam,
Mr. Ramesh Malla

Project Title:
**World Class Excellence in Environment
Management At Sinter Plant**

1

Content

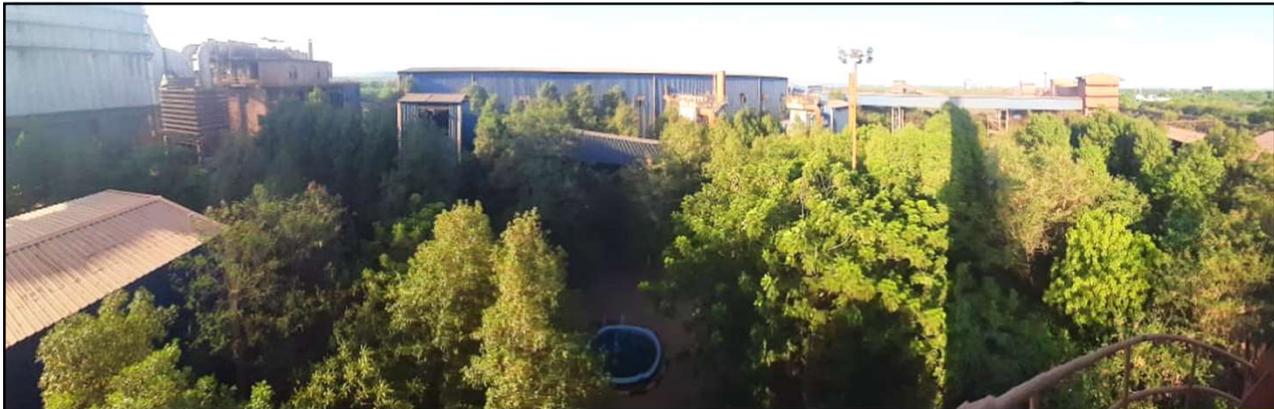


- Sinter Plant at Glance
- Sinter Process Flow
- Project Description
- Trigger of Project
- Uniqueness of Project
- Tangible Benefits
- Intangible Benefits
- Replication Potential
- Challenges Faced
- National Benchmarks
- Priority plans
- Top Ten Practices



2

2



Our Mission

TO BE A LEADING SPECIAL STEEL PRODUCER in India and be a benchmark for supply chain solutions to our customers

Our Vision

TO CREATE VALUE for all our stakeholders by operating our steel business, in a sustainable manner

Our Values

Be the CUSTOMER's choice
 SAFETY first
 EMPLOYEE engagement with Respect
 Achieve EXCELLENCE with SIMPLICITY
 RESULTS Orientation
 INTEGRITY always
 SUSTAINABLE practices

