

Proper Air Filtration— See No Evil, Hear No Evil

Noise and haze can add stress unnecessarily to already taxed welders and machine operators. Why inhibit their productivity when all that's needed is a well-designed and properly installed air-filtration system—precisely the case at this agricultural-equipment OEM.

BY BRAD F. KUVIN, EDITOR

Welders and cutting-machine operators welcome with open arms new technology that makes their days more productive, safe, rewarding and enjoyable. But such joy and appreciation can quickly subside when improved productivity and throughput comes with added shop noise and dirtier air.

Such was the case at agricultural-industry supplier Fast Manufacturing, Mountain Lake, MN, a manufacturer of pull-type sprayers and liquid-fertilizer application equipment. As the market for such equipment has surged since 2008, according to Fast general manager Clay Roll, so has the firm's fabrication and welding capacity.

In 2009 the firm added 4800 sq. ft. to its main fabrication building, which houses 25 manual arc-welding booths. In 2011, a second adjoining production facility welcomed a new plasma-arc-cutting table, and in January 2012 a new 4500-W laser-cutting machine. Finally, in December of 2012 the firm acquired a second 4500-W laser-cutting machine, replacing the plasma table. And, a third adjoining building features a 4000-W laser-cutting machine designed to cut tubes and structural sections. Fast processes structural-steel plate and sheet 16 gauge to 2 in. thick, and tube ¾- to 10-in. square.



Ducting from Fast Manufacturing's Mazak laser tube-cutting machine leads to a Farr Gold Series GS8 dust collector, located outdoors.

Air Handling—Undersized, and Loud

Such rapid growth taxed the firm's aging and undersized air-handling equipment, installed when it launched operations in 1990. "We really took note of this in 2009," says Roll, "when we built the addition to our weld shop to make room for five new booths. Our existing horizontal cartridge dust collector couldn't meet demands, and we

were sending a large amount of money in heat right outside the building. So we went in search of an air-exchange system that could filter the air and bring it back inside, to minimize heat loss."

The fume-collection unit of choice: a Farr Gold Series GS8 (eight filter cartridges) from Camfil APC, Jonesboro, AR, added to a ducted exhaust system provided by Glacier Technology Inc., Plymouth, MN. Along with significantly



From left to right, seen outside the Fast trio of adjoining buildings: a Farr Gold Series GS8 dust collector installed in 2009 to tackle weld fumes; a GS16 installed in 2011 that captures laser-cutting dust and fumes; and a GS6 installed in 2012, also for laser-cutting fumes and dust.

cleaner air that “our welders really notice and appreciate,” Roll says, “the new system provided a 3-yr. return on investment based solely on reduced heat loss.”

Also significantly improved, notes Camfil APC specialist Jon Ladwig, is the amount of noise generated on the clean-air side of the dust- and fume-exhaust system. Ladwig and Camfil APC metalworking market manager Greg Schreier designed the system for Fast.

“The old horizontal-style cartridge unit,” says Ladwig, “not only was undersized but created a lot of noise, which can be very fatiguing in the tight confines of a factory. We installed a better silencer on the exhaust and optimized the design of the ductwork to minimize air velocity of the clean air reentering the plant. All of this added up to an effective solution—cost- and performance-wise—that keeps the air clean and the noise to a minimum.”

Low-Pressure-Drop Filters

When Fast cleared the air of its weld shop, it also tackled the tube-production area by installing another GS8 dust collector. Gold Series units feature vertically mounted cartridges with a cone in the center of the cartridge that, says Schreier, expands the amount of usable media in the filter by as much as 25 percent compared to other horizontal cartridge-filter models.

“Fast also uses the new HemiPleat eXtreme fire-retardant media filter,” Schreier notes, “designed specifically for cutting and metal-dust filtration.

It further reduces energy use at Fast by operating with a low pressure drop, and achieves high filtration efficiency, to 15-16 MERV (minimum efficiency reporting value) rating.”

In 2011, Fast added a GS16 (16 filters) dust collector to its plasma-cutting table (since removed from the factory floor), which, says Roll, “always had a haze nearby. With the new system, air quality in that building improved dramatically. The same can be said of the GS6 unit installed with our newest flat-bed three-axis laser-cutting machine in December 2012, where we’re pulling cutting dust and fumes through a downdraft table.”

Filter Life

As if the improved environment and energy savings (all four dust and fume collectors allow warm, clean air to recirculate back inside the adjoining buildings) weren’t enough to justify its air-handling investment, Fast appreciates the low maintenance requirements associated with the new equipment—specifically, filter life.

“For example,” says Justin Herrington, the firm’s weld- and fab-shop manager, “Camfil recommends changing the filter on the system clearing the air from our tube laser once per year, but we ran it for 3 yr. before the gauge on the machine indicated that the filter needed to be changed. And in the weld shop, we expected to have to change the filters every 9 months, but they’ve lasted longer than a year.” **MF**

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