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## **Sheridan College Davis Campus**

REHAU radiant floor heating and cooling  
technology enhances learning environment.

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# REHAU radiant heating and cooling is cornerstone of Ontario trade school 'living laboratory'

From preschool through post-secondary education, teachers understand the importance of practicing what they preach. If you're going to help shape the minds of tomorrow's leaders, it is crucial to demonstrate the daily applications of what you want them to learn.

This focus on experiential learning informed the plans for an expansive new trades teaching facility at Sheridan College's Brampton, Ontario campus. The Skilled Trades Centre (STC), which opened for fall semester 2017, provides in-school training for apprentices and prepares post-secondary students for careers as electricians, plumbers, industrial mechanic millwrights, tool and die makers, welders, and general machinists.

As Sheridan College administrators explain, the Faculty of Applied Science and Technology (FAST) provides practical, hands-on learning opportunities that can be carried from the classroom to the workforce. They wanted their new teaching facility to serve as a "living laboratory" in which students and interdisciplinary experts could jointly participate in new technologies and strategies for design that respond to a changing world.

## Tomorrow's technology today

Every aspect of STC is designed with sustainability in mind. The building meets the environmental and functional performance requirements of LEED® Gold standards for its overall siting, design and construction. Energy performance, at 100 kilowatt hours per square meter per year (32.2 kBtu/ft<sup>2</sup>/yr), exceeds the LEED Gold standard.

The new facility features a tri-generation system, which simultaneously produces chilled and hot water, along with electricity output, not only for the three-story, 12,077 m<sup>2</sup> (130,000 ft<sup>2</sup>) building, but also for the district heating and cooling network serving the Brampton campus.

The building uses REHAU radiant in-floor heating and cooling technology, which designers say was the obvious solution for tackling the challenge of maintaining comfortable temperatures in a structure that requires ceilings high enough to accommodate the industrial equipment used in the curriculum.

"The workshop's double-height configuration makes it even more applicable to use the in-floor radiant heating and cooling because we could essentially heat or cool only the occupied area – the first five to six feet – and maintain a lower overall indoor temperature while retaining comfort in the space," says David Ng, vice president of The Aquila Group, the project's mechanical engineer.

## Tri-generation technology enhances efficiency

The radiant system is especially unique in that it is connected to a tri-generation plant, which produces electricity, heat and cooling in one process. This technology can reduce facility energy consumption by up to 30% and provides a level of independence from the grid. Using the radiant system as the primary heating/cooling source reduced the amount of ductwork and rooftop air handlers. A dedicated outdoor air system (DOAS) was installed for fresh air ventilation and humidity control.





The college's request for proposal for the project specified in-floor radiant heating and cooling. While there were other aspects of the RFP that The Aquila Group negotiated out of the project, the request for radiant heating and cooling always made the most sense, Ng says. Mark Euteneier, president of Brampton-based Klimatrol Environmental Systems Ltd. and REHAU's technical associate, explains the REHAU radiant system uses low-temperature heating and high-temperature cooling to achieve the aggressive energy target. Six dew point sensors were strategically located throughout the building to monitor the automated system and keep the humidity in check.

The facility also employs hydronic technology outdoors in a snow and ice melting (SIM) system that is installed under the perimeter sidewalks and the receiving dock where the welding tanks and specialty gas are delivered. A total of 65,900 ft (20,086 m) of 5/8 in. RAUPEX O<sub>2</sub> barrier pipe was used in the in-floor radiant and SIM systems.

Time constraints were tight, says Euteneier. Insight Technologies, the mechanical contracting firm, used a team of four men for 20 days to complete the installation. On-time delivery from REHAU was crucial to staying on schedule. Klimatrol provided engineering design support and on-site application and training assistance for the Insight installation team.

Aquila Group representatives working on site appreciated Klimatrol's support, Ng says.

**"We worked closely with Mark. He has a lot of knowledge of the systems and provides a lot of comfort in terms of installation. He's done this for a number of years, and we consider Klimatrol to be an expert on radiant in-floor heating and cooling. We didn't have any concerns when we chose to use the REHAU product."**

"The new STC building at Davis Campus combines excellent architectural layout and planning with advanced building technology features to create a facility that allows us to deliver a premier education to our students," says Dave Wackerlin, associate dean and campus principal for the School of Skilled Trades and Apprenticeships. "With its atrium and learning commons viewing into 50,000 sq. ft. of skilled trades shops, STC has become an important campus gathering space for students in all programs, who can enjoy the benefits of leading building technology features such as the radiant flooring system. STC is more than just a building, it is an educational community hub."



**Project:** Sheridan College Davis Campus Skilled Trades Centre, Brampton Ontario

**Construction type:** Educational Facility, opened in 2017

**Project scope:** 65,900 ft (20,086 m) of RAUPEX pipe

**Architect:** NORR Limited

**Mechanical engineer:** The Aquila Group

**Mechanical contractor:** Insight Engineering & Construction

**General contractor:** Giffels Constructors Inc.

**Distributor:** Klimatrol Environmental Systems, Ltd.

**REHAU systems used:** Radiant heating and cooling, snow and ice melting (RAUPEX® pipe, compression-sleeve fittings, PRO-BALANCE® manifolds)

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