

Hand Dryers: Green Attributes That Aren't Just a Bunch of Hot Air

Studies show hand dryers have a minimal impact on the environment

By Catherine Dinsmore

As facilities trend greener, facility managers and building owners are looking for ways to make their buildings as environmentally friendly as possible - even in the restroom. Waterless urinals and touch-free faucets help conserve water; cleaning chemicals, soap and paper towels can all be green certified. But there is one other restroom product to consider: hand dryers.

Hand dryers have minimal impact on Mother Earth and many models use low amounts of energy. Even more advantageous for some facility managers: the low energy usage means significant cost savings.

Environmental Impact

For building owners that want to earn the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design for Existing Buildings: Operations and Maintenance (LEED:EBOM) certification, green hand dryers can earn credits in five categories: Energy & Atmosphere

Credit 1: Optimize Energy Performance (a mandatory credit for all LEED facilities); Materials and Resources

Credit 6: Solid Waste Management - Waste Stream Audit; Indoor Environmental Quality Credit 3.1: Green Cleaning - High Performance Cleaning Program; Innovation in Operations Credits 1 and 3: Innovation in Operations and Documenting Sustainable Building Cost Impacts.

High-speed models that use 80 percent less energy than conventional dryers also meet GreenSpec standards. GreenSpec is a database of more than 2,000 green products used by architects, construction personnel and other building professionals.

The Climate Conservancy (TCC) demonstrated hand dryers' minimal environmental impact by determining its carbon dioxide equivalent (CO₂e), which is defined by The Organization for Economic Coordination and Development (OECD) as "a measure used to compare various emissions from greenhouse gases based on their global warming potential (GWP)."

To measure the CO₂e output, TCC looked at the amount of energy used to run a typical hand dryer. The study concluded that each average use (around 30 seconds) of a conventional hand dryer in a restroom emits between nine and 40 grams of CO₂e depending on the type of dryer. Newer models dry hands faster and use less electricity, further reducing the footprint of a hand dryer.

To put these results into perspective for products that dry hands, the study also determined the CO₂e emissions for paper products and found that every time a person uses two paper towels they are responsible for approximately 56 grams of CO₂e emissions. The number is higher because the process flow of energy and materials related to a hand dryer is, quite succinctly, to create electricity. There are also impacts resulting from the manufacturing process of the hand dryer unit, but other studies show that these impacts get offset by the manufacturing process of the towel dispenser.

When looking at paper products, the environmental impact really comes from the towels themselves. The process involves logging, pulp processing, paper milling, transportation and disposal. In addition, to dispose of paper towels, one needs trash bags, so the process flow of energy and materials for paper towels must also include refining oil into plastic for garbage bags, manufacturing, transporting and disposal of can liners.

"One ton of paper towels can use 7,000 gallons of water, 17 full-grown trees and 384 gallons of oil," says DiCicco.

A separate streamlined Life Cycle Assessment (LCA) study prepared by Environmental Resources Management in the United Kingdom concluded that a hand dryer, throughout its lifetime, would produce a global warming burden of 1.6 metric tons, the equivalent of 3,527.40 pounds of CO₂. This is the same burden as a car traveling

3,168 miles. Comparatively, the use of paper towels over the same amount of time would produce an average CO2 burden of 4.6 metric tons or 10,141.26 pounds, which is the equivalent to a car traveling 9,009.88 miles.

"Making a ton of paper from raw materials means needing to treat or dispose of 84 pounds of air pollutants, 36 pounds of water pollutants and 176 pounds of solid waste," says Carmela Bass-Belsito, president of C&L Supply in Los Angeles.

High-speed Dryers

High-speed hand dryers use less energy than conventional dryers so these models are even greener yet.

A separate study looking at cradle-to-grave environmental impacts peer reviewed by LCA experts in accordance with ISO 14040 standard found the climate change score for conventional hand dryers to be 220 percent higher than high-speed models because of the difference in energy usage. The production of materials and manufacturing of high-speed dryers is relatively the same as a convention dryer. (This study also found towels to have a higher climate change score than high-speed dryers: 220 percent higher for recycled paper and 270 percent higher for virgin paper because of environmental impacts during the manufacturing and disposal stages).

To dry hands in 15 seconds, hand dryers require 1,500 watts. Units with lower watts typically take longer to dry hands. Manufacturers are looking for ways to consume even less energy, but still dry hands quickly. Some models with lower wattage use special nozzles to increase air flow; others direct heat from the motor instead of a heating element.

Regardless of the type of high-speed dryer, these models are using less energy than conventional dryers, which is not only considered green, but reduces costs for facilities, too.

An analysis conducted by Dr. Greg Norris of Sylvatica, an LCA consulting and research firm with offices in the United States and Canada, compared the energy consumption of hand dryers and paper towels.

According to Norris' study published in Environmental Building News, standard hand dryers (which dry hands in 30 seconds) consume 222 kilojoules per use at a cost of \$1.47 per 1,000 uses. However, high-speed hand dryers, which dry hands in half the time, consume only 76 kilojoules at \$0.50 per 1,000 uses.

Newer models of high-speed hand dryers, DiCicco says, use 80 to 90 percent less energy than conventional dryers.

"One of the high-speed hand dryers [we sell] uses just 22 kilojoules," she says. "In dollars and cents, this amounts to \$0.18 per 1,000 hand dryings."

Customers are appreciating the fact that these hand dryers are not only green, but help save their facilities money.

"Hand dryers always have generated a cost savings," says Steven Collins, president of Collins Sales & Associates, Mississauga, Ontario, Canada. "However, with high-speed dryers, we have jumped on top of being environmentally friendly and have nearly tripled our sales in the last two years."

The next time a customer asks about LEED or ways to contribute to an environmentally friendly facility (especially in the restroom), don't overlook hand dryers as an option.

"Saving energy and reducing any potential waste are typically high on our end users' list of priorities," says Richard Osterhout, president of Green Electrical Supply, Rochester Hills, Minn. "Our customers buy hand dryers from us as a component of an overall, comprehensive, cost-saving and/or energy-saving initiative."

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