

MOBILE PLANT CONTRACTOR TAKES FOAM TO DUST

When dust threatened to derail contracts for a Queensland mobile crushing and screening contractor, it turned to a foam suppression agent to improve its productivity. **Damian Christie** spoke to Jason MacDonald of M&M Crushing.

M&M Crushing is a third-generation family business that specialises in contract crushing and screening. The business has been operated by the Mexted and MacDonald families since 1968.

M&M Crushing operated a quarry and landfill at Burleigh, on the Gold Coast, until 2010. Between 1968 and 2010, the business crushed and manufactured road base materials and cement-treated road base materials for the Gold Coast market. It was the first and largest recycling business on the Gold Coast and operated the first EPA licenced private landfill in Queensland.

M&M Crushing sold its quarry site to Gold Coast City Council in September 2009. It now concentrates on the contract mobile crushing and screening of rock, gravel, sand, soil and mulch for quarries, mines, landfills, demolition contractors and sand, soil and mulch operations.

“Up until four years ago, we were concentrated on the Gold Coast,” explained Jason MacDonald, who has an active role

in the daily running of the business. “We’ve been working up and down the Bowen Basin. We have a couple of crews working in the Dysart, Middlemount, Moranbah areas and surrounds on different projects. We also have boys working on the Gold Coast on concrete as well. We’ve also done contract crushing for local councils in northern New South Wales but our business is mostly in Queensland.”

DUST MITIGATION METHODS

Like most quarry operators and contractors, dust control is vital to M&M Crushing’s ability to meet its clients’ production deadlines. It is inconvenient and arduous to shut down the mobile plant in a quarry at some point in the day in order to re-position the plant to suit whatever direction the wind is stirring up the dust. Further, from job to job, the feed material will be different. Some forms of aggregate such as basalt and granite can be extremely dusty when crushed. Then there is the occupational health and safety of the crew to consider as well – and not every contract stipulates acceptable dust control and noise limits.

“In a lot of these projects, no one comes to

you and says, ‘This is what it has to be’,” said Jason. “We impose dust control on ourselves because it causes safety issues for our operators. You need to put dust down so that vision and visibility remains good and you’re not replacing your air cleaners every day.

“It also depends on how close you are to residents too. If you’re 30km away from the nearest houses, it’s not an issue but from our operators’ perspective, we’d like to see very little dust. You’re not going to stop all of it but you need to try to cut down 95 per cent of it. If you’re working somewhere near a highway, you have to make sure that you don’t have anything leaving the site. You have to get to the stage where nothing is leaving the site, otherwise that’s where your problems start.”

M&M Crushing has explored measures to mitigate dust over the years. These have included water trucks to wet down the feedpile before the product goes into the crusher – “That’s not very successful because it all sticks in the feed bin and everywhere else,” remarked Jason – and high pressure spray nozzles which are dependent on the use of clean water to work effectively.

Even then, Jason found that “if we try to use the water, what we end up doing is wetting the material to such a point that it blinds on the mesh and it overruns our product as well. So 20mm will be contaminated with fines, the screen blinds up and you have a halt in



Thanks to the Polo BDS, M&M Crushing’s assignment at Cedar Creek Quarry has been relatively dust-free.



M&M Crushing has explored numerous measures to mitigate against dust on its mobile plants.

production. You're moving large amounts of water too. It's almost impossible to get the balance right. Water is good enough to keep the dust down but then there's the situation where the mesh blinds up."

Other attempts at minimising dust were problematic. M&M Crushing attempted to fit covers and housing to the feed bins so that dust would not blow around but "it becomes a big job when you have to change the plant around and then have to move the feed bins as well. Adding housing to the feed bins does reduce dust a little but it's still not an effective use of plant, that's for sure," said Jason.

Weather also played chaos with the schedule, forcing M&M's fleet to crush in "whatever direction the wind was blowing. Dust was leaving the site and causing a lot of problems," Jason explained. "We needed a system that allowed us to keep crushing until 5pm in the afternoon without problems.

"Often the wheel loader drivers and staff were not allowed to leave the plant while the crusher was operating, otherwise everything would disappear in a dust haze. You couldn't see what was going on and you had damage to belts, blockages and jam ups and you couldn't see the plant. So most importantly, we wanted to control the dust so that we could continue to crush for more hours a day and not be limited to when the wind comes up and when to switch off."

TURNING TO FOAM SUPPRESSION

M&M Crushing turned to a biodegradable foam suppression (BDS) system to reduce

"You can use dirty water, whereas with other systems, it can block the spray nozzles."

dust and dust emissions from its mobile plant. It approached Polo Citrus, a specialist in natural orange technology that has developed a range of products to reduce dust emissions in most extractive industry applications. The key "weapon" against dust in Polo Citrus' arsenal 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 foam, when mixed with a single litre of water, expands up to 100 times to capture the airborne particles. The dust particles stick to the foam and the foam dries out as it goes through the rest of the process, causing the dust to fall off.

A benefit of the foam for quarry operators is that it is less water-intensive. The mobile plant only has to provide six litres of water per minute, resulting in potentially higher water savings. "I think we were using 40,000 litres of water a day to keep the dust under control," Jason MacDonald explained. "With the foam, we are using 6000 litres of water a day. So it reduces the water usage. And because the quarries were supplying us with water on

many of our jobs, we'd experience shortages sometimes. We'd be out of action without water and we couldn't crush without it. With the foam, we can crush all day, without interruption or disruption."

Another advantage of the BDS is that the mains water does not need to be clean. "You can use dirty water," explains Jason, "whereas with other systems, it can block the spray nozzles; you must have clean water. With the foam, there is no nozzle to get blocked, as opposed to water fitting in a 1mm hole in a high pressure system. You use a lot less water, you can use dirtier water and you don't have filter blockage problems."

During installation of the Polo BDS, the customer will provide water of up to six litres per minute, a minimum 35 cfm air unit and a 12 to 24 volt power source, depending on the mobile plant.

"We normally get a module made up, comprising the compressor," Jason said. "Any power we need we pull off our plant. Polo Citrus installs the control box and tunes the system to make sure it works properly."

According to Jason, installation of the BDS on M&M Crushing's mobile plant and equipment takes between six and 12 hours because "there is a lot of multi-stage crushing and we have product going through three or four crushers on-site. It's not like on other sites where you may have one crusher with one dust point; we have multiple dust points.

"If the Polo Citrus serviceman arrives by 8am, the BDS is up and running by 3pm in the afternoon."

Jason added that Polo Citrus' aftermarket service was also very good. "Polo Citrus comes out and services the unit every six months. If we have any minor issues, we can talk to them over the phone."

At time of press, M&M Crushing was already negotiating with Polo Citrus for the purchase of a further two BDS units for more contract work. Jason MacDonald highly recommended Polo Citrus to other quarry operators and added that there was an advantage to having a supplier that can provide sustainable and environmentally friendly products and services, as it helped with winning tenders for contracts.

"It can help when you're doing some of the different roadbase projects. The BDS is biodegradable and it doesn't cause any problems with asphalt plants, or even the roadbase. There are no nasty chemicals in it that will cause any drama. That has helped us to win contracts with big clients." •