



# SMITHGROUP

Phoenix, Arizona

## APPLICATION:

The SmithGroup office remodel project, aimed at showcasing cutting-edge design and high-performance solutions, involved major players like SmithGroup, Comfort Systems, and Varitec Solutions by introducing an innovative approach to 100% outside air active chilled beam system. This unique upgrade to an existing building ensured superior thermal comfort, indoor air quality, and improved energy efficiency for the occupants' well-being and productivity.

## PROJECT TEAM:

**Architect:** Smithgroup

**Mechanical Contractor:**

Comfort Systems

**Professional Engineer:**

Jonathan Sihol

## DESIGN & PRODUCT SOLUTIONS

SmithGroup, a prominent architectural and engineering firm, initiated an office remodel project to exhibit their expertise in delivering innovative design and high-performance solutions. The project's primary focus was to implement an efficient **chilled beam system using a 100% OSA unit** that provided proper and stable humidity control, resulting in improved thermal comfort, indoor air quality, and energy efficiency. The design incorporated a **DX DOAS unit** with variable speed fan and compressor technology to provide low dew point depression, allowing the chiller to serve the chilled beams independently and operate at elevated water temperatures of 58°F, leading to **significant energy savings**.

The project involved collaboration between **SmithGroup, Comfort Systems, and Varitec Solutions**. SmithGroup handled both architecture and engineering, with Jonathan Sihol serving as the lead PE. Varitec Solutions played a critical role in recommending a unique Munters' design concept of applying low dew point DX DOAS technology resulting in the chiller supplying only 58F chilled water to the chilled beams for enhanced energy efficiency. They supported SmithGroup by providing **Dadanco Chilled Beam** performance selections, an **AnnexAir DOAS** unit layout, and the **Motivair Chiller** solution.

The project showcased several innovative products, including Dadanco's active chilled beams, chosen for their ability to minimize noise in sensitive areas, Motivair air-cooled chiller, that provided the required turn-down solution, and AnnexAir Biocomposite DX DOAS, selected for its efficient thermal comfort and low dew point capacity. The installation posed some challenges, particularly with the DOAS unit's required small footprint that prohibited the use of an energy recovery section due to space constraints. However, these issues were addressed through careful product selection and configuration. The completed HVAC system has demonstrated excellent performance, humidity control, and energy efficiency, **outperforming the evaluated water-cooled split heat pump design by 25%**.



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