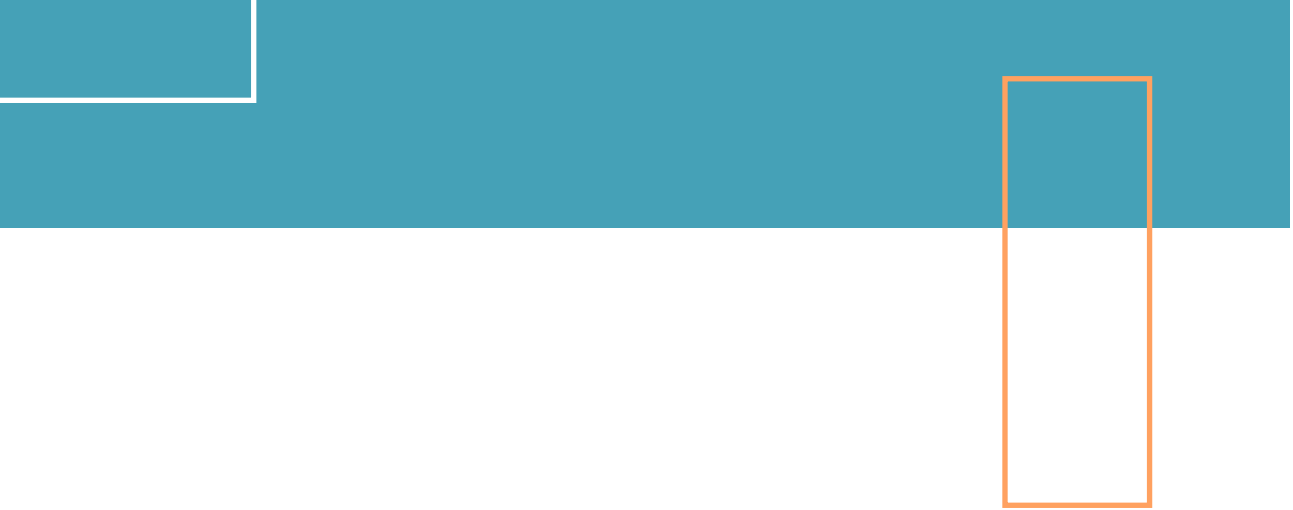
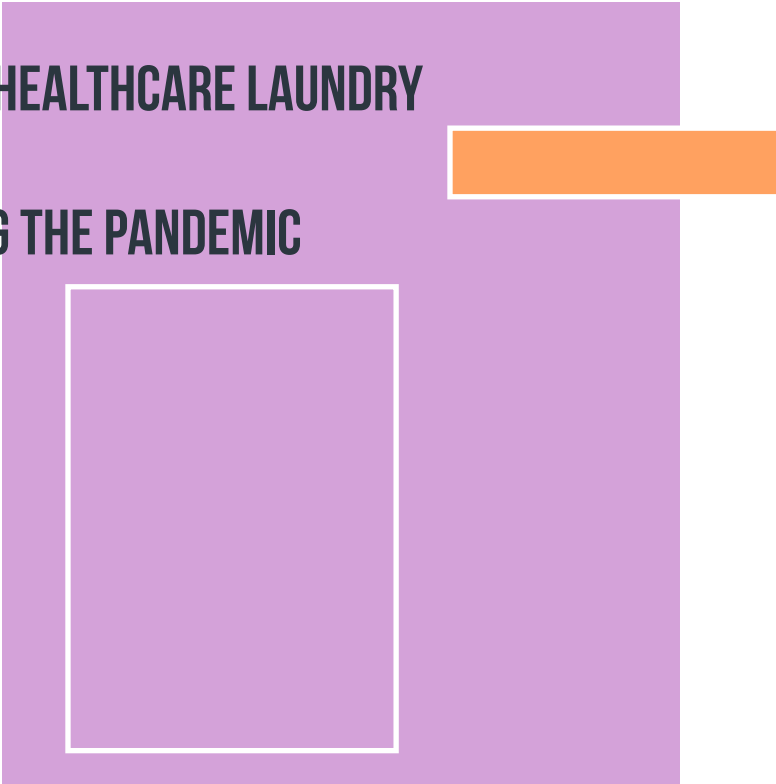


