"Rocket Coating" Adds Extreme Wear To Metal Parts

A new "RocketCoat" process for hard-surfacing metal parts actually uses the exhaust of a tiny rocket engine to lay down tungsten carbide which is "impact fused" to the metal.

"With RocketCoat, the exhaust gasses hit the object at 10 times the speed of sound," says Jon Osborne. "We get bonding strengths that exceed 12,000 psi and have coated surfaces as thin as 14-gauge."

Osborne's company, Extreme Industrial Coatings, has built its reputation around hard-surfacing valves, pumps, impellers, and other high-wear parts. He also repairs cast iron components, shaft bearings, and seals using several proprietary coating techniques he has developed.

In one case, a bronze impeller on a pump that recirculates wastewater at a dairy farm used to wear out every two weeks or so. After Osborne installed a RocketCoated impeller, there's no wear after 18 months.

"We've coated vacuum valves on potato seeders that normally get replaced each season, but ours aren't scratched after three seasons," he says. "Replacing them costs big bucks, along with the time to tear the machine down to its guts."

Other common uses for his expertise include pulleys and fan blades. While the pulleys are not that costly, as they wear, they tear up belts that can run as high as $1,500 on some machines. Fan blades in a variety of ag and non-ag situations quickly become pitted as blades hit dust particles. This affects the balance of the fan and its efficiency. Osborne says coatings can eliminate, or at least minimize, the wear.

Osborne, the wear control engineer and company owner, also uses plasma and flame techniques to lay down thin coatings of material on tillage wear points. He claims a quarter inch of PlasmaPlate (a 36,000° process that applies tungsten carbide over points subject to extreme wear) is as resistant to abrasion as 1-ft. thick steel plate.

"The plasma process melts both the tungsten carbide binder and the base metal," explains Osborne. "We've used the process on fans that were swapped out every three months and have since gone two years without replacement."

Another method, FlameSpray, uses a torch to lay down metallic and ceramic coatings, while BoroPlate welds boron carbide onto parts.

"Our niche is wear control, and we're always on the lookout for new materials as well as technologies to apply it," says Osborne. "Our electric arc spray is one that is really exciting. It gives us the technology to go in and lay down a thin skin of hard facing over large surface areas and do it economically."

He has used the process to coat the beds of large feed trucks and even corn chopper chutes.

"The chutes were a real pain in the neck, but we compared them to chrome chutes on side-by-side machines," says Osborne. "At the end of the season, ours showed hardly any wear compared to the chrome."

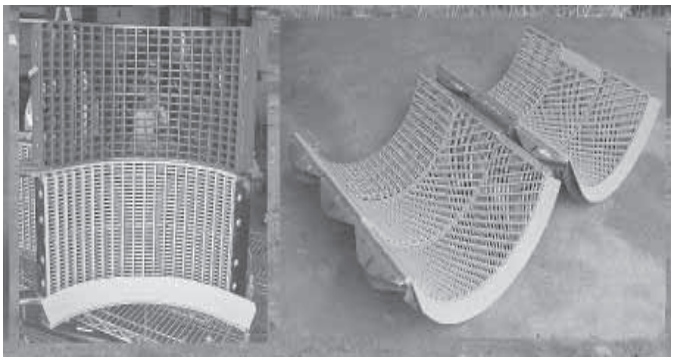
The material used also varies from job to job with tungsten carbide a common coating. On the chutes, Osborne used a boron carbide steel alloy called Borospray.

"It's like metallic glass with no grain structure in it and yet it approaches tungsten carbide in abrasion resistance while being lower in cost," explains Osborne.

He emphasizes that surface preparation is as important as the actual coating. He has developed several proprietary preparatory processes, including unusual media that are extremely hard and dense.

Prices vary depending on the process, material and size of the job. Osborne suggests contacting him before shipping a part, as it may be less expensive to buy a part in his area, have it coated and then ship it one way.

