



COMMERCIAL
WASHING MACHINE

The Hydrofinity Washing Machine Environmentally Preferable Product

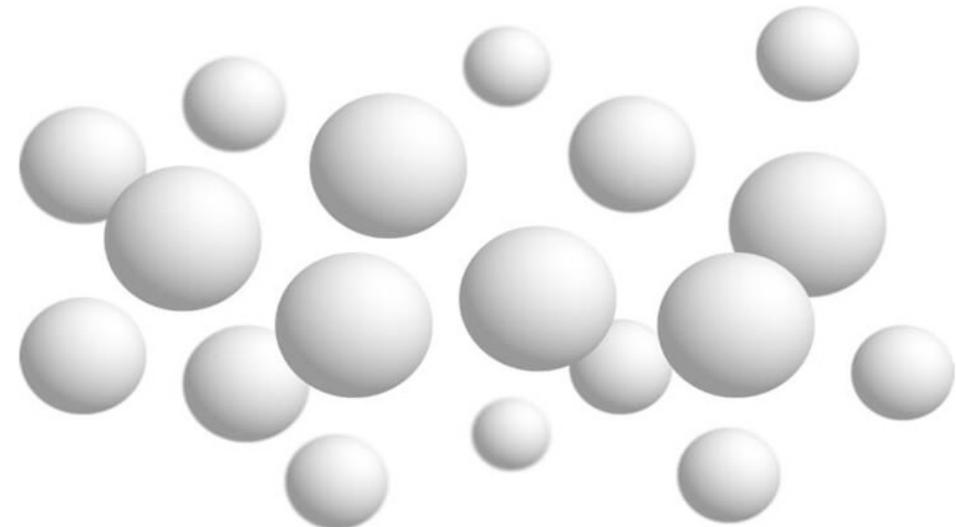
Summary and Key Findings

Introduction

On-premise Laundries (OPL) are **large consumers** of potable water. To assess this, SCS Global Services (SCS) compared the cradle-to-grave **environmental profile** of two similar sized commercial washing machines.

1. A Hydrofinitly washing machine – which can use proprietary Xeros technology – XOrbs™
2. A conventional washing machine

XOrbs™ are spheroidal shaped polymers which deliver better cleaning and fabric care, whilst saving water and reducing costs



What Wash Cycles Were Measured?

The Hydrofinitly washing machine has **two cycles**:

1. **XOrb** (for smaller items such as towels and facecloths)
2. **Non-XOrb** (for sheets and duvet covers)

The EPP claim is based on:

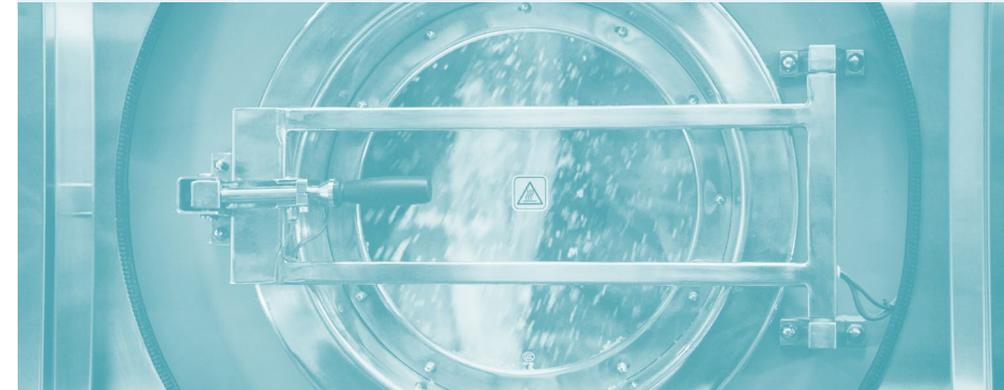
1. Washing **35%** of the wash load with an **XOrb cycle**
2. Washing **65%** of the wash load with a **Non-XOrb cycle**

This is a modest cycle split and customers have the option to use more XOrbs, which will give even better results.



The cradle-to-grave assessment used 3 base cases but the EPP Certification (and this summary) focus on Base Case 2

Base Case	Scenario
2	Typical cycle split for Hydrofinitly customers vs. the conventional washing machine



How Were Regions Selected?

