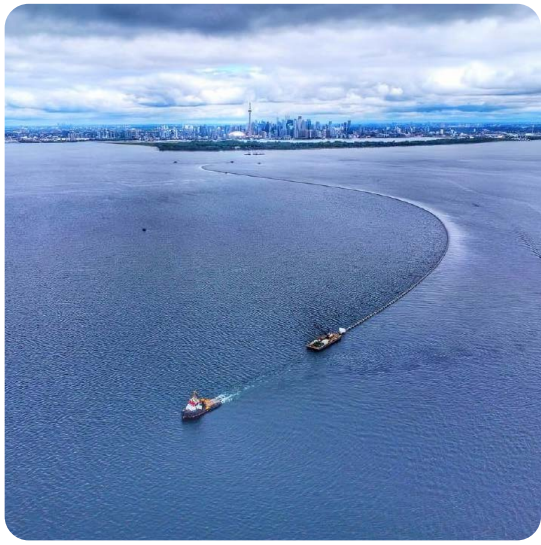
Case Study

Deep Lake Water Cooling (DLWC)



Product Overview

Extreme weather, aging infrastructure, and rapid population growth are overwhelming our water piping systems, leading to failures, increased maintenance costs, and health risks. To combat these challenges, North American communities demand durable infrastructure that is built to last.

With thousands of successful installations and a projected service life of over 100 years, Sclairpipe® stands as the trusted choice for municipal infrastructure that endures. With applications in potable water, industrial & mining, irrigation & agriculture, and deep water heating and cooling, Sclairpipe's versatility is engineered for peak performance.

This case study examines how the City of Toronto's TransformTO Net Zero Strategy identified Infra Pipes' Sclairpipe as a powerful partner to create a resilient, sustainable, and celebrated infrastructure project.

Project Overview & Background

In 2021, the City of Toronto developed the TransformTO Net Strategy, an ambitious strategy that aimed to reduce greenhouse gas emissions in the city to net zero by 2040. The Deep Lake Water Cooling (DLWC) project was a key component in this strategy, improving the reliability of the city's infrastructure and preserving the quality and purity of Toronto's drinking water. It became the city's most lauded project, profiled by The Washington Post and The Globe and Mail, and is the world's largest lake-based system, used for cooling in district energy systems.

The first phase of the DWLC project began in the summer of 2003, with the installation of three 1600mm Outside Diameter (OD) of Infra Pipes' HDPE Solid Wall Pressure Pipe, known as Sclairpipe®, to draw 4°C (40°F) water from Lake Ontario before it makes its way to Enwave's Energy Transfer Station. Pipelines then carry cooled water to buildings in downtown Toronto.

This renewable source of naturally chilled water serves multiple purposes. The project helps cool over 100 buildings in the downtown core, including educational institutions, hospitals, hotels, businesses, and City Hall. Secondly, the project saves 90,000 megawatt-hours of annual electric usage and saves 220 million gallons of water annually. Finally, it provides residents with cleaner drinking water at no extra cost to the taxpayer.

High-Density Polyethylene (HDPE) Piping is resistant to corrosion, flexible, and lightweight, all of which are significant properties that Sclairpipe® possesses, making it advantageous to utilize in an innovative project such as this one. Sclairpipe's resistance to corrosion, tuberculation, and zebra mussel fouling ensures a projected service life of 100 years, minimizing operational and maintenance costs throughout its lifecycle. Sclairpipe's flexibility allows it to be assembled on shore in a continuous length, floated on the water's surface, and then sunk by a controlled process; a crucial benefit for the complex marine installation.

The project has proved so immensely popular that the City has commissioned the installation of a fourth pipe, a second phase, to expand the current DLWC supply, as the owner of the project, Enwave, anticipates a 35% increase in its customers' cooling demands in the near future. The installation was complete in the spring of 2024. Infra Pipes was proud to partner with Enwave to turn this ambitious climate strategy into an operational reality. We look forward to future collaborations that continue to improve the flow of modern life.

System, Partners & Timeline

Owner	Engineer	Contractor	Consultant	Installation Timeline
Enwave Energy Corporation	CHA Canada	NESCO Inc. & Dean Construction Company	C&M McNally Tunnel Constructors	Phase 1: Summer 2003 Phase 2: June 2021 - Spring 2024

STORAGE SYSTEM REQUIREMENTS

- 15km of four 1600mm DR 22 - 26 of Sclairpipe®