INTER PLANT STANDARD IN STEEL INDUSTRY		
IPSS	**METHOD OF INSPECTION AND RECONDITION OF COKE CRUSHER ROLL (FOR BASE MIX PREPARATION)**	**IPSS:3-02-017-18**
	Corresponding IS does not exist	Formally : IPSS:3-02-017-07

0. FOREWORD

0.1 Interplant standardization in steel industry was initiated under the aegis of the Indian Standards Institution (ISI) and the Steel Authority of India Limited (SAIL). This IPSS was prepared by the standard committee on Operation and Maintenance, IPSS 3:2 and firstly published in 2007. Lastly, this has been revised by the standard committee in July 2018 with the active participation of the representatives from major Indian steel plants and leading consultants.

1. SCOPE

1.1. This Inter Plant Standard covers the visual inspection, inspection of coke crusher roll surface for any defects and specifies the methodology for reconditioning. Adequate precaution should be taken for getting best possible service life.

2. SPECIFICATION

2.1. A typical material of construction and specification of coke crusher roll is given below:

i) GS-42 CrMoV12

ii) 40Cr4 (IS : 4367)

iii) 70Cr1

iv) IS : 4892 (Gr.2)

Note : Material to be reviewed as they are very old.

3. INSPECTION OF COKE CRUSHER ROLL

3.1. The roll gap is required to be measured daily with the help of 1m long filler gauge.

3.2. Gap between rolls is measured at both ends and middle, to check the taper between the roll axis, wear out in the form of concave shape.

3.3. Deep groove formation.

3.4. Rolls not mounted properly – may be loose fitted.

3.5. The end product shall be checked for particular size after uniform adjustment to ensure its correction.

3.6. DP test / UT test for finding cracks on rolls.

4. COMMON DEFECT ON COKE CRUSHER ROLL

4.1. Irregular wear out of roll surface like, formation of concave surface & deep groove in some particular region.

4.2. Crack on the shell.

4.3. Damage of the cone holding tie rods.

4.4. Damage of the bearing, Plummer Block, end cover, labyrinth ring, lock nut, V group pulley, lock plate etc.

5. METHODOLOGY OF RECONDITIONING

5.1. RECONDITIONING OF PRIMARY ROLL

5.1.1. When the thickness of top roll becomes such that the gap cannot be adjusted to 10 mm, in-situ building up by proper electrode to be carried out for two times. Third time, the roll is to be dismantled and taken to Engg. Shop for undercutting and to be made up as per specification (or replacement of liner in case of roll with liner). The following methodology shall be adopted in Engg. Shop :

i) Under cut 5 mm from radius to remove work hardened surface and get a uniform surface.

ii) Built up with low hydrogen electrodes grade 7018 with buffer layer up to 8 mm from original dia.

iii) Building with hard facing electrode up to 12 mm depending upon the material of the roll.

iv) Both end bearing housing, bearing, labyringth ring, lock nut, end cover, tie bolt etc are opened, checked and replaced, if necessary.

v) Hardness of the final deposits shall be 55HRC

6. RECONDITIONING OF SECONDARY ROLL

6.1. Once the surface defect is noticed or 200 hours of operation, the wear out/groove is within 2 mm, the rolls shall be turned in-situ with the help of machining attachment provided on crusher frame.

6.2. If the roll is below adjustable limit, a 5 mm under cut is given to remove the work hardened surface and get a uniform surface. When the shell thickness becomes beyond adjustment limit after doing 5 mm under cut, the rolls shall be taken out and sent to Engineering Shop for replacement of layer. In Repair

Shop, the free side of the roll is dismantled (bearing housing, bearing etc). End is re-centred with respect to bearing seat.

6.3. The rolls shall be built up by low hydrogen electrodes and hard surfaced as in case of primary roll.

6.4. Roll OD is then turned on lathe to get uniform diameter.

6.5. Both end bearing of the rolls are then checked and assembled with bearing, sleeve, labyringth ring, lock plate, tie rod, etc. If necessary, damaged and worn out parts shall be changed. The remaining portion shall be unaltered.

7. BEARING SEAT AREA REPAIR

7.1 Measurement of size of bearing seat area to be done.

7.2 Required matching to remove the work hardened surface.

7.3 Build up by electrode compatible with the parent material and matching to the required dimension.

8. ASSEMBLY & BALANCING

8.1. After assembly both primary and secondary rolls are statically balanced, counter weights are welded, if necessary and assembled in the machine.