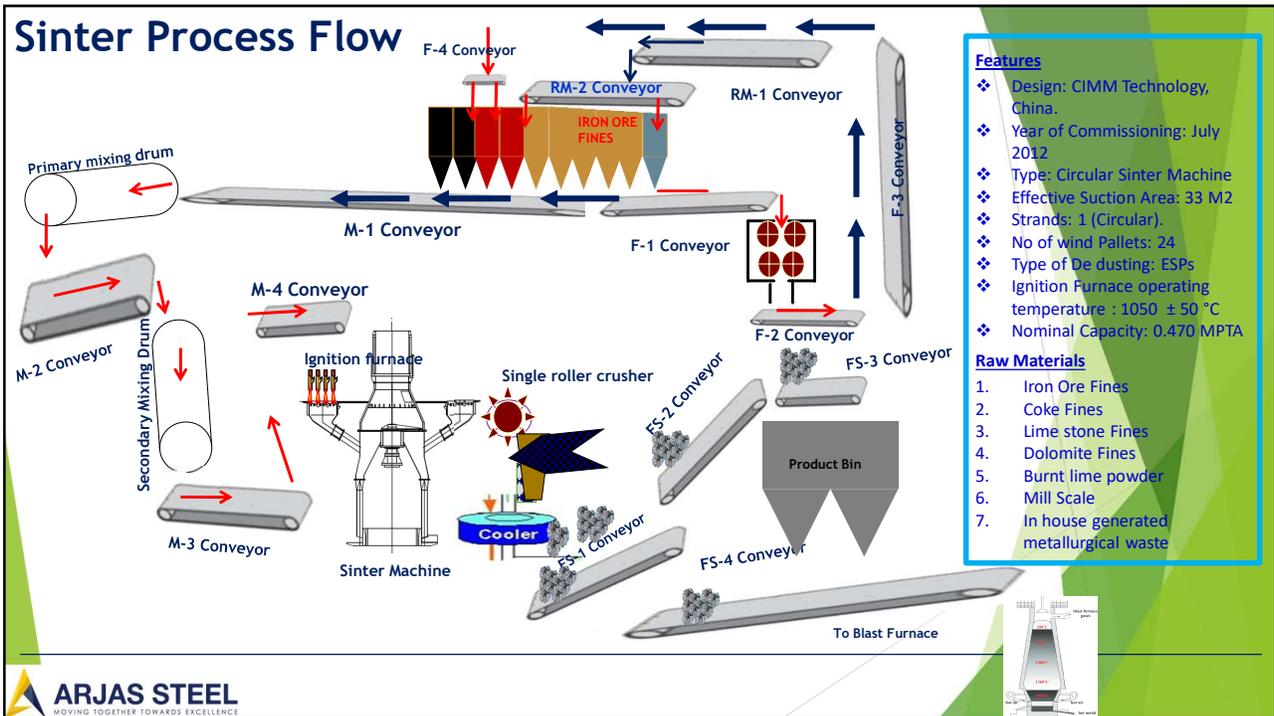
Our Purpose

To sustain world class sinter plant operation

- Spillage Control
- Fugitive Emission Control

To reduce the natural resources consumption,

- Metallurgical coke
- Power consumption
- Co2 reduction ton of Sinter





Project Description

- Major Objective of the this project is to improve cleanliness of work environment, Fugitive emissions control, controlling spillage, increase productivity, Reduce coke consumption at Blast Furnace, Power specific consumption.
- **Natural resource conservation & CO2 reduction:** Reduce coke consumption at Blast Furnace by using of sinter % in burden 73% to 80% (by 1% increase in Sinter burden - 1 kg/THM coke saving)
- **Spillage Control:** One Spillage arrest One person/day (OSOP) - Spillage Control program has been implemented.
- **Resource conservation:** Reduce specific power consumption, by increase the Sinter production
- **Fugitive Emission control:** Reduce drastically visible dust & fugitive emission around the Sinter plant.
- **Waste Recycling in sinter plant :** Conserve natural resources (iron ore) by waste recycling



5

5



Trigger of Project

Sustainable practices is one our core values for ASPL business processes and practices

- Potential to reduce Carbon foot print
- Potential to Control the spillages in conveyors areas
- Potential to Control Fugitive emissions occur during raw material charging in transfer points.
- Top Management directive to improve Dusty Environment
- Opportunity for people involvement
- Opportunity to recycle byproducts

Uniqueness of the Project

- One spillage One person program initiated (people Involvement)
- CO2 emissions reduced 0.17 to 0.12 T/Sinter
- Highest ever Month production/Day production-World Benchmark
- Brand image value increased after implemented -Feedback given by Customers & various agencies.
- Green belt development for aesthetic value

Significant Cost Saving

- Usage of Metallurgical waste generation inside plant premises (Replacement of Natural resources - Iron ore fines)
- Successfully commissioned Modu power system in ESP and improve the dust collection at System



6

6

Tangible Benefits ...

