

Safer Air Doesn't Have to Cost You More

Don't sacrifice indoor air safety due to increased energy costs. Taco Comfort Solutions' Whole Systems Approach can provide increased ventilation, safer indoor air AND reduced energy costs all while meeting the new ASHRAE Standard 241-2023.



Safer, healthier indoor air quality continues to be a priority

Precautionary measures through personal protective equipment (masks, eye wear, gloves, etc) and hand hygiene reduce the likelihood of transmitting viruses to people and surfaces, but what about the indoor air we breathe? Is it safe? Could it be made safer? We have the answers.

Taco Comfort Solutions' expertise in chilled beam systems enables us to take a Whole Systems Approach to mitigate infectious aerosols while providing healthier indoor air quality and reducing energy costs.



Chilled beam systems address key expert recommendations

- No recirculation of air to adjacent spaces
- No indoor air is recirculated back into the building; 100% is exhausted outside the building
- Low velocity reduces air mixing and drafts



Increased ventilation reduces airborne pathogens

ASHRAE and the CDC agree that controlling infectious aerosols will be required to protect buildings from future pandemic needs. And most experts agree that one of the best mitigation strategies is to increase the outdoor air ventilation of the building's HVAC system.



What is ventilation and how much is required?

Ventilation within a building space is defined as outside air. The previous guidelines and the new ASHRAE standard (241-2023) are outlined below. They compare the requirements for equivalent air changes per hour (eACH) across standards and space types, assuming typical occupant density.

Building Type	Previous (62.1/170)	New Standard (241)	% Increase or Multiple
Education	2.8 - 3.5	8.3	2.4 - 3.0x
Healthcare	Exam Room - 6 Patient Room - 4 Waiting Room - 12	Exam Room - 8 Patient Room - 24 Waiting Room - 40	Exam Room - 33% Patient Room - 6x Waiting Room - 3.3x
Office	0.5	1.1	2.2x
Other	Public Assembly - 5.4 Religious - 4.4	Public Assembly - 20 Religious - 24	Public Assembly - 3.7x Religious - 5.5x

Relevant ASHRAE Ventilation Standards

62.1 - Ventilation for Acceptable Indoor Air Quality | Non-Residential & Non-Health Care Spaces | CFM/person*

170 - Ventilation for Health Care Facilities | Health Care | ACH

241 - Control of Infectious Aerosols | All Occupied Spaces | EOA/person

CFM - cubic feet per minute eCFM/eACH - equivalent CFM/ACH
ACH - air changes per hour EOA - equivalent outdoor air

*ASHRAE 62.1 uses a combination of CFM/person and CFM/area



The problem with increased ventilation

Increasing the outdoor air ventilation of a building poses some unique challenges. Not only does the heating and cooling of the increased air ventilation result in higher energy costs, but the current building HVAC system needs to be assessed to determine whether it can handle the increased load on equipment.

How much more could increased ventilation cost?



Previous Ventilation Standard

17 CFM/Person

Five Floor Office Building

- 200,000 SQ FT
 - 400 SQ FT / Ton
 - 500 Tons
 - **Annual Operating Costs = \$360,000***
- *based on \$0.15/kw-hr and \$.95/Therm

ASHRAE Standard 241-2023

34 CFM/Person

Five Floor Office Building

- 200,000 SQ FT
 - 300 SQ FT / Ton
 - 667 Tons
 - **Annual Operating Costs = \$440,000***
- *based on \$0.15/kw-hr and \$.95/Therm

Taco Comfort Solutions Whole Systems Approach

Radiant/Chilled Beam
Injection Pumping System

34 CFM/Person

Annual Operating Cost = \$350,000
\$90,000 Annual Savings!

For more information, please contact your local Commerical Taco Rep. www.tacomfort.com/rep-locator

Radiant/Chilled Beam Injection Pumping System: A Safer, Healthier, and More Efficient Solution

The variable air volume comfort systems found in most buildings today provide inadequate protection against airborne germs, viruses, and mold. How does that happen? In these type of systems, air is blown through ducts into every room, recirculating time and again. That air can pick up contaminants along the way and disperse them everywhere, bringing the risk of infection to everyone in its path.

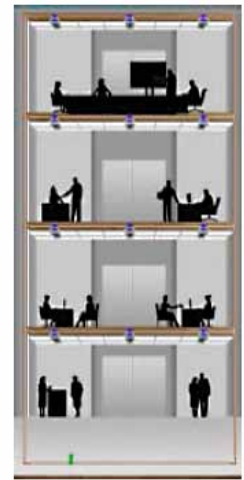
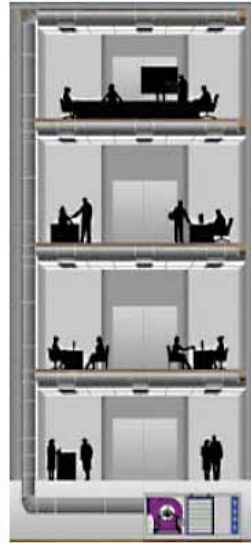
Fortunately there is a healthier heating and cooling option: a radiant/chilled beam system, powered by Taco's LOFlo® Injection pumping and Clarity3® Building Automation Controls. Chilled beams use water to transfer safe, consistent comfort without the use of in-room fans. There are no drafts, no noise, and little risk of spreading germs because chilled beams do not recirculate air to adjacent spaces.



