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## **Waterloo EMS**

REHAU radiant heating system helps  
Ontario-area EMS facility achieve LEED Gold  
rating.

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# Radiant helps Waterloo EMS achieve Ontario's LEED® Gold rating

The Region of Waterloo Emergency Medical Services (EMS) Facility, designed by McCallum Sather Architects and Enermodal Engineering, recently achieved the inaugural LEED® Gold rating under Canada's LEED guidelines, which were established in 2004 and administered by the Canada Green Building Council (CaGBC). It is also the first project in the province of Ontario to ever receive an overall LEED Gold rating. This environmentally sensitive building, located in Cambridge, Ontario, includes administrative offices and a garage capable of housing 12 ambulances.

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, originally developed by the U.S. Green Building Council (USGBC), offers three levels of LEED-certified accomplishment: Silver, Gold and Platinum. The use of REHAU's radiant heating system enabled the Waterloo facility to achieve LEED Gold status, and use 60 percent less energy and 85 percent less water compared to a conventionally designed new building.

Other environmentally friendly features of the facility include on-site storm water retention, low off-gassing materials, a rainwater cistern for toilet flushing and landscape watering, desiccant dehumidification in place of air conditioning, and Solera glazing for improved day-lighting.

"This unique building combines a variety of environmentally appropriate technologies and techniques to be among the highest LEED-rated buildings in Canada. We are pleased that this state-of-the-art building is the first LEED Canada Gold building, and we believe it to be the first of many to come," says Stephen Carpenter, president of Enermodal Engineering, a consulting firm specializing in energy efficient and environmentally sustainable building projects.

According to Lou Lima, senior mechanical engineer for Enermodal, REHAU products were chosen for the project based on reputation for quality, product warranty, previous experience on past projects, long-term involvement in the local construction market, ease of product availability, and reliable engineering and contractor support.

"As you may imagine, design and construction of a building consuming 60 percent less energy and 85 percent less water to meet a LEED Gold rating posed a number of challenges to all those involved," said Lima. "Everyone, from the client and end users, to the various design professionals, the builder, subtrades and suppliers, were able to meet these challenges."

One of these challenges involved supplying the entire building with ample heat that would require less energy. "As forced air heating often results in the inefficient distribution of heat, causing significant drafts, and does not typically make for warm floors, it was not an option for the project," Lima explained. "Also, the ceiling of the facility wasn't high enough to accommodate gas radiant tube heaters without directly affecting the plastic roofs of the ambulances. For all these reasons, REHAU's radiant floor heating became the obvious choice."

The REHAU radiant heating system works by circulating warm water through a network of RAUPEX O2 Barrier crosslinked polyethylene (PEXa) pipes and EVERLOC fittings placed in the floor. In all, more than 5,000 meters (17,000 feet) of RAUPEX pipe were used in the system, which was installed throughout the entire facility. REHAU PRO-BALANCE manifolds complete with Manifold Valve Actuators were arranged into 18 thermostat zones serving both the administration and garage areas of the building.



"The piping's enhanced flexibility, working temperature range and REHAU's EVERLOC fittings were a great asset to the complex slab assembly, and the installation went exceptionally well despite its installation during the cold winter season," Lima explained. "REHAU's support, through its agent, Kimatrol Environmental of Brampton, was also of great value, and we fully anticipate working with them again in the near future."

**Project:** Waterloo Emergency Medical Services, Waterloo, Ontario  
**Construction type:** Emergency Medical Services Facility  
**Project scope:** 17,000 ft (5,000 m) of RAUPEX pipe  
**Designer/Contractor:** McCallum Sather Architects/Enermodal Engineering, Klimatrol Environmental  
**REHAU systems used:** Radiant heating (RAUPEX® pipe, EVERLOC® fittings, PRO-BALANCE® manifolds)

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