WORLD DRYER EXECUTIVE WHITE PAPER

THE ADVANTAGES OF HAND DRYER TECHNOLOGY FOR TODAY'S FACILITIES

Facilities managers involved in the design of new public facilities or renovating existing ones have an important choice to make concerning restroom hand drying. Paper towels and automatic hand dryers are two common options found in restroom facilities. The choice of hand drying method has significant implications for a facility in terms of cost, hygiene, user experience and environmental impact.

This White Paper, brought to you by World Dryer, will explore the wide-ranging implications that the choice of restroom hand drying methods can have on the operation and perception of the facilities you manage.

WORLD DRYER
Experience a World of Choice

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WHY READ THIS WHITE PAPER?

Facilities managers have many important choices to make when specifying furniture, fixtures, equipment and technology (FFE&T) for a new or renovated facility. Many of these choices have far-reaching and long-lasting implications for the operation, atmosphere and actual use of the facility. While choosing how occupants will dry their hands in a facility's public restrooms may seem, at first, a minor consideration, it is actually one that has several important implications for the cost, cleanliness, function, appearance and environmental impact of the facility. This White Paper will explore each of these implications and identify important considerations to take into account when planning the public restrooms in your facility to ensure optimal results.

1 COST COMPARISONS

Top of mind for any facility manager when considering FFE&T is not only the cost of purchase but also ongoing operating costs. The costs associated with purchasing a towel dispenser or hand dryer will vary depending on the features—such as touch free technology—chosen. However, choosing between paper towels and automatic hand dryers in facility restrooms also requires a careful comparison of the relative operating costs of each.

The ongoing operating costs for paper towels can be expensive

While basic paper towel dispensers entail a minimal expense, paper of every kind has become increasingly expensive over the past decade and typically people use more than they need to in public restrooms. In fact, on average, people use 2.5 paper towel sheets every time they dry their hands. With the cost of paper towels at up to 2 cents per sheet it can cost as much as 5 cents per person to dry their hands. It is important to think about how many people use your facility's restroom every day and multiply that number by 5 cents each. It's an expense that can add up to thousands of dollars per year for paper towels alone. Additional costs that should be considered include the shelf space required for stocking the paper towel supply and, even more significant, labor costs related to the time it takes employees to restock the dispensers and clean up and dispose of the paper towel clutter users leave behind.

The efficiency of automatic hand dryers reduces facility costs

In terms of cost efficiency, switching to high-speed hand dryers can reduce costs in materials, maintenance in restroom upkeep and waste up to 99 percent. When high-speed hand dryers replace paper towels in the restroom,

Here is a calculator that can help in assessing potential savings when switching from paper towels to hand dryers.

❶ Your annual paper towel costs

How many cases of paper towel usage per year? **A**

What's the price of paper towel per case? **B**

Your total cost of using paper towels: **C** = ($15 + B) x A

(average $15.00/case of maintenance services fees)

❷ The annual hand dryer electricity costs

How many sheets or feet per case of paper towels? **D**

The paper towel consumption represents how many hand-dries.
Ex: Multi/C-fold towels (2,400/case or 4,000/case)
Center-pull towels (3,600/case) . Roll towels (4,200 ft/case)

What is your electricity rate? **E**

Ex: Commercial–average rate $0.10 KWH .
Industrial–average rate $0.065 KWH

Which hand dryer would you like to own?

	SMARTdri	VERDEdri	VMax	Airforce	SLIMdri	AirMax	Model A
drying time (sec)	10	12	12	12	15	15	30
electrical rating (kw)	0.8	0.95	1.2	1.1	0.95	2.3	2.3

What is its drying time? **F**

What is its electrical rating? **G**

Your total annual hand dryer electricity cost: **H** = A x D ÷ 2.5 x E x F ÷ 3600 x G

(average 2.5 sheets/ft per hand-dry)

❸ Your total annual savings if you switch from paper towels to hand dryers: **I** = C - H

you eliminate the cost of purchasing, inventorying and restocking towels—and this can add up to significant savings of time and energy. All of this translates into a significant savings per facility–as high as five figures per year, which can free up resources for critical facility improvements.

In the past, many people preferred paper towels to hand dryers because they found it quicker to use paper and—using plenty of paper towels—they could be sure their hands were thoroughly dry. However, the new generation of hand dryers dry up to three times faster than older models, and they can use as much as 80 percent less energy in the process.

