

Press release:

RTS Africa Inertial Spin Filters find their niche in underground mining – offering an effective, low maintenance solution to hazardous dust build-up

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The mining environment faces constant challenges from heavy dust loads generated by the mining process. These include health risks to underground mining personnel, damage to electrical equipment, and increasingly rigorous environmental legislation.

The problem is exacerbated by mine ventilation systems, consisting of large fans that force air down ducts into the mine shafts and underground working areas, carrying hazardous airborne dust in increasing quantities and densities.

An effective and practical solution to these challenges can be found in inertial spin filters - technology which is attracting increasing interest in the mining industry, according to Ian Fraser, Managing Director of RTS Africa Engineering.

“More and more, RTS inertial spin filters are being accepted as an effective solution to dust build-up in underground mining operations, particularly in control panel and VSD back channel cooling applications. Dust can be a major problem in mining, notably in working spaces and control rooms – spin filters offer a number of advantages, the most compelling being that they require virtually no maintenance,” says Fraser.

RTS Africa Engineering, is a Tshwane-based, specialised engineering company which focuses on providing innovative technologies and solutions to various industrial problems. The company is constantly updating its technologies and exploring new applications, and, while the concept of spin filters is not new, RTS Africa Engineering has been at the forefront of introducing this technology to South African industry, with a focus on mining.

“Spin filter technology is enjoying increasing acceptance as users in the mining sector start to reap the benefits which include simple installation, free (or extremely low) maintenance, high efficiency and a long service life of between 10 and 20 years,” Fraser comments.

The problem with conventional filtration systems, according to Fraser, is that they tend to require costly maintenance and filter replacement due to frequent ‘clogging up’, which can be inconvenient and time-consuming.

“Spin filter units are a high-efficiency application of cyclone technology,” Fraser explains.

“Through the process of ventilation, air is drawn into the spin wall by a fan. This air, which is dust laden, passes through the spin wall, where the dust is removed by inertial forces, and then vented back into the space where it came from.”

This process is especially effective where workers are confined to closed spaces, such as workshops or control rooms. “Clean, dust-free air can be fed into the space by using spin filters, which will remove 98% of all dust particles 15µm and larger, and 80% of dust from 5µm upwards in size,” says Fraser.

When it comes to removing very fine breathable dust – 1-2µm in size - spin filters offer an effective solution through the use of a primary filter, as well as a secondary filter. Fraser explains:

“The main problem faced by ventilation engineers is to contrive a filtration system which will remove the very fine dust while at the same time not becoming blinded by larger particles, which represent by far the greatest mass. This would mean a continuous replacement of the filter media. The solution is to use RTS Africa’s inertial spin filters as primary filters to continuously remove the heavy dust particles, thus preventing the fine filters from becoming rapidly overloaded. The fine secondary filters will, as a result, require vastly less attention and replacement.”

Other possible applications of spin filter technology include protecting compressors that are operating underground, where it would be necessary to achieve a dust removal of about 98% of particles 2µm in size. This is another scenario where fine secondary filters can be used with inertial spin filters installed as the primary system. “However, in spaces such as machinery areas, inertial spin filters provide a more than adequate level of dust removal, and no secondary filtration is required,” Fraser adds.

While a spin filter system may be more expensive than a conventional filtration system, the life cycle costs are significantly lower.

“With the prevailing costs and uncertainties within the labour market, RTS Africa’s spin filters offer an ideal solution by reducing the dependence on support and maintenance personnel. Not only are spin filters extremely efficient in underground mining environments in heavy dust load elimination, but the system will provide years of maintenance- and replacement-free service,” Fraser concludes.

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RTS Africa Engineering is a specialised, Tshwane-based company offering innovative technologies and solutions to industrial problems.

Run by Managing Director Ian Fraser since its inception in the early 1990's, the company offers globally-sourced, quality products such as continuous belt weighers without load cells, laser-based gas detection devices for hot or corrosive areas, and electrolyzers for hydrogen production.

Product delivery and technical consultation by highly-trained staff is offered throughout Southern Africa to a range of clients in industry sectors such as mining, glass, steel and energy.

Editorial Contact**Kendal Hunt**

PR Consultant and Writer

Kendal Hunt Communications

011 – 4626188 or kendal@kendalhunt.co.za