

Limiting respirable dust exposure during maintenance activities Peabody – Millennium Mine

The Problem

Maintenance activities on large mining equipment can present an increased exposure to respirable dust. The previously accepted practises of blowing out or scraping dust out of collectors or cabinets was identified through the hazard reporting process as presenting an unacceptable level of risk, due to the dust becoming airborne and creating a significant health risk to personnel undertaking these critical maintenance activities. An improvement project was initiated from the shopfloor to identify ways to limit the worker's exposure to the respirable dust hazards.



Previous methods of cleaning out air boxes and cabinets

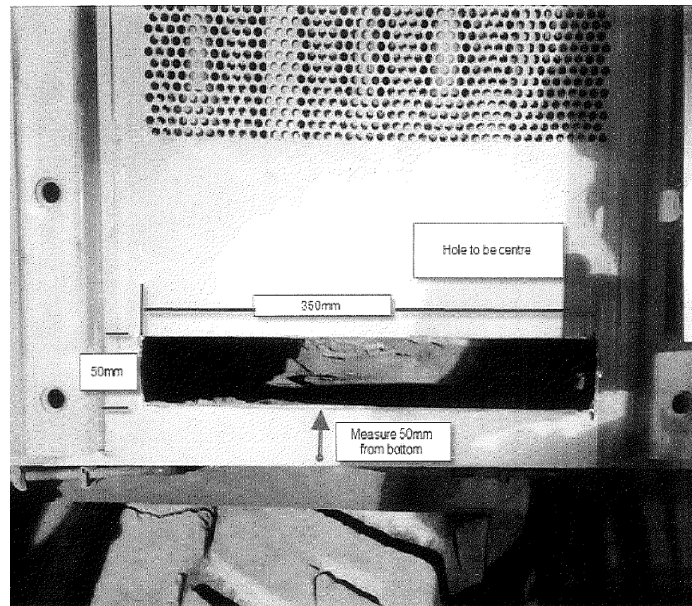
The Solution

A shopfloor fitter sourced an industrial vacuum cleaner and requested permission to trial the effectiveness of the unit in removing the compacted and often moist dust, with the aim of eliminating the use of high pressure air for blowing out the collectors and cabinets. An additional dust collection drum was also fitted to the unit to provide extra capacity and ease of emptying.



Dashclean A827 industrial vacuum unit with additional dust collector

Modifications were then designed and implemented to the T282C Haul Truck air boxes to allow better access with the vacuum unit during the dust removal process. Several additional modifications were made to the angle of the suction hose line to allow better access and improved performance.



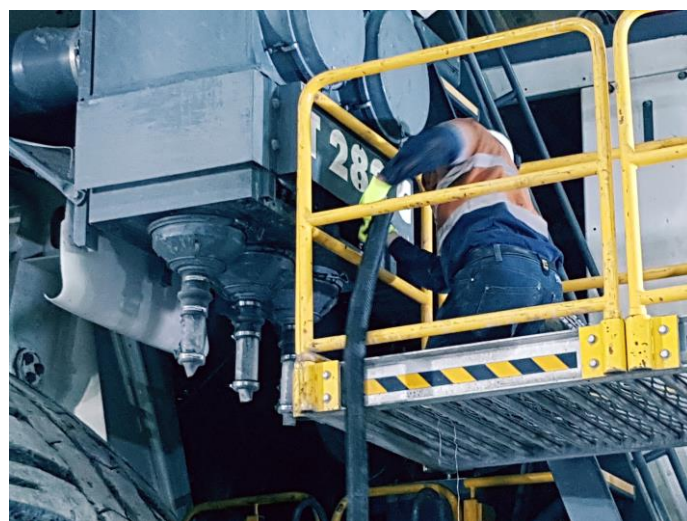
Modified T282 air boxes

The vacuum unit was then further trialed on removing dust build up in HV cabinets on both the 282 and 4400 haul truck fleets.

Benefits

Significant reduction in worker's exposure to airborne respirable dust generated from routine maintenance activities, particularly on air boxes and electrical cabinets.

This initiative and innovation has now been adopted across the other Peabody Open Cut Operations in Australia and shared international throughout the business.



Revised cleaning method on T282 air box

The below results were achieved by Moorvale Mine following the sharing of the innovation within the company and the adoption of the same industrial vacuum unit. The results indicate a significant improvement in respirable dust exposure during the cleaning out of electrical cabinets on their haul trucks.

Event Description	Dust (mg/m3)	Dust Exceedance	Silica (mg/m3)	Silica Exceedance
Initial test results	5.4	+2.6	0.37	+0.28
Re-test following introduction of vacuum unit.	1.0	-1.8	0.11	+0.02

Results achieved by Moorvale Mine

Transferability

The industrial vacuum units can be used wherever haul trucks and other heavy earth moving equipment, with similar air box configurations or electrical cabinets, are operating.

Innovation

The innovation evolved from a hazard report generated from the shop floor and the diligent follow up of a maintenance safety representative to follow up on a solution to address the issue.

A review was then conducted of the health risks associated with the current process for cleaning the air boxes and high voltage cabinets on both the 282 and 4400 haul trucks, which highlighted an increased risk of exposure to respirable dust for the maintainers.

Based on the documented risks associated with the task, a proposal was put forward to source an industry vacuum cleaner capable of handling the heavily compacted and moist fine dirt, in order to allow the task to be carried out without the exposure to respirable airborne dust.

The innovation was driven by the shop floor to come up with an improved and safer process to undertake this task. The solution is robust and addresses the issues raised and creates a much safer work environment.

The Cost

The cost of the industrial vacuum is approximately \$8,000. The costs associated with personnel to undertake the conceptual design and modifications to the air boxes has not been considered.