Hand dryers are now available that dry hands in as little as 10 seconds. Compare that with the fact that most people need 2.5 sheets of paper towels each time they dry their hands and the potential cost savings becomes clear.

Next generation hand dryers now offer adjustable speed controls as well, enabling facility managers to customize dry time, sound level and improve energy savings, making it possible to tailor your hand dryers to the desired conditions for your application.

2 SANITATION

Hygiene is an important concern. The popular use of hand sanitizers is but one indication that no one wants to touch something where someone else's bacteria-laden hands may have been. Because of the public's desire to reduce or eliminate the risk of infection related to restrooms, terms such as "hands-free" and "touchless" are widely accepted today as signals that a fixture or device is relatively cleaner and safer to use than those that must be grasped, pressed, cranked or otherwise operated by hand. As a result, facility managers are equipping their facilities with alternatives such as motion-sensor soap dispensers and faucets that help eliminate the need to touch surfaces.

There is no question that hand hygiene plays a fundamental role in minimizing the spread of bacteria, viruses and parasites. Dangerous microorganisms and bacteria collect on the surface of the skin, but proper and frequent hand washing with soap and water, coupled with sanitary hand drying techniques, can dramatically reduce the spread of harmful disease and bacteria, especially in those areas of the facility that are accessible to the public or casual visitors.

The rising public awareness of the dangers associated with the many ways bacteria and viruses spread suggests that people now have very high expectations of cleanliness at all public venues.

Moreover, there is a heightened public awareness of dangerous infections such as MRSA and H1N1, as well as the view—justified or not—that public restrooms are among the most likely places for exposure to disease-causing bacteria and viruses.

The cleanliness of your publicly accessed restrooms can demonstrate that you share the concerns of those who visit your facility and are taking every possible measure to prevent the spread of contamination, as well as providing the opportunity for them to take personal precautions, like proper hand washing.

While several studies[1] have shown the use of paper towels and hand dryers are equally effective in terms of resulting hand hygiene, the following additional factors deserve consideration:

Paper towels—the potential for contamination is difficult to control

Depending on the configuration of the dispenser, paper towels can give restroom visitors the ability to avoid touching potentially contaminated surfaces when drying their hands. However, this is not always the case. For example, some facilities stack paper towels in trays or use pull-down or hand-crank dispensers that can result in cross-contamination of towels or require users to touch potentially contaminated surfaces. Moreover, used paper towels can overflow or be dropped next to trash receptacles, ending up scattered on the floor. This not only provides the potential for bacterial growth, it also gives the appearance of an untidy, unclean restroom. Some patrons may also use soiled paper towels to open the restroom door when they leave, which can result in increased potential to spread disease-causing organisms.

Many automatic hand dryers incorporate advanced sanitation features

Touchless hand dryer models prevent possible contamination from buttons, knobs and levers common on earlier models, and they are proving to be more sanitary than other hand drying alternatives. Newer, innovative automatic hand dryers incorporate antimicrobial technology that inhibits the growth of bacteria, mold and fungus. In fact, studies have shown that anti-microbial technology is very effective against E. coli and MRSA.

Government studies and consumer feedback have also shown drying time to be important, and hand dryer design teams have emphasized shortening drying time as a key element of the holistic hand hygiene process. Some manufacturers offer drying speeds as quick as ten seconds—three times faster than traditional dryers—helping to ensure adequate drying that avoids the risk of water-based transfer of contaminants. Finally, hand dryers are also available with a HEPA filtration systems to reduce airborne contaminants and improve hygiene quality for facilities.

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USER EXPERIENCE

According to a recent survey by Cintas Corporation and Harris Interactive, 94 percent of adults would avoid a business where they encountered a dirty restroom. Similarly, 77 percent of those surveyed said that they would avoid a facility of any kind if it had dirty restrooms. This research demonstrates that user perception is critical to the success of a facility.

Facility occupants and visitors expect a clean and user-friendly environment

In most restrooms not using hand dryers, regardless of size, you can usually count on finding the trash receptacles overflowing with wet, germ-carrying paper towels—a sight sure to negatively affect user perception of your facility. Moreover, the constant attempt to keep these restrooms tidy and sanitary significantly adds to maintenance expenses.

