TATA STEEL

WeAlsoMakeTomorrow

IIM

Metallurgy
Materials Engineering

Presents

International Conference on

GREEN & SUSTAINABLE IRON MAKING

January 17 – 18, 2024

TATA STEEL
#WeAlsoMakeTomorrow

IIM Metallurgy Materials Engineering

Do you know that there is one solution to:

- Reduce Ladle Jamming and to Improve Ladle Throughput
- Increase the final Hot Metal Temperature at SMS from open and Torpedo Ladles and reduce CO2 emissions
- Get an additional 0.6-1kg/ton of steel from the waste heat from the ladle
- Improve the Hot metal yield improvement of 0.5-1.5% in the plants with open top ladles and improve the Torpedo Ladle cleaning frequency
- Reduce the emission by more than 90% from the ladle during ladle filling

All above benefits with absolutely free of cost (at current steel price)

Nellikuru Innovations Pvt. Ltd.

Existing solutions to these problems

- Fly ash/ rice husks are added on the full ladle
- These serve as a temporary cover on the ladle

Demerits:

- Metal solidifies on these particles and gets thrown out as kish, low value product/ waste
- Ladle Jamming
- Reduces the Ladle throughput to around 70-85%

Our Solution: A patented Iron based Hot Metal Insulation Compound

What

- An **iron based ladle covering compound** which is added to the empty ladle before pouring or at around 5-10% metal level

How

- On metal contact with it, it forms a semi liquid covering and traps the emissions, and reduces the heat loss
- As the metal rises, the cover rises and remains intact till the metal is poured out.

Note!

- Since it is iron based, the compound itself contributes to the iron content in the hot metal.

Reduced Emissions at a Plant in North India

Without our product – (Regular process)

*Click on the picture to start the video

With our product – NKHM - 18

*Click on the picture to start the video

Reduced Emissions at a Steel Plant

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With our product – NKHM - 18

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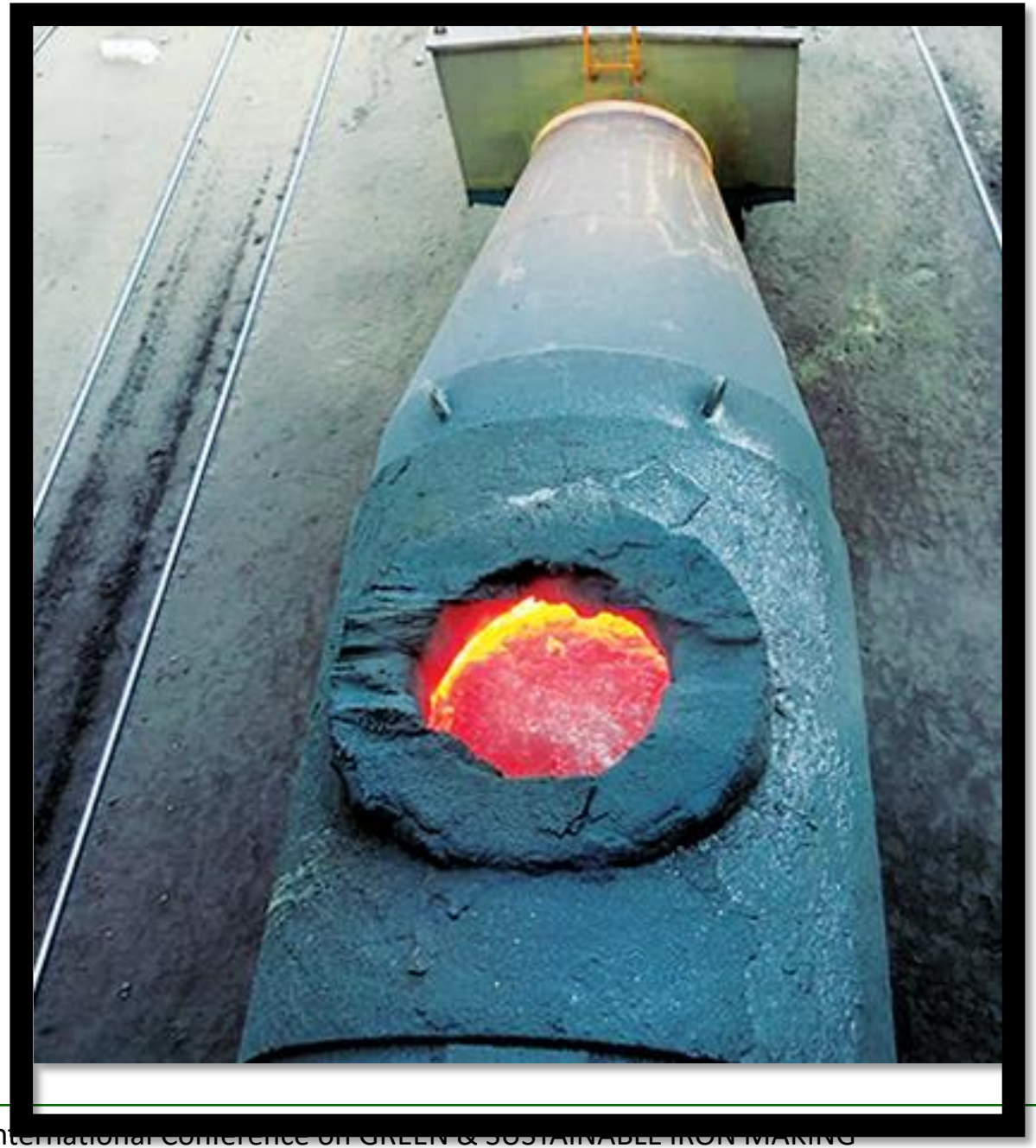
Benefits

