



**Why direct fired HTHV  
is the safest way to heat  
and ventilate your facility.**



**COMMITTED TO SAFETY>>**



# You don't have to sacrifice safety or performance.



As an engineer, we understand you are results driven and have a passion for solving problems. You want a heating system that is completely safe for the environment as well as for the people who are going to use the facility you're designing. Their safety is your number one priority.

**Ours too!**



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But, you have genuine concerns...

**How can you manage CO  
without a flue?**

ONE WORD:

**VENTILATION**



**100% OUTSIDE AIR:** ASHRAE 62.1 is the Engineering Standard that clearly states ventilation is the safety device to protect people from indoor pollutants including CO exposure. The primary reason direct fired HTHV products are safe is they operate using only 100% outside air. In doing so, HTHV products are the ventilation equipment for the structure as well as the heating equipment.

HELPS EXCEED  
**ASHRAE  
62.1**  
REQUIREMENTS



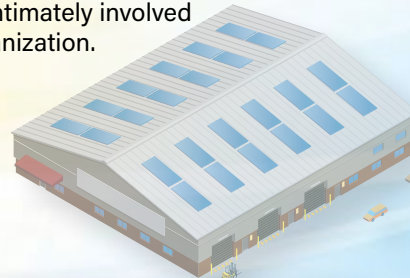
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## What's the impact of 100% continuous fresh air ventilation?

### Buildings Don't Need to Breathe But People Do.™

That's the impact of HTHV products using 100% outside air. Whenever direct fired HTHV products are in heating mode, they can exceed the fresh air requirements of ASHRAE 62.1. Above all, HTHV is ensuring that the structure has the fresh air needed to provide superior indoor air quality for the occupants of that building.

And, when there isn't a need for heating, HTHV products are still the ventilation equipment that creates needed fresh air for IAQ.



ASHRAE  
**62.1**

ANSI  
**Z83.4**

DIRECT FIRED HTHV  
**<5 PPM**

## How do I know a direct fired system won't cause problems in the future?

### ANSI Z83.4 safety standard.

This is the North America safety standard for this class of products that ensures the performance of all products in this class are safe. Cambridge is the only U.S. manufacturer to sit on the CSA B149 Natural Gas & Propane Code committee, and we are intimately involved with the organization.

## How does an HTHV system compare to industry CO standards?

OSHA sets the acceptable limits of part per million for CO in a building at no more than 50 parts per million. Most HTHV heaters are certified to produce no more than 5 PPM because of the patented burner technology. But remember, the best way to ensure there is no CO build-up in a structure is to provide adequate ventilation. By default, a direct fired HTHV system is the ventilation device.

OSHA limits >> 50 PPM

UL 2034 standards for CO alarms >> 30 PPM

Typical kitchen gas stove >> 15 PPM

# 100% outside air = ventilation



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## Single Blower = Inherently Safer Design

### With direct fired HTHV, what engineering safety controls are in place?

As engineers, we understand safety is a priority, regardless of the heating system you specify. Direct fired HTHV manufacturers each have their own safety controls built into their products. At Cambridge Air Solutions, here's a breakdown of our controls.

#### Triple Redundant Safety Controls

Cambridge has 3 key engineering safety features that provide the assurance of ventilation.

1

AIRFLOW SWITCH

2

HIGH TEMPERATURE SWITCH

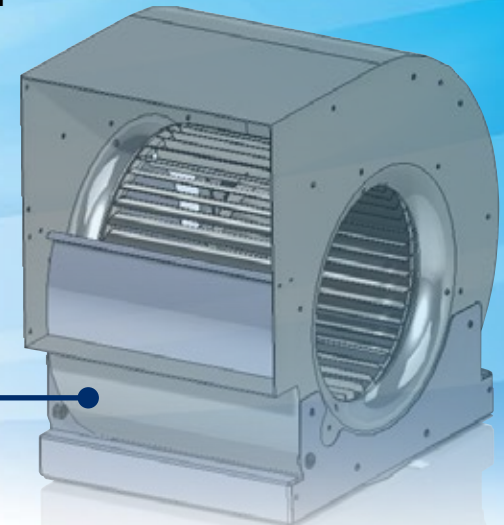
3

GAS MODULATION CONTROL

### What happens if those safety controls fail?

**Simple—the system will cease to operate.**

The key here is the 100% outside air for both the combustion air and the ventilation air. If we lose the ventilation air, which is providing the IAQ, we also lose the combustion air and the burner will cease to operate.



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 **CAMBRIDGE**  
AIR SOLUTIONS  
*Enriching Lives*

## Delivering certified, safe and sustainable solutions.

Cambridge Air Solutions has been manufacturing commercial and industrial heating equipment for over 50 years now. Our commitment to safety and innovation are the guiding principles for everything that we manufacture. With over 2 billion s/f of space heated and 30,000+ installations we have never had a building experience any CO exposure problem...**something of which we are very proud.**

ASHRAE  
**62.1**

ANSI  
**Z83.4**

**IAQ**  
LEADER

**CSA**  
CERTIFIED



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