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## **Milwaukee Art Museum**

Radiant heating enhances Milwaukee Art museumgoers experience with year-round comfort. [na.rehau.com/projects](https://na.rehau.com/projects)



# REHAU's radiant heating system increases comfort for museumgoers

Milwaukee's "masterpiece on the lakefront" not only offers visitors an impressive collection of nearly 20,000 works from antiquity to present; its ambitious five-year, 140,000 ft<sup>2</sup> (13,000 m<sup>2</sup>) expansion and renovation project also breaks the boundaries between the fields of art and architecture.

During initial planning, the Milwaukee Art Museum's unique design and choice of materials left the architect and builder with a major challenge – how to keep museum guests warm. Visitors would be positioned between two beautiful but innately cold elements: buffed, imported marble flooring and a cathedral-like ceiling made of glass. Considering Wisconsin's long winters, as well as the museum's waterfront location, cold exposure was inevitable. The structure would ultimately allow hot air to rise toward the glass ceiling, and cold air to force itself through the windows, thereby compromising the comfort of museumgoers.

"Calatrava knew that forced air would be a problem, so he recommended radiant heating," states Andrew Csoke, unit manager for REHAU's building technology group. "Forced air would result in dry heat, centering above the heads of visitors, while keeping their feet cold. Radiant heating on the other hand distributes heat efficiently from the floor up, offering a comfortable heat level for visitors. In addition, radiant heating presented considerable cost savings because the heat source eliminates wasted energy of heat pushed against the cold windows."

REHAU's building technology group and Rundle-Spence Manufacturing Company were called upon to design their "masterpiece." Approximately 25,000 ft (7,620 m) of RAUPEX O<sub>2</sub> Barrier crosslinked polyethylene (PEXa) 1/2 in. piping was laid out in a counter-flow spiral design, and joined with the REHAU compression-sleeve fitting system where necessary.

"Our decision to use compression-sleeve fittings was based upon the need for worry-free connections," says Ed Sharpe, owner of Sharpe Sales. According to Sharpe, "The compression-sleeve fitting system also sold the job due to its ease of installation. The locations of the fittings are difficult to access, so the installers wanted to make each connection only once. The piping normally relaxes within 24 hours and other fittings would require re-tightening. By not having to retighten the compression-sleeve fittings, valuable time and money was saved."

"Because of the size of the job, and the exposure of serving such a fine museum, it was an honor to be a part of a project with such worldwide recognition," concludes Ed Sharpe. "The museum required the best available products and REHAU was able to provide them."



**Project:** Milwaukee Art Museum in Milwaukee, WI  
**Construction type:** Museum renovation, opened in 2001  
**Project scope:** 140,000 ft<sup>2</sup> (13,000 m<sup>2</sup>) expansion and renovation  
**Architect/Engineer:** Santiago Calatrava  
**Distributor:** Rundle-Spence Manufacturing Company  
**REHAU systems used:** Radiant heating (RAUPEX<sup>®</sup> pipe, compression-sleeve fitting system, PRO-BALANCE<sup>®</sup> manifolds)

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