- At least 0.6- 1 additional kg steel per ton of steel produced using NKHM – 18 – **Therefore almost no additional cost to user**

- Reduction in drop in temperature loss from 12-40 degree C , depending up on the holding time.

- Higher yield, lower kish

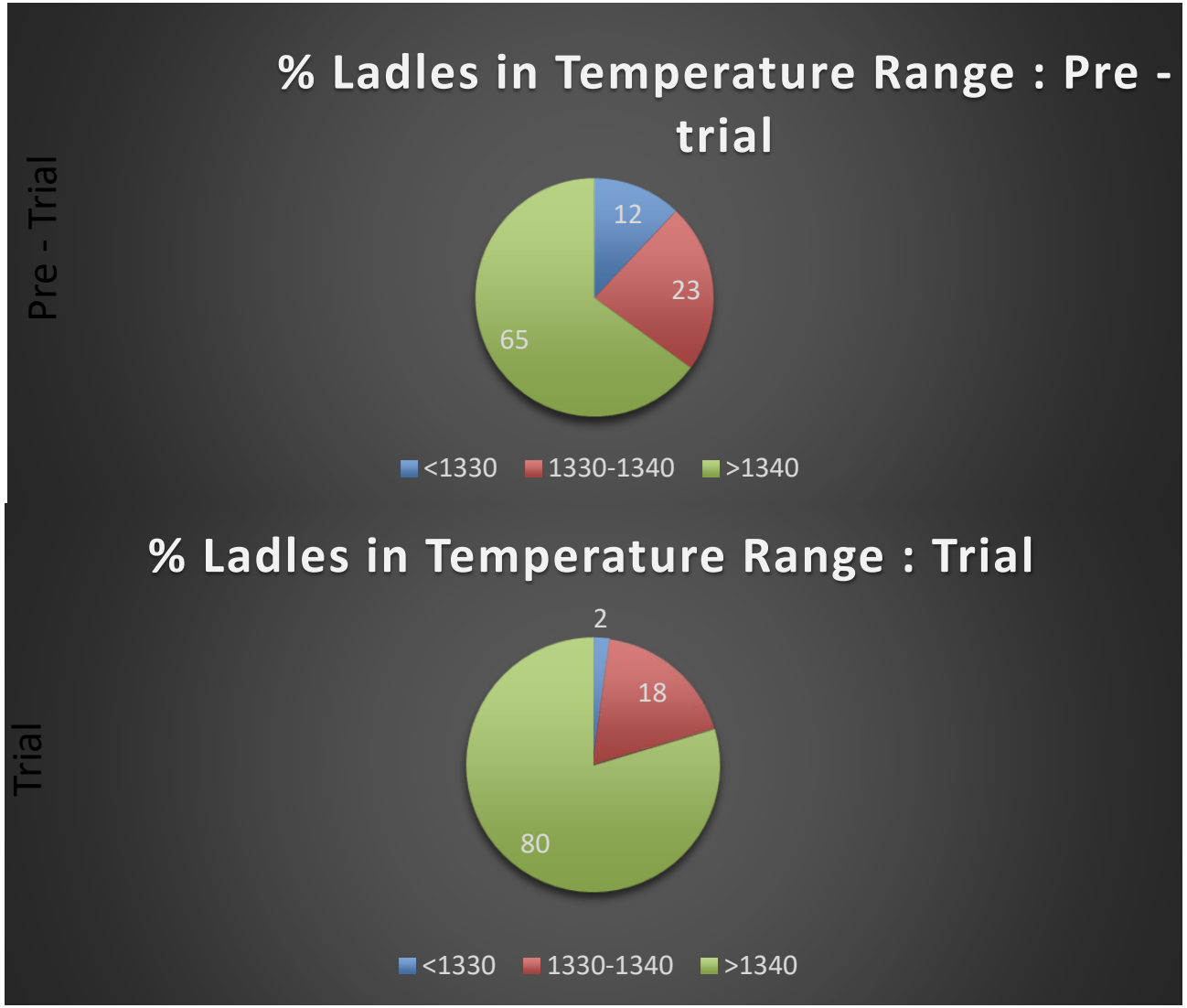


Benefits

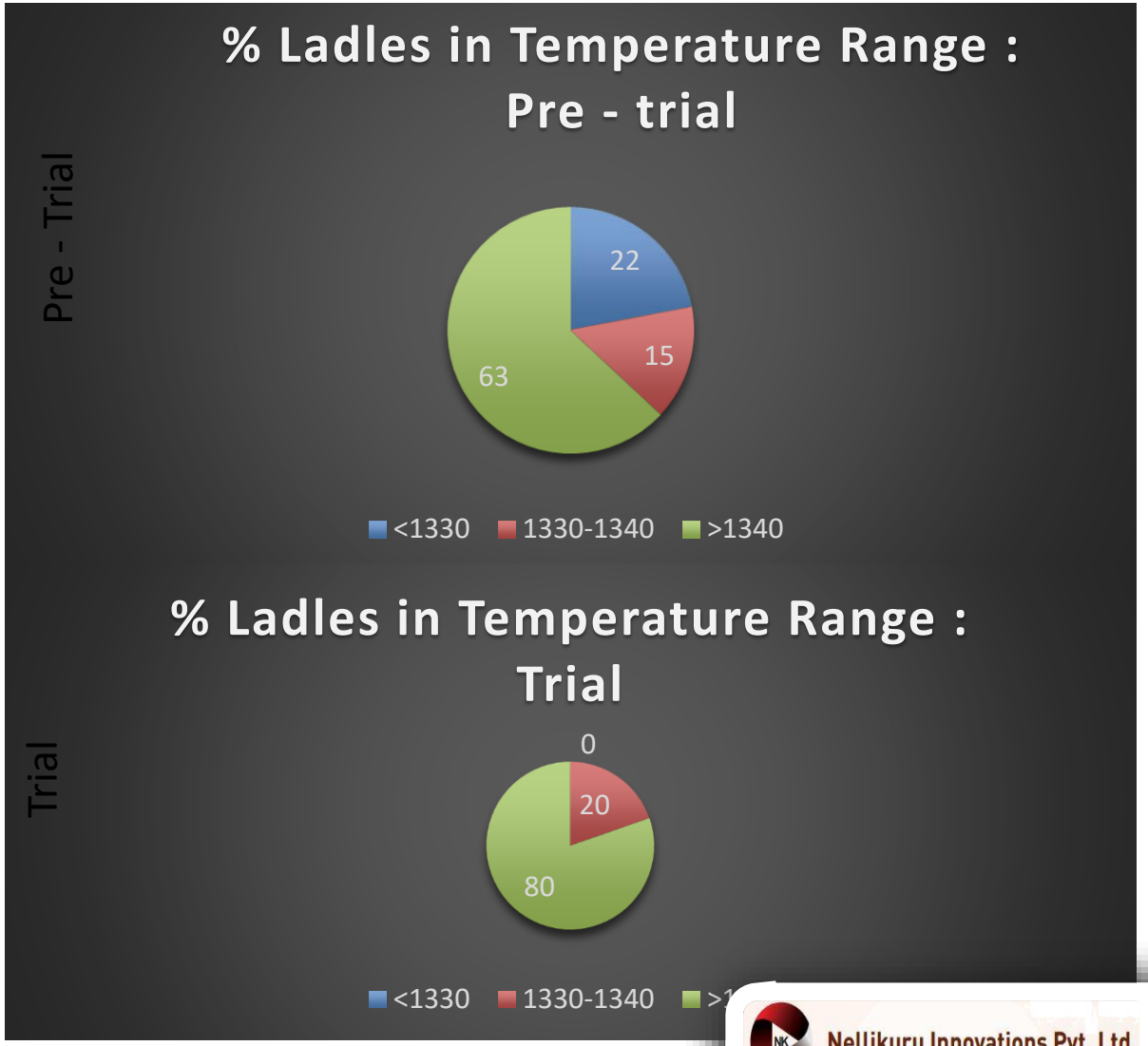
- Every 10 degree C heat loss per T of Hot Metal = Increase 0.01T of CO_2
- In near future, India will have around 100 Million T of liquid Hot Metal for Primary Steel making
- Therefore 1 million T of CO_2 can be prevented from going into the atmosphere absolutely free of cost

Trial Results at a premier steelmaker in India in Torpedo Ladles

BF - 4



BF - 3



Thank you,
Let's go for Net Zero Emissions from Steel Making

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Trial Results

Temp (Deg C)	Pre-Trial (BF 4)	Trial (BF4)	Pre-Trial (BF3)	Trial (BF3)
<1330	12%	**2%**	22%	**0%**
1330 - 1340	23%	18%	15%	20%
> 1340	65%	80%	63%	80%