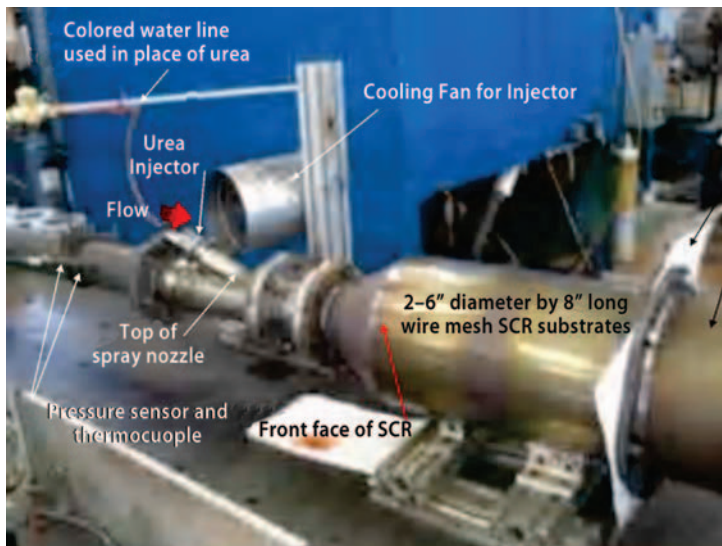


Mixing It Up For SCR

Online wire mesh mixer targets urea SCR applications; designed for higher gas flow uniformity; shorter mixing distance



ACS Industries has introduced a new online wire mesh mixer for use with urea SCR aftertreatment systems. The construction of the wire mesh allows for a more uniform flow pattern, which is designed to be more beneficial in reducing NO_x .

BY DAWN M. GESKE

As the on-highway vehicle industry begins looking ahead to the 2010 exhaust emissions standards, many engine and exhaust system manufacturers are looking at urea-injected selective catalytic reduction (SCR) as a viable option to meet Tier 4 NO_x regulations. With the European market readily adopting this technology, and Mack and Volvo announcing SCR as its strategy going forward in North America, a number of manufacturers are developing SCR-compatible products.

Among these is ACS Industries Inc., Lincoln, R.I., which is capitalizing on its wire mesh portfolio by offering a noncatalyzed online knitted wire mesh mixer specifically aimed at SCR systems.

While the wire mesh mixer is targeted toward dosing applications such as SCR aftertreatment systems that use urea to reduce NO_x , it can also be applied in fuel reformers used

along with Lean NO_x traps and retrofit systems. Using it in an SCR system, said Sivanandi Rajadurai, ACS vice president of engineering, exhaust products, provides a more uniform distribution of urea. "The flow uniformity is maintained because of the wire mesh.

"If you look at regular flow, it is going in a longitudinal way, but with the wire mesh you have longitudinal and radial. The gas can go anywhere. It has a larger spread and a torturous path because the gas molecules go around and around in a zigzag pattern."

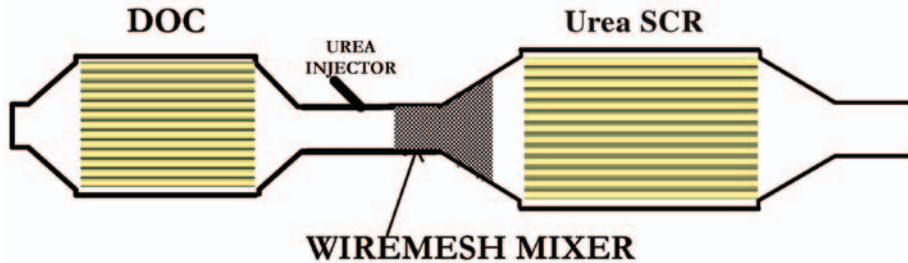
In a conventional urea SCR system, urea solution is injected through the exhaust pipe and into the catalyst. "A gas molecule going into a substrate channel can only go straight and is not able to redistribute," said Rajadurai. "The molecules are in the center only. They cannot go anywhere else."

The construction of the wire mesh

allows the gas molecules to go throughout the body of the substrate, said Rajadurai. "When they get in here (the wire mesh mixer) they can go any way because the wire mesh is like a sponge. It provides a lot of contact time, lots of distribution and the efficiency of the flow is better."

The optimized flow-through of the mixer also allows the thermal load to remain uniform throughout the body of the mixer, as no heat degradation occurs as exhaust passes through the mixer. This, ACS said, prevents urea crystallization and allows installation at the cone of the catalyst. Because the exhaust temperature is not reduced, a shorter mixing distance is achievable with the wire mesh mixer.

"Knitted wire mesh mixer has efficient mixing properties with low backpressure," said Rajadurai. "Its flexible construction gives it optimal flow dis-



The wire mesh mixer has a flexible design that allows it to be fitted in a shorter distance between the urea injector and the front face of the SCR catalyst, which ACS said can be reduced by 75%.

tribution and minimizes the space needed in the underbody layout. In the exhaust system, they don't have that space — so this mixer is able to provide mixing in a short distance.”

According to ACS, the distance between the injector and the front face of the SCR catalyst can be reduced by 75%. The wire mesh mixer is also designed with rapid warm-up and easy installation, requiring only a retainer ring to keep it in place.

To date, ACS is in the prototype stages of the mixer working with OEMs, engine manufacturers and Tier

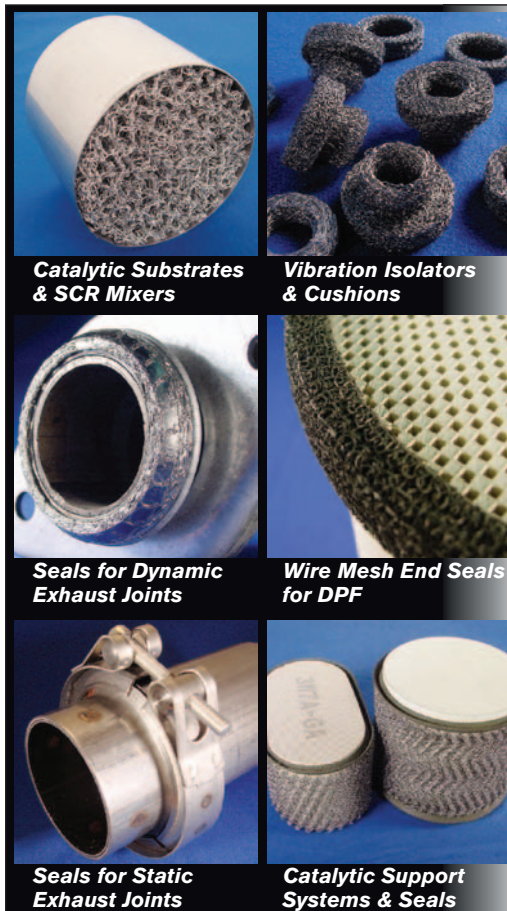
1 exhaust suppliers. “We will not only provide samples to the European market and Japanese market, we will do the North American market,” said Rajadurai.

ACS will produce the online wire mesh mixer at its Monterrey, Mexico, facility with production scheduled to ramp up for 2010. The company also recently opened a production facility in Shanghai, China, which ACS said has the production capabilities to produce the mixers if required.

Besides the wire mesh mixer, ACS also produces a range of knitted wire

mesh, rolled expanded metal/woven wire elements and wound wire exhaust products for the automotive and industrial industries. **dp**

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