

Industrial Fans: Saving People, Product, Power

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As a means of effective air circulation, they have proven beneficial in metal manufacturing plants where condensation issues disrupt product integrity; in auto repair facilities where they disperse localized exhaust fumes to improve air quality; and in printing factories where they provide just enough air movement to keep workers comfortable without disrupting the printing process. Industrial fans, long-lasting and energy efficient, have proven an integral component of worker comfort, productivity, and energy savings.

Active Air

At the forefront of industrial fans is cost-effectiveness, says Christian Taber, senior applications engineer and LEED® AP, Big Ass Fan Company®, both in terms of worker productivity and reduced operating costs. “Ideally worker comfort leads to safer working conditions as employees can spend more energy on the task at hand without experiencing heat discomfort or exhaustion.”

Often touted as the most energy efficient air circulating fans available, large-diameter, high-volume, low speed (HVLS) fans are capable of providing air speeds of 2 to 3 miles per hour to create the feeling of a 7 to 11 degree F drop in temperature when used as a stand-alone cooling system. For buildings utilizing air conditioning, fans can help supplement the air flow, allowing for an increase in thermostat set points. “There is a 4 percent energy savings for every degree a set point is raised,” explains Andy Olson, marketing director, Rite-Hite Fans. “One of the main economic benefits is reduced energy consumption as a result of destratification,” he adds, “a process where a fan spins slowly to mix warm air at the ceiling with cooler air near the floor.” During the winter, HVLS fans can redirect heated air that has been trapped at the ceiling back down toward employees at ground level, cutting winter energy costs by as much as 30 percent.

An alternative means for destratification are smaller, enclosed “turbine” fans, such as Zoo Fans. These smaller, lighter fans can be placed near overhead obstructions such as cranes, cables, and hoses, and can be directed to hit or miss specific areas. “ZOO Fans also provide an attractive alternative when the aesthetics of a large fan don’t fit with a building’s design,” says Jeff Benton, president of Zoo Fans. “They are an efficient, high impact strategy for increasing comfort and saving energy,” Benton continues. “Savings of 10 to 30 percent for space cooling and 20 to 40 percent for space heating are typical,” he says, also emphasizing that ZOO Fans can be a less-expensive solution than large fans.

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Industrial fans also provide savings by helping to preserve product integrity by reducing condensation on cardboard packaging and preventing rust. “When it comes to product integrity, corrosion costs the metal fabrication industry millions of dollars annually,” says Taber. Industrial air movement systems disturb the thin film of air on the metal surface, which in turn dramatically reduces the likelihood of condensation forming. “This air movement prevents the stagnant warm, moist air from being cooled below its dew point by the cold surface of the metal, which is what causes the harmful condensation to occur,” he explains. The air movement produced by the fan can speed the evaporation rate of the moisture on the metal’s surface by up to one-third, decreasing the time in which corrosion has to form, saving inventory.

Feeling Is Believing

“Industrial fans are evolving away from ‘bigger is better’ toward a grouping of smaller, more efficient units that can be operated independently or in zones to accommodate the conditions of specific areas,” says Benton. “Zoo Fans utilize the latest technology by offering a composite blade with serrations on the trailing edge to reduce sound, and winglets — top-and-bottom — to reduce blade-tip turbulence.”

“It’s not a ‘one size fits all’ approach,” stresses Olson. “Fans have become more customized to the application.” Different number of blades, diameters, and motor sizes allow users to pick an industrial fan that will meet their expectations. New control offerings allow a user to operate multiple fans from one location, fan speeds and on/off functions can be operated independently or simultaneously, and temperature and humidity sensors — with or without an interface to a building management system — allow industrial fans to run almost autonomously. “The most important thing to consider is what you are trying to accomplish in the defined space and then selecting a product that will meet those expectations,” explains Olson, adding that seeing industrial fans in action is a “great way to experience the benefits they have to offer.”

“Feeling is believing.”

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