



FURNACES, KILNS, OVENS & DRYERS

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Innovative pollution control enables cleaner, healthier environment

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EFFICIENT SOLUTIONS

By incorporating technologies, the company helps furnace operators reduce their energy usage and lower operating costs

The furnace industry faces significant challenges in managing air pollution linked to furnace operations, considering that each stage of the furnace operation requires a unique approach to address air pollution effectively.

Energy and environmental solutions provider John Thompson, a division of Actom, which specialises in tailored solutions for managing fumes generated during furnace operations, explains that these air pollution concerns can be addressed through selecting the appropriate filters.

Air pollution control is a critical concern for industries operating furnaces, as the combustion process produces harmful pollutants that can have adverse effects on human health and the environment.

John Thompson's Air Pollution Control division specialises in providing effective air pollution control solutions for the furnace industry, and endeavours to understand the unique challenges associated with furnace operations through offering customised filter designs for each

stage of the furnace process.

Air Pollution Control applications engineer **David Crosthwaite** explains that air pollution can occur throughout the entire process, though during the charging phase, capturing fumes depends on the type of raw material used.

"In larger furnaces, the volume of fumes can be substantial. However, the temperature of the gas is relatively low and can be managed using a bag filter. John Thompson offers a range of bag filter designs to handle fumes generated during this stage, ensuring efficient and cost-effective air pollution control," he tells *Mining Weekly*.

Additionally, the smelting operation poses another air pollution challenge as the fumes generated can reach extremely high temperatures of up to 1 500 °C.

Crosthwaite notes that specialised mechanisms are, therefore, employed to reduce the temperature, such as water injection or forced draught coolers.

"The final filtration of fumes can be achieved through bag filters or wet scrubbers, depending on furnace requirements.

"John Thompson provides expertise in selecting the most suitable filtration method for effective air pollution control during the melting/smelting operation," he says.

Additionally, during the tapping stage, the fumes generated are typically at lower temperatures, and bag filters are commonly employed to handle these fumes effectively.

John Thompson's range of bag filter designs are specifically made for trapping fumes, ensuring capture and filtration while maintaining cost-effectiveness, Crosthwaite says, adding that choosing the most suitable and cost-effective filter design is "crucial for efficient air pollution

control”.

“We consider the size and specific requirements of the operating unit when selecting the appropriate filter, ensuring optimal air pollution control for furnaces, kilns, ovens and dryers.”

Crosthwaite says that by prioritising air pollution control and providing innovative solutions, the company contributes to creating a cleaner and healthier environment for the furnace industry and beyond.

Meanwhile, advanced control technologies, including artificial intelligence (AI) and machine learning, are increasingly being used in air pollution control systems. These technologies improve system performance and enhance overall efficiency, Crosthwaite explains, adding that the remote monitoring of bag filter systems enables John Thompson to promptly alert users to potential problems, ensuring timely attention and maintenance.

“By harnessing the power of AI and machine learning, we can ensure that their air pollution control systems operate at peak efficiency,” he comments.

In addition, new filtration systems are being developed to be more effective in removing pollutants such as sulphur oxides (SOx), nitrogen oxides (NOx) and particulate matter. The company actively participates in the development of these enhanced filtration systems, with Crosthwaite adding that technologies like electrostatic precipitators and fabric filters, combined with high-efficiency particulate air filters, offer superior results in capturing and eliminating pollutants from furnace emissions.

“These advanced filtration systems provide better air pollution control and contribute to a cleaner and healthier environment.”

Further, energy efficiency is another key focus in air pollution control for the

furnace industry. Crosthwaite emphasises the development of energy-efficient solutions that reduce energy consumption while maintaining good performance.

He explains that by incorporating technologies such as variable-frequency drives and energy recovery systems, the company helps furnace operators reduce their energy usage and lower operating costs.

“These energy efficient solutions not only contribute to environmental sustainability but also enhance the overall profitability of furnace operations.

“We are committed to providing comprehensive maintenance and support for their baghouse filter systems. Regular inspections ensure proper functioning, and necessary repairs are carried out efficiently to minimise downtime,” Crosthwaite says.

The company also offers upgrades and modifications to enhance the efficiency and compliance of baghouse filter systems. By closely collaborating with clients, John Thompson identifies opportunities for improvements and ensures systems meet or exceed the latest regulatory requirements.

Training and support services are provided to equip clients with the necessary knowledge and skills for improved system operation and maintenance.

With certifications and accreditations such as ISO 9001:2015, ISO 14001, ISO 45001 and adherence to South African National Standards requirements, Crosthwaite concludes that the company “demonstrates its commitment to quality control, safety and compliance”.

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AIR POLLUTION CONTROL

Actom considers the size and specific requirements when selecting the appropriate filter, ensuring optimal air pollution control



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