Two of the largest markets for laundry were chosen:



USA



China

Two regions in each of these countries were chosen; one region used mostly renewable energy and the other, mostly non-renewable energy

Renewable energy

Non-renewable energy (e.g. coal)



California



Midwest



Qinghai

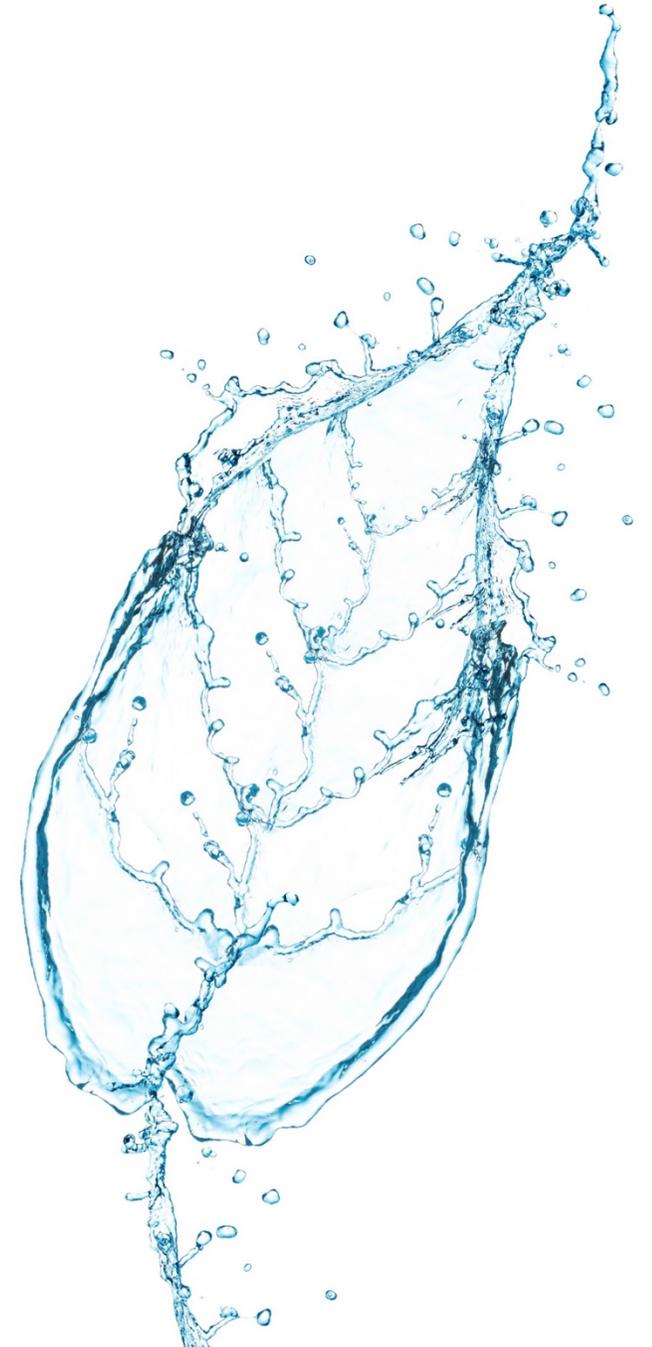


Shanghai

What Life Cycle Stages Were Measured?

When analyzing the cradle-to-grave impact, these processes were considered:

1. **Raw material** extraction and material processing
2. **Upstream transportation:** the transport of materials to manufacture site
3. **Production:** physical manufacture of each washing machine
4. **Downstream transportation:** moving the washing machine from the production facility to the consumer
5. **Use:** operation of each washing machine for its intended use
6. **End of life:** disposal of the washing machine, including transport and recycling



What Environmental Impacts Were Measured?

The operation of each washing machine was measured against **8 key** environmental impact factors (see [Appendix](#) for further detail):

1. [Global warming potential](#)
2. [Acidification potential](#)
3. [Eutrophication potential](#)
4. [Photochemical ozone creation potential](#)
5. [Ozone depletion potential](#)
6. [Resource depletion – fossil fuels](#)
7. [Primary energy demand](#)
8. [Water use](#)

