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## Economical route to recycling GRP

A pulverising system said to overcome the operating costs which make the recovery of GRP and other difficult-to-reclaim materials uneconomical has been produced by a Gateshead company.

The m-series mill was developed by International Innovative Technology to grind a range of materials of various hardnesses from limestone to silicon carbide. This ability has enabled it to convert plastic waste, including GRP, into granules and fine powders for recycling.

As part of the development programme IIT has worked with a UK-based GRP manufacturer to overcome concerns that GRP cannot be recycled cost effectively. A recycling plant using the new milling technology has been in production for two years.

This plant first converts the GRP waste into flakes before secondary reduction is carried out in an m-series mill which converts the flakes into a fine powder of less than 100 microns.

The m-series powder mill is capable of grinding soft medium and hard materials (to 9.5 on the Mohs scale) to 90 per cent passing 45 microns and below.

Material enters the machine through the upper in-feed chamber, passing through the grinding modules where it is progressively reduced in size, exiting the machine through the out-feed cone.

The multi-stage grinding process comprises one to four grinding modules, each having a central shaft, spreader plate and arbour, on to which are mounted six rollers linked to swinging arms. When the shaft is rotated, centrifugal force causes the rollers to move outwards, bringing them into contact with the inner face of the grinding chamber which, in turn, causes them to rotate. The spreader plates throw the material being processed outwards and the material is then ground between the rollers and the grinding module walls. By varying the speed of rotation of the central shaft, the force of the action of the rollers against the drum can be varied which in turn varies the finished particle size.

The company says that low electrical energy input is needed relative to particle size and volume of powder output with specific energy consumption typically between 5 and 10 kWh/t.

The trials with GRP processing have enabled the company to demonstrate the grinding of production line GRP off-cuts which had previously been consigned to landfill. The resultant fine powder can be recycled in the batch mix and other applications.

The vertical configuration and compact size gives the IIT m-series mills a small floorspace footprint for installation in relatively confined spaces and integration into existing processes.

Where materials which have the potential to combust or explode are to be processed ATEX rated models of the m-series grinding mill and ancillary plant are also available.



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