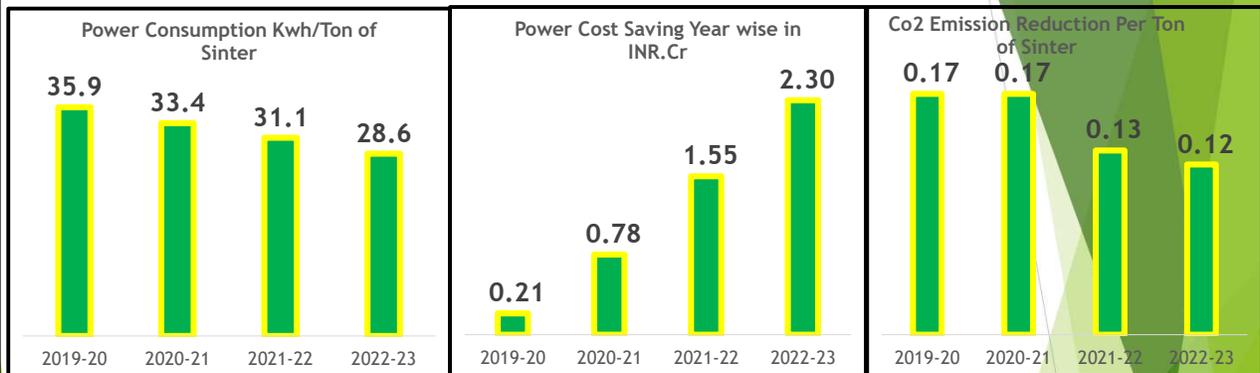
- Sinter Plant Year wise Avg power consumption
- Year wise metallurgical waste consumption
- Sinter Plant Year wise Productivity
- Blast Furnace Carbon Specific consumption
- Co2 emission reduction benefit's per ton of Sinter

Results are given in subsequent slide



7

Tangible Benefits 1/4



Power Consumption reduced year to year with

- ❖ Increased production volume.
- ❖ Installation of drives in place of direct starters.
- ❖ Reduction of conveyor idle running time with installation belt load switches

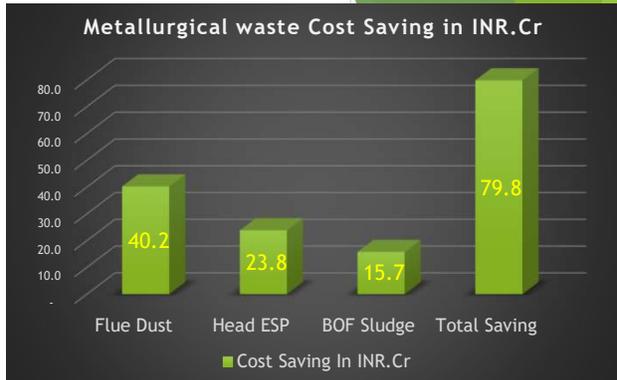
Co2 Emission Reduced year to year

- ❖ Increased production Volume
- ❖ Increased crushing index of coke fines



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Tangible Benefits 2/4



Natural resources replacement by waste recycling

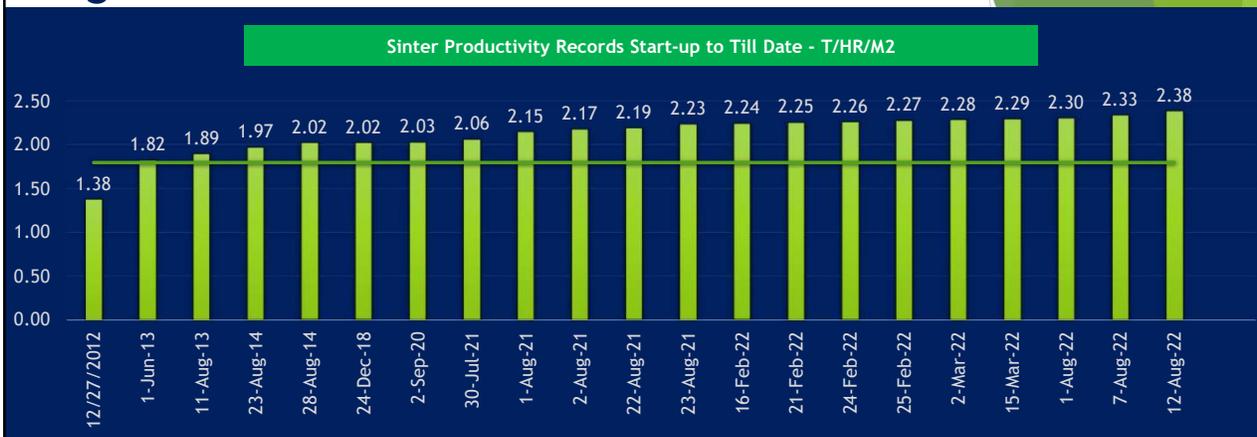
Collected in house generated metallurgical waste and consumed in place of iron ore fines

