

Coal Hauler Load Profiler & Sealing System Jellinbah Mining

The Problem

The 180 tonne coal haulers used to transport coal from the mine to the train loadout over a distance of approximately 25 kilometers presented a problem with coal dust and occasional pieces of coal being blown off of the trucks due to strong side winds during the journey. The original equipment manufacturers for the coal hauler trailers were contacted to assist with providing covers for the open trailers but could not provide a workable engineering solution. A mechanical engineering consultant was then engaged to review all after-market solutions and this process also failed to find a workable solution.

From previous experience at another site with these coal haulers being loaded by a flood loading system with washed coal, a solution started to form where the load could be profiled and flattened to reduce the affects of the side wind and the load could be sprayed with a veneer to effectively trap fugitive coal particles.

The Solution

The solution was discussed with the coal haulage company and a consulting mechanical engineer was engaged to manage the design and installation of a coal hauler load profiler and spray sealing system that was simple effective and reliable. A review of the risks associated with the use of the load profiler and the sealing agent was carried out to ensure that the project could advance to the next phase. A sealing agent was selected that would not present a health hazard to persons, would not corrode equipment and would not affect the coal quality.

The sealing agent was trialed on a number of coal haulers and a comparative assessment made of the effectiveness of the agent compared to no agent and using only water to spray the load. Site workshop personnel were involved in setting up and implementing the spray sealing trial. The sealing agent proved to be the most effective in controlling dust emissions over the entire journey from the mine to the train loadout facility.

The load profiler and spray systems were designed by a design engineering firm with sketches of the concept provided by site personnel. The profiler and spray system was then constructed on site ready for testing. An operational risk assessment was conducted involving the project personnel, coal loading operators, coal hauler operators and site maintenance personnel. The profiler was placed into service prior to the spray system being available due to delays with the installation of the water line to the facility. The spray system was then commissioned and implemented.

Benefits/Effects

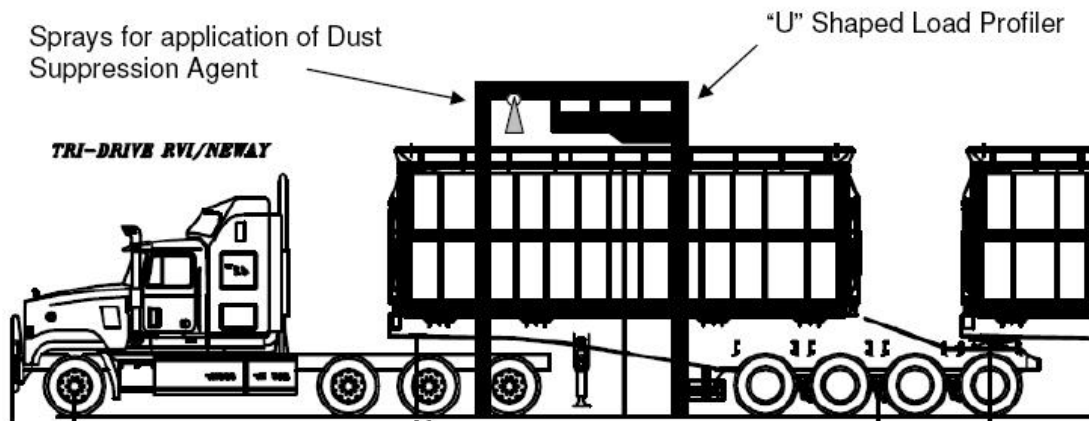
The coal profiler was effective and even without the spray sealing provided a reduction in dust emissions and coal particles. The introduction of the spray sealing has eliminated

dust from the sealed load and also binds the larger particles to the top of the load. The result has been very effective in reducing dust on the haul road as well as the incidents of windscreen and light damage to vehicles from coal particles coming off of the load.

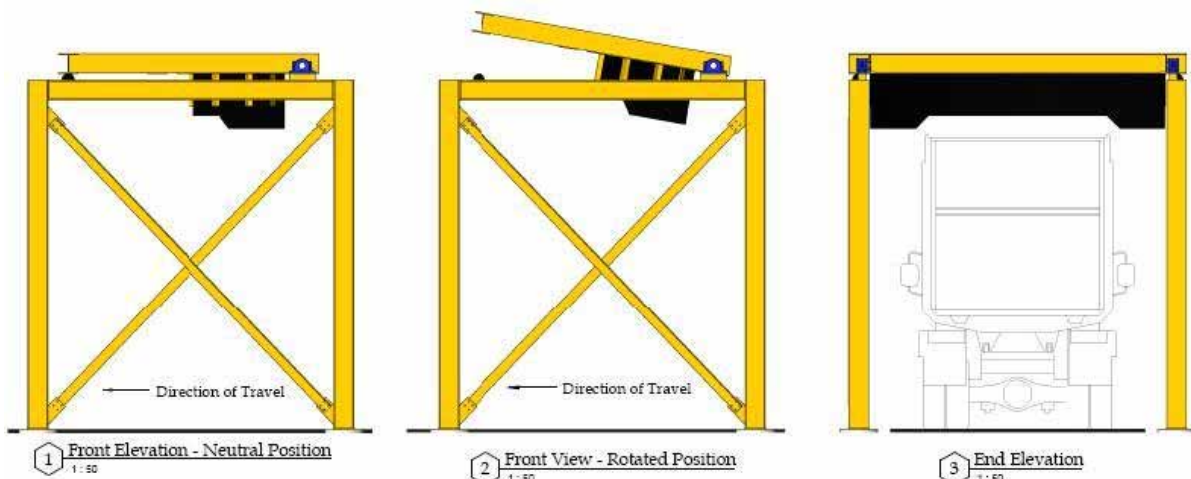
Dust sampling was carried out for a six month period prior to the implementation of the profiler and sealing system and these measurements are being compared to sampling after the implementation of the system.

Transferability

The system design has been provided to a neighbouring mine and would be useful for other operations utilizing these types of coal haulers. The system is simple but very effective and provides an effective barrier as well as the removal of loose coal that can cause damage to equipment.



Jellinbah Mine Coal Hauler Load Profiler and Spray Design



Jellinbah Mine Coal Hauler Profiler Concept Drawing