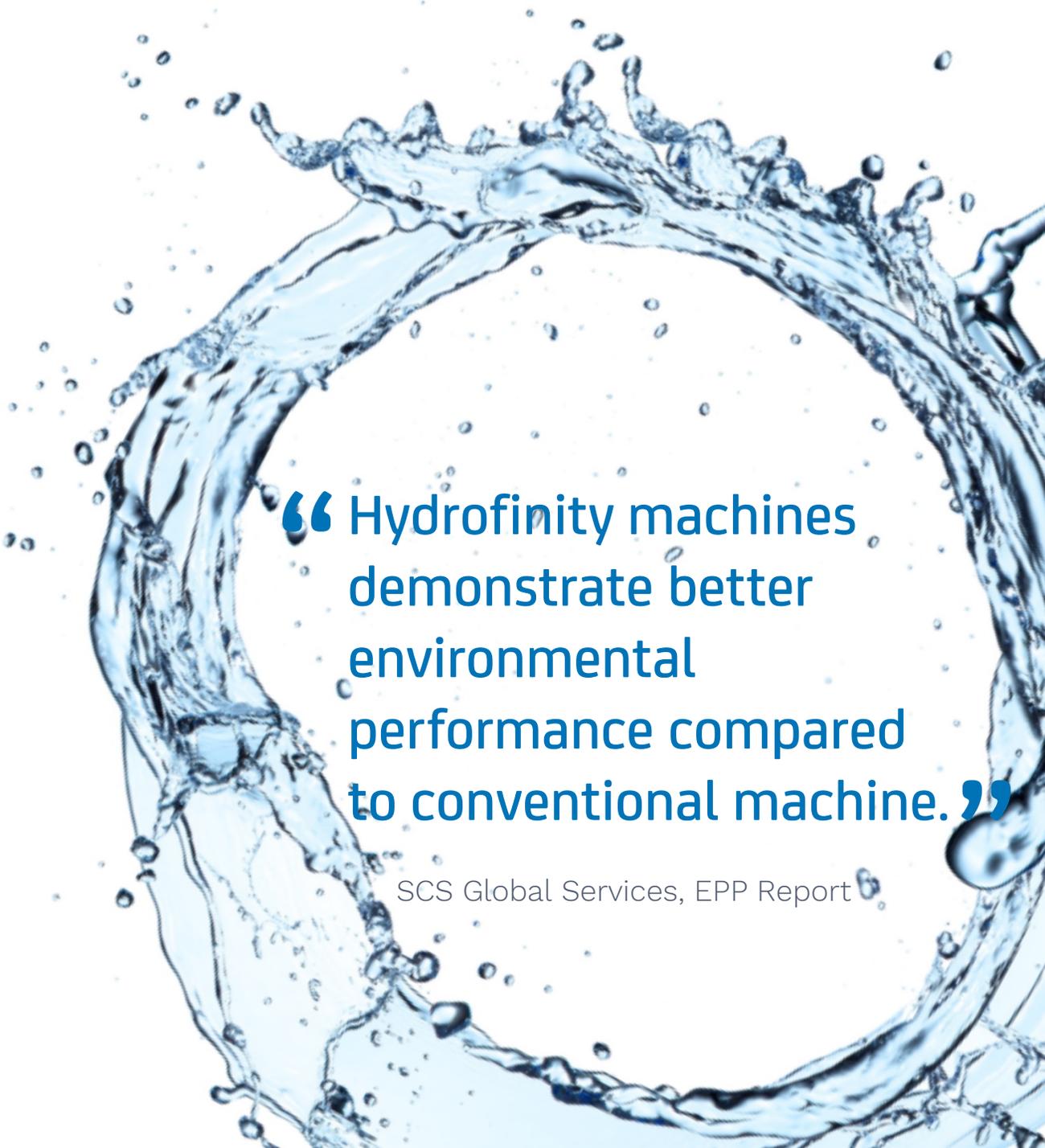


Key Findings

- The EPP concludes that the Hydrofinity washing machine demonstrated reductions across **all impact areas** when compared to the conventional machine.

The **three key areas** were:

1. Climate Change (kg CO₂e)
2. Primary Energy Demand (MJ)
3. Water Use (m³)



“Hydrofinity machines demonstrate better environmental performance compared to conventional machine.”

