

B&D SWING SHAFT CHANGER: A KEY COMPONENT TO THE BEST TOOLING PACKAGE FOR SHOVELS IN THE WORLD.

SITE

Copper mine in Chile that is currently operating 2 P&H electric shovels.

OBJECTIVES

- Improve safety for service technicians
- Increase shovel utilization to increase tonnage haul

OUTCOME

- No reported worker injuries as a result of maintenance and repairs on the component
- In 48 months an additional 211,200 tons were hauled
- Significant expectations for reducing long-term operating costs



CHALLENGE:

With only two shovels at this particular site, when one requires maintenance it cripples the hauling fleet. Currently, changing a swing shaft puts the shovel out of commission for about 12 hours. As a shovel fills a truck every 90 seconds this means a loss of 576,000 tons. Using a forklift to do the job is posing challenges getting one to fit under the shovel counter weight with the available ground clearance without having to dig a pit. Using a forklift lacks the functionality to safely and effectively remove and install the swing shaft because of the challenge to align the main bearings and gearing. In addition, it poses safety issues for the service technicians because of the lack of fall arrest protection. The service technicians are also at risk without a proper work-platform to perform the required maintenance.

SOLUTION:

Safety and efficiency were the deciding factors for this site and they chose the B&D Swing Shaft Changer. Service Technician friendly, this straight-forward and easy to use piece of equipment easily drives under the shovel. It provides a safe work platform with hand railing and tool storage. The B&D Swing Shaft Changer is a 7-axis full function swing shaft placement machine. The base scissor lift extends 4 ft. (down for 2300 and 2800, and up for the 4100). The main deck has a 10" X movement and 12" Y movement. The main tower is mechanically linked by 4 Acme threads providing 5.5 ft. of stroke. In addition, the main swing shaft table has an XY cradle movement (up to 6 degrees of motion) which gives the ability to place the shaft within a sphere. The final axis is a 30 degree rotation of the main swing shaft table (this accommodates meshing of the gears). The B&D Swing Shaft Changer can make the change 16 times faster than using a forklift. **After 48 months an additional 211,200 tons can be hauled.**

Swing Shaft Changer required for:	Recommended frequency for maintenance	Maintenance hrs without B&D SSC	Maintenance hrs using B&D SSC	Increased shovel utilization (Loads x tonnage)
Shovel* - loads one truck every 90 seconds	25,000 hrs = 38 months**	12 hours	1 hour	11 hours = 440 loads every 38 months x 240 tons*** per load = 105,600 tons

Every 48 months approximately one Swing Shaft Change is required on each of the two shovels which enables an additional 211,200 tons to be hauled.

**Shovels are on alternate schedules for Swing Shaft Changes.
**Based on trucks being used 657 hours per month (90% utilization).
*** Based on an average ton haul per truck.*



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