



MODERNWATER

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97.5% of the total volume of water on earth is in seas and oceans



1.725% of water is locked in glaciers and the polar caps. 0.0175% of water is tied up in swamps, soil moisture and frost

0.75% is fresh groundwater and just 0.0075% is found in lakes and rivers as fresh surface water

Therefore, less than 1% of the water on earth is available for consumption



“Almost 70% of all available fresh water is used for agriculture.”

*UN World Water Development Report*





## the world water crisis

Fresh water is a finite resource, and as water consumption and population increase, many parts of the world are experiencing the effects of reduced water availability. Annual water consumption around the world has risen sixfold during the past century, which is more than twice the rate of population growth. Demand is forecast to continue to grow and by 2025 five and a half billion people, two-thirds of the world's population, will live in countries that are water stressed. In recognition of the growing water crisis the United Nations General Assembly proclaimed the years 2005 to 2015 the International Decade for Action "Water for Life".

In addition, whilst the future impact of climate change remains uncertain, there is a consensus amongst the scientific community that it is likely to exacerbate the water crisis through an increase in extreme weather events such as droughts and flooding.

The availability of fresh water is not only an issue for potable water supply. The primary users of water are agriculture and industry. The approximate breakdown of water usage by sector is as follows: agriculture 69%, industry 23% and domestic 8%. Water shortages are therefore likely to become an increasing constraint on economic growth throughout the world. Growing population, changing diet and increasing production of bio-fuels will put intolerable pressure on depleted water resources with implications for global security, health and lifespan.

“If the world’s water fitted into a bucket only one teaspoon would be drinkable.”

*WaterAid*





## background

At Modern Water, we own exciting leading edge desalination technology, which produces large volumes of water at lower cost, in an environmentally responsible way. With expectations that by 2025 two-thirds of the world's population will live in countries that are classified as water stressed, our portfolio of technologies will revolutionise the provision of fresh water.

Our executive team, who all have impressive experience in the water industry, oversee our portfolio of strategic investments in relevant technology, which address the worldwide problem of the availability of fresh water and the treatment and disposal of wastewater. Our strategy is unique in comparison with other technology based companies, because we focus on owning, operating or licensing assets where our technology is deployed.

To date, there has been limited adoption and commercialisation of innovation in water technology generally. Our key competitive advantage is our ability to identify, develop and implement technologies that transform under-performing water assets into industry-leading projects. Our technologies all offer significant benefits in terms of capital and operating cost savings, whilst reducing the impact on the environment through energy saving and a reduction in emissions.

“Sustainability and environmental responsibility lie at the heart of our business.”

*Modern Water*





# environmental responsibility

At Modern Water, we are committed to the improvement and sustainability of the environment in which we operate. As the lack of available fresh water becomes an increasingly pressing problem, our range of technologies provide environmentally sound solutions to address this global issue.

A key focus of our research is to reduce the environmental impact of water treatment globally. We are currently developing technology to enhance the sustainability of desalination plants and increase the amount of renewable energy utilised in their operation.

Our patented membrane process allows for sustainable desalination whilst significantly reducing energy consumption and discharges to the environment. Our technology greatly impacts upon the reduction of long-term damage to the planet caused by the use of fossil fuels. Our application of renewable energy in the treatment of water for industrial and domestic use ensures this process is both sustainable and energy efficient. In many areas around the world, fossil water stocks are rapidly diminishing. Where once water could be found just below the surface, water tables are plunging and it is now necessary to drill down up to a kilometre to reach the precious supply. These reserves are not being replenished, which is why we are committed to delivering sustainable solutions to make water available where fossil water is running out.

As a team, we are aware of our responsibility to conduct business and develop the company with a focus on environmental accountability. As the company grows, our intention is to place increased emphasis on our corporate social responsibility for the long-term benefit of the planet.

“The global desalination industry is predicted to grow 140% between 2005 and 2015. Capital expenditure on desalination worldwide is expected to total \$56.4 billion by the end of 2015.”

*GWI Global Industry Forecast*



# desalination

**Manipulated Osmotic Desalination (MOD)** Modern Water has proven technology to use a manipulated osmosis process to convert seawater to drinking water, borne out of original research conducted by the Centre for Osmosis Research and Applications (CORA) at the University of Surrey. This process offers a significant reduction in capital and operating costs. Our technology has a positive impact on the environment as it reduces energy use by desalination plants and lowers the consumption and disposal of hazardous chemicals. The technology and expertise are in place to both retro-fit and new-build, depending on requirements.

**Multi-Stage Flash (MSF)** Our pre-treatment for MSF thermal desalination plants increases the top temperature of the plant, thereby increasing output by up to 25%, which can be applied to existing or new plants. The technology reduces costly chemical dosing requirements and has the added benefit of extending the life span of desalination plants. Furthermore, the process also reduces the problem of pollutants in the brine output.



“Annual world water use has risen sixfold during the past century, more than double the rate of population growth.”

*Credit Suisse Report*





## industrial applications

**Secondary Oil Recovery** Our patented enhanced oil recovery process has the potential to increase extraction of additional oil from existing fields by between 3-13% and is based on a similar principle of manipulated osmosis for desalination applications.

