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HAULAGE DC

-  Reduces water requirements and application frequency by up to 40%
-  Increases distances travelled with same equipment and water
-  Reduces frequency of maintaining roads, saving labour and equipment costs
-  Reduces dust pollution and will not corrode equipment
-  No additional mixing or blending is required
-  Polo installs the dosing equipment
-  Biodegradable
-  Non-irritating to humans and animals
-  Water will penetrate faster into roads, allowing less evaporation
-  Orange oil coats dust with a micro-film to trap moisture and increase agglomeration of dust particles
-  Humectant helps retain moisture in the soil for longer periods

Haulage DC was developed for application on haulage roads to control and reduce airborne dust and to reduce water consumption. Haulage DC is used in underground and on surface mines where dust poses serious health and safety risks to personnel and equipment.

Citrus based Haulage DC reduces surface tension, allowing water to penetrate deeper into the roads. Haulage DC also contains a humectant to help retain water in the ground. When the water penetrates faster, there is less water remaining on the surface to evaporate, create potholes or runoff ruts.

Haulage DC has also been very successful in quarries where the same operator does many tasks; including water truck driving.



Haul Roads



Unsealed Surfaces

Directions for use

Haulage DC is simply batch-mixed in existing water tankers, Polo Citrus can advise the appropriate dilution rate for your application.



SETTING THE EXAMPLE IN THE FIGHT AGAINST DUST

The train of mobile plant before Polo BDS is sprayed into each crusher.

A crushing contractor has turned to a less water-intensive, foam-based dust suppressant solution to mitigate excessive dust emissions at a Victorian quarry site. **Damian Christie** visited Hi-Quality's Bulla Quarry to watch the dust suppressant system at work.

The Hi-Quality Group is a family-owned Australian business that specialises in natural quarry and recycled products, transport services and waste management solutions. The group manages seven quarry, recycling and processing sites throughout New South Wales and a single quarry in Bulla, Victoria, about 30km northwest of the Melbourne CBD and less than 13km from Melbourne's Tullamarine Airport.

Hi-Quality Group's Bulla Quarry contains predominantly basalt deposits, with deeper reserves of sand and clay. Consequently Hi-Quality's end products include basalt concrete aggregates that have been certified for use in concrete and asphalt applications. Its sand deposits are also suitable for ready mix concrete applications and concrete and asphalt production. The Bulla site's products include pebbles and washed sand.

Hi-Quality is also managing a prescribed industrial waste landfill and recycling facility

at the Bulla premises, accepting disposable materials such as cleanfill Category C contaminated soil, asbestos waste and acid-sulphate soil. The landfill facility abides by all Victorian Environmental Protection Agency (EPA) approvals and requirements.

To meet customer demand, which is currently outweighing supply, Hi-Quality Group engaged a mobile crushing contractor to produce its concrete aggregate to specification at the Sunbury site. This includes end products of 20mm, 14-10mm and 7mm aggregate and a 5µm (micron) crusher dust.

The biggest challenge for Hi-Quality's contractor on this project (who for the purposes of this article asked not to be specifically named) was dust mitigation. It was required as part of the contract to abide by EPA and Victorian Department of Environment and Primary Industries requirements agreed to by Hi-Quality at the



The 1000 litre container of the Polo BDS solution at Hi-Quality's Sunbury Quarry.

Bulla site. The nature of the basalt at the Bulla site means that when it is crushed into fines, it generates significant amounts of dust.

Various attempts by the contractor's mobile crew to control the dust with water proved difficult and in some instances created more

SHOWCASE - DUST CONTROL

complications. Spraying water onto the grizzly bars led to blockage, screens had to be cleaned out at least once a day and water would carry excess fines into the end product, putting it out of spec.

The mobile crushing contractor was familiar with Polo Citrus, a specialist supplier in natural orange oil and biodegradable technology that has developed a range of products to reduce dust emissions in most extractive industry applications, so engaged the company to find a solution at the Bulla quarry site.