CHANGING THE TIDE ON COMMERCIAL LAUNDRY

How Oxwash is pioneering sustainable
laundry in healthcare



WHAT TO EXPECT

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HG Whilst this may be the current practice the industry follows, Oxwash is looking to reinvent the wheel, adopting a circular approach to protect our finite resources.

Oxwash is the sustainable solution to commercial laundry, whose aim is to eliminate the impact of textile cleaning on both the planet and people. Halston Group spoke to Dr Kyle C Grant, Founder of Oxwash, to discuss the impact of this industry and uncover how they are driving positive change and setting new standards for sustainability and social responsibility.

THE ENVIRONMENTAL IMPACT OF LAUNDRY

OW *Laundry is not necessarily an industry that the general public believe has much of an impact on the planet or people. But actually, when you lift the lid on the industry, it's pretty toxic. We as a company have spent a lot of time quantifying the impact of the industry, both at home and in commercial settings, taking into consideration its carbon emissions, the number of natural resources that are lost, the unnecessary waste, and then the toxic chemistry of detergents or bleach. In 2019, NHS's emissions totalled 25 megatonnes of CO₂e, 62% in the supply chain (~ 15.5 megatonnes) of which business services is around 1.5 megatonnes. This encompasses the heating of water, drying of items, and the energy drawn from machinery, then when you layer on top the logistics of moving items from hospital settings to plants and back again, it's astronomical.*

Another problem is items get lost in the supply chain at an inexorable rate, so between 15-40% of all scrubs that get washed by providers to the NHS are lost every month which then have to be replaced by new items. Manufacturing scrubs and uniforms, like any textiles, have a significant impact on the environment in the form of greenhouse gas emissions, water use, and toxicity, primarily from the production of raw materials. Replacing them too frequently not only creates waste but also means this impact is repeated. Put simply, if items last longer the need to procure new ones is reduced and we save the environment enormous amounts of carbon emissions. We need to focus on looking after the items that we have and seeing them as assets, rather than something that is disposable.

The other scary part of the industry is the toxic chemistry that is used to clean fabrics. At home, we have the luxury of choosing eco-friendly detergent, but in commercial settings and especially in healthcare, providers typically use toxic chemicals, one of which is perchloroethylene which has been linked to respiratory failure, cancer and miscarriages in people who wear the clothing or work in the plants where the clothes are washed.
- Dr Kyle C Grant

HG Laundry will be a concept many of you will be familiar with. For the eco-conscious readers, when you do your laundry at home you will apply techniques that limit the impact of each wash, such as washing at lower temperatures, using more organic-based washing powders, and may air dry clothes.

But have any of you considered the environmental impact of commercial laundry?

Commercial laundry services clean tens of thousands of garments, linens, and bedsheets each week. But unlike those actions you take at home to minimise the environmental impact, many laundry services still run with old techniques and often don't make sustainability a priority, leading to a considerable carbon footprint.

Commercial laundries operate on a linear model taking resources in and wasting them on the other side, and there are three core areas in which laundry causes a negative environmental impact: energy consumption, use of toxic chemicals and high water usage.

NASA TO NET-ZERO TEXTILES

OW Oxwash was founded with the mission to permanently eliminate the impact of textile cleaning on our planet and us. The inspiration for starting the company comes from an unlikely place, so in a previous life, I was a NASA and Space X life support systems engineer, designing the systems that are currently used in Dragon 2 or NASA's deep space vehicle, Orion. The approach to life support is simple, you have a finite amount of resources; water, air, and calories, that you need to take into space and make last as long as possible, ideally indefinitely and you achieve that through closing the loop of those resources. Making sure that you reclaim the water that you drink or the air that you breathe. Oxwash is applying that same approach of building a life support system with finite resources to textiles and clothing.

