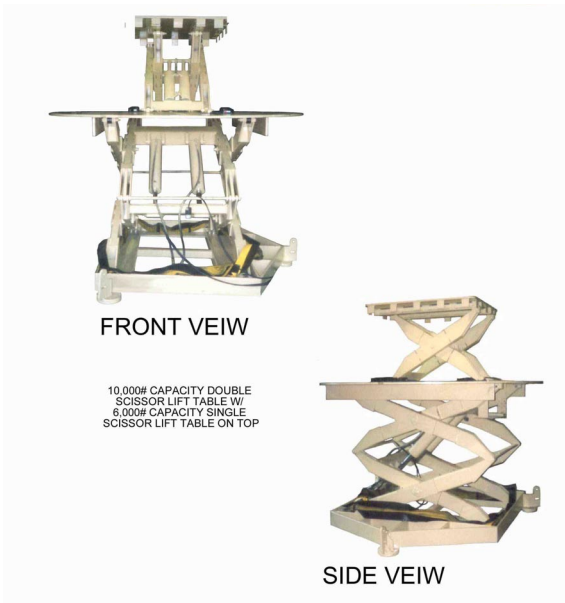


BRICKER'S LIFT



NEED

As part of our manufacturing process, Cascade Steel Rolling Mills use large melting pots, known as “ladles”, for melting materials. These ladles are lined with a fireproof brick material, which is sealed with a cement-like compound to hold the bricks in place. Normal wear requires these bricks to be chipped out and replaced every 100 heat cycles of the ladle. It is an ongoing process to rotate used ladles in for refurbishment. The ladles average 10 feet in inside diameter, by 10 feet in inside depth. There are over 1,300 bricks used in each ladle weighing 20-25 pounds per brick. The repetitive lifting associated with the work creates ergonomic health risks to the employees doing the brick lining. The need was to develop a device to improve the ergonomics of the process by providing height adjustment relative to the area being bricked, and height adjustment of the raw materials relative to lifting them off the pallets. All of this had to be accomplished inside the 10 foot diameter ladle. The device was required to operate in an extreme environment and be hoistable from an overhead crane for placement inside the ladle.



SOLUTION

The solution resulted in the specification, design, and development of a lift system that incorporates 2 separate lifts and some unique features. A subframe that rests on 3 pads prevents rocking on the sometimes uneven bricked floor. The subframe also provides attachment points in 3 places for the required overhead chain lift harness. The base lift system is rated at 10,000 lbs. The top of the base lift is comprised of an 8 foot diameter steel platform that has a permanently attached secondary lift in the center of it. The secondary lift holds a pallet of bricks to be used and allows for adjustment of the height of the pallet relative to the ideal lifting height, to unload them for use. Both lifts are foot controlled from 2 locations along opposite sides of the secondary lift base. A small trap door located in the floor of the main lift allows for power connections either above, or below the device.

BENEFIT

The post ergonomic report states " The pre and post project employee discomfort surveys indicate a substantial decrease in areas of discomfort and severity of discomfort (32% reduction in average over-all rating) after the project improvements were completed. One employee now reports no discomfort whatsoever related to the bricker job tasks following implementation of the improvements. This is a very positive and important measurement of the success of this project. All of the recommendations identified in the baseline ergonomic evaluation have been successfully implemented, resulting in the ability of employees to work in optimal positioning up to 75% of the time."

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