Manufacturing Innovation Insider Newsletter

Making Industry Safer and More Productive for 50 Years

After creating the first air operated vacuum cleaner to stop fire risk and boost productivity, VAC-U-MAX remains US industry's leading and most innovative vacuum solutions provider

Frank Pendleton knew the dust and lint surrounding oiled textile machinery was a time bomb ready to go off. First hand experience taught him the fire hazard had to be safely and efficiently removed. Existing electrical vacuums, however, were not only underpowered but also posed a real ignition risk due to sparking on start up. And traditional compressed air hoses simply blew unwanted debris around. So Pendleton teamed up with an inventor, and in 1954 introduced the first air-operated vacuum cleaner, or air vac, which was three times as strong as its electrical counterpart and posed no sparking hazard.

From his dedication to meeting industry's needs, Pendleton founded VAC-U-MAX, the world leader of industrial vacuum and vacuum conveying technology. Now, celebrating its 50th anniversary, the Belleville New Jersey-based company continues its tradition of innovation to solve vacuum-related challenges in a wide range of manufacturing and industrial settings from powder coating and metalworking to chemical and pharmaceutical.

Take for instance their custom solution for Holcim Cement's Midlothian Tex. plant, whose automated quality control lab was frequently shutting down due to an overload of dust and debris.

"We needed a high volume, high efficiency vacuum system to pull dust from our lab 24/7, year round," says Cal Beard, Quality Supervisor for Holcim. "But the original vacuum system specified by the robotic installation team was like an 'asthmatic mouse.' It just didn't have the capacity or reliability we needed."

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VAC-U-MAX sent an engineer to measure desired vacuum volume and other parameters needed in the lab. A continuous central vacuum system was installed that simultaneously cleans five robotic stations, with the capability to use a manual vac at multiple sites by simply plugging into floor vents. Beard and his

operations crew, impressed with their new central vac system's abilities and appearance, nicknamed it "Blue Max."

"Nothing here works without the vacuum system," says Beard. "It provides us with the vacuum capacity and reliability we need for continuous operation."

But like a free safety on the football field defending against disaster, the venerable air vac remains one of US industry's most mobile and versatile pieces of equipment. Sam Miller, for example, faced a labor-intensive, potentially dangerous problem in need of a solution, as many in the powder coating industry do.

"Static electric shock to our workers while vacuuming excess powder coating was a concern," says Miller, Vice President of Miller Welding and Iron Works, a custom job shop fabricator based in Washington, Illinois. "We couldn't adequately sweep the fine powder residue from the floor, lights, booth walls, and components, and there were potential flammability issues with the powder and the electric shop vacuums we were using. With the shop vacuums, our productivity suffered too since we not only had to vacuum but also clean by hand using wet rags to prepare booths for the next powder coating job."

Miller sought out VAC-U-MAX, which offers the industry's only written static control guarantee. To eliminate any shock, fire, or explosion hazard associated with electric or engine driven units, a Venturi compressed air-powered vacuum was installed with anti-sparking vacuum inlets and grounding lugs, static conductivity from end to end, including a static conductive hose with internal ground wire and grounded end cuffs, that prevent static build up.

To further reduce sparking danger, static-conductive filters are used, rated 99.9% efficient at one micron, which virtually eliminate any fine particle discharge from the vacuum's exhaust back into the work area. This helps to create healthful, productive breathing conditions in the workplace.

Furthermore, a unique pulse jet filter cleaning system on all VAC-U-MAX air vacs not only speeds

Today VAC-U-MAX's 1020 MFS continuous-duty industrial portable vacuums can pick up between 3 and 5 tons of material an hour from 30 feet away.

color changes in the powder coating industry but also ensures high vacuum efficiency while virtually eliminating clogged or "blinded" filters in a variety of industries, including chemical and pharmaceutical. By simply pushing a button on the air vac, the operator can backwash the filter with compressed air instead of taking the vacuum apart to clean the filter by hand.

"The air operated vacuums were designed for powder applications like ours," says Miller. "They eliminated both our static electricity problem and the spark concern we had with our previous electric shop vacuums. Not only that, but they're also 30 per cent faster than the old shop vac equipment, cover more area, and pick up finer material. Smaller particles are trapped in the filter, which is safer for our staff."