Uncoated impeller, left, lasted 30 days. Impeller at right has been in service 30 days and counting.



Concaves, augers and many other combine parts can be treated.

What looks like a flame is actually a steel alloy melted with a 14,000-volt-amp power source and then sprayed using almost 5 cu. ft. of air per second.

Contact: FARM SHOW Followup, Jon Osborne, Extreme Industrial Coatings, Airways Industrial Park, 11319 W Willow Lane, Airway Heights, Wash. 99001 (ph 509 991-1773; fax 509 299-7706; jono @extremecoatings.com; www.extremecoatings.com).

Magnetic Oil Pans Catch Metal Shavings

It's common sense that transmissions and differentials last longer if they run cooler and if the fluid is cleaner. One way to do both for trucks is with components offered by Mag-Hytec. The company makes differential covers with magnetic drain plugs and dip sticks to trap shavings and other metal parts. They also make replacement transmission pans with magnetic drain plugs.

"Our differential cover and transmission pan double the fluid capacity of each, and the finned design cools the fluids faster," explains Jerry Rothlisberger. "Magnetic drain plugs and dipsticks keep the fluid clean."

He and his wife Korena run the company his dad Roy started nearly 30 years ago. "My dad wanted a differential cover with a dipstick for his truck and decided to make his own. That got him started," recalls Rothlisberger. All components use high quality.

Most plugs, cap screws and washers are stainless steel. The covers and pans are cast in aircraft aluminum with cooling fins machined out.

Drain plugs and dipstick are magnetic. "The magnets collect fine metal shavings and if big chunks break off they prevent further damage," says Rothlisberger, who suggests regular inspection of plugs and dipstick. "You'll always find a clump of chrome shavings or fine particles on the magnetic dipstick or plug, but if you see a larger part, it alerts you to pull the cover and do an inspection."

Photo shows fine metal shavings attached to magnetic dipstick and drain plug.

The heavy-duty differential covers sell for $235 and up, while transmission fluid pans sell for $250 and up, depending on the vehicle. Covers and pans are available for Chevy, Ford and Dodge trucks and covers for rear Dana 44 differentials.

Contact: FARM SHOW Followup, Mag-Hytec, 14718 Arminta St., Van Nuys, Calif. 91402 (ph 818 786-8325; fax 818 786.0560; info@mag-hytec.com; www.mag-hytec.com).

Electronic Ignition Kits For Older Tractors, Cars

"I installed a 12-volt electronic ignition on my 1952 Ford 8N tractor. It works great and eliminates the points and condenser," says Peter Bodde, Arthur, Ontario.

The tractor still has its original 6-volt starter motor, but Bodde had it rebuilt. He also installed a new distributor, a 12-volt battery, a 12-volt coil, and a GM AC alternator.

"Converting from six volts to 12 volts paid off, says Bodde, who made the conversion about seven years ago. "I made the conversion because in cold, damp weather condensation would build up on the points so I had trouble starting the tractor. I often had to use a heat gun to dry them off. Now the tractor always starts right up.

"I bought a used alternator and had a friend rebuild it, which was cheaper than buying a new one. I paid $80 for the electronic ignition kit which I bought from a local farm implement dealer. My total cost was less than $200."

Bodde also installed a 6-volt electronic ignition kit on his 1931 Ford Phaeton Model A touring car, which was originally equipped with a distributor, coil, points and plugs. "Since I converted to electronic, the car starts and runs better," he says.

The electronic ignition kit bolts on inside the distributor on an adaptor plate.

He kept the car's original 6-volt battery. "The car's entire system is still 6-volt. I didn't want to change to 12-volt because the car is road worthy, and installing a new 12-volt battery and ignition would reduce the car's value as an antique," notes Bodde.

Contact: FARM SHOW Followup, Peter Bodde, 7866 Peel Side Road 21, RR 1, Arthur, Ontario, Canada N0G 1A0.

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