CANADA'S WATER INDUSTRY
DESALINATION FRESHWATER RECOVERY

Growing water demand and depleting water supplies are compounding water scarcity in many regions around the globe. Alternative freshwater resources, such as desalinated water, will play a significant role in providing a sustainable and reliable source of water to meet the current and future demands of population growth, economic maturity, and climate change. According to the 2019 International Desalination Association and Global Water Intelligence Water Security Handbook, more than 300 million people around the world rely on desalinated water for some or all their daily needs.

Many Canadian companies recognize the necessity of pioneering water desalination technology that will close the water demand and supply gap. Importantly, these firms are making headway in both industrial and municipal markets worldwide, converting brackish water into freshwater, using innovative approaches that are both economically feasible and energy efficient. Through state-of-the-art membrane filters, corrosion resistant equipment, and better approaches to brine management, these companies are executing on advanced strategies for extending water supplies beyond what is available from the hydrological cycle.

There are now almost **16,000** desalination plants operating in **177 COUNTRIES**, producing

95,000,000 m³

of freshwater per day.[1]

1. United Nations Study. The State of Desalination and Brine Production: A Global Outlook. 2018.

H2O INNOVATION INC. ›

h2oinnovation.com

Since 1995, **H2O Innovation Inc.** *(Quebec)* has been involved in seawater desalination with its innovative reverse osmosis technology in both the United States as well as international projects in the Caribbean, Tunisia, Saipan, Mexico, Europe, and the Middle East. Recently, through its independent, California-based subsidiary, Piedmont, H2O Innovation exported the largest fibreglass reinforced polyester (FRP) filter housing cartridges in the world for use in two desalination projects. The fourth quarter of the 2019 fiscal year also marked a record number of orders for H2O Innovation through Piedmont, which secured eight medium-to-large scale desalination projects, with flow capacities ranging between 50,000 to 500,000 m^3 / day. As well, the company is currently designing and building a reverse osmosis system for the third-largest desalination plant in North America, located in Monterey, California. Finally, H2O Innovation is actively involved with the International Desalination Association (IDA) and will be exhibiting at the organization's next world congress in Dubai in October 2019.

Bringing leadership and innovative solutions to the world.

WATER INDUSTRY

CANADIAN COMPANIES WORKING GLOBALLY

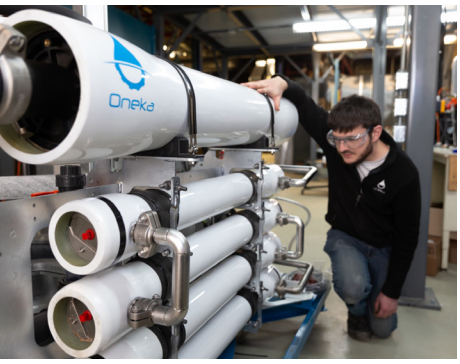
When it comes to advances in desalination technologies, Canadian companies are leading the way. Here are some examples of firms at work around the world.

FORWARD WATER TECHNOLOGIES › forwardwater.com

In the global market, the most common desalination technologies are distillation and reverse osmosis, both of which can be quite expensive and energy intensive. **Forward Water Technologies** *(Ontario)* has developed a green desalination system that is more cost effective and uses less energy than either of these solutions, using a process called forward osmosis. This approach can purify water by applying a natural driving force known as osmotic pressure. With their proprietary switchable salt, the company is able to create an extremely salty solution that is capable of drawing pure water across a membrane without the use of heat or energy. Once this process is complete, the switchable salt is deactivated, removed from the system, and collected again for re-use. Forward Water has recently begun work with a global industrial shipping and storage provider head quartered in the Netherlands to explore the treatment of contaminated wastewater generated from their worldwide on-site operations.

SALTWORKS TECHNOLOGIES INC. › saltworkstech.com

Saltworks Technologies Inc. *(British Columbia)* is a leader in the development and delivery of solutions for industrial desalination. Founded in 2008, the company offers thermal and membrane systems for brine concentration, zero liquid discharge, and advanced separations. By working with customers to understand their unique challenges and focusing on continuous innovation, Saltworks designs, builds, and operates full-scale treatment plants, as well as offers comprehensive offsite and onsite testing services with its fleet of mobile pilots. In particular, the company has had export success in the United States with its electrodialysis reversal (EDR) technology. Saltworks' Flex EDR is a unique solution that uses ion exchange membranes that dramatically improves recovery rates in otherwise scale-limited waters, has no need for chemical softening, and has process-control innovations to achieve higher recovery and optimized performance.



ONEKA TECHNOLOGIES › onekawater.com

Oneka Technologies *(Quebec)* has generated interest for its autonomous desalination buoys that produce drinking water using only energy from waves. The buoys produce drinking water through reverse osmosis membranes, which is pumped to shore through an underwater pipe, and then redistributed locally by the user. The company is focusing on global coastal markets that struggle with drinking water shortages and where the cost of conventional desalination technologies has proven prohibitive. In 2019, as a result of investment, Oneka is seeking to launch its product in the Caribbean market at coastal tourism establishments. Once the system is implemented, the produced water would be up to five times cheaper than that provided by certain public services in island environments. In addition, the invention could eventually meet the needs of isolated coastal communities, or even populations affected by hurricanes. Furthermore, as a supplemental technology, this solution could also reduce the dependency on fossil fuels of populations that already have access to drinking water.

MORE CANADIAN FIRMS OFFERING DESALINATION SOLUTIONS:

- A.B.E. Environmental
- Aquavive Technologies
- Aslan Technologies Inc.
- BluMetric Environmental Inc.
- Canada Eco-Tec Inc.
- Drinkable Air
- Durpro
- Excalibur Water
- Fil-Trek
- Ionic Solutions Ltd.
- Quest Water Solutions Inc.
- Petro Sep Corp., Pani Energy
- Rainmaker Worldwide Inc.
- Terragon Environmental Technologies Inc.
- Trilogy Environmental Systems
- Waterworks Technologies Inc.
- Zenon Environmental Inc.

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