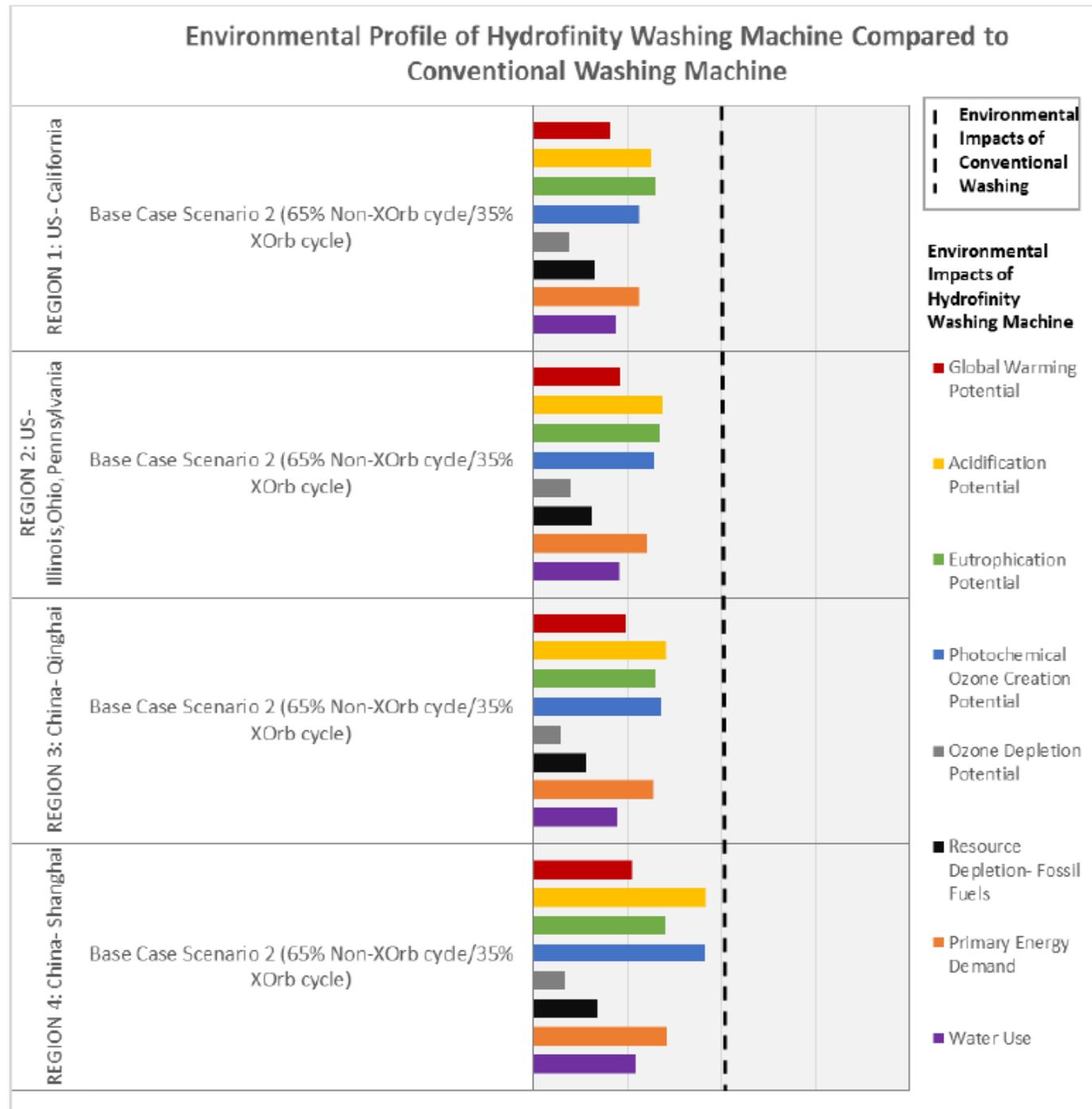
SCS Global Services, EPP Report

Appendix and Results

Appendix: Environmental Impacts Summary

The summary chart on the right (Figure 1 in the EPP report), shows that the Hydrofinité washing machine has a **lower environmental impact** across all categories than the conventional washing machine (calculated using TRACI 2.1 LCIA method).