High-speed hand dryers eliminate the need for cleaning up messy and potentially contaminated paper towels several times daily and also reduce opportunities for vandalism by clogging the plumbing with paper towels.

When you consider that automatic hand dryers can dry hands in as little as ten seconds and that most people need 2.5 sheets of paper towels each time they dry their hands, you will see the improvement in user convenience, not to mention the avoidance of the unsightly appearance, waste and sanitation risks that come with discarded, dirty paper towels.

Perceptions are key, and your tenants or facility visitors now have a heightened interest in ensuring they are in a clean, healthy and user-friendly environment.

Next generation hand dryers now offer adjustable speed controls as well. This enables facility managers to customize dry time, sound level and improve energy savings, making it possible to tailor your hand dryers to the desired conditions for your application. For example, a lower speed setting can be chosen to reduce noise in areas where acoustics are an important consideration, such as near a performance hall.

Another important consideration when it comes to user experience is ADA compliance. Hand dryers are available in surfaced mounted, ADA compliant models, making compliance easy while reducing installation costs.

Today, most manufacturers design hand dryers with the latest technologies to deliver robust choices that can result in energy efficiency, an improved environment and a better user experience. All of this will keep the needs of your facility's tenants, employees, and visitors, as well as your budget, in mind.

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ENVIRONMENTAL CONSIDERATIONS

Energy efficiency is good for the bottom line and the environment

Energy efficiency is important for every facility. Today's high-speed hand dryers use up to 88 percent less energy than traditional hand dryers. These dryers can use less than 1000 watts of power, which dramatically enhances their sustainable impact and cost efficiency. Several available high-speed hand dryers provide fast dry times even without additional heat and some include on-off heating controls, so facilities have a choice between ambient temperature drying for maximum energy efficiency or providing heated comfort with minimal impact to operating cost. Of course, energy savings can result in LEED credits. Additionally, some hand dryer models offer global universal voltage to accommodate any available service voltage.

Facility managers in today's world must keep sustainability top of mind.

While paper towels may seem like an energy-conscious and sustainable choice when compared to high-speed hand dryers, in fact, they are not. Energy efficient high-speed hand dryers have less cradle-to-grave environmental impact than paper towels, making hand dryers an obvious choice for sustainability. Over its service life, a high-speed hand dryer can reduce CO2 emissions by as much as three tons compared to paper towels—saving literally tons of trees and the resources required to make paper. Additionally, while it is possible to make paper towels from recycled paper, they are rarely—if ever—recycled, creating millions of cubic feet of waste in landfills.

5

A CASE STUDY IN RESTROOM REDESIGN

Fairplex, located approximately 30 miles east of downtown Los Angeles, has been the home of the Los Angeles County Fair since 1922. With a footprint of nearly 500 acres, the venue includes the Sheraton Fairplex Hotel and Conference Center, The Millard Sheets Art Center, a KOA RV park, a grandstand and infield with seating for 10,000 people, the Finish Line Sports Grill, 12 acres of fairgrounds and parking for 30,000 vehicles. In addition to the month-long Los Angeles County Fair, held annually in September, Fairplex is the site for approximately 500 sports and entertainment events every year.

On average, more than 1.5 million visitors attend the L.A. County Fair each year. Accordingly, the venue has 300 to 400 year-round employees, but the number skyrockets to close to 2,000 during the Fair. Jim DeMonaco, director of facilities, joined Fairplex in 2012. One of his first goals was to renovate the public restrooms—which had seen their last major renovation more than 50 years earlier.

DeMonaco launched an extensive redesign program for the Fairplex restrooms. Among the new installations were waterless urinals that would save the facility more than 10 million gallons of water a year; one-piece flooring with a central floor drain for quick clean-up; motion-sensor lighting that switches off when the restroom is not in use; multiple sinks formed of a single piece of counter material; hands-free faucets; high-pressure toilets; and most importantly, replacing paper towel dispensers with high-speed hand dryers to save on costs.

Finding a hand dryer that met multiple criteria

DeMonaco discussed his criteria in selecting a hand dryer model. "My first priority was enabling hands-free operation. In public restrooms, the paper towels tend to fill up the trash very quickly and people tend to throw them on the floor. The immediate impression to guests is that the restroom is not clean. So one of my objectives was to do away with the paper towels and go with hand dryers. Part of this decision was also the money we would save because we wouldn't have to spend $100,000 a year for paper towels."

