Metalock Engineering UK

Press Information

METALOCK DESIGNS A SPECIAL RIG FOR LAFARGE IN-SITU RAW MILL REPAIR

Faced with the task of machining the 5.2 metre diameter base table on a raw mill at Lafarge's Dunbar works, Coventry firm Metalock Engineering UK designed a special machining rig to restore the main surface that had suffered wear. This is the only cement works in Scotland and £35 million has been invested in the factory resulting in a rise in production to one million tonnes a year.

The revolving table supports a baseplate that forms one of the crushing surfaces. Others come from two pairs of steel tyres(rollers) weighing 75 tonnes each that run in mating grooves on the baseplate. When in operation the tyres are subjected to 130 bar pressure to effectively crush raw limestone to a fine powder for the manufacture of cement clinker. The pressures and vibration are enormous and severe fretting corrosion had taken place between the table and the baseplate since the mill had been installed in 1985. The mill had not been refurbished before and the fretting corrosion was causing fixing bolts to shear due to substantial undesirable movement between the baseplate and the table.

Metalock was recommended by the mill's chief mechanical engineer who had previous experience of working with the company when he was at the Llanwern steelworks in South Wales.

Metalock's machine design comprised an outer support track, feed rack and feed assembly all of which was welded to the circumference of the 5.2m diameter base table after the baseplate segments had been removed. The assembly was aligned by laser and revolved around a main bearing hub located in a 640mm diameter hole in the centre of the table. A 3 metre long cross slide with its own feed and outer support mechanism, designed to rotate at 1 rpm, was attached to the hub. On the cross slide was an hydraulically driven milling head which enabled Metalock to remove material more quickly and provide a better finish than if a single point tool had been used.

To replace the material that had been machined from the surface of the base table, Metalock produced twelve new 4mm thick stainless steel segments. These were predrilled to allow spotting through and subsequent drilling and tapping of 21 holes for M6 countersunk screws to fix each segment.

The purpose of the stainless steel segments was so that, if necessary, they could be replaced in future rather than having to machine further material from the base table. Stainless steel was selected to better resist any future fretting corrosion. The fixing bolt configuration for the crusher track plate was also changed.

The baseplate was changed just over 12 months after the Metalock operation, and no marks on the main table indicated that the modification was successful.

Metalock's machine had an outer support track, feed rack and feed assembly, all of which was welded to the periphery of the 5.2 metre diameter base table. It revolved around a hub at the table's centre.

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