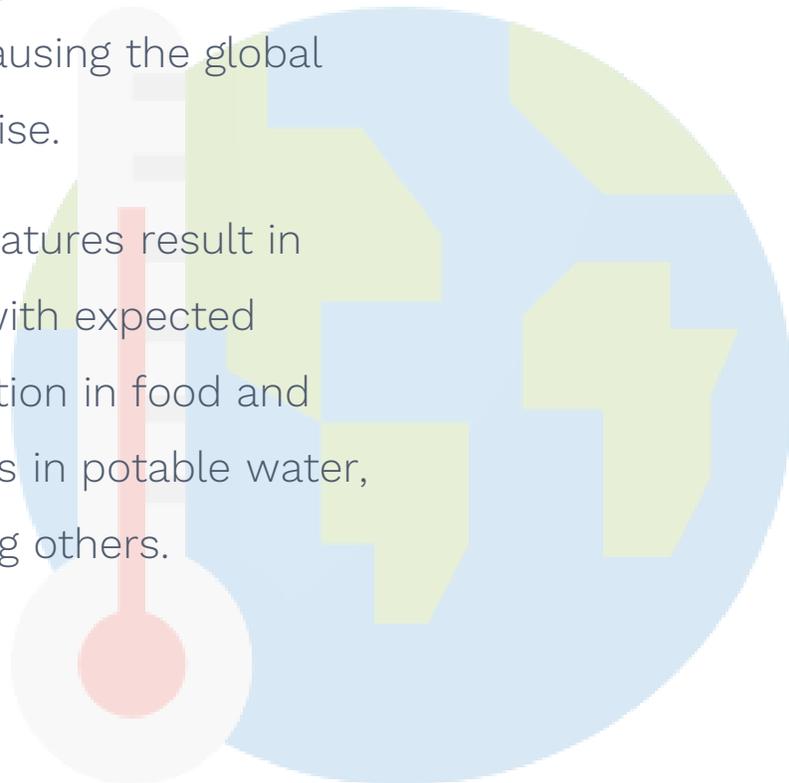
Results for Hydrofinité washing machine were normalized based on the environmental impact of conventional washing machine (indicated as a dash line in the figure). Impact bars below the dash line suggest that the Hydrofinité washing machine has relatively **lower impacts** compared to conventional washing machines.



Appendix: Climate Change/Global Warming

Global warming resulting from emission of greenhouse gases are causing the global mean temperatures to rise.

Increased global temperatures result in global climate change, with expected impacts including reduction in food and food supplies, reductions in potable water, and sea level rise, among others.



The Hydrofinity machine
contributes between

48-60%
less

to global warming
impacts than the
conventional machine

Appendix: Acidification Potential

Acidification is the increasing concentration of hydrogen ions within the local environment and comes from adding acids to the environment.

The acidification also affects fresh water bodies, causing tree stress & destruction and ultimately the death of the water body.

The Hydrofinity machine
contributes between

9-37%
less

to acidification impacts
than the conventional
machine

Appendix: Eutrophication Potential

Eutrophication is the build-up of chemical nutrients in an ecosystem which leads to increased and abnormal productivity, which has a negative impact on the ecosystem.

The best example is the introduction of excess nutrients such as nitrogen and phosphorus into a water body. The increase in these nutrients can increase the production of algae, which can choke out other life in the water body. Decaying algae can consume the dissolved oxygen in the water column starving out other organisms.

The Hydrofinitly machine
contributes between

**30-35%
less**

to eutrophication
potential than the
conventional machine

Appendix: Photochemical Ozone Creation Potential

Smog is formed as the result of the presence of ground level ozone arising from a reaction between NOx and volatile organic compounds in the presence of sunlight. Photochemical oxidation is linked to human health effects, including bronchitis, emphysema and asthma. There are nearly 1,200 substances linked to smog formation.

The Hydrofinity machine produces
9-44%
less
smog emissions
than the conventional
machine

Appendix:

Ozone Depletion Potential (ODP)

The ozone layer in the atmosphere provides the Earth with protection from solar radiation.

Depletion of ozone increases the incidence of certain types of cancers and well as cataracts.

There are a range of chemicals that interact with the ozone in the atmosphere to deplete this protective layer.

With the use stage being the most dominant life cycle stage, the primary driver of *use stage impacts* is energy consumption.



The Hydrofinitly machine shows a

**81-85%
reduction**

in ozone depletion potential compared to the conventional machine

This is because the Hydrofinitly machine has lower energy requirements during the use stage

Appendix: Resource Depletion – Fossil Fuels

This category refers solely to the consumption of fossil fuels and considers extraction of the most economically feasible reserves prior to seeking less accessible sources.

