electric Handdryer Association

Hygienic · Environmentally friendly · Efficient · Economical

Comments on an Impact Assessment on a potential implementing measure
(EcoDesign Directive)
Concerning the energy efficiency of Electric Hand Dryers

POSITION PAPER

Electric hand drying contributes to energy efficiency in a manyfold way.

eHA has worked constructively and contributed to the work of the "Ecodesign and Energy Labelling Preparatory Study on Hand Dryers (GROW Lot 12) | Final Report" (ICF Prep Study). eHA feels the need to point out a number of additional factors that were not subject to the named prep study, but that are crucial to properly assess the impact of potential on industry and consumer, notably:

a) Environmental considerations of hand dryers
b) Substitute products (notably paper towels)
c) Consumer behavior
d) Resulting economic and environmental impact on the electric hand dryer industry
e) Actual expectable energy efficiency gains of potential measures

a) Environmental considerations of hand dryers

The hand dryer industry was the first industry to establish global standards with regards to products contained in the category relative to their testing and environmental effects throughout their life.

- Product Category Rules (PCR) are documents that provide rules, requirements, and guidelines for developing an Environmental Product Declaration (EPD) for a specific product category. They are a key part of ISO 14025 as they enable transparency and comparability between EPDs.
- Environmental Product Declarations (EPDs) are a standardized way of quantifying the environmental impact of a product by studying the raw materials and energy consumption during its production, use and disposal.

With over a century of experience developing more than 1,500 standards, UL Environment, a business division of Underwriters' Laboratories (UL) was chosen to develop and publish the PCR. The rule established product evaluation methods used to determine key values such as dry time and energy consumption through industry consensus.

Prior to the establishment of the PCR for the industry, an American hand dryer manufacturer conducted a third-party Life Cycle Assessment (LCA) (peer reviewed to ISO 14040 standards) that confirmed between a

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50–75 percent reduction in the carbon footprint of hand drying—even when compared to 100 percent recycled paper towels. Now, using standardized and agreed upon methodology, all hand dryer manufacturers are able to test their products to the same rigorous standards, with results—substantiated by a credible leading organization—confirming the environmental benefits of hand dryers.

b) Paper towels constitute poor substitute products

One ton of virgin paper towels consumes 17 trees, uses 75,8 m3 of water are consumed and polluted. To reprocess this water, a lot of energy is needed. Furthermore, this ton of paper produces more than 3 tons of CO_2 emissions, and requires 12 m^2 of landfill space. Three more reasons:

1. **Paper Towels cannot be recycled**
   Paper towels are contaminated waste therefore they all have to end up in landfill. Although paper towels can be made from previously recycled paper, they are usually the last paper product to be made in the chain. This means that the paper they are made from has been recycled up to seven times before. The fibres are just too short in paper towels to be used again.
2. **Decomposing paper hand towels contribute to global warming**
   In the USA alone, 6,500,000 TONS of paper towels are sent to landfills each year. The decay of paper products and landfills in general **produces methane gases** which are 28 times more potent than carbon dioxide, therefore a real threat to global warming. They are also often put in plastic bags, creating further downstream problems in the recycling process.
3. **The average paper towel generates 7.5gms/CO2 or 22.5 gms/CO_2 per dry.**
   Life Cycle analysis shows that the effects of felling raw materials, transportation, manufacturing, packaging, storage on a constant loop, significantly produces a lot of CO2 into the atmosphere. Also, to make one ton of paper towels, 17 trees are cut down and 20,000 gallons of water are consumed and polluted.

c) Consumer behavior

The measures proposed in the study cannot be stomached by the industry without an increase in cost for consumers. For instance, the proposed measures are likely to lead intentionally to the elimination of a high number of lower-priced – so-called category 1 – hand dryers, as those dryers are less energy-efficient. Our experience shows that the loss of these sales will not be compensated with sales in dryers that meet higher energy efficiency levels, but part of these sales will be replaced by another drying system with a lower initial investment: Paper towel dispensers.
Hand dryers and paper towels are fully substitutable products. In the long term, hand dryers are less expensive, but the short-term investment is lower for paper towels. Anyone looking for a drying system that requires a low minimum investment and under the assumption that they do not have an economical dryer, will buy a paper dispenser (sometimes given away with the contract to buy paper for a long-term lease such

as 60 months). Although companies concentrate their promotion almost only on high-speed dryers, category 1 dryers are still a very popular alternative in the EU. The main reasons are:

- Budget solution
- Quieter
- Suitable for low/medium traffic installations
- Longer life span. Easier to repair. Supporting circular economy.

d) Resulting impact on the Hand dryer industry

The hand drying businesses in Europe are family-driven and comprise a mainly medium-sized industry. The suggested Energy Label and saving efforts might reduce limited energy and thus GHG emissions but increase huge amount of cost on hand dryer manufacturers, which most are SME.

The safety, hygiene and sustainability of products have always been the major targets when developing and manufacturing hand dryers. This is why products of European SMEs have obtained quality and sustainability certificates in Europe like GS, Blue Engel, and other certificates worldwide.