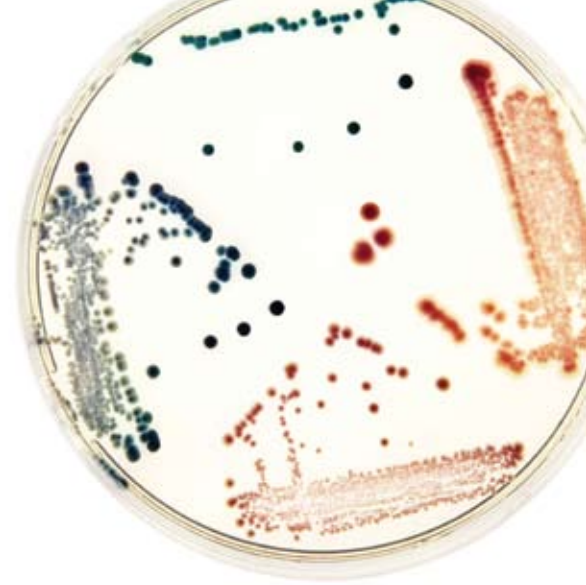
**Cooling Towers** We also own a further innovation deploying our patented manipulated osmosis process for cooling towers. The technology uses water from non-potable local sources to create a closed loop system which virtually eliminates blowdown; reduces chemical dosing and water consumption; improves cost efficiency and has a positive impact on the environment through reduced energy consumption.

**Cymtox** We own pioneering technology which monitors acute water toxicity on a continuous, real-time basis. Acting like a modern day canary, its monitoring device constantly checks the presence of water borne toxins and warns of suspicious changes.

“1.1 billion people in the world do not have access to safe water, this is roughly one sixth of the world’s population.”

*WaterAid*





## wastewater

**PWL** We are the world leader in using and treating seawater for toilet flushing, thereby reducing the domestic requirement for fresh water by over 30%. The wastewater treatment systems are based on seawater substitution. Combining biological treatment and wastewater expertise, the principle benefit is the reduced requirement for fresh water. This technology is complementary with our desalination technology.

**Integrated approach** Modern Water can assist in planning drinking water and irrigation requirements, along with the use of seawater toilet flushing, for new developments. With reduced requirement for desalination plant capacity (up to 30%) and significantly reduced energy use for producing drinking water (more than 50%), savings are made on both capital and operating costs. Our managed solution accounts for and minimises environmental impacts of using salt water irrigation whilst significantly reducing the carbon footprint. In order to maximise the benefits it is essential that Modern Water is involved early in the planning process.

“By 2025 it is forecast that two thirds of the world’s population, 5.5 billion people, will live in countries classified as water stressed.”

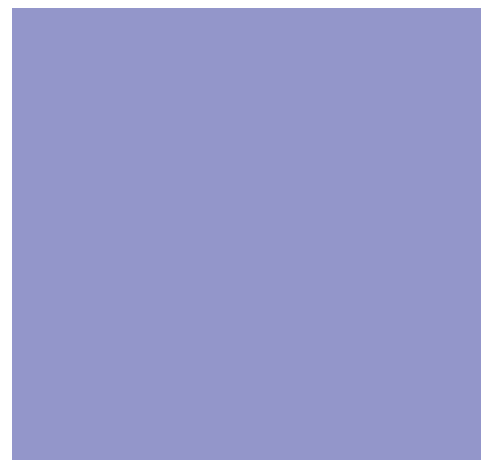
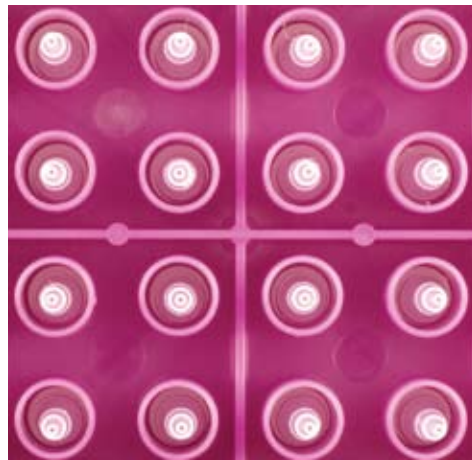
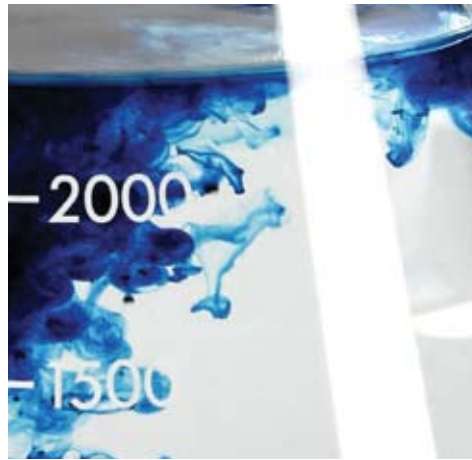
*United Nations*





## future developments

**Hydro Osmotic Power (HOP)** Ongoing investment in intellectual property has resulted in the development of hydro-osmotic power, which generates energy by mixing water with different levels of salinity. The technology harnesses the pressure generated to drive a reverse osmosis plant, and it can also generate electricity. The development of this exciting renewable and emission-free form of energy represents a potentially important new revenue stream. The low operating costs and positive environmental impact make it a very attractive proposition.



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Printed on Mohawk Options with  
Green-e certified electricity generated  
by renewable wind power.