And because radiant/chilled beam systems use water, the most efficient and natural energy transfer medium on the planet, the increased ventilation won't result in increased energy costs. You may even see a savings from your previous HVAC system. It's a system that's perfect for schools, hospitals, and office buildings. What's more, there are chilled beam solutions for both new building construction and retrofit projects.

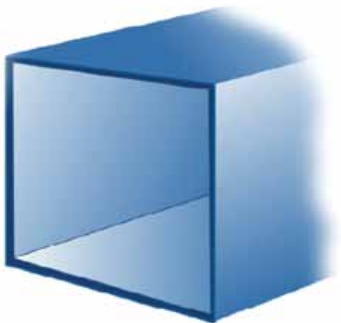
No Rain, All Gain

One concern with chilled beams is the possibility of condensation forming and dripping off the beams, or "raining" to the space below. Taco's Clarity3® Building Automation Control monitors room temperature, supply water temperature, and ever-changing dewpoint, adjusting the system's water temperatures to prevent condensation and deliver quiet, worry-free comfort.



Air System with large ducts Hydronic system with small pipes

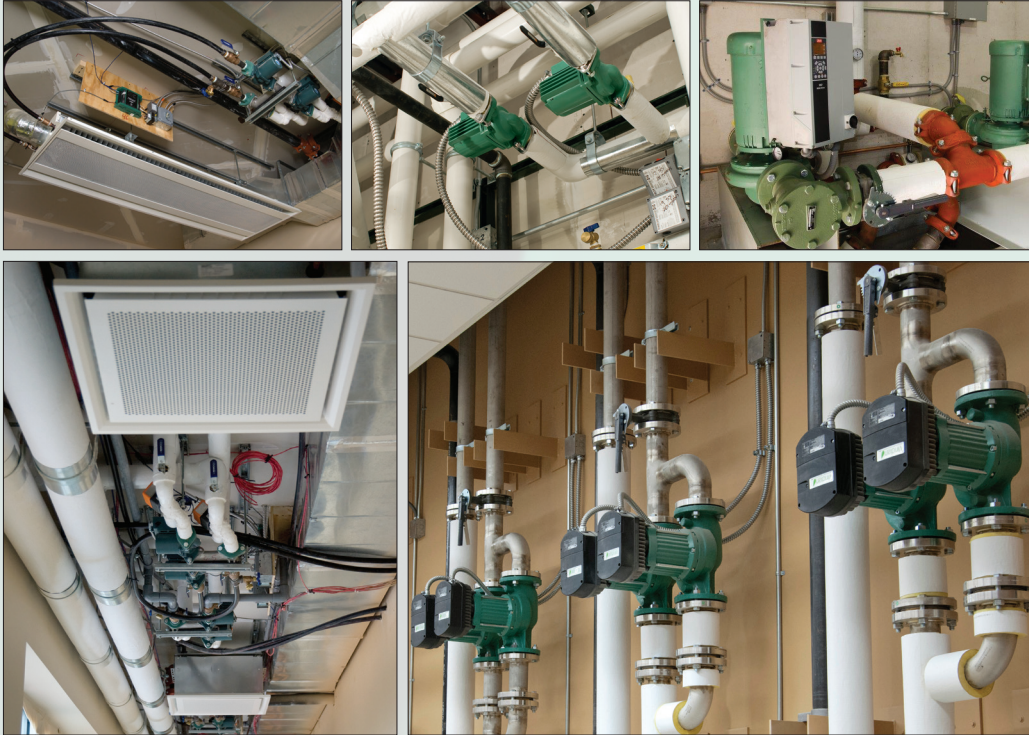
18" x 18"
Air Duct



1" Diameter
Water Pipe

Cost Competitive

Taco's LOFlo® Injection pumping system eliminates the need for large air ducts in new buildings because it uses small pipes to transfer heating and cooling. This means a lower building height and less raw materials in the construction phase. Combined with superior efficiency and longer life cycles, you'll save in the construction phase and all the way through the life of the system.



Taco is a third generation family owned American manufacturer of quality hydronic components and comfort systems. Based in Cranston, RI, Taco manufactures electronic controls, scalable, compatible web-based building monitoring and management controls, valves, tanks, pumps, heat exchangers, high efficiency variable speed drives, ECM circulators, and ancillary products. Our LoadMatch® and LOFlo® single pipe comfort systems are recognized as the most efficient, cost effective hydronic systems on the market.

Taco is a people company that understands the value of solid working relationships backed with design assistance and support for the life of the system. We are here before, during, and after your project to help you bring your systems up to peak efficiency as quickly and economically as possible. We do business with a personal touch because we believe that your personal success is as important as the success of the project.

For more information, please contact your local Commercial Taco Rep.
www.tacomfort.com/rep-locator

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Taco Inc., 1160 Cranston Street, Cranston, RI 02920 • 401.942.8000
 Taco (Canada) Ltd., 8450 Lawson Road, Unit #3, Milton, Ontario L9T 0J8 • 905.564.9422
www.TacoComfort.com

