

# AWARD

Solar Thermal Project of the Year | Stantec

## NOMINEE

Olivia Keung | Stantec

### Summary:

**Set out a brief synopsis of the initiative (i.e. project, technology, service). This summary may be used during the event promotion.**

The very first building in Canada to be certified as a Zero Carbon Building under the Canadian Green Building Council's Zero Carbon Building Standard is the Evolv1 Urban Office Building in Waterloo, Ontario. A solar air heating system was included as one of the key on-site renewable energy technologies, and was blended seamlessly into the south wall façade. The 110,000 ft<sup>2</sup> facility is one of the most beautiful and uniquely modern multi-tenant office buildings in Canada. Owned by the Cora Group, it will set the standard for future commercial buildings in Canada.

Stantec was the lead architect, consulting engineer, and sustainability consultant for the project. Like any architect or consulting engineering firm, Stantec had a myriad of choices on how to design their building, and whether or not to specify a standard heating system and a conventional wall cladding system. By choosing solar air heating as their lead renewable energy technology on this first Zero Carbon Building, they are showcasing the widespread potential for solar in general to help achieve all types of green building certification and on-site energy targets.

The Zero Carbon Building certification means that the project has:

- Modelled a zero carbon balance for future operations
- Incorporated a highly efficient energy and ventilation system to meet a defined threshold for thermal energy intensity
- Achieved on-site renewable energy production to provide 105% of the energy usage

### Description:

**Please provide as much detail as you can to describe the initiative. Simply provide a description of the project, technology, service, etc. being considered. Do not address here how it was done or what it achieved.**

The SolarWall® air heating technology was specified to preheat the incoming ventilation air for this new building, reducing the use of fossil-based energy and helping to achieve the 105% onsite energy generation target. In total, just under 5,000 ft<sup>2</sup> (460 m<sup>2</sup>) of Mica Grey colored

SolarWall panels were integrated into the south wall and the mechanical penthouse. The solar heating systems are key parts of the building façade, while also generating sizable amounts of on-site renewable heat energy.

The SolarWall® technology is a Canadian invention that established the global standard for solar air heating. It has been honored as one of the 9 best energy inventions of the past two centuries by American Society of Mechanical Engineers (ASME).

**1. Innovative Approach:**

**25/100 points**

**Please describe which kind of innovation and creative approach that was used to achieve outstanding results. In what way has the initiative pushed the envelope of current norms, traditional results and standard approaches?**

Architects and consulting engineers are the gatekeepers of building design. They envision and bring to life the many facets of a new building, from its appearance and building envelope to its energy footprint and mechanical design. Solar technologies are still at the early stages of becoming mainstream in new construction; that is why it is important to honour the energy-savvy architects and engineers that embrace the opportunity to integrate solar into their work, and then elevate it to a key visual component of their design.

Stantec succeeded in creating a building that not only satisfied the requirements for the Zero Carbon Building Certification, but was also beautiful and “fashion-forward”. The building was going to have a metal façade regardless, and the facility had a significant ventilation heating load, so the decision to amalgamate these considerations into one solution – a solar air heating wall system – was extremely appropriate. And it is these types of projects that help move the solar industry along towards becoming a mainstream building & energy consideration. Innovation of today will create the norms of tomorrow – to wit, solar as a part of all building envelopes and on-site energy systems. This project is a perfect example of this progression.

**2. Economic Benefit:**

**25/100 points**

**Highlight the benefits, with a sense of financial benefit, cost savings, emission reductions or other directly attributable benefits of the initiative. Did this initiative deliver or exceed anticipated value, results and returns? If you include confidential and commercially sensitive information, it will be treated as such. Please ensure you note the following - do not publicize.**

As this was new construction, the solar air heating system replaced the exterior cladding on part of the south wall as well as the mechanical penthouse wall, making it a cost-effective and environmentally robust part of the building envelope. In new construction, the mechanical system can also be located to minimize the ducting costs of moving the solar heated air to the HVAC system, so the incremental costs of the system integration is minimal.

The most significant aspect of this project is that it validates that it is possible to build beautiful buildings using low-carbon strategies for the same cost as conventional construction.

“Our original vision was to design and build a building that was net positive energy at similar costs to conventional construction – and we were determined to prove it was possible,” said Adrian Conrad, Chief Operating Officer of the Cora Group, owner of the Evolv1 building.

**3. Engagement:**

**25/100 points**

**In what way(s) did the nominee undergo meaningful stakeholder/customer engagement and how has it been incorporated into the design and execution of the initiative? Highlight the manner in which the initiative was communicated to promote the importance and benefits of solar energy while achieving business and stakeholder/client objectives. Demonstrate how the proponent listened to its audience and acted on the advice.**

“The design intention for the building was for it to speak to the public about innovation and sustainability, without being “green-washed.” Using Solarwall was always a feature that both the design team and client group were excited about, because it is so prominent on the façade as one of our strategies, but fits in perfectly with the high-tech feel we wanted to create.” - Olivia Keung, Architect, Stantec

These were all design aspects that were important to the client in creating a modern work environment that would attract the best companies. Upgrading the heating system to include solar heating (vs straight natural gas heating) was also important to the Cora Group in helping to transform the building into an on-site energy generator. Including solar in the building was considered a must, and solar heating was best suited for this application given aesthetic considerations and the need for ventilation heating.

**4. Corporate and Sustainable Responsibility:**

**25/100 points**

**Describe the environmentally conscientious approach during the design and execution of the initiative. Give concrete examples of how your initiative has benefited the environment (ex: saved X amount of CO2 emissions, reduced X amount of GHG, etc.) Explain the ways and manners by which this initiative was undertaken with the intent of demonstrating true corporate responsibility.**

The solar air heating systems on the evolv1 building will heat 17,000 cfm of air and will displace 20,000 cubic metres of natural gas every year. They will deliver 206 MWh of renewable energy.

The use of solar air heating will result in 42 tons of CO2 being displaced each year. This means that over the 40 year lifespan of the systems and the building, it will eliminate over 1,600 tons of CO2.

“First and foremost, we want to make a difference,” Conrad said. “When we heard about the CaGBC Zero Carbon Building certification, we saw a tremendous opportunity to measure our efforts against a progressive new building standard and to pilot our project within a program that is capturing attention from across the country and indeed, around the world.”

**PHOTOS**