When it's necessary for employers to meet OSHA established permissible exposure limits for crystalline silica during an 8-hour work shift, VAC-U-MAX

can also provide a second HEPA filter rated 99.97% on particle size to 0.3 micron. The added filtration combats breathing hazards such as silicosis - a lung disease caused by continued inhalation of siliceous minerals - that pose a threat in the glass, brick, cement, asphalt, ceramic, and metal fabrication industries where sand is used as a component or for blasting, as well as in tunneling operations.

Clean filters thus translate into higher productivity, less operator exposure to contaminants, and higher accountability for controlled substances. This can be vitally important for the pharmaceutical industry, which not only tracks every ounce of product for the FDA, but also needs to recover ingredients that may be worth hundreds of dollars per ounce, and safeguard operators from ingredients blowing around in the air that may affect them. For applications like this, the company offers automatic off-line filter cleaning capability on its continuous vacuum systems as well.

For clean up of truly explosive materials such as gunpowder, rocket propellant, sodium azide, aluminum powder, and others which can explode if collected in dry form, a Submerged Recovery Vacuum Cleaner is available and designed specifically to pick up explosive powders safely. The explosive or hazardous material is submerged under fluid to render it inert. The unique design includes not only a high liquid level safety shut-off, but also a low liquid safety shut-off to prevent vacuum operation if insufficient liquid is in the drum.

While handling potentially explosive powder or dust can be a serious challenge, the non-explosive kind can also pose a challenge if it detracts from air quality or working conditions in production facilities. Forward thinking managers realize that it's prudent to minimize worker contact not only with dust and powder, but also with sharp or jagged fragments that can injure or simply be an ergonomic burden to remove.

At Majestic Marble and Glass, a residential and commercial solid surface and granite fabricator in Youngsville, NC, Division Manager Jeff Coombs proactively sought to improve both air quality and workfloor ergonomics for his production staff. Previ-

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ously, air quality was unsatisfactory as various sanders, routers, and miter saws produced a large volume of fine, heavy dust during production. Shop vacuums attached to the workstations were cumbersome, tended to get in the way, and had to be emptied and cleaned several times each day. This was inconvenient, and cut into production time as well.

"On high use days, the dust would look like a fog on the shop floor," says Coombs. "We wanted a high quality work environment, day in and day out, no matter what our volume. Not only that, but we knew the system had to be ergonomic and easy to use, or our staff just wouldn't use it they way they should."

Coombs sought the expertise of VAC-U-MAX, whose company engineer twice visited his production floor to help custom engineer a central vacuum system to his needs. Drop-down hoses now hang conveniently over each station with quick connects that allow dust to be pulled directly off equipment at its source. An enlarged filter housing and extra filters with a non-stick surface ensure constant dust filtration with self-cleaning ability.

"With the source capture dust removal, there's no visual dust anymore and air quality is vastly im-

proved," says Coombs. "Not only are we well within OSHA's mandated air quality standard, but we're also more productive and producing a better product. Since the dust is immediately removed from the sanders, saws, and routers, we're getting about 20 percent more life out of our sandpaper and equipment. One man with a forklift can now dump the central hopper once every few days, allowing staff to stay productive at their stations without having to dump and clean the shop vacs several times a day the way we used to. In material, equipment, and labor, we're saving up to $20,000 per year."

For safety, productivity, ergonomics, and other goals, VAC-U-MAX offers pre-engineered solutions and can manufacture industrial vacuum equipment to customers' specific applications. Its 6,000-sq. ft. testing facility, along with a full line of industrial vacuums, allows a multitude of equipment configurations. Or equipment can be tested at the client's site to duplicate actual conditions, when suitable.

For more information about VAC-U-MAX industrial vacuum cleaning solutions, write to them at 37 Rutgers Street, Belleville, NJ 07109; call 888-241-6992 ; e-mail info@VAC-U-MAX.com; or visit their web site www.VAC-U-MAX.com.

Del Williams is a technical writer based in Torrance, California.