HYDRONIC SHELL
TECHNOLOGIES

Upcycling Buildings for Better Living

Hydronic Shell: An Equitable and Affordable Solution for Multifamily Building Electrification

The Hydronic Shell is an integrated turnkey solution for multifamily building electrification retrofits at industrial scale. It combines a high-performance building enclosure retrofit with an energy efficient and electrified HVAC retrofit that reduces HVAC energy and emissions up to 90% while improving occupant health and comfort. The system comprises modular pre-fabricated façade panels that are installed quickly, cost-effectively, and non-invasively on the building's exterior. Hydronic Shell is comprised of three systems: 1) central hydronic heat pump and ventilation equipment with distribution via duct and pipe risers on the exterior of the existing facade, 2) HydroBox terminal units integrated into the new facade to provide heating, cooling, and ventilation through the window opening, and 3) an insulated and air tight facade installed over the existing facade with a conditioned air cavity between the new and existing façade for the distribution of air ducts and hydronic piping to each HydroBox. The non-invasive installation from the exterior minimizes tenant disruption during installation, drastically reducing the cost and complexity of electrification retrofits. The Hydronic Shell provides a scalable and cost-effective solution for the decarbonization and modernization of multifamily homes in mild to very cold climates, upcycling them for improved energy performance, indoor air quality, comfort, and aesthetics.

Key Project Members

David Goldstein, PE: Founder + Chief Executive Officer, Hydronic Shell Technologies
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Demonstration Partners

Oak Ridge National Laboratory, RDH Building Science, Syracuse University, Radicle Development Center, GTI Energy, and Cycle Retrotech