BIODEGRADABLE DUST SUPPRESSION

Polo Citrus' key "weapon" against dust in crushing applications has been Polo BDS, a biodegradable dust suppression agent. Unlike traditional dust control agents, Polo BDS employs foam micro-bubbles at the application point and downstream prior to crushing and screening.

"The dust particles adhere to the foam and go through the crushing and screening process," Polo Citrus business development manager Adam Gelly explained. "The airborne dust particles that would go airborne stick to the foam. The foam dries as it goes through the rest of the process and the dust falls off. In most cases, the foam will last right through to the stackers, so you're likely to get dust suppression right through to the stockpiles, up to about 90 per cent better in most cases."

In turn, the foam, when mixed with a single litre of water, expands up to 100 times to capture the airborne particles. This means the plant only has to provide six litres of water per minute, resulting in considerable water savings. Gelly added that the foam also dries more quickly, reducing material build up on belts and in the plant, leaving a better quality



The train of mobile plant after Polo BDS is sprayed into each crusher.



With a cleaner operation, the contractor has been able to deliver a higher spec concrete aggregate for Hi-Quality Group.



Prior to the installation of Polo BDS, dust emissions around the mobile plant made visibility extremely difficult.

SHOWCASE - DUST CONTROL

product at the end of the process – that is, no “dripping” stockpiles”.

Polo Citrus managing director Brett Aisen said that while there are other suppliers that offer similar dust suppressant agents, they are not quite like Polo BDS. “Our concentrate has been designed around our foaming unit,” he emphasised. “We built them both to match. The concentrate wouldn’t work with any other piece of equipment.

“Our product’s different, our equipment’s different, it’s been built to purpose,” Aisen added. “The quarrying industry doesn’t need the bells and whistles, they need a robust product that’s reliable. And the product itself, the concentrate, was redesigned a couple of years ago to actually go out to market with a price decrease, to make it cheaper, and to make it more cost-effective. So it’s very much designed for the quarry industry. We’re very much aware of the costs and we’ve tried to build a product that fits the purpose.”

To date, Polo Citrus has installed over 100 foam units throughout Australia, notably for clients such as Hazell Bros, Boral Contract Crushing and M&M Crushing. The company’s dust solutions have also been exported to “half a dozen” operations in New Zealand, three in France and four in Norway. Polo Citrus is looking to further expand its dust solutions into Europe.

ENVIRONMENTAL, PRODUCTION SAVINGS

Polo Citrus delivered the Polo BDS foam unit, along with a 1000 litre container of the solution, to the mobile crushing contractor at

Hi-Quality’s Bulla Quarry. Two pipes are run from the unit and the solution container to the mobile plant – one spray bar into the feed hopper of the impactor and the other into the feed bowl of the cone. The solution is then sprayed over the aggregate as it passes the transfer points.

“It takes air, water and power, it’s derived back to a system,” Gelly elaborated of the process. “The water and solution are combined in a mixing chamber and then they head through a vent where the air is added. Likewise, the solution is made into a foam, the foam is pumped up through 40mm lines to the areas where the most dust is generated and it is sprayed on the material that goes through the plant. It has a flow-on effect throughout the plant right through to the stacker.”

The mobile crushing contractor was pleased with the way the Polo BDS successfully reduced the dust overflow in its mobile operations and assisted the crew. The mobile plant operators found that the Polo BDS could minimise their water usage and reduce the downtime in cleaning screens from once or twice a day to just once every two days.

The contractor stated that other quarry operators that experience dust problems would benefit from employing Polo BDS. “Thanks to Polo Citrus, we’re getting a better quality product because we’re not using up water and carrying the fines over into the aggregate. That means the end user is getting a product that’s in spec – and that’s essential to our business,” he said. •

SHOWCASE - DUST



Boral has several mobile crushing plants across Australia, with two new track-mounted aggregate plants in operation, with a crushing capacity up to 300 tph.



The foam suppression system in operation.



