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## Trends in Vacuum Cleaner Technology

By Mike Schaffer

At one time, more than 100 years ago, selecting an upright vacuum cleaner was relatively easy, because the options were limited:

- They were heavy.
- They cost about \$75 (a huge sum at the time).
- They were hard to push and to pull.
- There was nothing ergonomic about them (in fact, the word had just recently been invented).
- Large amounts of dust and contaminants were released into the air every time they were operated.
- They almost always came in black.
- Only one manufacturer made them.

But one more thing should be mentioned as well: custodial workers and housekeepers loved them. In fact, the first vacuum cleaner was invented by a janitor, James Spangler, who cleaned a department store in Canton, Ohio. He was looking for a more efficient way to clean the store without causing dust to cover the store's merchandise in the process.

Before vacuum cleaners, rugs and carpets were swept clean with brooms, causing lots of dust to be released into the air. Alternatively, they would be cleaned with the carpet sweepers of the day, which did a relatively poor job, or they would be hung on clotheslines to be pounded with specially designed rug-cleaning sticks that released clouds of dust into the air, but often did a surprisingly good job.

Today, things have changed a lot. Instead of just one vacuum cleaner to choose from, facility managers can select from scores of models from manufacturers all over the world. Moreover, these machines have all kinds of features that make cleaning more efficient, Greener, more productive and safer.

However, understanding the terminologies that identify these features has become confusing even for the most experienced in the professional cleaning industry. A closer look at some of the most common terms and what they mean can help facility managers and cleaning professionals select the best equipment to meet their facility's needs.

- **CFM.** By the mid-1920s, vacuum cleaner manufacturers were struggling to make their machines ever more powerful, usually by building larger, heavier, and noisier motors that increased the suction. What they had yet to neither learn, nor invent, were vacuum motors that were more efficient, without adding bulk and noise to the machine. The goal is to increase the volume of airflow moving through the machine, which is measured in CFM-cubic feet per minute.

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Some new upright vacuum cleaners have as much as 160 CFM, providing enough lift for exceptionally powerful cleaning performance.

- **Dual-Fan Technology.** Many conventional upright vacuum cleaners have two motors: one to drive the roller brush and another to provide the suction power for the machine. Others have just one motor playing two roles. Both systems have their benefits and drawbacks. However, some more advanced vacuum cleaners now feature dual-fan technology, which takes advantage of the benefits of both systems. Instead of one fan, two fans are used, which increases the suction power of the machine without the added weight – and noise – of a second motor.
- **HEPA Filtration.** In the past 15 years, the term “HEPA” (high-efficiency particulate air) evolved from a high-filtration system to a media buzzword. But HEPA filtration has become essential in facilities where protecting indoor air quality and trapping allergens and contaminants are vital. Nearly 100 percent of all airborne particulates are trapped by installing a HEPA filter over a vacuum cleaner’s exhaust. But one problem some upright vacuum cleaners still have is that as the machine is used and the HEPA filter is soiled, airflow can become restricted and the machine performs less efficiently. Some manufacturers have developed new technologies to ensure maximum airflow with HEPA filtration systems helping to alleviate this problem.
- **Multistage Filtration.** Filtration systems on vacuum cleaners often cause confusion for facility managers and cleaning professionals. Many assume that if the vacuum cleaner already has a HEPA filter, there is no need for a more extensive filtering system. And they aren’t sure what a multistage filtration system is, anyway. A multistage filtration system uses multiple filtering systems, including more advanced filter bags, to help trap airborne particulates. It should be viewed as a pre-filter, helping to remove larger particulates and leaving the smaller soils and contaminants to the HEPA filter.
- **Ergonomics.** The term “ergonomic” was first used in relation to machinery about the same time as the first vacuum cleaners were being manufactured. It referenced machines that had a “good fit” with the people that used them. However, just as with the term “HEPA,” it soon became a buzzword in the professional cleaning industry. The term still refers to a good fit between man and machine, but there is more to it with an ergonomic vacuum cleaner. Two of the most ergonomic features of a more advanced vacuum cleaner are the design of the handle and the weight of the machine. The handle should be designed to comfortably fit into the user’s hand. It should be light but sturdy, easily following the lead of the user. Additionally, the entire machine must be lightweight. Some newer uprights weigh only about eight pounds. A machine this light is usually easy for users to operate, making it a good fit in most cleaning situations.

Another term that is often heard when discussing vacuum cleaners is “cost of ownership.” This is about much more than just the sticker price. It refers to the performance of the machine, its overall durability, downtime, repair service and parts costs, and other factors. Often a jansan distributor will have experience with a host of machines and will be able to answer most cost-of-ownership questions about many vacuum cleaner models.

One thing facility managers and cleaning professionals should always keep in mind is that the most expensive vacuum cleaner is not always the most durable and least expensive to own over the long term. In fact, some manufacturers are introducing lower-priced vacuums that are some of the highest-quality machines in the marketplace today.

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