



FSX, a manufacturer of diesel particulate filter cleaning systems, has added a sales office in Warsaw, Poland, as it seeks to expand from the North American market into Europe.

AIMING TO CLEAN UP IN EUROPE

Washington manufacturer taking its diesel particulate filter cleaning technology offshore

BY JACK BURKE

FSX, a Granite Falls, Wash.-based manufacturer of diesel particulate filter (DPF) cleaning systems for the North American market, is setting its sights on Europe.

The company has opened a sales office in Warsaw, Poland, said Drew Taylor, the company's North American sales manager.

FSX was formed in 1999 and has experienced rapid growth in the North American market as DPFs have become more commonly used on vehicles and equipment. Taylor said the company supplies DPF cleaning equipment to about 85% of the North American market and counts the Navistar, Kenworth and

Peterbilt dealer networks as customers. Transit, school and government agencies also use FSX's equipment for their fleets, he said.

Now, Taylor said, Europe beckons. "We're anxious to get the word out in Europe now," he said. "On the heavy-duty side, Europe is right where the U.S. was in about 2006 — they're getting ready to see a lot of equipment come on the market with DPFs on them and we want to get the word out on our products."

When FSX began, its focus was supplying ventilation technology for industrial processes for companies such as Boeing. But as DPFs began entering the market — transit authori-

ties were among the first to use the filters onboard their vehicles — how to go about cleaning them was something of an unknown, Taylor said.

"Some of the large transit authorities in this area had begun to retrofit exhaust filters onto their buses and knew of our reputation of restored old filters as good as new," he said. "Two of the region's largest transit authorities essentially showed up on our doorstep one day because they had retrofitted their exhaust filters with DPFs on hundreds and hundreds of their buses and they needed help cleaning the filters. That was our introduction to this whole DPF thing."

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The FSX TrapBlaster's design includes a series of moving air knives that blast air into each individual DPF cell, breaking up any ash and sending it to a central dust collector.

Taylor said the company took some time to understand how DPFs worked, what made them plug and ultimately fail. He said many of the assumptions about how to clean the filters turned out to be wrong. In the beginning, he said, the preferred cleaning method was to use a burst of compressed air from a diaphragm valve in an attempt to clean all of the thousands of DPF cells at once.

"When you blast all 6000 cells with air, you're assuming the cells are evenly loaded but they're not," he said. "That energy from the air will seek the path of least resistance and continue to follow that path. But not all the cells will be cleaned. You have to attack each individual cell."

In the FSX system, the cleaning takes place in a sealed cabinet called the TrapBlaster, where a series of moving air knives blast air into each individual cell. The effect is to break up ash trapped within the cell walls and send it to a central dust collector, dubbed a SootSucker.

The TrapBlaster uses high-pressure air jets that clean from both ends of the filter. The system is designed so the operator can see the process and focus on difficult areas, Taylor said. The noz-

zles are fully adjustable to allow cleaning of outer edges, which he said are often not cleaned fully in other systems.

The FSX cleaner can accommodate filters up to 36 in. wide and 20 in. in diameter. The system also includes diagnostic features designed to detect failed cell walls and defective filters during the cleaning process.

The TrapTester includes a filter baseline database chart that lists air flow readings and cleaning target ranges for most common DPF filters used on trucks, buses and heavy equipment that have that have sent filters to FSX or reported test readings. The list is updated regularly.

If the cleaned DPF fails to meet the "green tag" range associated with the identified filter, it is placed into the TrapBurner kiln, where it will be baked at temperatures of up to 1112°F for up to six hours.

The TrapBurner thermal cleaner is designed to provide a programmed, regulated thermal regeneration of troublesome filters without cracking or damage. The TrapBurner can be expanded with optional extension rings and an internal filter rack to process as many as three standard Class 8-sized filters every 24 hours, or a single, larger filter up to 39 in. long, the company said.

Once through the TrapBurner process, the filter should be free of any soot and ready for a final cleaning in the TrapBlaster.

Taylor calls DPFs "sophisticated garbage cans," and just like an actual garbage can, they need to be emptied from time to time.

"If you get the ash out when it's still pliant and soft, you can do that repeatedly — many, many times — the pneumatic cleaning process is not harmful to the substrate," he said. "If you let them go beyond 250,000 miles, the ash starts to set up like concrete and at that point, they become very difficult to clean. It's like someone poured plaster down there."

The FSX cleaning process can remove anywhere from a pint to a quart of material from the filter, he said.

"The good news is the filters work

very, very well," Taylor said. "They do an excellent job of oxidization on PM matter.

"The bad news is the filters have turned out to be quite a bit more fragile than we thought in the beginning."

Part of that fragility can be the result of ash when not properly removed from the filter, he said.

"When the ash sits in there and builds up over time, it completely changes the thermodynamic characteristics of the filter," Taylor said. "What you've got is a foreign tumor growing in there."

That "tumor" of hardened ash will result in a cooler temperature island within the DPF. "When you get something very hot colliding with something a few hundred degrees Fahrenheit cooler and then something relatively brittle in between — the crystalline substrate — it cracks," Taylor said. "Once that cracking begins, it is irreversible damage and the cracking will spread through that filter."

That can lead to unexpected downtime for operators and expensive DPF replacement, he said.

"The bottom line is cleaning DPFs saves money," Taylor said. "The fleets that have our equipment save a ton of money, not only in replacement costs, but we've had several fleets find a fuel savings from 4 to 6% when they've kept their filters clean."

That's the message FSX will take to Europe, Taylor said. He also believes the market for FSX's technology will continue to grow.

"The biggest skepticism we hear is from people who say there's going to be some kind of paradigm shift in the technology itself," Taylor said. "That they can just wait it out because pretty soon everyone's going to be running on CNG or LNG and no one will need a DPF. Or there's going to be some big paradigm shift in the filters themselves and some university will develop that's totally different.

"But the DPF is going to be here for a long time." **dp**

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