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Skyline Elementary School

Project Overview

Skyline Elementary School, a state-of-the-art educational facility located in Tacoma Washington, required a cutting-edge HVAC system for its new construction project. To ensure superior indoor air quality, energy efficiency, and overall comfort for students and staff, the school district collaborated with AirReps and BCE Engineers. AirReps worked closely with BCE Engineers, Oxygen8, a leading manufacturer of

high-efficiency counter-flow heat recovery ventilators, and Daikin, a prominent HVAC industry player specializing in water source heat pumps. The project also incorporated BAC FXV fluid cooler to enhance heat rejection efficiency. This case study highlights how their collective expertise successfully designed and implemented the HVAC system for the new school building.

Challenges

1. Designing an Efficient HVAC System:

The school district sought to create an HVAC system tailored to the new school's specific requirements, balancing energy efficiency and comfort

2. Indoor Air Quality:

Poor indoor air quality (IAQ) was a significant concern, especially in the wake of increased awareness of the importance of clean and healthy indoor environments.

3. Energy Efficiency:

The school district aimed to reduce energy consumption and operating costs while minimizing the school's carbon footprint.



Solution

AirReps proposed a comprehensive HVAC system upgrade that would address all of Skyline Elementary's challenges. This solution included the following key components:

1. Daikin Water Source Heat Pumps:

Daikin's water source heat pumps were selected for their high efficiency and flexibility. These heat pumps would provide both heating and cooling to the school, utilizing a closed-loop water system to transfer energy to and from the building's interior.

2. Oxygen8 High-Efficiency Counter-Flow Heat Recovery Ventilators:

Oxygen8's heat recovery ventilators

(HRVs) were integrated into the system to improve indoor air quality. These HRVs efficiently exchanged stale indoor air with fresh outdoor air while recovering heat from the exhaust air, reducing the energy required for conditioning incoming air utilizing high efficiency counter flow heat exchangers.

3. BAC Fluid Cooler:

To enhance heat rejection efficiency, a BAC fluid cooler was incorporated into the system. This component improved the cooling process by rejecting heat effectively, reducing the load on the heat pumps and enhancing overall system efficiency.

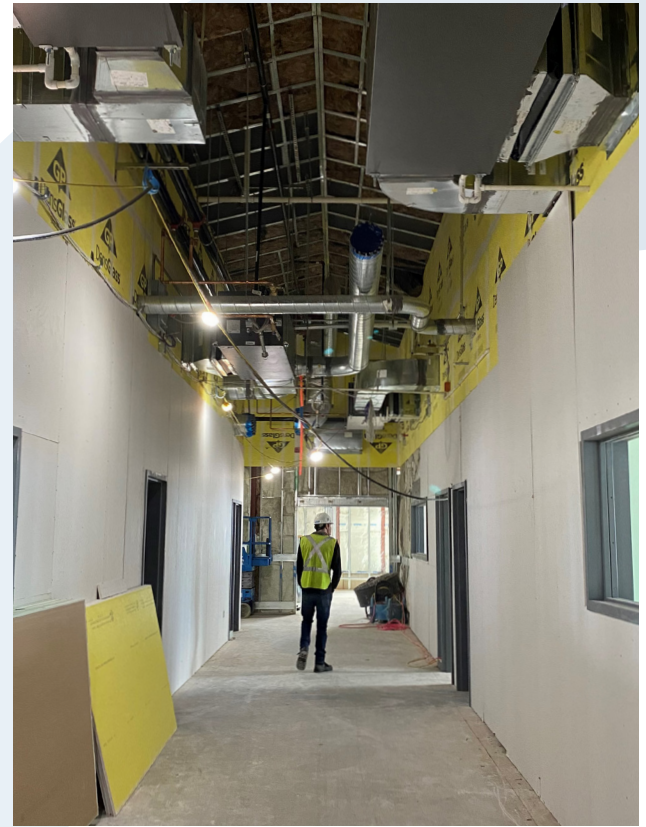


The installation of Oxygen8's HRVs significantly enhanced IAQ, creating a healthier learning environment for students and staff. The HRVs efficiently removed pollutants and provided a continuous supply of fresh air.

Implementation

The project's implementation was meticulously planned and executed by **Scott Douglas** and **James Winn** from AirReps who collaborated closely with the school district, **BCE engineers**, **Oxygen8**, and **Daikin** to ensure seamless integration and optimal system performance.





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Results

The HVAC system upgrade at Skyline Elementary School yielded remarkable results:

1. Improved Indoor Air Quality:

The installation of Oxygen8's HRVs significantly enhanced IAQ, creating a healthier learning environment for students and staff. The HRVs efficiently removed pollutants and provided a continuous supply of fresh air.

2. Remarkable Energy Efficiency:

The combination of Daikin's water source heat pumps, Oxygen8 HRV's and BAC fluid coolers resulted in a highly efficient system. The school experienced a notable reduction in energy consumption and operational costs, leading to long-term savings for the district.

3. Optimal Comfort:

The new HVAC system design provided consistent heating and cooling, ensuring a comfortable environment throughout the school year.



By optimizing energy efficiency, the school reduced its carbon footprint, aligning with its sustainability goals and contributing to a greener future.

4. Reduced Environmental Impact:

By optimizing energy efficiency, the school reduced its carbon footprint, aligning with its sustainability goals and contributing to a greener future.

Conclusion

The collaboration between AirReps, BCE Engineers, Oxygen8, and Daikin, along with the incorporation of BAC fluid cooler, resulted in a state-of-the-art HVAC system for Skyline Elementary School's new construction project. The solution not only met the school's specific requirements but also successfully addressed the districts challenges, resulting in improved indoor air quality, energy efficiency, comfort, and reduced environmental impact. This case study serves as a testament to the effectiveness of strategic partnerships and innovative HVAC solutions in educational settings, creating healthier, more efficient, and sustainable learning environments.



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