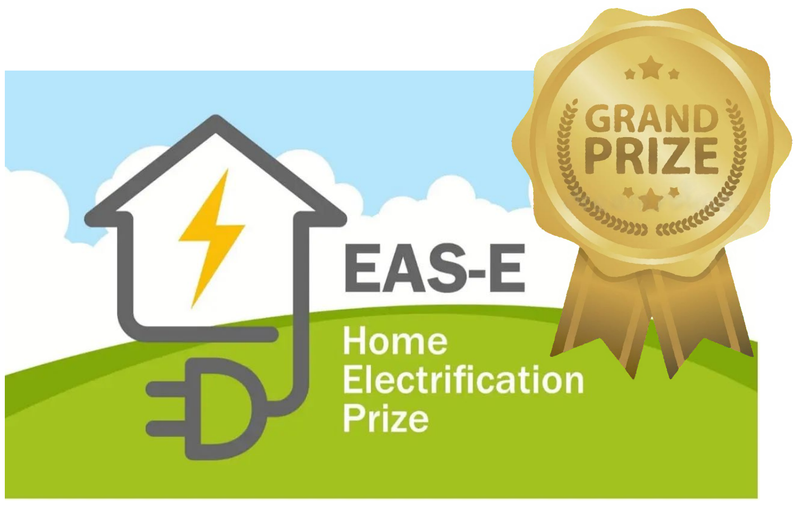
Modular multi-function air-to-water heat pump systems for expedited and affordable home electrification



SOLUTION OVERVIEW

To cultivate equity and affordability while accelerating decarbonization, Aris Hydronics is advancing a suite of hard-tech innovations and business solutions that strategically address costs, complexities, and limitations related to retrofit of the largest residential energy end uses – heating, cooling, and domestic hot water. Aris Hydronics is a vertically-integrated direct-to-consumer solution provider offering a turn-key multi-function air-to-water heat pump system that incorporates all subsystems and controls in a single end-to-end platform.

ADVANTAGES

Electrical systems

Eliminates apartment subpanel upgrades
↓ need for new electric circuits
↓ building service ampacity requirements
↓ peak electricity demand
↓ number, capacity, and footprint t of HPs

Refrigerant

↓ refrigerant use
↓ risk of leakage
↓ refrigerant GHG risks
Route to zero GWP refrigerants
↑ workforce for heat pump deployment

Installation

↓ piping and insulation
↓ electrical work, ↓ controls work
↓ construction complexity
↓ resident displacement
Enables use of lower cost polymer pipe

Energy and performance

↓ low load cycling, ↑ improves efficiency
Resilient to equipment oversizing
Increases opportunity for demand flexibility
↑ comfort control
↓ Indoor noise

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MODULAR SYSTEMS

Aris's solution is modular, flexible, and configurable, making it suitable for heating, cooling, and hot water in a wide range of applications in both single-family and multifamily residences. The solution includes four major subsystems:

Multi-function air-to-water heat pumps: Aris' family of modular air-to-water heat pumps provide heating, cooling, and domestic hot water for a wide range of design scenarios. Single family residences use one heat pump, while multifamily buildings use a group of central heat pumps.

Thermal storage tanks: Options include compact multi-chamber tanks appropriate for within-residence installation, and short duration thermal storage as well as larger tanks appropriate for central storage in multifamily buildings.

Hydronic control module: The HCU incorporates system controls, electrical distribution, streamlined hydronics. and web communicating data analytics.

Distributed terminal cooling and heating: Modular combinations of integrated ductless hydronic heat emitters

These modular subsystems are designed to package numerous hydronic components into simple to understand system building blocks so that installer's responsibility is limited to mounting the major modular subsystem components, connecting them with insulated polymer pipe, and providing electrical connection.