

BAR QUALITY IMPROVEMENTS FOLLOW METALOCK MILL REFURBISHMENT AT LLANWERN

To restore stands R2 and R3 of the roughing mill to their original manufacturing tolerances for squareness, straightness and dimensional accuracy and eliminate risk of cambered bars at Corus Llanwern hot strip mill, Metallock Engineering UK, Coventry in conjunction with the mill management, carried out extensive in-situ machining work during a recent shutdown. Metallock has a wealth of experience in this type of work and has developed equipment and expertise enabling it to undertake such projects effectively.

Llanwern is an integrated steel plant producing strip products. The roughing mill is the first rolling stage of the hot strip mill.

The project involved machining the vertical wear plate faces (windows) and wrap around edges on R2 and R3 mill housings. The 1.7m wide x 6m high vertical windows and new wrap around edges on each of the four columns required machining to full height. This allowed oversize hardened wear plates to be fitted and original dimensions restored. Additionally, over 200 1¼-inch BSW holes were to be refurbished by drilling and tapping oversize to M48 holes, then fitting screwed inserts with a central 1¼-inch BSW tapped hole.

Wear plate securing holes tend to become damaged during routine roll changes due to the 30-ton roll and chock assemblies sometimes colliding with the edges of the wear plate. Corus's solution to this problem has been to redesign the wear plates to incorporate wrap around edges to closely position the plates thus preventing sideways movement in the event of a collision with the roll chocks.

From information collected during a series of pre shutdown surveys it was evident that the vertical wear plate faces had worn and would require each face to be machined to clean up and at the same time to ensure square and true surfaces to the mill centreline axis.

For the vertical wear plate faces and wrap around edges machining operations, special purpose milling machines, designed and built previously by Metallock, were adapted to suit the larger mill housings at the Llanwern plant. To drill and tap the a large number of M48 holes on the wear plate faces Metallock engineers designed and manufactured two special-purpose drilling machines mounted on 6m long jig plates that covered the full face and facilitated rapid access to every hole.

By using two special purpose milling machines, the operator side windows on both stands were machined concurrently. At the same time, two drilling rigs were used to drill and tap the holes in the drive sides of both stands. On completion of those four operations, the machines were changed over to drill and tap the operator sides and machine both drive side windows. Organizing concurrent operations on each stand this way enabled the project to be completed well within programme and budget.



Stands R2 and R3 of the roughing mill at Corus Llanwern's hot strip mill were restored to original tolerances using in-situ machining expertise by Metallock

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