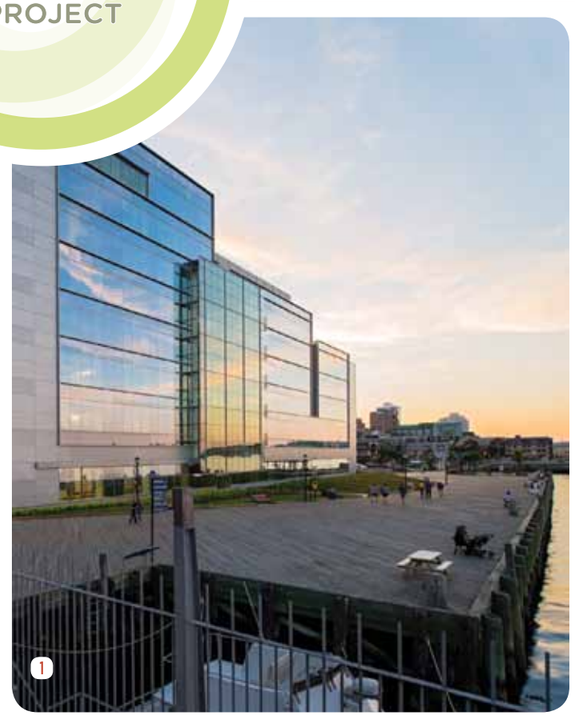
2013 WINNING PROJECT

NOVA SCOTIA POWER HEADQUARTERS - HALIFAX, NS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JURY COMMENT - The transformation of a coal-fired power station on the Halifax harbour to a commercial building employing 600 people made for a compelling story of environmental, economic and social sustainability. These broad ambitions were reinforced with impressive energy performance, good use of natural light and an innovative envelope upgrade. The project acknowledges its industrial past in the scale and character of the atrium space, and offers publicaccess to the waterfront where none existed before.


2

The Nova Scotia Power [NSP] Corporate Headquarters occupies a decommissioned generating plant in a prominent location in down-town Halifax, with significant frontage on the public board-walk that lines the western edge of Halifax harbour. The project involved the retention and adap-tive reuse of the former generating plant for the headquarters of the provincial electrical utility. The facility houses over 600 staff in approximately 14,600 gross square metres and provides parking for 150 cars.

The project used an innovative construction strategy that involved the reuse of the existing steel structure and exterior concrete clad-ding where possible, in conjunction with the insertion of floors within the existing volume. Originally designed to support coal bins and turbines, the existing structure and foundations were robust enough to support the new floors.

The project is targeting LEED Platinum certification, providing an example of sustainability and design and construction innovation for the provincial and national building industry.

NSP's ambitions for the project were broadly based, falling gener-ally into four:

Environmental: It was the desire of NSP, as the provincial power authority, to have a visible demonstration of its commitment to environmental responsibility and show leadership in energy conser-vation through the adaptive re-use of a former generating station. Elements such as the original steel structure on the interior and chimney bases converted to skylights retain a memory of the origi-nal building and its former use.

Economic: Financial analysis demonstrated that renovation of an existing owned building was the optimal solution to meet future space requirements. It provided the lowest life cycle costs when compared to both renting existing, or building new corporate office space.

Civic: This redevelopment of an urban brownfield site demonstrates civic responsibility on behalf of the corporation. An example of urban intensification, it minimized incremental costs of infrastruc-ture improvements.

Social: Relocating but retaining employment within the city, the NSP headquarters supports both the economic and social fabric of downtown Halifax. Materials used were sourced from companies in the region whenever possible in order to support the local economy.

Building section looking east

1 Atrium **2** Offices **3** Core **4** Elevators

PROJECT PERFORMANCE

- **Energy intensity [building and process energy] =** 366.5MJ/m²/year
- **Energy intensity reduction relative to reference building under MNECB =** 48%
- **Lighting power density =** 28.3 kWh/m²
- **Lighting power density relative to model building under MNECB =** 45%
- **Potable water consumption from municipal sources =** 2,625L/occupant/year
- **Potable water reduction relative to reference bilding =** 24%
- **Reclaimed and recycled materials [new construction] by value =** 30%
- **Regional materials [800km radius] by value =** 28%

PROJECT CREDITS

CLIENT NSPI - Nova Scotia Power Inc.
ARCHITECT WZMH Architects
STRUCTURAL ENGINEER BMR Structural Engineering
MECHANICAL/ELECTRICAL ENGINEER M & R Engineering Limited
LANDSCAPE ARCHITECT Gordon Ratcliffe Landscape Architects
INTERIORS Figure3
GENERAL CONTRACTOR Aecon Atlantic Group
LEED CONSULTANT Enermodal Engineering
PHOTOS RPM Productions

