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RECYCLING REMETALLIZING OVERSPRAY DUST, RELATED BYPRODUCTS



A green strategy
for tube and pipe
producers

By Scott McLaughlin

AS green initiatives grow and expand, and as metal prices reach new highs, manufacturers are becoming increasingly adept at recycling leftover material and scrap metal. Most sources are obvious, such as the waste material from operations and discarded plastic bottles

and aluminum cans from the break room. Others are less obvious, but a careful review of company operations can reveal a formerly overlooked source of recyclables.

If you run a tube or pipe mill that remetalizes the weld seam, the over-

spray and related materials don't have to be disposed of—they can be recycled, often for a small profit. A little research, imagination, and flexibility can go a long way in getting the most out of your overspray dust, spent dust cartridges, wire snippets, and all other

waste materials generated at the remetalizing station.

Sending your overspray materials to landfills as hazardous waste is both expensive and unnecessary. You can recycle them and, in many cases, get paid for your materials. Converting the overspray dust from an expensive cost center into a cash-generating profit center is easy if you follow some basic practices.

TRAP IT, RECYCLE IT

In tube and pipe mills that make galvanized or aluminum products, the two common processes used for remetalizing the weld seam are electric wire arc spray, also known as twin-wire arc, and combustion or flame spray.

Electric wire arc spray produces more overspray dust than flame spray because the deposition efficiency is 10 to 15 percent lower. More zinc and aluminum sticks to the workpiece with combustion spray. However, the overspray dust from electric wire arc spray tends to be more oxidized, which lowers its value. Therefore, it's a trade-off.

Most mills use zinc to recover the weld seam to protect the product from corrosion. However, some mill operators prefer aluminum because it is easier to get aluminum to stick to the tube. Of the two, zinc overspray dust has more commercial value when it comes to recycling. While aluminum is recyclable, there is little value in the overspray. Aluminum is very light, and like most metals, its value is based on weight. It takes a great deal of aluminum dust to make up 1 pound, so the cost to ship aluminum dust typically is greater than the recycled value. That said, aluminum still can be recycled and kept out of landfills.

On the other hand, zinc has good value, and by following a few recommended practices, you can sell it to a recycler for a nice payback.

RESEARCH FIRST

Before sending a truckload of overspray dust to a recycler, it is necessary to work with the recycler to determine the dust's value. The recycler probably will have the mill operator send a 1-lb. sample for lab analysis, which will determine whether the dust is a candidate for recycling and help predict a dollar value. Most of the time the actual value of a load of dust will not be finalized until the entire load is received and processed.

Several tactics can help you to increase the value of the remetalizing process's byproducts.

Separate, Not Equal. If it's operationally practical, segregate the overspray materials. This saves the recycler from having to separate the materials, thereby increasing the value of your materials.

Keeping overspray dust separate from other materials usually is easy because the dust collector for the remetalizing step is dedicated to that operation. The same is true for the snippets of wire created when feeding the torch at start-up. Keep the wire scrap in a container separate from ferrous scrap and other waste material. If your mill uses the electric twin-wire arc spray process,

separate the spent copper electrodes also. A recycler dedicated to processing overspray dust from remetalizing often will pay more for the nozzles than a local scrap hauler you may be using for recycling other waste such as scrap tube and pipe.

It's also necessary to keep common shop trash out of the recycling bins. Latex gloves, string, wood, plastic or glass bottles, aluminum cans, and ordinary rubbish drive down the cost of recyclables.

Don't Forget the Filter. Spent dust collector cartridges are also recycling candidates because the metal dust stuck in the cartridge filter can be reclaimed just like the material in the hoppers. Also, the metal caps and cages have value to the recycler. Perhaps the best way to handle the cartridges is to keep the original boxes. Put the cartridges back into the original containers and palletize them for shipment.

Dust overspray, filter cartridges, copper electrodes, wire clippings—perhaps the most important step is finding a recycler who understands your business and can process *all* of your scrap, regardless of alloy or form.

Tips for Maximizing Spraying and Filtering Efficiency

Proper exhaust ventilation is important to collect as much dust as possible. This keeps employees safe from metal dust and captures as much dust as possible for recycling.

Be sure the ventilation is drawing airflow away from the nozzle at a 90-degree angle. If the airflow is vertical (such as with an overhead hood), the metal overspray will coat the torch on the way to the ductwork, which creates operational problems for the torch. The metal will foul the torch, resulting in quite a bit of unnecessary maintenance and torch rebuilds, which can reduce mill uptime.

Another tip is to cover the torch with an antibond coating such as Spraymask. As anyone who has worked around a remetalizing operation knows, zinc and aluminum stick to nearly everything. Keeping the torch free of overspray is key to maximizing uptime.

RESOLVING RECYCLABLE REVENUE

What are the factors that determine the payment, or settlement, as it's called in the recycling business? The primary one is the material, zinc or aluminum. Believe it or not, volume is probably the second-biggest factor. The more you generate, the more attractive the material is to the recycler. To that end, store as much as is practical and send large, less frequent shipments instead of small, more frequent shipments. This also reduces shipping charges.

Other factors are material purity, the absence or presence of contraband, metals market fluctuations, and shipping distance.

Recyclable materials sent to the recycler don't need to be shipped as hazardous waste. They are product, just like the wire was a product when it was originally shipped to the mill. Ask the recycler for assistance in complying with environmental laws and regulations, both federal and state.

This brings up another frequent question: Who pays for shipping? If you prefer to have the recycler pick up the freight charges, it will do so, but will deduct the shipping charges from your settlement. Before going that route, get a bid from your usual freight hauler. Because you already have an existing business relationship, you might get a better rate.

DOCUMENT IT

Finally, be sure the recycler provides a certificate of recycling to document that the materials were not sent to a landfill. This protects your company, because all materials sent to a landfill are your responsibility. This responsibility doesn't end—it's yours forever—so acquiring and keeping this documentation can be the most critical step of all. **TPJ**

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