

Rolling Mill Operating Committee Meet and Workshop

19-20th March 2021



Highlight of Technical Sessions: Long Mills

Date: 19/03/2021

Session: I B



I: Improving productivity in sliding stand while rolling higher size bars at BRM

Shri R Edison, JSW Salem

- **Action taken for addressing Lower production rate in Higher size bars (>42mm) was discussed**
- **By regression analysis Key parameters was fixed.**
 - **Mill speed of sliding stand was fixed at 2.8m/sec, roll diameter as 0.68m and groove factor was eliminated**
- **Productivity has improved from 99Mt/Hr to 105 Mt/Hr while rolling Higher size bars (>42mm)**

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2: Life improvement of bent pipe in WRM, ISP

Shri A Maitra, SAIL RDCIS

- **In this paper premature failure of bent pipe at Wire Rod Mill of ISP during rolling lower section plain wire rods was discussed.**
- **Heat treatment done to the existing bent pipe**
- **Bulk hardness of bend pipe was increased from 30HRC to 45HRC by heat treatment.**
- **Modified bent pipe has given 2.5 times more life than existing pipe during trial**

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3. Performance improvement in Bar Mill

Shri Mritunjay Kumar, JSW Steel - Dolvi

- **Steps taken for TMT production enhancement from 0.7MT to 1.0MT was discussed**
- **Different case studies were discussed like**
 - **Spring loaded delivery guides, Bar conveying line I modified, modified Water box parameter modified to control TMT properties variations, Pass preparation improved to avoid pass slippage after pass change etc.**
- **Internal delays reduced from 15.13% to 13.10 %**

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4. Improvement in TE parameters of WRM

Harsh Bijay, Tata Steel Tarapur

- **Key improvement initiatives were discussed**
 - **Development of half sections, elimination of cobbles during rolling of 8mm TMT, Auto cobble detection system, automated control of combustion blower etc**
- **These initiatives have resulted in improvement in TE parameters**

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5: Stabilisation and optimization of high carbon grade rolling in WRM

Shri S Ramesh, SAIL-ISP



- **In this paper operating challenges for high carbon rolling was discussed**
- **Rolling rate was increased from 65t/hr to 82t/hr with reduction in inter billet gap time from 35sec to 15sec**
- **Dry and tail length was reduced by optimizing of water box behavior**
- **Variation in mechanical properties was reduced by optimization of cooling conveyor setup, Reheating furnace temperature and laying head temperature**

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6: Guide wear reduction in Laying Head Pinch Roll guides

Shri T S Rao, RINL

- **Problem of frequent wear out of Bell Mouth of Laying Pinch Roll while rolling 5.5mm to 8mm**
- **Width of Insert inside bell mouth was modified from 17.5 to 14**
- **This modification has resulted in reduced mill down time, better laying due to minimized contact and better surface finish due to minimized abrasion**

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I: Implementation of Hi Fire –Low fire system for fuel consumption reduction

Shri Rajman Sharma, Mukand Ltd.

- **Problem of higher consumption of Furnace oil and high decarb in Few grades in Wire Rod Mill was discussed.**
- **Main factors responsible were excess combustion and atomizing air**
- **The atomizing air pressure was controlled with auto control and electrically operated solenoid auto shutoff valve**
- **After implementation of this system the oxygen percentage was reduced from 4.5% to 3.5%**

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2: 20mm finishing pass life improvement at MM

Shri Rajesh Kumar, Tata Steel

- **Finishing pass life while rolling 20mm TMT in this mill was 500tons resulting in lower utilization.**
- **Roll material was changed from Spheroid Graphite Acicular (SGA) to COMBI roll.**
- **Average roll life has increased from 500t to 2500 ton**

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3: Improvement in TE parameters of LP Mills

Shri A K Prasad, JSW Vijaynagar

- **Less pass life in centre line rolling resulting in lower utilisation.**
- **2 set of additional water header installed at pass entry side for both rolls**
- **Water flow of water header Increased to 220LPM from 180 LPM with increased water flow in bottom roll.**
- **Average roll life has increased from 700t to 950 ton**

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4: Modification & Implementation of Roll Pass design for 20 mm TMT & 25 mm TMT from 100 mm square Concast billet to 125 mm square Concast billets in Merchant Mill

Shri Satya Prakash, SAIL-DSP

- **In this paper change over from 100mm billet to 125mm billet by modification in roll pass design is discussed.**
- **Pass design in roughing stand and template were developed.**
- **Rolling from 125mm concast billet is established.**

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5: Improvement measures at Merchant Mill, DSP