- ❖ In house generated ESP dust (Fe(T): 35% Max.) using in place of Iron ore fines (Fe(T):>60%).
- ❖ BOF slurry (CaO:12%, MgO:3% and Carbon:15%) using in place of Lime stone fines, Dolomite fines and coke breeze.
- ❖ Metallic chips (Fe(T):40% Max.) using in place of Iron ore fines (Fe(T): > 60%).
- ❖ Non Metallic chips -generated slag in SMS (CaO:30%, MgO:8%) using in place of Lime stone fines, Dolomite fines.
- ❖ Flue dust (Carbon: 20-25%) using in place of coke breeze.
- ❖ Lime Slurry (CaO: 60-70%)using in place of lime stone fines.
- ❖ Sludge pond coke fines (FC: 50-55%) in place of coke breeze.



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Tangible Benefits 3/4



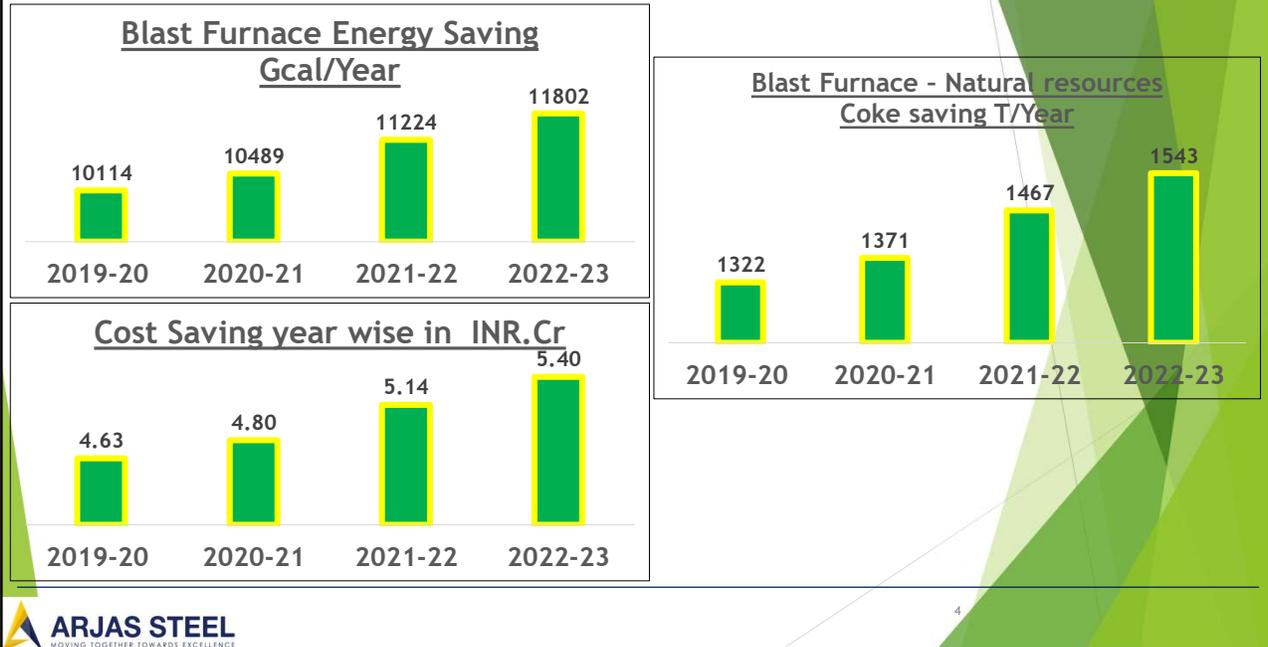
Sinter Productivity

Design Sinter Productivity 1.80 T/HR/M2.
 Highest ever Sinter Productivity Day Avg -2.38 T/HR/M2
 Highest ever Sinter Productivity Month Avg - 2.29 T/HR/M2



