RECENT DEVELOPMENTS ON FORGING QUALITY STEELS AT JSW STEEL LIMITED SALEM WORKS

(M/s D. Ravichandar, T K Naha, S S Asawale, P Sathyamurthy & B.M Hasan)

d.ravichandar@jsw.in; tapankumar.naha@jsw.in; sudhakar.asawale@jsw.in; ps.murthy@jsw.in; bm.hasan@jsw.in

Abstract

JSW steel limited Salem works is an integrated Iron and steel plant having a production capacity of 1MTPA of long products mainly of forging quality grades used in various automobile applications. The steel making route comprises of Blast furnace- Energy Optimizing Furnace - Ladle Refining Furnace - Vacuum Degassing — Continuous casting.

This paper in general gives various efforts taken during last 2 to 3 years thereby meeting requirement of customers. These include component Yield improvement by supplying close size tolerance through Kocks block, online profile measurement, Surface improvement through change in oscillation mechanism in caster, installation of billet grinding machines ,installation of high pressure descaler, improved Fatigue life by clean steel production with modifications ‘in slag metallurgy, flotation of inclusions in ladle and tundish by tundish modelling, gases control with effective Vaccum degassing techniques, increase in equiaxed zones in macro with controlled superheat and cooling parameters.

Thrust and emphasize is given for more and more development of micro alloyed grades. The aim of the paper is to present the recent micro alloy developments for applications such as crankshaft and leaf springs including design of chemical composition, microstructure and precipitate size. The mechanical properties like yield strength, tensile strength, hardness properties are controlled by optimizing rolling process parameters, cooling rate, microstructure etc. Additions of micro alloying elements and raising the Nitrogen levels resulted in finer grain size and thereby enhancing the strength.

Investment in online surface detection system, immersion ultrasonic system, Scanning electron microscopes has further strengthened the detection and in house R&D activities aimed at root cause analysis and thereby planning prevention of failures at process stage itself. Implementation of TQM has further strengthened systemic dependence.

Key words: Micro alloys , Kocks block, Ultrasonic System, TQM

Author: Mr B M Hasan, Contact No.+91-9894677120 <bm.hasan@jsw.in>
Associate Vice President (PPC & D), JSW Steel Ltd. “Salem Works”,
Pottaneri, Mecheri, Salem District – 636 453 Tamilnadu, INDIA.

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