

HVAC CASE STUDY

High-performance HVAC gets to work for utility office



Utility office upgrades from piecemeal HVAC to state-of-the-art system.

Flathead Electric's district office is a single-story 1960s-vintage building with offices at the front and a combination of storage space and garage bays for utility trucks in the back. Their former HVAC system had been pieced together from several years of modifications and it no longer provided indoor comfort or an adequate level of heating efficiency. To solve these issues, Flathead Electric took advantage of an innovative approach to HVAC they knew all too well – a very high efficiency dedicated outside air system (also referred to as very high efficiency DOAS).

"We knew it was time to upgrade our HVAC," said Don Newton, Energy Services Supervisor at Flathead Electric. "This was the ideal time to take the very high efficiency DOAS approach to increase our comfort and greatly reduce our energy use. It was a very easy decision to make."



Project Overview



Building Type
Office



Year Built
1960s



Project Floor Area
5,735 sq. ft.



Energy Utility/Program
**Flathead Electric
in partnership with
the Bonneville Power
Administration**



Total Project Cost
\$21.90 per sq. ft.



Reduction in HVAC
Energy Use
45%

Innovative HVAC approach saves energy, increases comfort, and reduces air leakage.

Updated piece-by-piece over many years, the existing HVAC system was inefficient, uncomfortable, and featured a significant amount of air leakage. By installing a very high efficiency DOAS system, the facility team was able to improve all of these aspects of the building's HVAC system at once.

DOAS separates heating and cooling from the ventilation system to allow for optimal control of each of these critical building functions. Building on the DOAS concept, a very high efficiency DOAS includes heat recovery ventilation (HRV) and focuses on increased equipment efficiency and optimized system design. This approach has been proven to yield significant energy savings in new and existing commercial buildings while also providing:

- **Increased occupant comfort**
- **Improved indoor air quality** due to filtered 100% outside air being brought into the space
- **Lower energy bills** because the very high efficiency HRV allows for a smaller heating and cooling system that runs less often
- **Saved roof space** through system downsizing and reduced ductwork
- **Precise temperature and humidity control**

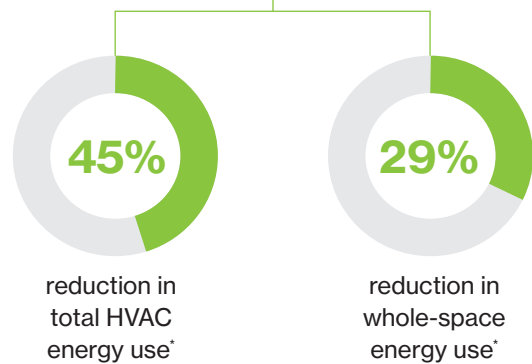


“While we expected the very high efficiency DOAS system to work, the marked upgrade to indoor comfort still takes you by surprise. The difference is huge and we couldn't be happier.”

*Don Newton, Energy Services Supervisor,
Flathead Electric*

Conversion Summary

Existing HVAC system:	1 electric boiler 2 swamp coolers 1 6-ton heat pump RTU 1 server room heat pump
New HVAC system:	2 4.5-ton Mitsubishi heat pumps 1 Ventacity VS1000RT HRV



*Compared to a modeled code-minimum HVAC system.

Results

The facility team was happy to see their upgraded HVAC system bring the expected increase in comfort and decrease in energy use. The vastly improved energy performance managed to outpace expectations, with the facility team looking forward to citing it as another successful example of the many benefits of the very high efficiency DOAS approach to HVAC.

betterbricks/

To learn more about this and other efficient commercial HVAC solutions, visit betterbricks.com/hvac.

© 2023 BetterBricks