Bronx Domestic Hot Water System Gets Electrified -

Innovative heat pump water heater from Laars uses CO_2 refrigerant

Case Study



Summary

Building Specs	48-unit, six-story multifamily residence
Location	Bronx, NY
Scope	Electrification of domestic water system
Laars Product Installed	E-Therm Heat Pump
Contractor	AC Plumbing

Project Overview

850 Bryant Ave is a 48-unit, six-story apartment complex in the Bronx, New York. The property was selected for an electrification upgrade to improve energy efficiency, reduce carbon emissions, and modernize aging mechanical systems. As part of a broader initiative to enhance sustainability, the project focused on replacing its existing gas-fired domestic hot water (DHW) system with a high-performance commercial heat pump water heater.

Once the engineering team evaluated the site, however, they decided on an optimized hybrid approach in which the onboard control system automatically alternates between the heat pump and the existing gas-fired system based on real-time efficiency. This strategy aims to ensure optimal performance year-round while maximizing carbon footprint reduction and to provide redundancy by using existing equipment.

Project Origins & Key Stakeholders

The Association for Energy Affordability (AEA), a nonprofit that specializes in energy efficiency and electrification upgrades for low and moderate-income buildings, often partners with local organizations to identify and implement impactful solutions. AEA plays a key role in helping building owners access state and federal funding opportunities to support weatherization and electrification initiatives.

At 850 Bryant Ave, AEA collaborated with the South East Bronx Community Organization (SEBCO) and the Father Gigante organization to secure a grant through New York State's Weatherization Assistance Program (WAP). With funding in place, the team moved forward with a long-overdue upgrade to the building's aging mechanical systems, aiming to implement a domestic hot water solution that offered both high efficiency and low emissions—this aligns with New York City's carbon reduction goals and Local Law 97 compliance.

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Solution Implemented

After evaluating several options, the project team selected the Laars E-Therm® electric air-source heat pump water heater. One of the deciding factors was its use of R-744 (CO_2) refrigerant, which not only performs well in the low ambient temperatures that New York City experiences during cold winter nights but also has a global warming potential of just 1—helping future-proof the installation against refrigerant phase-out regulations. The Laars E-Therm includes everything needed for a "plug-and-play" installation: pre-charged with CO_2 refrigerant, an on-board double-wall DHW heat exchanger, and DHW pump.

The Laars E-Therm is a part of a complete Laars® solution that utilizes stratified storage tanks and LaarsLinc® Pro-I/O™ Tank System Control to monitor the stored water's stratification temperature profile. LaarsLinc then adjusts the heat pump's output to ideally balance tank target temperatures.

A major advantage of this system is that it uses a natural refrigerant, CO_2, that outputs DHW up to 180°F and is a refrigerant which will not be "phased out" over time like many synthetic refrigerant systems. Thanks to its integrated double-wall heat exchanger, the unit accepts incoming potable water directly and delivers hot water without requiring a secondary double wall heat exchanger loop.

This design reduces operational complexity and improves overall system efficiency compared to those that require an external double wall heat exchanger; it requires fewer components to install, less space, and fewer potential failure points.

These factors, combined with the unit's high DHW output temperatures and modular scalability, made it a practical and forward-thinking choice for this multifamily electrification effort.



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Conclusion

The successful deployment of the Laars E-Therm and stratification tank system at 850 Bryant Ave highlights its potential as a scalable, efficient, and sustainable domestic hot water solution for multifamily buildings. By leveraging advanced heat pump technology and a natural refrigerant, this project sets a benchmark for future electrification upgrades in New York City's residential sector.

"The installation of the Laars E-Therm is going to make a huge difference in the performance of this building. We'll achieve greater efficiency with less equipment. The plug-and-play design made our lives much easier and will continue to do so for those performing maintenance. We're so happy with how this project went. We'll most likely use this install as a prototype for all heat pump water heater installations going forward." – Francis Rodriguez, weatherization director at Association for Energy Affordability, Inc.

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