

[IOM3 Home](#) > [Materials World Magazine](#)

Run of the dry mill



*Mouse over image
for caption*

A compact solution for energy-efficient dry milling could turn industrial by-products that had previously been considered waste into commercial products, says a UK firm.

The patented m-series mill, developed by International Innovative Technologies, in Gateshead, grinds materials including limestone, glass, silicon carbide and bauxite, and is said to make the recycling of waste from fibreglass manufacturing more economically feasible.

The mill itself incorporates a grinding ring with rollers held on a vertical axis that move inwards and outwards on pivots. These rotating rollers then hit the material as it passes downwards through the mill. The number of times the material is hit is governed by the number of grinding modules that are stacked in the mill.

Managing Director, George Ord, says the big advantage of this system is that, 'We're not using any energy to transport the material within the process, which would normally involve large volumes of air moving through. In ours, it's gravity. The material goes in at the top and down at the bottom through gravity'. The milled product is discharged, usually through a rotary valve into a conveying system or bag.

'We are taking advantage of the centrifugal forces, coupled with the swinging rollers, which results in high energy and throughput efficiency,' he adds.

He ascertains that new customers can now be targeted. 'You could have a process producing fibreglass products. The waste in the manufacturing process is being milled into a powder that is going back into the process'.

According to Ord, the energy expended in these mills is between three and 10 times less than current technologies.

The standalone grinding modules can also be bolted together, enabling users to configure their throughput to their demand. 'So, if you have a 50t/ hour [mill] and your demand drops to 30t/hour, you can turn two of them off'.

The common feed, he says, means that individual mills can be isolated while others are kept running, which limits downtime during unit maintenance.

Furthermore, unlike existing machinery, the technology is said not to require substantial foundations. This means the mill can be brought to the product, instead of having to transport material to a central milling facility, as in the case of milling blast furnace slag.

Anthony Hartwell, of the School of Engineering at the University of Birmingham, could not comment extensively on the technology due to the confidential nature of the information.

He says, 'It is true that conventional mills are inefficient, but one advantage of air-swept mills is that they can use warm/hot air to dry the material and the air flow removes the fine material from the chamber to avoid overgrinding.' He also queries the level of moisture the mill can tolerate.

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