DeMonaco took a methodical approach to find the hand dryer that would fit perfectly in the renovated restrooms. "I was concerned about drying time, so the hand dryer of choice had to be in the top 10 percent of hand drying speed," he said. "I was also concerned about noise and wanted the dryers to be relatively quiet. I was looking for something that was durable, that would stand up to the constant use, but also had an attractive design. Additionally, the dryer unit needed to be small so that I could put multiple dryers in a convenient place. Our plan was to mount them above the sinks so guests didn't have to move from the sink to use them."

Another key factor in choosing a hand dryer was the heating element. DeMonaco wanted a hand dryer that would work with or without a heating element to save electricity and hand drying time.

In terms of cost savings and efficiency, Fairplex has been able to cut its paper towel budget in half, but there's much more. "Labor is another important savings," said DeMonaco. "We're not cleaning the restrooms as often or as long. We're not emptying trash as much, so that reduces the entire waste disposal chain. I went from one attendant per restroom to one attendant per two restrooms. Obviously, the more important and tangible benefit was that our guest satisfaction ratios rose overall for the Fair experience. I can't attribute all of it to the restrooms, but I think that's a large part of it."

6 CONCLUSION

Facility managers need to look for every opportunity to improve the appearance, functionality and sustainability of the facilities they are responsible for while, at the same time, reducing ongoing operating costs. The technology available in today's advanced hand dryer designs has the potential to deliver on each of these goals while eliminating the cost inefficiencies and potential concerns regarding sanitation, negative user experience and sustainability posed by offering paper towels in your restrooms.

A decision about hand drying options in a new or renovated facility can have long lasting implications when it comes to achieving a cost-efficient, well-functioning, attractive, sanitary and sustainable environment. Considering all of these factors will help guide you to the best choice for your particular application.

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[1]Following are excerpts from relevant research on hand drying methods and hygiene:

"Warm air dryers have been shown to be as effective as paper towels with respect to the number of bacteria recovered from hands after washing and drying. In addition, there is no evidence to show that warm air dryers contaminate the air; in fact it has been demonstrated that airborne microbial populations are reduced as they pass through the warm air dryer (Taylor et al., 2000). The choice, therefore, between paper towels, high velocity air dryers or warm air dryers is based upon circumstance."
-- Source: "Personnel and personal hygiene;" Issued by Campden BRI Dec. 2012.

"A finger rinse technique for counting micro-organisms on hands showed no significant difference in the level of recovered micro-organisms following hand drying using either warm air or paper towels. Contact plate results appeared to reflect the degree of dampness of hands after drying rather than the actual numbers of micro-organisms on the hands. In laboratory tests, a reduction in airborne count of Pseudomonas aeruginosa and Staphylococcus aureus of between 40 and 75% was achieved from 600 readings comparing inlets and outlets of warm air hand driers. In washroom trials, the number of airborne micro-organisms was reduced by between 30 and 75%. Air emitted from the outlet of the driers contained significantly fewer microorganisms than air entering the driers. Drying of hands with hand driers was no more likely to generate airborne micro-organisms than drying with paper towels. Levels of microorganisms on external surfaces of hand driers were not significantly different to those on other washroom surfaces. This work shows that warm air hand driers, of the type used in this study, are a hygienic method of drying hands and therefore appropriate for use in both the healthcare and food industry."
-- Source: "A microbiological evaluation of warm air hand driers with respect to hand hygiene and the washroom environment;" Taylor, Brown, Toivenen, Holah; Journal of Applied Microbiology, Vol. 89, Issue 6, pgs. 910-919; published December 2000.

"…the results of the current study suggest that there are no differences in the efficiencies of removing bacteria from washed hands when hands are dried using paper towels, cloth towels, warm forced air, or spontaneous evaporation."
-- Source: "Effects of 4 Hand-Drying Methods for Removing Bacteria from Washed Hands: A Randomized Trial;" Gustafson, Vetty, Larson, Ilstrup, Maker, Thompson, Cokerill; Mayo Clinic Proceedings, Vol. 75, Issue 7, pgs. 705-708; published July 2000