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HVAC CASE STUDY

Legal Firm Objects to Older Building's Inefficiences and Discomfort

Old building comes with age-old indoor comfort problems.

Local law firm Immix Law Group purchased the upper floor of a 1909, two-story historic building in the once-industrial area of Northwest Portland. Vacant for nearly three years, the 11,615-square-foot space presented many comfort challenges. Air leaked between floors, the fresh air dampers were all closed shut, and the oversized existing HVAC system was aging and inefficient.

Before they moved in, the law firm was committed to providing year-round indoor comfort for their team and their clients. To get there, they chose an HVAC configuration that would provide consistent temperatures and high indoor air quality across their approximately 30 office spaces, five conference rooms, lunch room, exercise room, two sets of restrooms, and open common and utility spaces.

The owners decided to update their space with efficient equipment that would not only safeguard occupant comfort, but also reflect the firm's commitment to sustainability and energy efficiency. "We want to be good stewards," said Emily Wooton, COO of Immix Law Group. "Being a Certified B Corp, energy efficiency is very important to us."

Project Overview

Building Type
Office

Project Floor Area
11,615 sq. ft.

Energy Utility/Program
Energy Trust of Oregon

Total Project Cost
$15.61 per sq. ft.

Annual Reduction in GHG Emissions
42%[1]

Reduction in Total Buildilng Energy Use
72%

High-performance HVAC brings efficiency, temperature control and improved air quality.

After looking into their options, the firm discovered that a very high efficiency dedicated outside air system (very high efficiency DOAS) was an ideal HVAC solution to meet their needs. 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 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**

Results

Immix combined their HVAC upgrades with additional energy efficiency improvements by working with Energy Trust of Oregon. Energy Trust helps Oregon businesses and residents benefit from energy-saving solutions by providing cash incentives and technical assistance. Together they identified an incentive package best suited to meet the building's needs, that included the VRF and HRVs as well as LED lighting, windows and insulation.

Thanks to the very high efficiency DOAS upgrade, the firm is enjoying significantly reduced heating and cooling costs, improved comfort and better air quality.

CONVERSION SUMMARY

Pre-existing HVAC system:	9x rooftop units (35 tons in total)
New HVAC system:	1x 16-ton Mitsubishi VRF 4x Ventacity VS1000RT HRVs

reduction in total HVAC energy use

reduction in building energy use

> One of the best benefits has been the quality of air. It's just superior. If you're to walk in the hallways, you won't see particulates flying. When the sun shines in, the air is clear and it's light and it's crisp and it's fresh. Our bills range from $300 to $700 for 12,000 square feet, no matter if it's 100 degrees outside or it's a snowpocalypse.
>
> *— Emily Wooton, COO*
> *Immix Law Group*

[1] Reported GHG emissions reduction is based on the following assumptions: 1) 11.7 pounds of CO2 per therm of natural gas saved, 2) 0.91 pounds of CO2 per kWh avoided (Northwest Power and Conservation Council's latest report from 2018 on avoided CO2 rates in the Northwest).

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