The use stage accounts for the majority of the impact. Because the Hydrofinitiy machine's XOrb cycle does not require water to be heated, the Hydrofinitiy machine reflects energy savings of between **66-72%** depending on the geographic location.

The Hydrofinitiy
machine consumes

66-72%

less

fossil fuels
than a conventional
machine

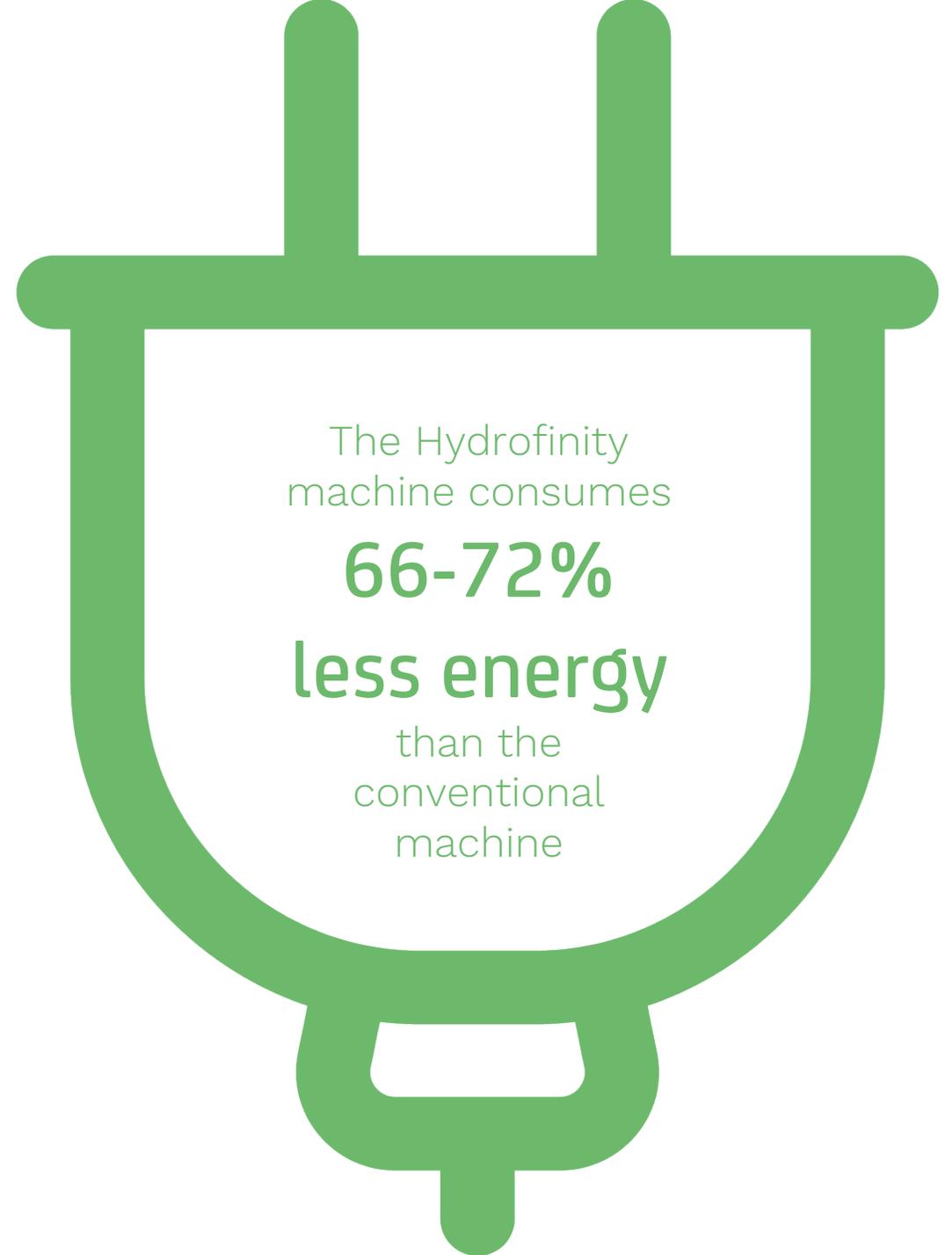
Appendix: Primary Energy Demand

This category evaluates the total energy consumed across the entire life cycle of the washing machines.

It is the cumulative consumption of non-renewable energy such as that generated by coal or natural gas, and renewable energy coming from hydro, wind or solar sources.