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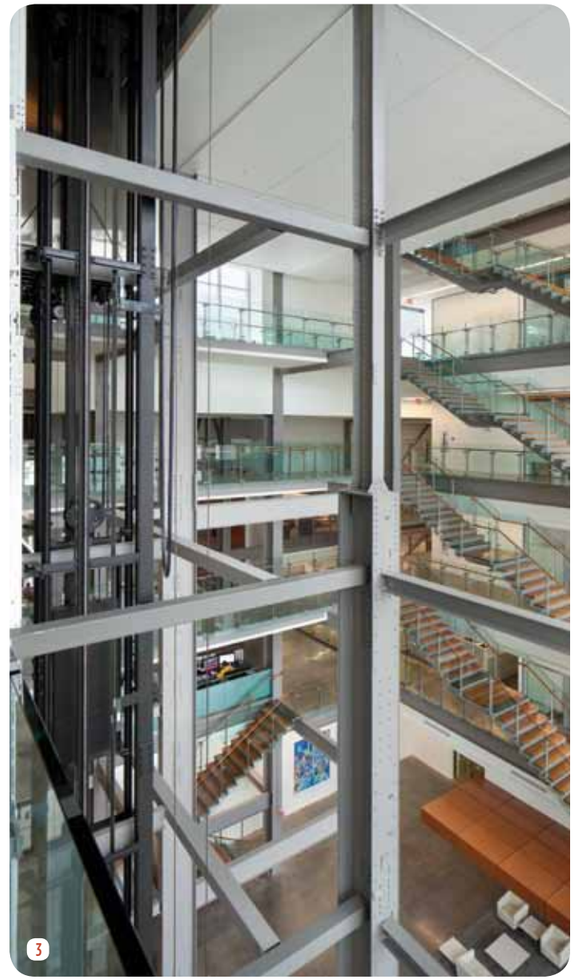
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HVAC system uses seawater heating and cooling

By Denis Morris, P. Eng & Dan MacDonald, P. Eng., M&R Engineering Ltd.

A seawater loop was provided using the existing piping of the for-mer power plant. New seawater pumps, anti-fouling controls and titanium plate heat exchangers were designed. The seawater loop system achieved all 19 energy points in the LEED rating system.

BUILDING COOLING

Because seawater temperature varies to over 15 deg C, M&R decided to make extensive use of Active Chilled Beams [ACB] for space cooling needs – a first in Atlantic Canada. Active Chilled Beams provide space cooling and ventilation using only about 35% of the air required for conventional building cooling systems. They use primary air supplied through nozzles to induce a larger volume of room air across a cooling coil within the ACB. This provides space cooling at tremendous fan energy savings, and without need of a chiller plant.

BUILDING HEATING

Water-to-water heat pumps extract heat from seawater and provide heating to the building at a temperature of 60 degrees C. Heating water is circuited through the building to in-floor heating and low-temperature perimeter heating.

VENTILATION

A series of air handling systems use seawater-cooled chilled water and heat pump hot water for cooling and heating respectively. All air handlers have energy recovery wheels and variable speed drives for optimal energy performance.

See the web version of this article for a more complete description of the seawater loop system.

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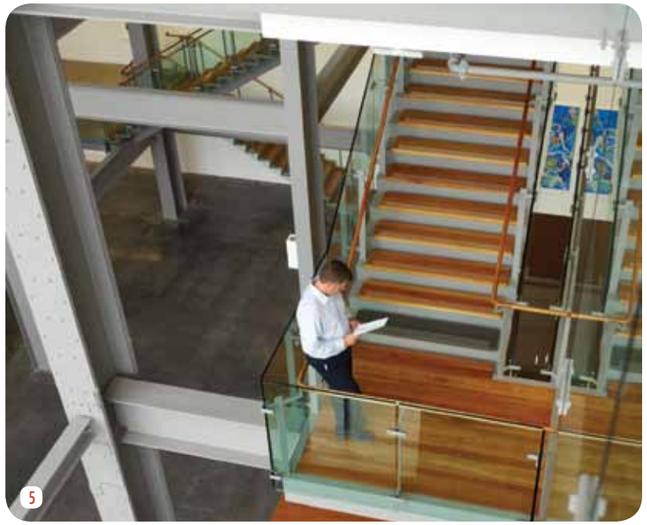

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The original building was a large concrete mass that formed a barrier to the waterfront. A portion of the existing structure was demolished in order to introduce an atrium, which connects the city to the harbour.

The project addresses the utility's desire to be a more accessible organization engaged with the community that it serves; transparent entries on both the boardwalk and Lower Water Street lev-els welcome the public into the facility. The building design locates animated uses, such as the conference centre, atrium, and café with outdoor seating area, facing the boardwalk.

The building represents the first major use of "chilled beam" technology in Atlantic Canada. The system utilizes [low energy sea] water rather than air to transport cooling thereby lowering en-ergy consumption. Additional energy saving strategies include the provision of energy recovery on HVAC, variable speed drives, a tight building envelope and daylight and occupancy sensors for lighting.