RST Solutions improves material handling from pit to port with new technology DEM Hydroboost Pro

A new advanced product for mines, designed to achieve ideal moisture levels for controlling dust using less water, has been launched to the market by leading fine particles specialist RST Solutions.

Gold Coast, Queensland Mar 27, 2024 (Issuewire.com**)** - New advanced dust control solution DEM Hydroboost Pro is reducing the opportunity for overwatering of mined materials and preserving product quality along the supply chain to reach the end user in the same condition as it left the mine.

Designed by RST Solutions to improve material handling and dust control at the mine and during transferring and transportation, DEM Hydroboost Pro is an advanced solution added to water to control dust extinction moisture (DEM) levels to meet requirements for health and safety and quality control.

Added once at the starting point of the material supply chain, DEM Hydroboost Pro is evenly distributed throughout the bulk of the material. Only a small amount of water is then required at different points along the material supply chain, removing the risk of overwatering and potentially causing issues such as excess weight and stickiness.

Following successful trials conducted with one of Australia's leading mineral exporters to address the issue of overwatering reducing the quality of mined material, DEM Hydroboost Pro has now been

released to the market as an advanced multipurpose dust control solution.

Fine particle specialist RST Solutions says the best way to achieve optimal DEM is to significantly reduce the volume of water needed to attain the material's DEM sweet spot.

“Achieving the mandatory DEM levels is a considerable challenge for mines and so they are consistently seeking more effective approaches for achieving optimal DEM instead of simply using water,” RST Solutions Operations and Technical Director David Handel said.

“DEM Hydroboost Pro is a total material treatment that holds moisture in minerals and waste materials for longer periods of time to mitigate dust without relying on excessive amounts of water. Using large volumes of water to achieve the required DEM can negatively impact material quality and cause handling problems not just at the mine, but throughout transportation and storage, reducing product quality for the end user. Excessive moisture creates excess weight and stickiness while failing to provide additional benefits such as preventing dust down the line.

“The actual reduction in the amount of water required after treatment to reach DEM targets is 42% less water which is highly significant. After applying DEM HydroBoost Pro to mined material, results show a significant drop in DEM from 9.2 to 5.4, which translates to a 3.8% reduction in DEM, resulting in 42% less water used, which is substantial for a mine.”

Applying DEM HydroBoost Pro to any material type is a simple process that requires a dosage rate of between 0.1 to 0.5 litres per cubic meter. The dilution rate is calculated based on the amount of water needed to ensure even product distribution throughout the material mass to achieve the desired, reduced DEM content.

Results have shown that DEM Hydroboost Pro offers a typical reduction of between 2.5% and 3.5% in a material's DEM, which is significant considering that a typical DEM reduction can be around 7% - 12%.

A range of tests on DEM Hydroboost Pro were conducted during a series of field trials throughout a coal mine’s supply chain from pit to port with further testing of the coal after it was shipped to another country. When the coal was received by the customer, tests proved DEM Hydroboost Pro was still active, and reports were of a much more manageable product.

A gentle spray of water is all the material needed to re-activate the chemistry, requiring very little effort to generate the right amount of moisture for improved and continued dust management throughout the entire material supply chain, adding more value to the product for clients downstream.

DEM Hydroboost Pro disperses evenly throughout the material and holds moisture in for longer periods of time, enabling mine site operators to control the moisture content and manage fugitive dust liftoff without relying solely on water to do the job. This removes the risk of overwatering the material during dust suppression activities in storage, transportation, and transfer points.

“The unique fine particle chemistry treats mineral material during the dry separation process, offering mines additional advantages by treating waste at the same time,” Mr Handel said.

“This significantly reduces the amount of water needed (with some additional binding) to minimise fugitive dust liftoff when waste is dumped. The waste product is separated in a dryer form with a much better DEM, reducing the need for tailings dams to store wet waste. Another advantage is the crusting effect when treated waste is dumped, providing ongoing waste dump surface dust suppression.

“DEM Hydroboost Pro also has the potential to assist in keeping operations open in stronger windy conditions. An Australian coal mine that was forced to stop operations when wind gusts were 9m/sec, applied DEM Hydroboost Pro and the coal was still holding down the dust when winds were 12m/sec, enabling the mine to ship another one million tonne of coal per year.”

Water constraints and increasing costs make wet mineral extraction impractical and unsustainable in many parts of the world, with alternative solutions being sourced by mines to meet dust control regulations and cost savings. DEM Hydroboost Pro application methods are customised by RST Solutions with specific dosage levels and application methods to be compatible with all bulk materials, such as iron ore, coal, and waste material for a far superior outcome.

This achieves far better moisture control to manage dust than just using water or other solutions that may be a broad spectrum solution and not targeted specifically for the type of material a crew is working with.

RST Solutions specialises in supplying alternative methods tailored specifically to a project and the materials being mined or used on site as well as mining and construction processes, a site’s application equipment and systems, local weather patterns, and budget perimeters. With three decades of experience gained from developing tailored solutions for the many various fine particle challenges presented across numerous industries, processes, and material types, RST Solutions has the expertise to solve complex site-specific fine particle issues for companies seeking more project optimisation strategies on a range of projects.

RST Solutions is an Australian business operating internationally, with presence and projects in Australia, North and South America, Africa, the Middle East, Asia, and the Pacific. For more information, contact RST Solutions at (+61 7) 5522 0244 or visit www.rstsolutions.com.au.



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