

ADDITIVE METHODS FOR ENHANCED BLAST MEDIA RECYCLING

BY RUSSELL RODEN, ATLANTIC DESIGN, INC.

Additive ingredients for expendable abrasives have been around for years and used to great success. They can enhance safety by neutralizing harmful waste material produced in the blasting removal process and have considerable cost saving benefits.

Many modern, portable abrasive reclaim systems already have the components required to add materials into the abrasive or waste during the reclamation and recycling process. Economical upgrades or separate standalone modules can also be used with existing equipment to take full advantage of additive options, whether reusable abrasives, such as steel grit, or nonmetal recyclable abrasives, such as garnet, aluminum oxide and staurolite. The additive can be a reactive material used to neutralize or change the chemical makeup of the waste stream or to introduce new grit into the abrasive blast mix to ensure proper particle size for efficient abrasive blasting.

EXAMPLES OF ADDITIVE METHODS

1. Introduce a waste neutralizing product or material into the abrasive blast mix during the recycling process. This is a good choice for adding a chemical or compound—such as a calcium silicate additive used for lead abatement—that needs to be present during the blasting operation. The additive must be introduced continuously while the grit is passing through.

An excellent way to do this with certain abrasive reclaim systems is to use a pneumatic transfer system, which makes the volume of grit per transfer uniform and consistent. A feed system injects a precise amount of additive into the abrasive transfer vessel. By controlling these two volumes, an accurate mix of grit and additive can be achieved. No offsite mixing of the additive and grit is required. Previously, this type of additive was only available in premixed abrasives and only with single-use, expendable abrasives. Now, it can be used with recyclable steel abrasives, which can reduce waste content by up to 99% and provide safety and performance advantages.

2. Introduce fresh grit into the blast mix on a continual basis during the reclaim process, allowing reuse of abrasives that are not typically considered reusable. While steel grit can be effectively reused hundreds of times before breaking down into a small unusable size, nonmetallic abrasives, including garnet, aluminum oxide and staurolite, break down too quickly when pressure blasted. The smaller reclaimed grit will create a different profile than the original, rendering it ineffective.

A way to overcome this limitation is to use the pneumatic transfer system to continually introduce fresh abrasive into the blast mix in the storage hopper and mix throughout the reclaim process. This produces a consistent size blast abrasive



Clockwise from top left: ADI T1.5S Transfer Skid System for waste neutralizing or fresh grit additive processes; ADI Double Dump for adding a neutralizing chemical at intervals; ADI Supersack Loader with the ADI BRD430PSS unit on jobsite, using continual fresh grit media additive processing

with performance similar to new abrasive, while using up to 50% less material and lowering cost.

3. Add the neutralizing chemical or compound into the waste stream at intervals that will constitute a mixed product.

Like the abrasive additive process, the waste additive must be introduced at precise ratios to achieve a successful mix. This is accomplished by releasing the waste in small, uniform batches using a metering discharge valve, such as a double dump valve. The additive is introduced in proper amounts to each waste dump to attain the desired waste-to-additive mix ratio. The additive mechanism might also be a batch dump valve or another type of precision feeder. An advantage of the waste additive technique over the abrasive additive method is that the neutralization chemical is not blasted but, rather, added at the last point in the waste stream.

To learn more about grit recycling systems, call 866.call.ADI or visit atlanticdesigninc.com/equipment/grit-recyclers.