

Presenter Name: Jitendra Kumar

Paper name: Stabilization of RH degasser in SMS-III, Bhilai Steel Plant, SAIL



PRESENT AFFILIATION

Bhilai Steel Plant, SAIL

AREAS OF INTEREST

Steel Making, Games and Sports

Education

B-Tech, Metallurgy

Experience

- BOF LD Converter Operation
- Secondary Refining Unit (LF, RH and VAD)
- Continuous Casting (Billet Caster, Bloom Caster and Slab Caster)
- Commissioning & Stabilization of BSP, SMS-II LF and RH Degasser
- Commissioning & Stabilization of BSP, SMS-III Bloom Caster, Billet Caster, Ladle Furnace and RH Degasser

Projects:

- Development of Special Steel, e.g. EWNR, CAQ Grade-I & Grade-II, SWR10 etc.

Publication/ Patent

NA



Stabilization of RH Degasser in SMS-III, Bhilai Steel Plant, SAIL



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SMS-III BSP COMPRISES:

- TWO HMDS UNITS
- THREE LD BOF CONVERTER
- THREE ARS
- THREE LADLE FURNACES
- ONE RH DEGASSER UNIT
- TWO BILLET CASTERS
- ONE BLOOM CUM BILLET CASTERS
- ONE BEAM BLANK BLOOM CASTER

RH DEGASSER

WHAT IS A DEGASSER?

A DEGASSER IS A DEVICE USED TO REMOVE GASSES FROM LIQUID STEEL WHICH COULD OTHERWISE FORM BUBBLES WHICH MAY LEAD TO DEFECTS.

RH (RUHRSTHAL-HERAEUS) DEGASSER:

THIS PROCESS IS USED IN DEGASSING (REMOVING)

ENTRAPPED GASSES SUCH AS OXYGEN, NITROGEN AND HYDROGEN FROM LIQUID STEEL.

INTRODUCTION

- **SMS-3 PRODUCES RAIL STEEL THROUGH LF- RH ROUTE**
- **THERE IS ONE RH UNIT WITH THREE VESSEL**
- **THE WORKING CAPACITY IS 180/165 TONS**
- **RH DEGASSER WAS COMMISSIONED ON 08.10.2019**

CONSTRAINT FACED DURING STABILIZATION

- **SELF-FLOW CASTABLE INPLACE OF RAMMING MASS**
- **BRICKS CUTTING AS PER REQUIREMENT**
- **IMPROVEMENT IN VESSEL WELDING WORK**
- **MODIFICATION OF CONNECTING PLATE**
- **DEGASSING TEMPERATURE REDUCED BY INCREASING CASTING SPEED**
- **SLAG VOLUME CONTROL IN LADLE**
- **MODIFICATON OF VESSEL TOP RELINING PATTERN**

SELF-FLOW CASTABLE INPLACE OF RAMMING MASS



IMPROVEMENT IN VESSEL WELDING WORK

- **STARTING UT TEST**
- **DP TEST FROM LAST TWO YEARS**
- **USE OF LH ELECTRODE**

IMPROVEMENT IN VESSEL WELDING WORK

DP TEST



SLAG VOLUME CONTROL IN LADLE



DEGASSING TEMPERATURE REDUCED

- **CONTROLLED SUPERHEAT IN TUNDISH**
- **CASTING SPEED INCREASED**
- **REFRACTORY LIFE INCREASED DUE TO REDUCTION IN DEGASSING TEMPERATURE**

MODIFICATION OF CONNECTING PLATE

**CONNECTING PLATE THICKNESS INCREASED
FROM 36 MM TO 50 MM**



MODIFICATION OF VESSEL TOP CONE RELINING PATTERN



OFFTAKE &
VESSEL
TOP CONE
JOINT

MODIFICATION OF VESSEL TOP CONE RELINING PATTERN

AT VESSEL TOP CONE USE OF CASTABLE AND
CERAMIC BLANKET IN PLACE OF BRICKS



IMPROVEMENT IN RH DEGASSER LIFE

IMPROVEMENT %



THANK YOU



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