The impact of suggested measures e.g. reduced stand-by power to max. 0.5 W would lead to an immense reduction of revenues. The consequences are:

- Less resources to invest in new technology
- Reduced competitiveness in the market
- Job reduction
- Possible closure of companies

eHA Member`s estimate:
We estimated the market share loss to be 20%-30% due to the category 1 dryers shift to paper, and maybe some of the category 2-4 dryers also being substituted by paper.

It usually takes 6 to 9 month to payback when comparing paper towel dispenser and hand dryer cost, but when hand dryer price increased 20%, the payback time may be prolonged to 1 year and some of the customers will then choose paper.

Another Assessment:
We consider that by eliminating category 1 dryers from the market, there will be a 60% substitution effect. In other words, 6 out of every 10 installations that have bought a category 1 dryer will buy paper. That will mean a loss of market share of between 25-30%.

If the MEPS (Minimum Energy Performance Standard) and Labeling are implemented, we estimate an increase in the cost of category 2 and 4 dryers by 20-25%. This will push approximately 10% of those who would have bought a high-speed dryer, choosing paper.

It should be noted that in 2020 the hospitality sector has been affected very hard by the COVID crisis. Hotels, bars and restaurants, with medium/low traffic areas, are one of the main applications for category 1 dryers. These installations will be particularly sensitive to price/costs and will choose drying systems that represent the lowest initial investment.

e) Actual impact on efficiency gains that can be expected

The European Commission must bear in mind that a negative impact on the hand dryer industry could be very high, while the actual energy efficiency gains are likely to be minimal. We elaborate a few examples below:

Energy Label

The energy label requires to reduce the energy, but according to the current technology limitation, the energy that can be reduced is limited and requires high costs. For example, the suggested stand by power is max 0.5w, currently 31% of hand dryers already fall within the range, while 69% of hand dryers are in the range of 0.5–2w. In order to adjust the standby power, it requires PCB (Printed Circuit Board) redesign, and the possible costs and efforts needed for this could be as follows:

- Safety approvals fee
    - To change PCB board means most of our safety approvals need to be re-applied. In general, a hand dryer will have 6-8 safety approvals, and roughly it will cost EUR 25,000 each model, and we currently sell over 15 different BC1 dryer models to Europe, which means to change the standby power, the reapplied safety approval fee is EUR 375,000.
- Long test time
    - Updating PCB requires quality assurance. The longest test should be life cycles test which takes about 6-9 months. And to gain each safety approvals takes 2-4 months.
- Replacement & stock cost
    - For the current timeframe of energy label, manufactures need to replace the current dryers on the market and in the stock. Take the study figure for example, to replace the least efficient (25%) BC1 hand dryer PCB will cost (PCB cost + labor cost)*(2020 BC1 stock*25%), which will be (27.25+128.58)*(5,179,000*0.25) = EUR 201,760,892.5.

COST PER 1,000 HAND DRIES						
Description	**Mj/kg**	**Towels/kg**	**kW draw**	**Time (sec)**	**kJ/Use**	**Cost Per 1,000 Uses**
Virgin Towel	131	352	–	–	743	$23
Recycled Towel	81	352	–	–	460	$23
Standard Dryer	–	–	2.2	30	222	$1.47
XLERATOR® Hand Dryer	–	–	1.5	10	76	.50

Lack of standards to measure the drying time

To establish a limit of 10Wh per cycle, the consultant took in consideration the drying time values published by the various manufacturer. Since there are no clear standards, each manufacturer has a different way of measuring drying time. Additionally, the drying time varies a lot depending on the type of skin, size of the hands, soap residues etc.

A Spanish eHA member company has made some drying tests taking as reference what was proposed in the Preparatory Study: Rest of water 25gr. This is the result with different dryers and two different users:

	DryTime	Person 1	Person 2
Dryer 1	25 s	0,41 gr.	1,24 gr.
Dryer 2	25 s	0,11 gr.	0,41 gr.
Dryer 3	15 s	0,18 gr.	0,66 gr.
Dryer 4	15 s	0,12 gr.	0,19 gr.

Without a definition of drying time all the projections on efficiency gains are questionable.

Conclusions

All measures taken to further reduce energy use of warm air dryers need to consider contextual factors, especially the following:

- Increasing use of energy by consumers due to substitution of products
- Job losses in the relevant European SME sector
- New environmental problems with regard to water, waste, additional GHG emissions
- Hygienical problems

The latter is quite relevant during the Corona pandemic. Experts from leading health organizations including the World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) state that proper hand hygiene is the best defense against the spread of germs, like coronavirus. Furthermore, all are in agreement that proper hand hygiene consists of thoroughly washing and completely drying hands.

Specifically, the World Health Organization has stated that proper hand hygiene is the best defense against the spread of the coronavirus and other germs, recommending that everyone “frequently clean [their] hands…” and “dry [them] thoroughly by using paper towels or a warm air dryer.” The Centers for Disease Control and Prevention calls hand hygiene a “do-it-yourself-vaccine,” and reports that, “both [clean towels or air hand dryers] are effective ways to dry hands.”

The hand dryer industry has a vivid interest in improvements of their products. The innovative power has been demonstrated over the past decades. However, the real costs – especially environmental costs – need to be considered by examining and comparing **two completely different systems that serve as substitute products for each other**.

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