

SPECIAL REPORT

Auto Parts

Two heads better than one

Greenkote, Kalcor partnership aids rubber-to-metal bonders

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CLEVELAND—Two Cleveland companies have joined forces to offer makers of rubber-to-metal bonded automotive parts and assemblies an adhesives and coatings system they claim will perform better, cost less and be more environmentally friendly.

Greenkote USA and Kalcor Coatings Co. have partnered to offer complementary technologies for thermo-diffusion and waterborne coatings. The firms said this combination gives high-performance synergies for bonding adhesion and corrosion protection using environmentally friendly products compatible with

polymer-based adhesives used in the industry.

Though the main market will be automotive, the company's said the technology also will have application in the appliance and industrial sectors.

"We came together to put together a

system for automotive parts suppliers where the sum is greater than the individual parts," said Paul Mills, Kalcor business development manager. "As a system, the two technologies that we have—when they're paired together—are really impressive."

Technical nuts and bolts

In the system, Greenkote's thermo-diffusion batch process uses a dry bulk powder formulation to create a uniformly applied coating. The anchor pattern improves the adhesion of top-coat layers that are used for primer and adhesive bonding systems and promotes under-bond corrosion protection, the firm said.

The company's PM 1 zinc/aluminum coating can be used as a base coat on a variety of ferrous metals and alloy combinations used for stampings, fasteners, powdered metal and MIM shapes, castings and forged components. The coating replaces phosphate pretreatment and abrasive cleaning on non-heat treated metal substrates.

Greenkote's coating is compatible with one- and two-coat adhesive products used for molded rubber compounds made from

natural and synthetic elastomers. It forms a hard surface that improves adhesion of primers and adhesives to promote bond strength, the company said.

Kalcor then provides its Kalgard 094

line that is a water-based, low-VOC polymer coating it said gives excellent corrosion resistance with low moisture and vapor permeability properties. The firm said long-term corrosion resistance to non-bonded surfaces are enhanced by Greenkote's PM 1 line with Kalgard 094 providing a durable finish at variable thicknesses based on customer needs.

Officials from the two companies said molded components and assemblies can be coated shortly after removal from molds and tooling with excellent adhesion to metal and rubber surfaces providing a low-gloss black appearance. Coating application methods for the 094 line include spray, dip spin and dip/drain, giving excellent coverage that can be air-dried within minutes for parts handling, they said.

Kalgard 094 can be formulated for colors with gloss levels up to 35 on a 60-degree gloss meter and complies with several OEM specifications as a cost-effective alternative for electro deposition coatings on metal surfaces.

Lab corrosion studies for combinations of Greenkote PM 1 and Kalgard 094 exceed 2,000 hours as tested in accordance to ASTM B 117, according to the firms. The systems also are available in high-temperature versions.

Coming together

The need for such a collaboration came about because of the increasing demands of auto makers on their suppliers of various rubber-to-metal bonded components and assemblies, many of those in the anti-noise and anti-vibration areas, Mills said. And not only did the car companies demand increased performance, but better appearance.

"You need to come up with a part that is not only very functional, but now it can't rust, it can't oxidize and it has to

look pretty," he said.

Greenkote originally contacted Kalcor because it always is looking for collaborative relations with other firms, according to Tony Hall, Greenkote USA vice



An example of a rubber-to-metal bonded automotive part that can benefit from the combination of technologies offered by Greenkote and Kalcor.

president of business development. Greenkote was looking to improve its offerings in the automotive suspension component area, where requirements to stop corrosion had escalated over the course of time.

"We were looking for someone that would have a product that was very likely to work at a higher level of performance than some of the alternatives that have been in practical use for many years," Hall said.

The two firms first sat down around the end of last summer to explore the capability of each other's products. They then undertook a testing program in a lab environment and received impressive results, he said.

With the call for coatings that were not only functional but aesthetically pleasing, the rubber part makers had a lot of options to get either one or the other, but those options weren't always compatible, according to Hall. Or the rubber-to-metal bonders would have to add process steps and additional costs to develop that compatibility.

"What we see here is we add something to the menu of options that just becomes simpler in terms of the process itself," he said.

Potential customers will have three

options to have the coating system applied to their components or systems. They could have it applied at Greenkote or Kalcor's operations in Cleveland, they could go to a licensed applicator, or they could purchase a coating license and apply it right on their shop floor.

Where it stands now

Hall said the firms have talked to several automotive makers, either directly or through Tier 1 suppliers. They were encouraged that the OEMs liked the technology, gave them listings of their preferred supplier networks and told them to go into the marketplace to continue their efforts.

So far, Greenkote and Kalcor have introduced their technology to some of the larger and smaller rubber-to-metal bonding manufacturers, which have seen the potential for improvements in performance and cost as well as environmental factors from traditional processes, according to Hall.

Now is when the need for patience sets in.

"The unfortunate part with automotive is unless they have an absolute problem that needs an immediate correction, you're sort of pegged to start with the introduction of a new model year program," Hall said.

That means the earliest mass production programs using the new technology likely would be with the 2013 model year.

He recalls a conversation with a non-domestic supplier of rubber-to-metal parts that told him that if his company agrees to go forward with testing its product, it would take a minimum of three years of testing and adaptive science before the company would put it on a vehicle in the marketplace.

One thing in the companies' favor, Mills said, is that while the combination is new, both Greenkote and Kalcor are quite experienced in the automotive sector. Kalcor paints a lot of parts on cars while Greenkote has a long history of success in Europe, so the potential customers will know who they are.



Mills



Hall