

Dust exposure mitigation controls for fixed and mobile plant cabins

SAFE TO WORK SPEAKS WITH LSM MANAGING DIRECTOR PETER WOODFORD ABOUT HOW THE COMPANY IS HELPING MINERS BREATHE EASIER, PROVIDING OPERATOR COMFORT AND ENSURING THEIR HEATING, VENTILATION AND AIR CONDITIONING (HVAC) SYSTEM LASTS LONGER WITH CABIN FILTRATION AND PRESSURISER TECHNOLOGIES.



Typical mine dust conditions.

LSM's many solutions for mitigation of OH&S issues are the preferred technologies for mining operations, providing sites with advanced fleet telemetry, collision awareness, tyre monitoring, driver fatigue monitoring, among other innovative technologies.

One of LSM's areas of expertise is providing cabin filtration and pressurisation systems to mitigate the risks of exposure to airborne harmful dust particulate and fibrous matter. Keeping these dangerous materials

out of the cabins of mining equipment and air-conditioning systems protects the operator from exposure, ensures thermal comfort and reduces the costs of HVAC maintenance.

Dust is one of the most common risks faced by mining employees and without the right dust mitigation solution, workers are at risk of chronic lung conditions, severely impacting their quality of life.

In combination with the dust mitigation solutions that LSM offers, the company has positioned itself as

an industry leader in contributing to the development of key health and safety standards and guidelines since 2008.

This means that LSM not only provides products to keep its own clients safe, but also provides (albeit as a quiet achiever) input into the standards that guard entire industries from the dangers of airborne dust particulates and fibre.

LSM activities over nearly the past two decades are sure to have contributed to the development of the Queensland Recognised Standard 20 in 2019 and other

recognised guidelines, which address the importance of dust control in surface mines. The company has also contributed to the development of ISO 23875, which if passed, will be introduced in the first quarter of 2021.

Recognised Standard 20 is accepted across Queensland for senior site executives to meet health and safety obligations related to cabin pressure, and to help them develop safety and health management plans to control respirable and inhalable dust at surface mines.

Specific requirements of the Standard 20 for fixed and mobile plant cabins are:

- To be enclosed and sealed
- Positively pressurised
- HEPA filtration for both external and recirculated air
- To be frequently monitored for workplace exposure with data to be provided to the respective OH&S regulator.

LSM managing director Peter Woodford says the company's role in contributing to the evolution of OH&S standards and guidelines, which are implemented industry-wide, and mitigation technologies that meet these standards demonstrate its position as an industry leader in this space.

"Since 2008, LSM has been working alongside various companies and organisations to develop standards relating to protecting operators in enclosed cabins from dangerous dust particulate and fibre materials," Woodford tells *Safe to Work*.

"What ISO 23875 will mean if it becomes a standard is that all persons conducting a business or undertaking (PCBUs) such as suppliers of mitigation technologies, the machine provider and the operators will all be responsible under the workplace health and safety act (Work, Health and Safety Act 2011), so they are totally accountable for the lung health



The first RESPA (SD version) system for external and recirculated air filtration in 2008.

of employees."

Woodford also says that the acceptance of the ISO 23875 will not only set new compliance standards for operator dust exposure but also thermal comfort, cabin pressurisation as well as monitoring, alerting and recording of these cabin environmental conditions.

In addition, the ISO 23875 requires complete life cycle mitigation with additional requirements for performance testing, operation and periodical maintenance checks of the fitted technology to validate and prove continued compliance.

LSM provides full engineering, technical design, support, education, installation, commissioning and training services to its clients for its Sy-Klone International RESPA range of cabin filtration and pressurisers.

"LSM provides technical support and audits for quality air environmental conditions in cabins of fixed and mobile plant," Woodford explains.

"We have our own dispersed oil particulate (DOP) testing unit and can provide full in-house testing and certification of any cabin pressuriser or filtration systems to EN1822 and ISO 29463 standards."

Regardless of current and future standards, LSM has long been a leader in providing compliant cabin pressurisation and filtration solutions that are field tested and certified by occupational health and safety regulators, including the National Institute for Occupational Safety and Health (NIOSH) and the Queensland Department of Natural Resources, Mines and Energy with a joint field trial/report (RESPA trial 2009) on an excavator operated at a sandstone quarry.

LSM also works alongside and represents key dust mitigation technology manufacturer, Sy-Klone International.

LSM was the first dealer in the

Dust suppression



Unmanaged dust issues can cause long-term lung illnesses to mine workers.

health and safety to best protect the occupants of enclosed cabins, there are other cost benefits of a reliable and complaint cabin pressuriser and filtration system that are often easily forgotten,” Woodford explains.

“What LSM sets out to do is provide clean air to the machine’s cabin through the air conditioning system without it getting choked so it doesn’t require high maintenance, filter elements last longer and by reducing failure, avoids associated production loss.”


With national exposure standards for respirable crystalline silica having been reduced from 0.1 milligrams per cubic metre to 0.5 milligrams per cubic metre of air breathed over an eight-hour working shift (and even lower for extended work shifts), LSM continually monitors changes to dust mitigation so as to not just meet but ensure the technology is ahead of these changing standards and compliance requirements.

If ISO 23875 officially becomes a

standard in early 2021, LSM will be there for its clients to provide dust mitigation solutions that keep their operator cabins clear so mine workers can breathe easy and ensure a low maintenance of air-conditioning systems.

Woodford says a global standard will establish a mutual understanding for governments, OEMs, mining companies and employees, but frequent mandating and testing must still be completed for clarity and successful roll-out of the standard.

“Once a situation is created that a cabin pressurisation standard is legislated and it has been adopted, it must be implemented appropriately at all PCBU levels,” he says.

“When adopting something like ISO 23875, everyone must conform and take ownership in the supply chain, from the OEM, mitigation control supplier through to the mine.” 

world to introduce the Sy-Klone RESPA[®] cabin pressurisation and filtration technology to the mining, quarrying and extraction industries and has been Sy-Klone’s master dealer for the Australasia region since 2008.

LSM’s involvement in providing Sy-Klone International’s RESPA cabin pressurisation and filtration technology gives it an edge when developing the most advanced system configurations to serve the needs of Australian mining applications.

Woodford says LSM endeavours to take advantage of the most advanced technologies available to ensure its products are innovative enough to not just keep up but exceed the latest health and safety standards.

However, he adds that LSM also takes a “back to basics” approach during the design phase.

“Whilst focussing on occupational



A blocked air conditioning system.