

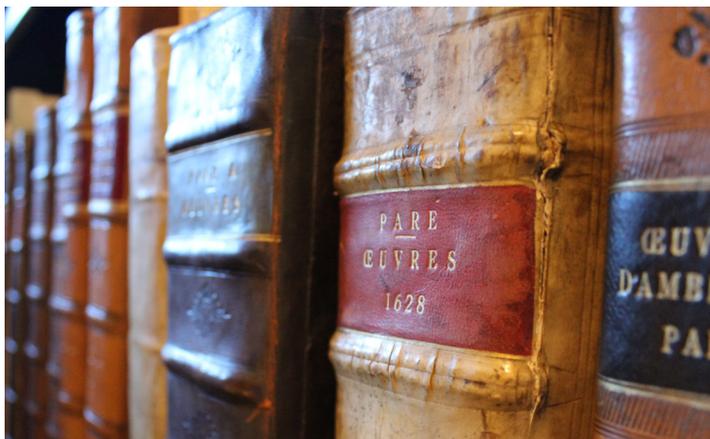


Engineering students fortify library of invaluable works

Spray foam key to protecting priceless pieces

How many engineering students does it take to rework an aging insulation system? The question may sound like the setup to a joke, but in lieu of a punchline, there's a happy ending. The story involves five students, one spray foam insulation product, and hundreds of thousands of rare books that were saved by the students' inventive approach to a serious condensation problem.

Since it was first opened on the University of Toronto campus in 1973, the Thomas Fisher Rare Book Library has amassed a collection of over 740,000 rare volumes. It houses items like the four folios of Shakespeare and a Babylonian cuneiform tablet from 1789 B.C., as well as the works of literary moguls like Margaret Atwood and Dennis Lee.



While individual books, manuscripts, scrolls, and other items are preserved using delicate techniques and held in customized housings, the library itself needs a controlled environment to protect the collection from external hazards. The building's fixed temperature and humidity levels provide ideal conditions all year round—with one caveat.

WHEN THE COLD CREEPS, WALLS WEEP

When outside temperatures drop below freezing for extended periods of time, it can cause water condensation to penetrate into the library. The dampness and resulting mold pose a deadly threat to the paper, papyrus, and vellum items housed inside.

“The library is treated for humidity to preserve the books, and that was hard to maintain because there was no insulation happening and there was condensation precipitating off the walls,” explains Sharon Lishman, Marketing Manager, Performance Materials, BASF. “The insulation that existed previously wasn't doing the job any longer.”

For over a decade, the library's staff worked to address its short-term risk factors while seeking more permanent solutions. Although internal renovations might have solved the problem, the collection's many old and fragile items required a lighter touch.

“The books are so old that any kind of movement or vibration could cause potential damage,” Lishman notes. “They couldn't afford to move these books and rare, priceless items.”

AN AIRTIGHT PITCH

To find their alternative fix, the Fisher Library's caretakers challenged a group of engineering students to solve their condensation problem with an outside-the-box approach. Five undergrads came up with the winning solution: a sprayable foam insulation applied to the library's exterior walls. Three years later, their pitch was officially chosen by U of T staff.

Once the university staff had consulted with outside experts and come up with a viable plan, work on the library's walls began in early 2017. Their spray insulation of choice was BASF WALLTITE, a closed-cell polyurethane foam with numerous energy-efficient properties.

"WALLTITE is helping to control the moisture issue because it creates an airtight seal," says Lishman. That seal provides a barrier against air, vapor, and weather conditions, as well as thermal insulation and soil gas control.

The library's outer wall was completely coated in the WALLTITE insulation system. While the foam initially took on a purplish color that faded to yellow in the sun, the insulation was later covered up with concrete casings to match the façade of Fisher Library and the adjacent Robarts Library's exteriors.

BACK TO BUSINESS

What does that mean for the rare books inside the Fisher Library? In essence, WALLTITE will help the building maintain its perfectly controlled environment and reduce the risk of condensation, mold, and other water damage. Because the application was external, U of T staff were able to solve the issue without displacing or disturbing any fragile items.

"No books or items were lost," Lishman adds. The library managers intervened in time to prevent any damage to the rare book collection.

After years of searching, the library's dark cloud of condensation has finally found its silver—or in this case, purple lining. Completed earlier this year, members of the public can access the Fisher Library's rare collections under strict security guidelines.

