

## Vancouver Convention & Exhibition Centre

**Building Type:** Multi-use assembly center

**Building Size:** 1,076,400 sq. feet (100,000 sq. m)

**Location:** Vancouver, British Columbia, Canada

**Occupancy Date:** March 2008

**Application:** Wastewater reuse

**Treatment Plant Size:** 1,200 sq. feet (111 sq. m)

**Capacity:** 20,000 gpd (76 m<sup>3</sup>/d)

**LEED Rating:** Canada Green Building Council LEED-NC Gold



Photo Credit: Vancouver Convention Centre Expansion Project a Division of BC Pavilion Corporation

### Challenge

Vancouver is one of North America's leading meeting and convention destinations due mostly to its direct accessibility throughout North America and its equidistant location from Europe and Asia. The Vancouver Convention & Exhibition Centre (VCEC), originally opened in 1987, is a first class facility with more than 150,000 square feet (13,935 square meters) of exhibit, ballroom, and meeting space. However, the convention center is consistently at maximum capacity with an obvious need for additional space.

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In October 2004, the VCEC began construction of the expansion which will triple the convention center's existing capacity creating additional space for meetings and conventions. Scheduled for completion in 2008, the expansion will meet LEED Gold certification, incorporating many environmental innovations, including water conservation, to limit the impact on the local environment.

### Solution

In keeping with their goal to achieve LEED Gold certification, the VCEC selected GE Water & Process Technologies, to supply an on-site wastewater reuse system as one of its green building features. The system consists of a Z-MOD\* system for gray and black water treatment, which incorporates ZeeWeed\* MBR (membrane bioreactor) technology. ZeeWeed MBR combines the proven activated sludge process with the physical barrier characteristic of ultrafiltration (UF) membranes.

The system will treat 100 percent of the wastewater that is produced in the building, and the effluent will be recycled for flush fixtures and irrigation of a 6-acre (24,280 sq. m) living roof.

### Process Overview

The on site wastewater treatment system is located next to the Exhibit Hall. The influent is first directed to the anoxic chamber for denitrification, then to the bioreactor where active bacteria consume or digest the biodegradable waste, and finally to the ZeeWeed UF chamber. Permeate pumps are used to gently pull the wastewater through thousands of membrane fibers. Each fiber is filled with billions of microscopic pores that physically block suspended solids, bacteria and viruses from passing through—guaranteeing an exceptional water quality and clarity on a continuous basis. The treated water then flows through an activated carbon filter, and ultra-violet units for further disinfection.