

Vac-U-Max

Advanced Industrial Vacuum Cleaning Systems Integrated into Production and Processing Systems Are Paying Dividends by Increasing Productivity, Improving Safety and Protecting Worker Health

Today's industrial vacuum cleaning systems – capable of picking up material as heavy as bowling balls or as fine as mist - are now far more sophisticated than their brethren, the common shop vacuum. These powerful and sophisticated vacuum cleaning systems, often custom designed for specific applications but also available pre-engineered, are becoming an integral part of industrial processes for reclamation of production material, maintaining and cleaning critical production equipment to reduce downtime, and extraordinary “housekeeping” such as removal of hazardous waste or material too heavy to be handled safely by human labor. In fact, for many manufacturers and processors, industrial vacuum cleaners are now being completely integrated into production and process systems and are quickly becoming a key component of critical strategic issues that range from productivity to environmental safety and worker health.

Yet, as sophisticated as today's vacuum cleaning systems are, a surprising number of companies still use ordinary “shop” vacuums purchased from the local building supply. Even when used for ordinary house-keeping functions, these throwaway vacuums are expensive to operate, noisy and inefficient. Some companies spend literally tens of thousands of dollars on shop vacuums that quickly find their way into the trash heap.

Of course, the proper selection of an industrial vacuum cleaning system is based primarily on the application. In some cases small air and electric powered drum-style units will suffice, while others require large electric and diesel powered units for multiple users and filtration systems capable of capturing particles that are invisible to the naked eye.



Whether their applications involve caustic materials, hazardous waste, potentially explosive situations, extremely fine particles, harsh environments – or all of the above – their requirement can usually be met with pre-engineered Vac-U-Max vacuums, accessories and control panels.

Some applications require sophisticated customized vacuum cleaner installations. For other applications, compact, off-the-shelf vacuum systems are perfectly adequate when replacing crude or unnecessarily hazardous cleaning methods, such as the use of compressed air hoses for blowing debris.

“The users of industrial vacuum cleaning systems may assume they need a custom, one-of-a-kind solu-

tion when their application actually calls for a pre-engineered product,” says David Kennedy, Sales Manager for the Industrial Vacuum Systems division of VAC-U-MAX, Belleville, NJ. “In other words, most applications require standard equipment that offers the option capabilities to best fit their application.”

In business over 50 years, VAC-U-MAX specializes in the design and manufacture of industrial vacuum systems, ranging from compact electric-powered units to large and powerful diesel-powered vacuum systems. The company is also a leader in the design and manufacture of pneumatic systems and support equipment for conveying, weighing and batching of dry materials. Its combined experience with vacuum and positive-pressure pneumatic systems and controls, plus its nationwide network of distributor and sales rep specialists, makes VAC-U-MAX a leader in the industrial vacuum cleaning business.

According to Kennedy, industrial hygiene is an important function that requires effective vacuum cleaning systems. There are increasing concerns among workers, labor unions and OSHA about the quality of the plant environment. For example, in the glass, brick and cement industries and where sand is extensively used, silicosis (a lung disease caused by continued inhalation of the dust of siliceous minerals and characterized by progressive fibrosis and a chronic shortness of breath) is a threat that can be alleviated through the use of vacuum cleaning systems with HEPA (High Efficiency Particulate Air) filtration, instead of shoveling, sweeping or blowing the dust around the plant.

In addition, vacuum cleaner filtration systems must be capable of completely removing hazardous materials and even everyday dust from the workplace. Vacuum systems must have appropriate power, in many instances capable of picking up heavy production residue, returning such material to the production process. At the same time, vacuum systems should be designed so that noise hazards are minimized, either by dampening system noise or configuring the system to minimize worker exposure to high noise levels. In most cases, these safety issues are best addressed by a collaborative effort between the industrial customer and highly experienced vendors such as VAC-U-MAX.

Industrial vacuum cleaning systems are also fre-

quently used as a means to clean machine tools and other manufacturing equipment. However, according to Kennedy it is not uncommon for manufacturers to incur thousands of hours of downtime each year using manual or other outmoded methods to clean machine tools and automated production equipment. He cites a manufacturer of jet engines as a good example of where productivity gains and capital equipment savings are dramatic.

“The company uses a \$3 million waterjet cutting machine tool in its manufacturing operations. It used to take a full backbreaking week to remove the wet abrasive using shovels. We were able to reduce the cleanup time to less than two days with our vacuum cleaning equipment, enabling the company to pick up substantial operating time and produce more engine parts, and avoid any back injuries,” says Kennedy.

In many instances, the benefits of a correctly chosen vacuum cleaning system include productivity and safety. Kennedy mentions pharmaceutical applications as an example, where product recovery is vital, since many pharmaceuticals are worth hundreds of dollars an ounce. “At the same time, you want to make sure you recover the material safely – you certainly don’t want powerful pharmaceuticals blowing around in the air and affecting operators,” he adds.

Golden Grain, a member of PepsiCo company under the Quaker Oats division in Chicago, uses five VAC-U-MAX systems for sanitation and cleaning in its pasta processing area and packaging department. The systems are standard pre-engineered models, but were customized to provide the use of up to 20 pick-up points from one central vacuum producer.

“We’re trying to get away from using compressed air to clean devices and components,” says Joe Thomas, Technical Services Manager. “When you use compressed air hoses to clean equipment, you don’t have control of the debris. Our VAC-U-MAX units are a lot cleaner and much easier to maintain, and they help us to clean very specific areas.”

