

Challenge

Background

At a Mini Steel Mill, the customer was challenged by a issues with hydraulic billet shear cylinders in the continuous casting area. Issues included intensive hydraulic fluid leakage, heavy mechanical damages, and scoring of the piston rod.

Root Cause

During the shear cycle of billets, excessive shear force was generated on the cutting blades. This high shear force should have been transferred and handled by the sliding pads of the blades. However they wore out quickly, generating unexpected high lateral force on the blade operating cylinders.



Worn rod guide bushings (with spiral oil grooves).

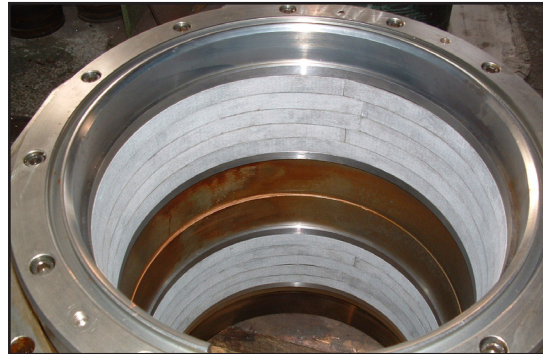
Solution

Service

The Chesterton engineering team recommended refurbishment of the worn and damaged bushings based on inspection of the equipment and operating conditions.

Product

The Chesterton 16K Non-Metallic Hydraulic Wear Rings have exceptional physical properties with high load-bearing capacity, supporting heavy lateral loads. The higher bearing capacity of the wear rings helped improve the lateral load handling capability and limit of the complete blade operating cylinder, increasing equipment life. (Ram diam 400mm (15.75"))



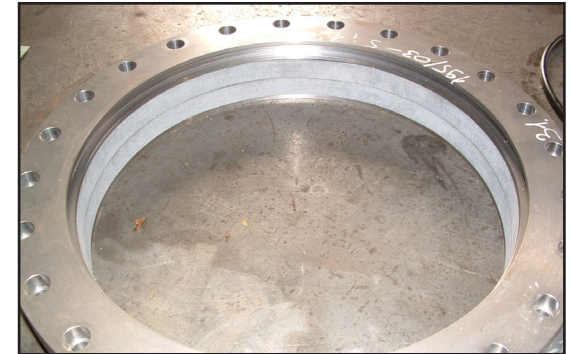
16K cut wear rings are installed in the grooves.

Results

The Chesterton 16K Wear Rings were installed in the first hydraulic billet shear cylinder in autumn of 2002. Based on excellent performance and improved reliability of the hydraulic shear units, the customer standardized 16K cut-to-size rings in all blade operating cylinders.

Benefits of 16K Wear Rings:

- Prevents metal-to-metal contact and scoring
- Significant cost saving on repair budget of the large diameter press cylinders
- Increased lateral force handling capability of the cylinders
- Improved equipment life: MTBR 2-3x



16K cut wear rings are installed in the groove.