

# A PROVEN APPROACH TO HIGH-PERFORMANCE HVAC IMPROVES EFFICIENCY, HEALTH AND COMFORT

## THE NEXT STEP IN THE EVOLUTION OF HVAC

Very high efficiency dedicated outside air systems (very high efficiency DOAS) pair the highest performance HVAC equipment with key design principles to provide cleaner and safer indoor air, enhance indoor comfort, and reduce commercial building HVAC energy use. This approach has been demonstrated to reduce HVAC energy use by an average of 69% when compared to a code-minimum version of the existing equipment (often a packaged rooftop unit).<sup>1</sup>

## WHEN HIGH-EFFICIENCY EQUIPMENT MEETS THOUGHTFUL HVAC DESIGN

Very high efficiency DOAS has been proven to deliver a variety of benefits to commercial building owners, operators, architects, designers and occupants alike, including:

- Significantly reduces customer energy costs and lowers overall commercial building energy use by an average of 48% and HVAC energy use by an average of 69%.<sup>1</sup>
- Improves indoor air quality and reduces viral risk by using fresh and filtered air with little-to-no circulation—all while using up to 37% less energy than a similar high-ventilation variable air volume (VAV) system.<sup>2</sup>
- Allows for the downsizing of heating and cooling equipment to reduce maintenance costs and the lifetime cost of the system.
- Increases occupant comfort by improving temperature stability and allowing for zones with unique temperature controls.
- Offers design flexibility with several manufacturers offering a variety of readily available qualifying heat/energy recovery ventilators (HRVs/ERVs).
- Meets or exceeds the 2018 Washington State Energy Code requirements for new construction or major HVAC system replacements, which requires DOAS in many applications.



## THE FOUR KEY ELEMENTS OF VERY HIGH EFFICIENCY DOAS

- 1** A high efficiency HRV/ERV that features 82% or greater sensible effectiveness.
- 2** High-performance heating and cooling system that meets ENERGY STAR® performance standards.
- 3** Ventilation fully separated from heating and cooling.
- 4** Right-sized heating and cooling equipment.

<sup>1</sup> When compared to a code-minimum version of the existing equipment (often a packaged rooftop unit); Data based on 12 demonstration projects in small-to-medium commercial buildings throughout the Northwest.

<sup>2</sup> Study performed by the Northwest Energy Efficiency Alliance (NEEA), Red Car Analytics and the University of Oregon. Learn more at [betterbricks.com/resources/covid-19-hvac-riskreduction-strategies](https://betterbricks.com/resources/covid-19-hvac-riskreduction-strategies).

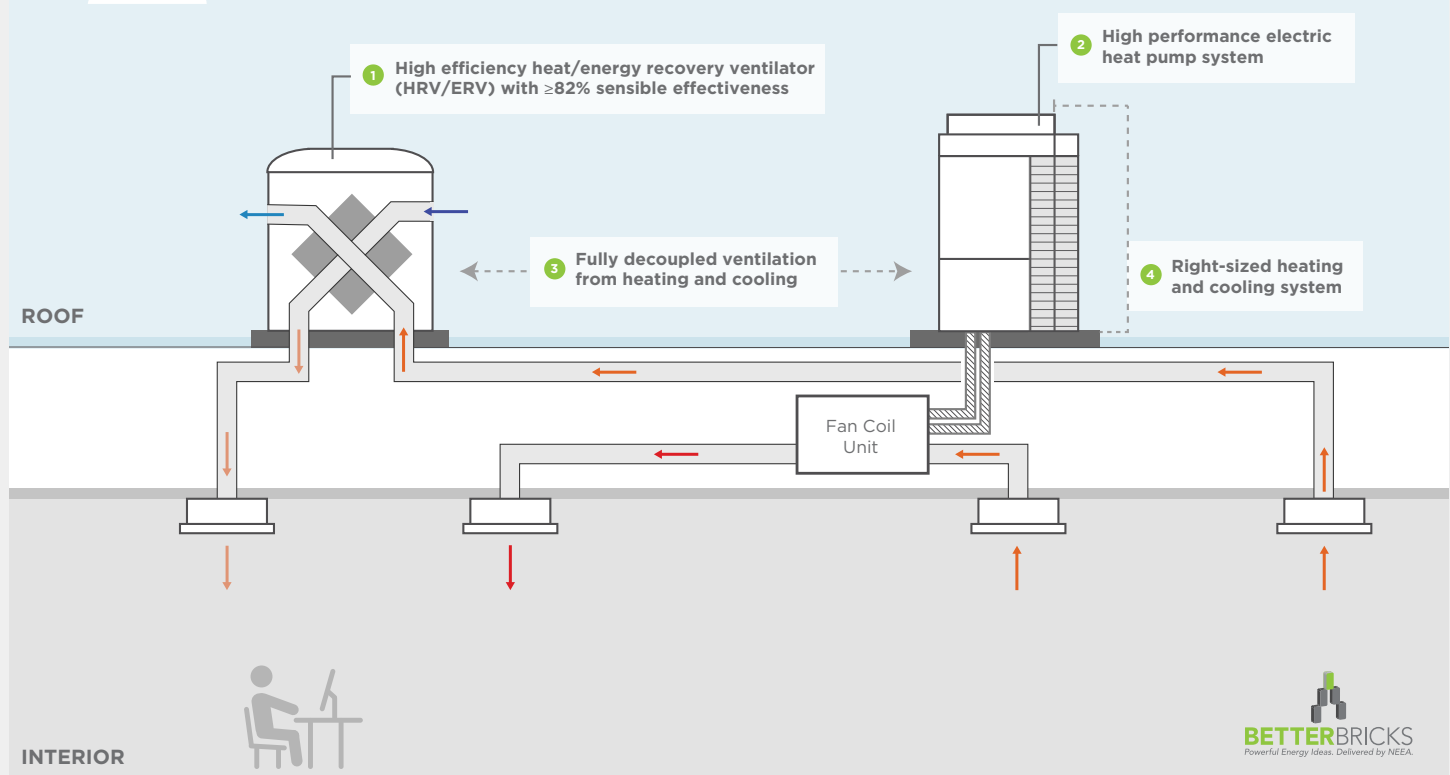
# HOW VERY HIGH EFFICIENCY DOAS WORKS

Very high efficiency DOAS combines high-performance HVAC equipment with the dedicated outside air system (DOAS) approach that separates heating and cooling from the ventilation system. This design approach minimizes energy by combining a high-efficiency HRV/ERV (82% or greater sensible effectiveness) with a high-efficiency, ENERGY STAR-rated heating and cooling system. And with many available system options on the market, the very high efficiency DOAS approach offers built-in flexibility at the HVAC design phase.

The decoupling of ventilation air from primary heating and cooling allows for optimal and efficient control of each critical building function while circulating 100% fresh and filtered outdoor

air throughout the building, with little-to-no recirculation. The very high efficiency DOAS approach further maximizes performance by allowing building designers to right-size their heating and cooling equipment and ductwork. This right-sizing increases system performance, saves space on the roof and offers building designers enhanced design flexibility.

Northwest-based installations have revealed some ideal project and buildings types that can benefit from this approach, including small-to-medium-sized buildings (less than 50,000 sq. ft.), both new construction and major renovations, and several buildings types, including schools, retail, government, and office buildings.



To learn more about this and other efficient commercial HVAC solutions, visit BetterBricks at [betterbricks.com/solutions/hvac](https://betterbricks.com/solutions/hvac).