The foam suppression system at work in a mobile crusher.

CITRUS FOAM SUPPRESSION OFFERS DUST SOLUTION

Mobile crushing is becoming the preferred way of many quarries to manage their businesses due to the ease of operation and mobility of this type of crushing and screening operation.

With this mobility, there are some shortcomings within the process, particularly the ability to curb the major problem of dust. This is a problem that all operations find when they go mobile, as they do not have at their disposal the same solutions that work with fixed plant configurations.

With water being a scarce commodity that cannot be sourced easily at every site and is not always the preferred suppression method, Boral Contract Crushing has enlisted the expertise of Polo Citrus Australia to control and manage its dust generation and emissions.

Boral Contract Crushing has several mobile crushing plants across Australia, with two new fully track-mounted aggregate plants in operation with the capacity to crush up to 300tph. At the same time, these plants generate a significant amount of dust.

The solution? Enter Polo Citrus Australia, with an extensive knowledge of dust control and a dust suppression system that can be varied to any type of crushing operation. Boral Contract Crushing was aware of the good record of Polo Citrus systems on Boral fixed plants throughout Australia.

Ben Henry, operations manager, Boral Contract Crushing, said the company chose Polo Citrus because it “had a good quality product”, its system “can effectively suppress ultra fine dust produced in a crushing circuit, reducing the amount of airborne dust” and

its “backup is good”.

Systems were in place for Boral Contract Crushing with some of its older mobile plant, but with new Metso and Sandvik plants coming into production that were of greater crushing capacity, the company was unsure if the present Polo Citrus systems could suppress the extra tonnage. With assurances that the Polo Citrus system would be able to cope with the extra tonnage, Boral Contract Crushing placed an order for the installation and commissioning of one Polo Citrus foaming unit suppression system to be fitted to the Metso plant; instant results were observed with dust generation cut down considerably and with the ease of the Polo Citrus system being constructed for mobility, it fitted in with Boral Contract Crushing’s specifications

for its mobile plant configuration.

With the system in operation on the Metso plant meeting the desired effect relating to dust suppression, the next plant to commission the Polo Citrus foaming unit suppression system was the new Sandvik mobile crushing plant. All the current and previous plants within the Boral Contract Crushing fleet had 240V power at their disposal, but the new Sandvik plant had only a 24V DC power supply. This did not pose a problem for the team at Polo Citrus Australia who designed and built a system to operate via a 24V DC that, in turn, operated the same as a 240V system, achieving the same suppression effect on the process with a significant dust reduction throughout the process.

Ben Henry said that with fully mobile crushing equipment, Boral had a system that, once fitted correctly, “only takes about one hour on each site to pack up and set up. The system is easy to use and very reliable. Once it is set up, we rarely need to do anything with the system except turn it on when the material starts flowing

With water a scarce commodity and not a preferred dust suppression method, Boral Contract Crushing turned to Polo Citrus Australia.

through the crushing plant”.

As with most mobile plants, Boral Contract Crushing is sometimes unaware of the next location its machines will operate in; it may be in a pit-type situation crushing for a quarry in remote parts of country Australia, or near a metropolitan area. In all these applications, one thing is required - dust suppression, whether it be for the health and safety of the employees operating the plant or the general public who are close to the operation.

“Dust suppression is, and should be, a major concern to the people owning and operating this type of plant,” said Brett Aisen, the managing director of Polo Citrus Australia. “For these reasons, dust suppression on mobile plants is a must for the future of processing crushed material in populated areas or in full view of the public and their environment.

“As resources become more scrutinised by the general public, operators must be more aware of the public’s perceptions of them and their operations. They should manage and combat the environmental issues that come within this industry, be it water conservation, air pollution, noise pollution or health and safety.

“These issues are intensely magnified when the production facilities are of mobile plant arrangement and the relationship between Polo Citrus Australia and Boral Contract Crushing helps to build a sustainable future for the benefit of all concerned.” •

Source: Polo Citrus Australia