Because the XOrb cycle does not require heated water, the Hydrofinitly machine consumes between **66-72% less energy** than the comparison machine in the use phase.

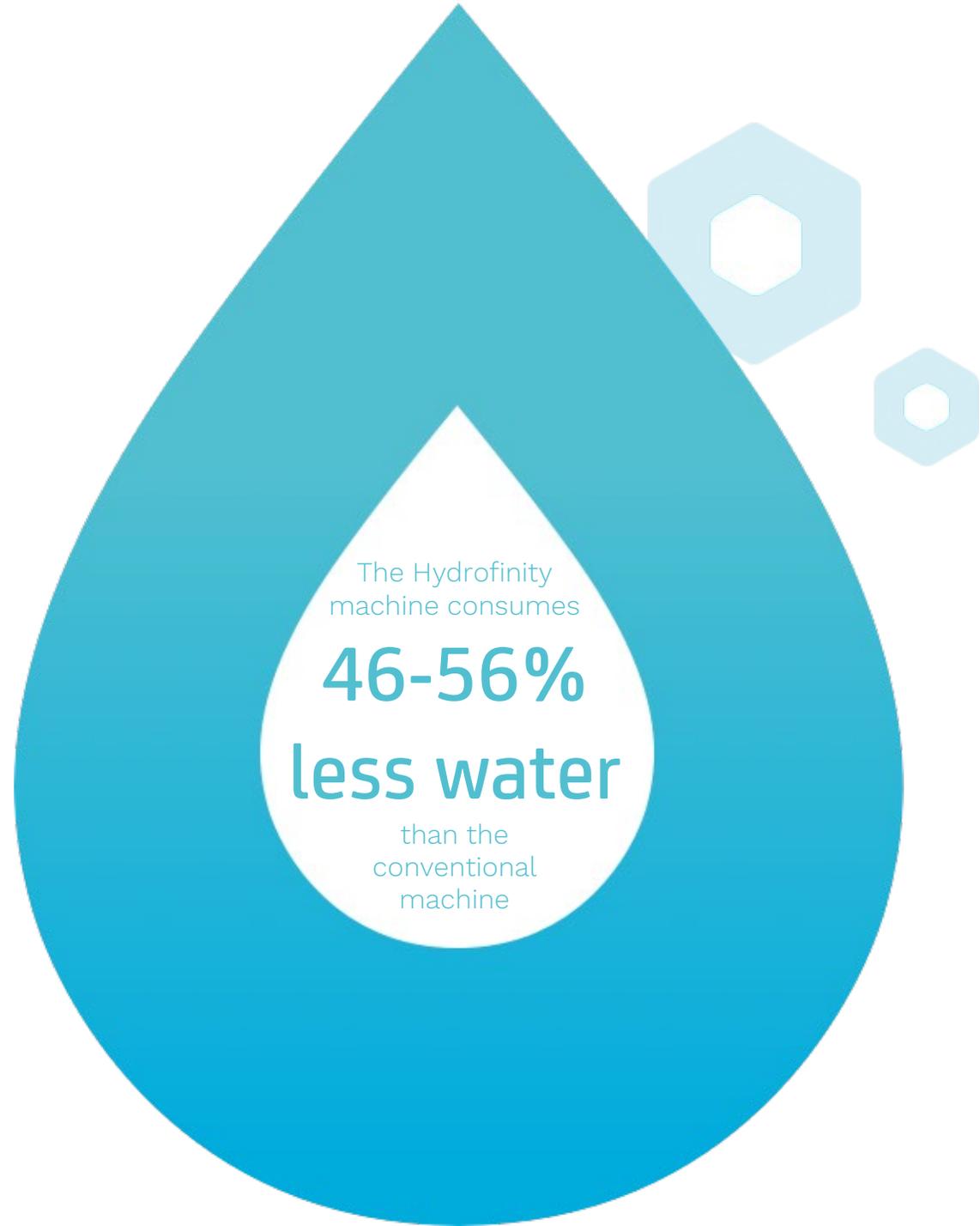
Hydrofinitly



Appendix: Water Use

This category provides an aggregate of fresh water used across the life cycle of both washing machines. There is some embedded water use associated with generation of electricity, which is considered in addition to the wash process.

Overall, Hydrofinitly uses **46-56% less** water than the comparison machine.



Thank You.

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The full EPP report is available

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