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Atomised mist cuts Drury plant dust by 90%

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Stevenson has helped develop an atomised dust suppression system for its Drury plant which controls silica and other crusher dust while also saving water.

The initiative has reduced dust at the primary plant by 90 per cent and water usage by 97 per cent.

The system uses six litres of process water an hour per nozzle compared to 900 litres per hour for traditional spray bars.

It has shown itself to be more effective than traditional spray bars, which fail to capture airborne dust and can create excessive water, washing away fines and drenching equipment.

Concerns around silica dust have been highlighted recently, with MinEx holding a respirable crystalline silica workshop earlier this month.

Submissions also closed this week on the Government's consultation on working with engineered stone and materials containing crystalline silica, including other industries which face risks from RCS, such as quarrying and mining.

"With dust regulations tightening across New Zealand, it's essential to keep dust levels low for compliance and to protect the health of our workers," Stevenson maintenance mechanical supervisor Adam Jeremic says.

"Our dust suppression solutions ensure staff are not exposed to harmful silica dust, creating a safer work environment for everyone."

System

The company's engineering team collaborated with technology experts Spraying Systems to design the system for its primary plant.

The atomising nozzles were installed under the jaw crusher and on the CV088 conveyor.

The system combines water spray with compressed air, allowing the droplets to stay in the air long enough to capture airborne dust particles.

Once they attach to the dust, the particles become heavy enough to drop onto the conveyor.

Spraying Systems' Peter Schierhout commends Stevenson and Jeremic for their approach to the issue.

"Adam and his engineering team came up with innovative ways to install and protect the nozzles in very strategic locations to ensure the best results."

Further developments

The system is one of a number of initiatives the site has undertaken to manage dust during the past few years.

There's been a digital upgrade at the site and the operator who was in the primary plant control room has been relocated to a safer environment.

At the tertiary plant, the Barmac 9100 crusher was enclosed, capturing dust and directing it to an extraction system, which has reduced dust exposure by almost 100 per cent.

Ongoing projects include covering conveyors to eliminate dust dispersal from the 8100 Barmac and installing a cover on the ballast belt infeed chute, both of which will direct dust into the existing extraction system.

Other sites

Stevenson is investigating its other sites to see where the atomised mist system would be the best fit and could complement existing dust control measures.

"After testing and refining the atomised mist system, we have a clear understanding of where it excels and where it's less applicable, such as in high wind areas," health and safety manager Shane Stewart says.

"We take a practical and strategic approach to dust management at our sites."

He says some of the changes being made are simple, but can have a significant impact and support existing processes and systems.

At the Tauhei quarry, the company recently brought in FODS trackout rumble strips, which reduce dust by removing mud from tyres before vehicles exit the site.

"We are committed to reducing airborne dust and the associated risks at our sites to create a safer work environment," Stewart says.

"Alongside our engineering controls, we have trialled advanced respirators and dust masks for our staff and implemented a robust annual exposure monitoring programme to pinpoint risks and track dust levels."