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Tangible Benefits 4/4



11



Intangible Benefits 1/2

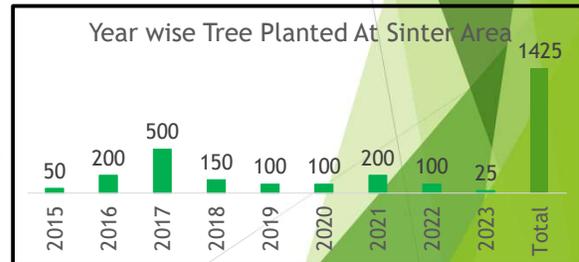
- Reduced work load to operators in cleaning spillages, improved operators morale.
- Reduced emissions, eliminated dust accumulation over the trees and improved tree growth.
- Dust free environment to local communities.
- Improved relationships with customers and local communities.
- Appreciation from customers for clean and healthy plant environment.
- Healthy atmosphere for birds roaming in the plant (peacocks, pigeons, sparrows etc. observed roaming near sinter plant garden area).
- Improvement in brand image among the customers.

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Intangible Benefits 2/2

- ❖ We initiated tree plantation in inside sinter plant in the year 2015
- ❖ Till date planted 1425 trees and all the trees are grown well and it giving greeneries either side of Sinter plant
- ❖ Aesthetic look view improved.



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13



Replication of potential

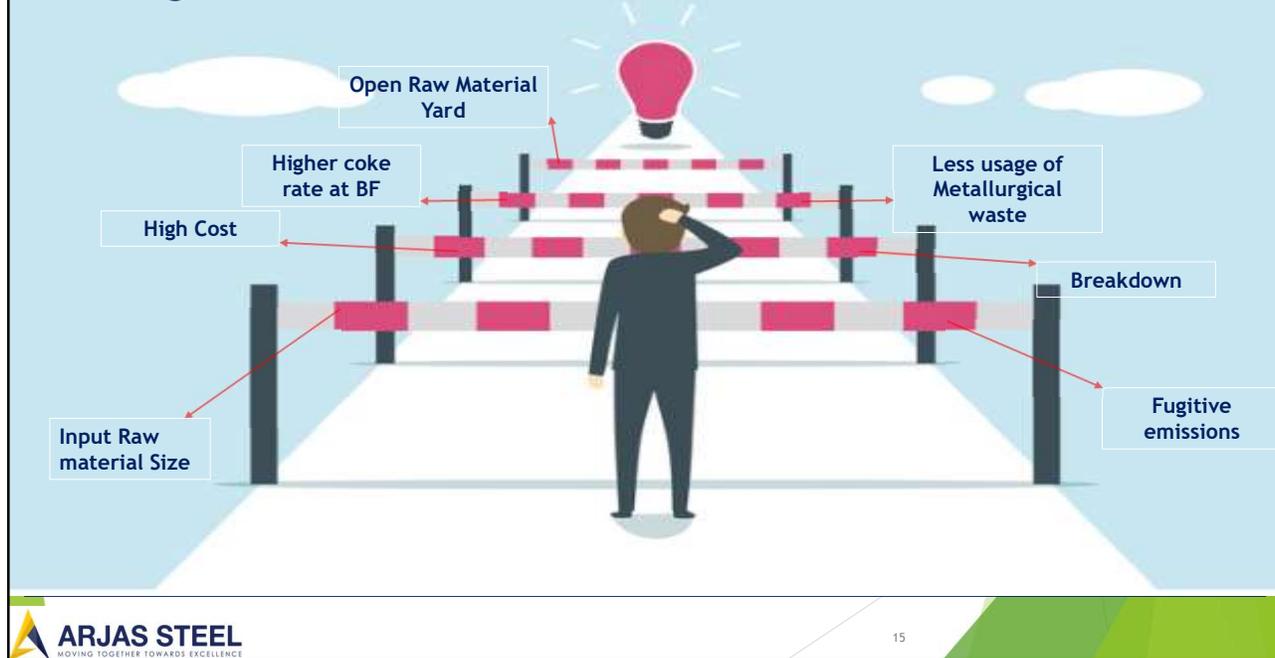
- ▶ This Sinter plant model can be replicated anywhere in the sector by
 - ▶ People Involvement
 - ▶ Top Management support
 - ▶ Break the mindset (to increase the use of metallurgical waste)
 - ▶ Urge to be role model
 - ▶ Conduct regular Environment Inspection
 - ▶ Monthly review with Top Management
 - ▶ Implement Quality Culture Program to improve quality of life