Thomas says the Golden Grain application requires a vacuum cleaning system rigorous enough for continuous cleaning in a 24/7 operation.

“We were also concerned about the number of use points that are available from each system. I have

a common line that comes off the VAC-U-MAX unit, and I want to be able to put 20 people on it at the same time.”

Thomas says he also considered user friendliness in his evaluation of vacuum cleaning systems “We wanted a system that operators could understand very quickly. And we also wanted to be sure it didn’t present any safety risks.”

Technglas provides television glass to the world’s leading television tube manufacturers - including RCA, Sony, Toshiba, Philips, Panasonic, Samsung and Daewoo. The Pittston, PA plant produces over 10 million glass panels per year, operating 24 hours a day, 365 days a year. With a manufacturing operation that is in constant motion, the company scheduled time-consuming manual cleanings of iron oxide dust and glass shard accumulation when production permitted. From a health, safety and quality perspective, Technglas had to find a solution for more frequent, automatic removal of these materials that didn’t depend on a shop being down to complete the work.

“We’re in a very competitive business, yet manufacturing plant appearances can make a noticeable difference to customers,” says Mark Perlis, Hot End Maintenance Specialist at the Pittston plant. “With the variety of weights and sizes of waste material – ranging from 2-inch pieces of glass down to fine silica and iron oxide dust – we wanted a system that could clean up that spillage. We also wanted to send the hazardous waste into drums for disposal, and recover the larger pieces of glass so they could be re-melted and reused.”

Perlis says it was critical that the cleaning system would not exhaust iron oxide dust into the air, since even a small amount of the red dust on a glass TV panel could ruin the product.

To accomplish this, Technglas contacted their local VAC-U-MAX dealer to schedule a demonstration of a continuous-duty vacuum cleaner with the capacity to pick up and filter up to six tons of material per hour. A HEPA filter, which is rated 99.97% efficient down to 0.3 micron particle size, successfully prevented iron dust from contaminating production, and the vacuum system cleaned production tables and



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conveyors at various points in the plant on a continuous basis, solving the waste problem without slowing production.

It was more or less a centralized system,” Perlis explains. “It was fairly easy to install, and we could use it as often as we liked. So we purchased a unit and simply hooked up the attachments to the central vacuum, and we were ready to go. The system has been working for us with no problems ever since.”

Nordson Corporation, an Amherst, OH-based producer of powder-coating paint systems needed to find a way to remove powder paint overspray from the conveyor belts used to transport products through the powder spray booth. If not removed, the powder overspray could cling to the belt or underside of the product – typically flat metal panels used to make household appliances – and contaminate the underside of trailing product, causing rejects or carry-over into the curing oven.

Nordson wanted a solution that did not require interruption of the automatic powder application process, and felt that the optimum solution would recover the powder and cycle it back through the spray system.

“One of the major attractions of powder paint versus wet paint is the fact that you can recover overspray and reuse it,” says John Binder Marketing Manager, Powder Coating Systems and Project Engineer for the project. “That made it pretty obvious that we should try to find a method of finding a recovery solution to our overspray problem.”

Binder’s team looked at a couple of different devices and methods, and after some trial and error with other suppliers, began a development association with VAC-U-MAX. “We finally evolved our application into a vacuum cleaner head with a rotating brush that was tied to a vacuum cleaning system. VAC-U-MAX supplied everything from the vacuum head to the vacuum system.”

According to VAC-U-MAX’ Marketing Director Doan Pendleton, their product line covers all applications except hospitals and commercial facilities. The company’s dealers offer comprehensive sales and installation support, including the integration of VAC-U-MAX systems with production equipment and controls. VAC-U-MAX occasionally provides demo equipment for application testing and is capable of performing tests on samples of customer materials at specialized lab facilities.

“With all the productivity and safety issues that are associated with industrial vacuum systems today, our users view their vacuum cleaning systems as capital equipment,” explains David Kennedy. “We have geared our manufacturing and marketing programs accordingly.”

As with the evaluation and purchase of other capital equipment, VAC-U-MAX users want their vacuum cleaning systems to fit their operations like custom systems, yet also wish to avoid paying custom prices. Standard VAC-U-MAX equipment can run from less than \$1,000 for small installations, to more than \$100,000 for highly customized ones. Whether their applications involve caustic materials, hazardous waste, potentially explosive situations, extremely fine

particles, harsh environments – or all of the above – their requirement can usually be met with pre-engineered VAC-U-MAX vacuums, accessories and control panels.

VAC-U-MAX systems are sold worldwide, with major markets for conveying systems including the chemical, food and pharmaceutical industries. Industrial vacuum cleaners range from small air- and electric-powered drum-style units to large electric and diesel units. Centralized units can support fixed piping networks for general plant housekeeping or spill recovery. Options include continuous pulse filter cleaning, HEPA filter for hazardous materials, and a large variety of filter media. VAC-U-MAX provides material handling choices for collected materials and offers electrical components for all area classifications, and stainless steel construction when required by application.

For more information about VAC-U-MAX industrial vacuum cleaning or pneumatic material handling solutions, contact Vac-U-Max by mail at 37 Rutgers Street, Belleville, NJ 07109; telephone (888) 241-6992 or (973) 759-4600; E-mail: info@vac-u-max.com; or visit the web site www.vac-u-max.com.

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