BEING A B CORP

HG By reworking the traditional approach and treating every aspect like the finite resource it is, they have become a business that benefits the planet rather than takes from it, and in 2022 Oxwash became certified as a B Corp to signify their dedication.

OW We're proud to say that our business practice and technology have allowed us to become the first textile care company to achieve B Corp status. A few highlights from our Sustainability Report 2022 include:

- 90% of microplastics are filtered out.
- 4,600m³ of drinking water was saved, enough to fill 57,400 baths.
- All carbon emitted in 2021 was removed through durable methods such as biochar, direct air capture and enhanced weathering.
- 139 tonnes of Co2e saved. Equivalent to emissions of 1,240 flights from London to Paris.
- 94.8 overall score for B Corporation status.
- Targets to achieve net zero by 2028.
- Living wage employer.

CONTINUOUS GREEN INNOVATION

HG Even after revolutionising the model around commercial laundry and delivering incredible sustainable benefits, Oxwash is not stopping there. The company continues to innovate and develop new technology that will enable them to deliver a more circular system.

One of the innovations that is currently being developed in their flagship facility in Swindon that is aptly named 'Big Blue' is ultrasonic drying.

OW Unlike traditional drying methods which primarily depend on natural gas and utilise heat to evaporate moisture, our revolutionary ultrasonic drying technology patent leverages high-frequency vibrations to extract water from textiles. The high-frequency vibrations induce cavitation in the water molecules within the fabric, forming microscopic bubbles that implode, thereby generating localised heat and pressure. Once it is ready for commercial launch, this innovative process will enable rapid evaporation of water from the textiles, effectively drying them without the need for external heat sources.

HG Aside from this, the Oxwash team have been pioneering an advanced AI-based technology that will automate the process of identifying stains.

OW We will use cutting-edge computer vision, convolutional neural networks (CNNs), and deep learning algorithms to accurately classify and localise stains on textiles. Once ready for commercial launch, this AI-based system will outperform traditional manual stain inspection, improving the accuracy and speed of stain identification by 75%, and leading to a standardised, consistent, and efficient stain treatment process.

PROMOTING LINEN LONGEVITY

HC Aside from cutting-edge technology, Oxwash supports a wide range of industries with expert advice to extend the longevity of linens. According to research, each year a typical 400-room hotel will generate around 2-3 metric tons of used linen. It has been uncovered that higher-end luxury hotel brands have even been disposing of linens every nine months or so (the industry average is between 1-3 years). This amounts to an incredible amount of waste, which can be held at bay for many years with proper treatment of linens.

Oxwash's simple approach includes 5 core actions that will keep linens in rotation for many more washes. The extension in linen lifespan reduces the cost to our planet.

Oxwash aspires to be that catalyst for change, supporting the laundry sector and the array of industries it serves to evolve to greener practices.

[View Linen Longevity Guide](#)

CHALLENGING THE STATUS QUO IN HEALTHCARE LAUNDRY

HC Healthcare facilities often outsource their laundry services to clean and decontaminate PPE, linens, and a range of other garments. However, many of these operate with traditional carbon-intensive and toxic methods that are contributing to the NHS' Scope 3 emissions. When you consider the NHS aims to have its "Carbon Footprint Plus" (that includes Scop 3 emissions) net-zero by 2045, this needs to change.

OW At the moment in the healthcare sector textiles are not seen as a finite resource, they are seen as expendable, whereas we believe garments, whether that is scrubs or gowns should last hundreds or thousands of uses, not 10 to 15, which is the current case.

Oxwash is trying to solve two problems simultaneously, the first is the impact this industry has on the planet and the people. But also, the fact that the inefficiency of that process is inherent and the cost to the NHS is astronomical. We've approached the problem holistically and are incrementally reducing our costs to provide our service across three main facets.