14

14

Challenges Faced 1/2

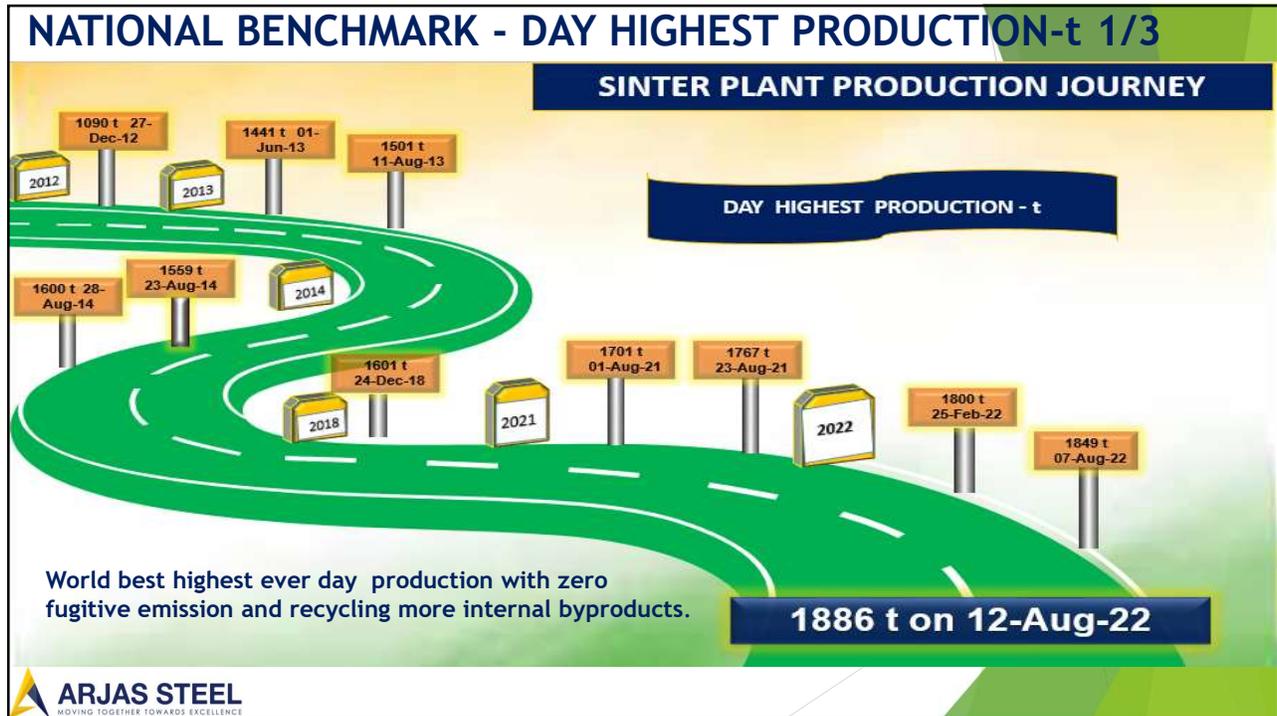


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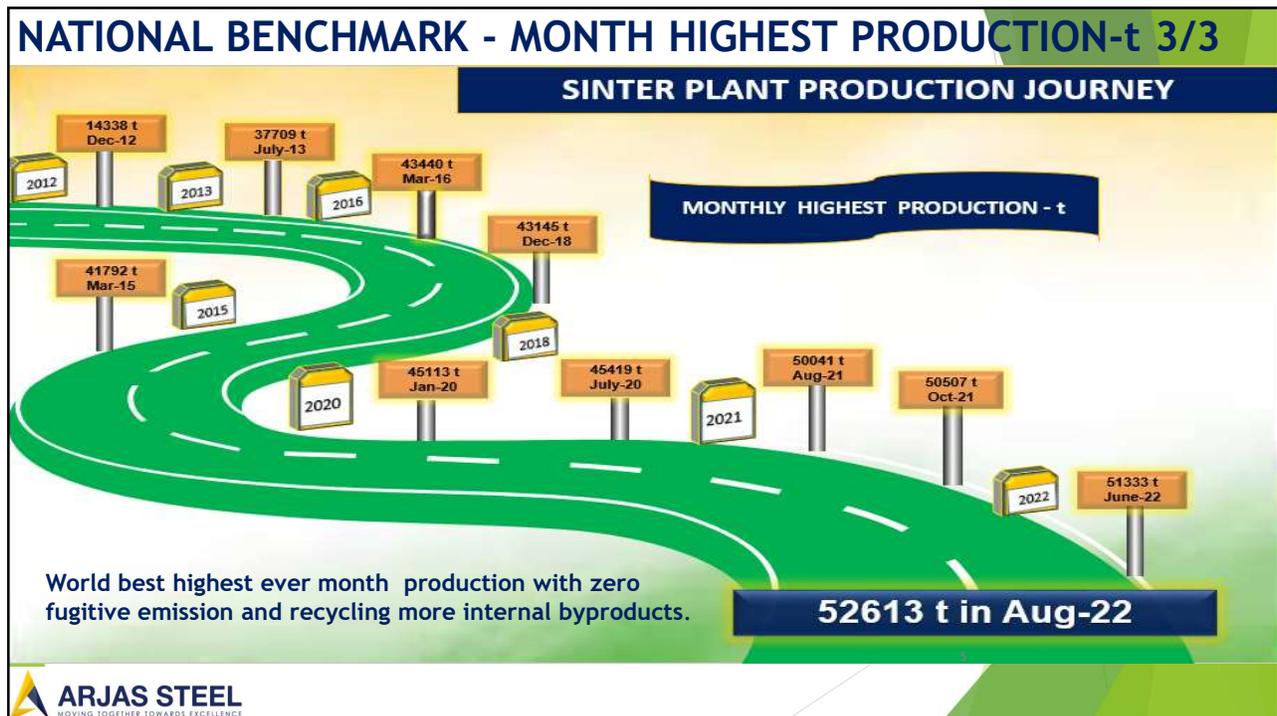
Challenges 2/2 - Mitigation Plan

1. Input iron ore fines micro fines -1mm size load > 55%. Countered with quick lime usage and changed the portion of dry zone , wet zone and nodulizing zone in the primary mixing drum.
2. Daily stoppage for hot screen greasing and frequent breakdown of hot screen. Modified Hot screen drive system from grease lubrication to oil lubrication. Availability increased by 1.5%/day.
3. Sinter Product dumping to the ground due to frequent cut of shuttle conveyor between product storage bunkers. Incorporated Y chute in place of shuttle conveyor between product bunkers and eliminated product dumping to ground and emissions. Frequent Conveyor change and maintenance of shuttle conveyor eliminated.
4. Emission during dust dumping from ESP. Replace humidifier system with twin type digester for effective mixing of dust with water before dumping.
5. Fugitive emissions at product transfer points. Inspection doors provided at all horizontal duct lines, scheduled cleaning of duct lines for effective suction at transfer points and eliminated fugitive emissions.

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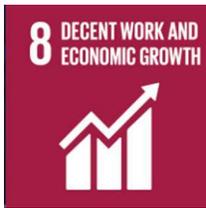
17



18

NATIONAL BENCHMARK - 3/3

We are working on these 4 sustainable goals at Sinter plant.



Installations in Progress 20MW

Priority plans (Next 1 / 2 Years)

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Installation of 4th Stove - Completed 2. Solar Power Plant 20 MW 3. Stove 1,2, Revamping 4. Bell less Top Blast Furnace | <ol style="list-style-type: none"> 5. Co2 foot print reduction projects. 6. Green belt Development – for carbon capturing 7. Pneumatic Conveying system 8. SP Cooler Waste Heat Recovery |
|--|--|

Best Practices

- ✓ OSOP - Daily One improvement (One Spillage arrest one person)
- ✓ Environment Monthly Audit /Inspection
- ✓ AAQMS/ CEMS continuous data connectivity to PCB server
- ✓ Recycling of Metallurgical waste
- ✓ Environment Management Score card
- ✓ Air Pollution control equipment monthly inspection
- ✓ Waste Management
- ✓ 14001 EMS
- ✓ Recycling of Metallurgical waste
- ✓ 5S Work place Management

