Metalock Engineering UK

Press Information

METALOCK GOES ORBITAL FOR CORUS BEAM STRAIGHTENERS TO SPEED BOBBIN CHANGES

In-situ orbital turning by Metalock Engineering has enabled rolls on one of the straightener/finishing machines in the beam mill at Corus, Teesside to be changed as quickly as those on the hot mill further up the line resulting in substantially improved production rates.

Lamberton roll straighteners comprise seven shafts, four driven on a top row and three free-spinning in the mid-positions on a lower row, each of which carry a sleeved bobbin with the beam profile. This straightens and finishes the beam sections that have been produced in the hot mill.

A wide range of beams are produced at the plant and every different beam requires a new set of rolls to produce it. Over the years roll changes at the hot mill end have got faster — down to about 45 minutes now — and because this sort of time could not be achieved at the finishing end, due mainly to the bobbin sleeves sticking on the shafts, there tended to be a backlog of beams awaiting straightening/finishing. The aim of the exercise, for which Metalock Engineering devised an in-situ orbital turning machine, was to facilitate roll changes on the straightener as quickly as those at the hot mill end. This has been achieved.

The in-situ orbital turning procedure for the seven 0.5 metre diameter, 1.15 metres long stub shafts was necessary to avoid a very lengthy strip down and removal operation and the fact that individual shafts could not be rotated - it was all seven or nothing. The sleeved bobbins, which are removed using an overhead crane, were sticking on the shafts and it was considered that they would release much quicker if, instead of a single diameter the shaft diameters were stepped. In the event Metalock orbitally turned each of the seven shafts to give four reducing diameters with 25mm long chamfers leading from one diameter down to the next.

To speed up the orbital turning operation and ensure that all seven shafts matched, Metalock fixed a template of the stepped profile to the orbital turning device. The turning tools followed this profile - as in a copying lathe. Two orbital turning devices were manufactured to machine two shafts at a time.

For each shaft, the inner bearing ring of the orbital turner was attached to a temporary bearing housing on the straightening machine casing and the outer was supported on the threaded end of the shaft. The inner end of the shaft was turned down to 537.6mm for a distance of 225mm, followed by a 25mm long chamfer down to the next diameter of 533.6mm for 200mm. Another chamfer took the diameter to 529.6mm for a distance of 412mm with the final 200 mm to the locknut turned down to 525.5mm. As well as a need to remove metal rapidly, the hydraulically-driven orbital device was designed to be sufficiently robust to cope with a 100mm wide keyway running the length of each shaft.

As part of the upgrading process, the beam mill engineering team produced a set of racks for bobbin storage so that as they are removed from the straightener they are craned on to the rack. Replacements are drawn off in the same way. In conjunction with the stepped shaft diameters, which are now enabling the bobbins to release quicker, this new system has enabled bobbin changes to be performed as fast, and sometimes faster, as roll changes at the hot end of the mill.

The in-situ orbital turning procedure for the seven 0.5 metre diameter, 1.15 metre long stub shafts avoided a very lengthy stripdown. Metalock used copy lathe techniques and built two orbital turning machines to speed the project.

Metalock Engineering UK
Unit H 5
Pilgrims Walk
Prologis Park
Coventry
CV6 4QG
England
Phone: +44 (0) 24 7636 0084
Fax: +44 (0) 24 7636 0190
E-mail: sales@metalock.co.uk
www.metalock.co.uk

REG IN ENGLANDNO:469627
VAT. No. GB 646 9227 09