Shri Ravi Shankar, SAIL-DSP

- **Late bite /pass slip at leader pass (std.12) and bearing failures are discussed in this presentation.**
- **Guides were modified at leader pass and Stand No. 1.**
- **Bearing failures were analysed.**
- **Seal material has been changed from Synthetic Rubber to Nitrile butadiene rubber (NBR) and Casing material has been changed from Mild Steel to Stainless Steel as per AISI-304**

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6: Initiative taken in WRM for performance improvement

Shri S K Shyamal & Shri Pritesh Prakash RINL, Vizag

- **It was discussed that use of concentric nozzles in cooling pipes have enhanced turbulence and cooling along with optimizing the selection of water boxes has enabled to use billets with CE from 0.31 up to 0.36**
- **Enhanced cooling resulted in improper tail end formation at laying head. This was mitigated by modifying the laying head incremental speed.**
- **Each coil is being given an unique Identification number for effective traceability.**

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7:Action taken for rated capacity in BRM, BSP

Shri S K Behra & Shri S Mohanty, BRM, BSP

- **It was shown that Keeping Heating Zone temperature 10 degC more than Soaking zone set point the Discharging temperature ranges from 1120 to 1150 degC**
- **Combustion air temperature increased from 340 degC to 470 degC by adjusting cold air injection valve which resulted in increased combustion of fuel**
- **Cobble due to stand 5 exit guide getting dislodged is prevented by rescheduling metal size of Roughing group.**
- **Water spray facility is provided in stand 18 in entry to flush out scale/small scrap deposition.**

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8: Introducing multibar recovery and optimisation for yield improvement in bar mill, ISP

Shri Shri Dhiraj Kumar, ISP SAIL

- **Improvement in yield was achieved by optimisation of cut bar length.**
- **System of Optimization recovery was developed in which the system reduces the length of penultimate bar to 72m (user Defined) and last bar is made $12x(n+1)$ meter which can be handled by the system, if bar length is more than 36m.**

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I:Visual inspection capacity improvement at rail mill JSPL raigarh

Shri Nilimp Pandey , JSPL Raigarh.

- **Increase rail inspection from 36 to 108.**
- **The rail is inspected internally and all the rails offered for inspection was of good quality this reduced the inspection time from 1380sec per rail to 480 sec per rail.**

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2: Development of ISMC 300 in universal section mill at ISP, SAIL

AK Choudhary.

- **Direct drafting of web and flange could be done by this mill.**
- **Groove design was changed and width of pass increased.**
- **R500 to R200 change was helpful in filling the corner of the flange.**

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3.Improvement measures in RSM.

Pankaj Puri BSP SAIL

- **Recent modifications in furnaces.**
- **Straightening of Thick web asymmetric rails in Structural roller straightening machine.**
- **Rolling of billet 125 sq at RSM**

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4.Avoid collaring in stand 6 top roll during ISMC 100 at BSM

Deepak soni , JSPL Raigarh

- **Pass design was analysed.**
- **center of gravity issue in pass design was found as the cause/**
- **After modification in pass design upward tendency of metal was controlled.**
- **Metal behavior is now downward and there is no chance of collaring in top roll.**

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5. Techno-economic parameters, URM BSP

Rahul Srivastava

- **Worlds longest rolled rail length- 138 M**
- **Layout of mill was described in brief.**
- **Bending of bloom at BDI was described.**
- **Deflector position was shifted to avoid bending.**
- **Excessive wear at UR pass at flange position was discussed.**

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6. Reduction of Cobbles in 8mm Rebar Rolling. ESL steel limited, BOKARO Polash Kar.

- **There were 113 billets cobbles in 8mm rebar during the period July-20 to Oct-20 and 5373 minutes were lost .**
- **Problem causes like metal hooking, guide misalignment, fins etc were discussed.**
- **Action taken such as Machined Entry insert to be used at #17 entry Guide, #17 entry guide to be leveled with the set bar of 10 mm round, stand 17 twister guide nose to be grinded as per the pass profile of stand 17.**

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7. Process improvement in merchant mill BSP

SK Hariramani

- **Innovative job like: U-SEAL installation in Furnaces 1,2 & 3, Successful rolling of TMT-32 from 125*4.1 billets produced by RSM., Rolling of TMT 40 and Angle 90 from 105 sq billets., Modification in Furnaces to accommodate 3.7 mt billets.**
- **Area of concern such as Profile problem in Angles, Split head cobbles, Shifting and vibration in housing less Stands were discussed.**

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8. Operating challenges in wire rod mill of BSP

MV Gouri nath

- **Limited length for cooling available, with micro alloy, only three cooling tubes were being used, each of capacity 25-30 m³ / hr at a pressure of 15 kg/ cm².**
- **Excessive temp. variation across the length of billet $\pm 50^{\circ}\text{c}$**
- **Weight / meter was on higher side due to low temp. at intermediate cooling.**



THANKS