process of ELIMINATION

Mobile abrasive blasting systems help remove lead-based bridge paint and safely recycle steel grit.

The majority of bridges built in the United States, dating back to the 1950s, contain some amount of lead paint which kept these massive structures from deteriorating and corroding for decades. Other steel structures such as water tanks and power houses commonly had a lead-based primer and top coat as well. But when the Environmental Protection Agency (EPA) determined that lead was a hazardous material that was contaminating soil and groundwater, state and local governments were forced to replace lead with environmentally-friendly coatings.

So, how do you remove lead-based bridge paint without hauling thousands of tons of lead-contaminated blast debris to a landfill? One way is to remove the lead paint using a steel abrasive,

separate the old lead from the steel grit and recycle the metallic abrasive material.

Many commercial painting contractors are doing just that with a mobile abrasive blasting system manufactured by Advanced Recycling Systems Inc. of Lowellville, Ohio, just outside of Youngstown, Ohio. The patented Mobile Abrasive Recycling Machines use Eriez' Magnetic Drum Separators and Model B Feeders to separate the steel grit before it is washed and recycled back into the blasting mode.

GRIT-CLEANING TECHNOLOGY

Advanced Recycling Systems' President Gus Lyras developed the equipment in the early 1990s to recycle metallic grit for his brother's painting business. Later, he partnered with Vic Pallotta who helped fabricate and develop the product line. Today, Advanced Recycling Systems machines have captured the market and continue to work on many well-traveled bridges, including the Manhattan and Henry Hudson bridges in New York City and the Ben Franklin Bridge in Philadelphia. Advanced Recycling Systems' equipment is also at work in shipyards and at various construction sites.

"When the EPA finally stepped in and declared lead was dangerous because it would leach into the ground and water, we started to explore making portable units containing steel grit that would blast away the lead paint, but we would also have a way to separate the grit from the lead paint," Lyras says.

By using recyclable metallic abrasive material, a painting contractor can reduce the amount of hazardous waste that must be disposed of by more than 90 percent, according to Lyras.

"We knew Eriez had a good reputation for magnetic separation and screening which would be one step in the process of cleaning the steel abrasive so it could be put back into circulation," says Lyras. "Eriez helped design the equipment so it would fit into our portable unit that was then placed onto a trailer." He adds, "They assisted in making this product work."

The Advanced Recycling Systems Super unit is one model in the Mobile Abrasive Recycling Machine line. It features a six-nozzle blasting system and a 5,400 CFM vacuum powered by a 350-HP engine. The system also includes a six-stage air wash run by electric motors.

SEPARATION

Advanced Recycling Systems uses a combination of Eriez' Heavy Duty Electromagnetic B Feeders and Magnetic Drum Separators. The Separators range in size from 12-inch diameter to 24-inch diameter, depending upon the size of the Mobile Abrasive Recycling Machine, according to Lyras.

The Eriez Magnetic Drum separates both the paint chips and steel grit from other non-magnetic waste debris. This magnetic material continues to travel through a series of screens to remove rust and other foreign metallic debris and flows through a multi-stage air wash to remove any remaining dust. Once cleaned, the recycled metallic grit is deposited into blast pots for reuse.

"Instead of 100 drums of hazardous abrasive going into landfills, you now have 10 drums. Painting contractors are cleaning abrasive and reusing it, which cuts disposal down to 10 percent of their cost," Lyras says. "By cutting down on trips to the landfill and the disposal fees, contractors can recover the cost of a new mobile unit within just two years." He adds, "It makes sense to recycle; you are not just helping the environment, you are minimizing waste and that helps a company's bottom line."

ABOUT THE EQUIPMENT

Eriez' B Feeders are used primarily in the glass, steel, chemical, fastener, coal and aggregate markets where high capacity is required with the best linearity. B Feeders are virtually maintenance free. They can be provided with abrasion resistant replaceable liners and with capacities of 400-1700 cubic feet per hour.

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Eriez Magnetic Drum Separators remove both large and small pieces of iron contaminants from many processing lines. Powerful permanent magnets enable more efficient separation performance for a broader range of applications. The complete line includes standard models in diameter from 12 to 36 inches and widths from 12 to 60 inches. These units provide separation on volumes up to 25,000 cubic feet per hour.

"By separating the abrasive and cleaning it, we create a safer work place for the painting contractor who works under the bridge," Lyras says. "By cleaning the grit, you are not blowing hazardous dust back into the containment zone."

"We have been using Eriez' products close to 20 years," Lyras explains. "Part of our success has been the air washing techniques, but the other part is the magnetic separation of the steel grit from the lead paint. We owe that to our relationship with Eriez and the people there who worked with us in the design stage." C&DR

This article was submitted on behalf of Eriez, Erie, Pa.

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