Automation.

1.

Order Management - The first is automation which is building tools for those on a ward to self-serve, so they don't have to rely on an external account management. Beyond this, we apply route optimisation, which means with every asset that we use we are maximising the number of items that we are collecting dirty and delivering clean. We also make sure that the items going through our facilities are throttled so that we're constantly operating with high reliability and velocity.

Service.

2.

We've also on-shored our customer service team, we're doing a lot of work to ensure those in healthcare can request and modify our services on the fly.

Innovation.

3.

Our cleaning technology allows us to use fewer finite resources and therefore the associated costs. We've been able to systematically half the operating cost per kilogram of washing compared to the next best operator. Our unique processes and technologies include:

- **Water reclamation** – We reclaim, filter and reuse our water. We also test materials' latent water capacity to use around 60% less water in the first place. We have applied both of these technologies in Swindon and have been able to completely close the loop on water.
- **Biodegradable chemistry** – We don't use PERC or other toxic chemicals, using a water and biodegradable formula instead, that can degrade in hours.
- **Digital Disinfection** – Dramatically lower energy use and 99.99999% germ eradication by ozone supersaturation, whereby we constantly deploy ozone gas into the washing machines that oxidises all organics and deodorises the laundry and achieves a log seven.
- **Microfibre Filtration** – We use filters that filter microfibrils from our effluent before the drain so that it never ends up in our watercourses.
- **Electric Vehicles** – All of our logistics assets are EVs ranging from electric cargo bikes to electric vans.
- **Acoustic Drying** – Using ultrasound instead of heat from natural gas to dry textiles.

CASE STUDY

DISINFECTION DURING THE PANDEMIC

HG A long-standing misconception in the industry is that scrubs and garments need to be heated to 72 degrees during the cleaning process to properly disinfect and remove all contaminations. Oxwash challenged this during the pandemic, demonstrating how sustainable laundry methods can deliver the same level of disinfection at a time where infection prevention with the number one priority.

OW During the Covid-19 pandemic, we spent a lot of time working with the NHS and the Oxford University Hospitals Foundation Trust to show that our way of washing was better for the planet but was able to disinfect to a very high degree, and actually finding out our solution outperforms the traditional method of boiling linen. We then took this data to help the NHS with their scrubs for primary and secondary care, and were also selected as a provider for PPE provision washing and circularisation for the AstraZeneca Covid-19 vaccine development itself so we were washing their lab coats, scrubs, and even face masks.

HG This rigorously tested example during Covid has allowed Oxwash to change the conversation on sustainable laundry practices.

OW Chemical cleaners and manual techniques are still widely used, but there is a growing recognition of the limitations of these methods, which the COVID-19 pandemic highlighted, particularly when it comes to effectively combating certain pathogens and ensuring thorough disinfection. New technologies and innovations offer advantages such as reduced human error, and faster turnaround times, which will eventually push out traditional methods.

But there is still a learning curve to overcome as adopting new technologies and practices requires training, investment, and to some extent changes to existing policies and legislation. In our industry we see players being hesitant to switch from traditional methods due to factors like cost, familiarity, or resistance to change.

OXWASH IS A COLLECTIVE GROUP OF INNOVATIVE THINKERS THAT ARE PIONEERING TECHNOLOGY AND PROCESSES THAT ARE REVOLUTIONISING THE LAUNDRY INDUSTRY. THEIR UNIQUE APPROACH AND MISSION TO ELIMINATE THE IMPACT OF LAUNDRY ON THE PLANET AND PEOPLE WILL SUPPORT HEALTHCARE ON ITS JOURNEY TO A NET-ZERO FUTURE.

TIDES ARE CHANGING IN HEALTHCARE, AND OXWASH IS MAKING WAVES.

HALSTON GROUP

Oxwash

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TECH ORIGIN

MERCURY



MedTech+HealthTech: The New Realm of Patient Care

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