



THE HOTLINE

Current news and information from Cambridge Engineering, Inc.

The Performance Leader In Industrial Space Heating & Make-Up Air
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"The intelligent man is always open to new ideas. In fact, he looks for them." Proverbs 18:15

We Have the Proof

Every manufacturer of gas-fired unit heaters, boilers, infrared heaters, air turnover systems and direct gas-fired air heating equipment says they have an energy efficient design that costs less to operate. They talk about heat exchanger efficiencies, burner efficiencies, heating people not air, re-heating air, not re-heating air, stratified air, blow-thru heaters, max temperature ratings and the list goes on. All of this information is true, but what does it mean in terms of cost per sq. ft. to heat a large commercial or industrial building? What type of space heating system really is the most energy efficient for your facility? Who has the "Proof" to back up their claims?

We have the documented proof through our unique heating studies program that includes a growing list of over 200 onsite building studies from the past 10 years.

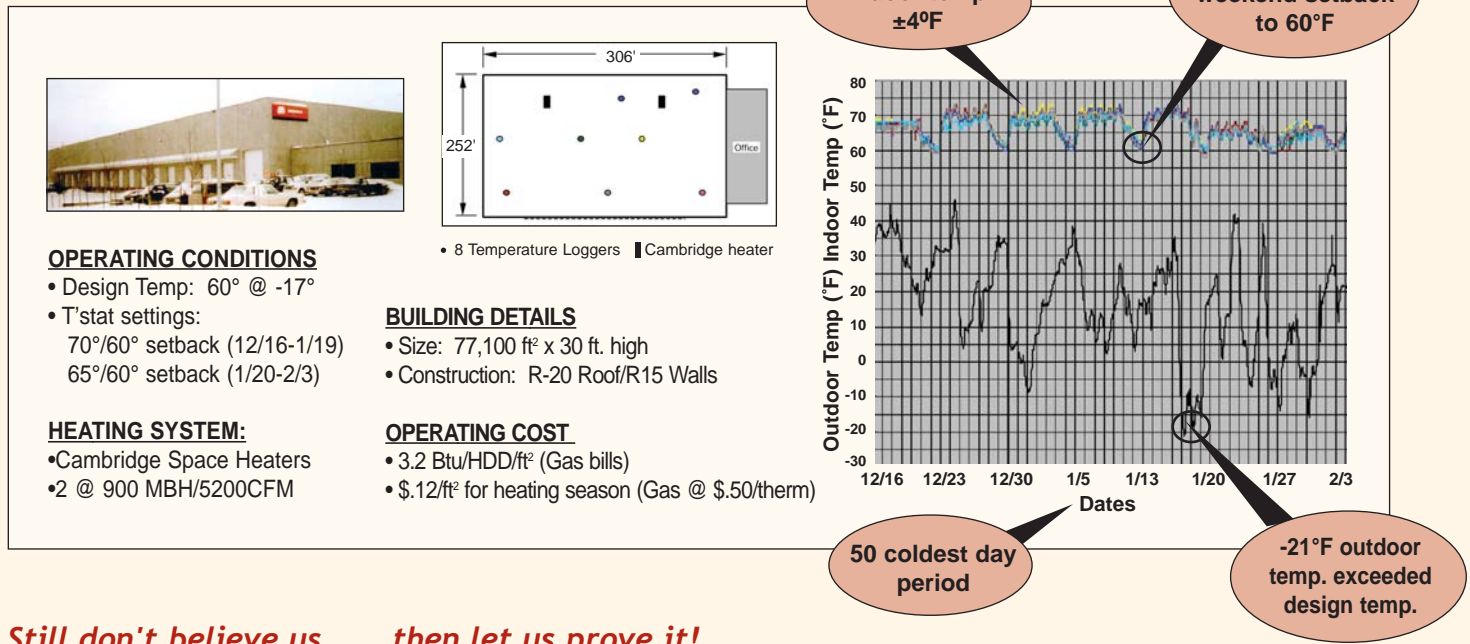
In each study, we measured, tracked and documented heating/ventilating system performance under actual cold weather conditions for an extended period of time. This program includes onsite studies for both Cambridge technology and other industrial space heating systems.

...utility bills show up to **70% savings** with Cambridge space heaters versus other types of heaters.

Temperature loggers document balanced temperatures throughout buildings heated by Cambridge with no high ceiling temperatures from air

stratification or cold dock door areas. Best of all, utility bills show up to 70% savings with Cambridge space heaters versus other types of heaters.

A Sample Cambridge Heating System Study is shown below.



Still don't believe us.....then let us prove it!

Comparison Studies (like the one on page 2) are available for other types of heating systems. Cambridge will also conduct new onsite studies at no cost for qualified facilities.



Jack Kramer, President

From the President

High Gas prices... "Get used to it"

This is what an energy analyst said at a recent gathering I attended on the subject of today's high natural gas prices.

As a manufacturer of gas-fired heaters and as a private investor in gas exploration (hopefully

more new wells), I read and listen to everything I can get my hands on regarding the future of natural gas. The general consensus is that expensive gas is here to stay. Fortunately, the big spikes (highs and lows) have settled down a bit and most wellhead prices have remained steady. Even so, today's costs are about 10% above last year's high prices and more than double what they were a just a few years ago.

Natural gas prices will probably only get worse in the foreseeable future. This is due to rising productivity in

the manufacturing sector and increased usage of gas for generating electricity. Another factor is a relatively small increase of new wells as exploration only slightly exceeds the number of depleted wells. However there is some good news and help is on the way. Consistent high prices at the wellhead will encourage more drilling. Added to this, consistent high prices have made LNG (Liquefied Natural Gas) a viable alternative to local wells. Though these are longer-range solutions, there is reason to believe that today's high costs may increase in the short run, but eventually will stabilize.

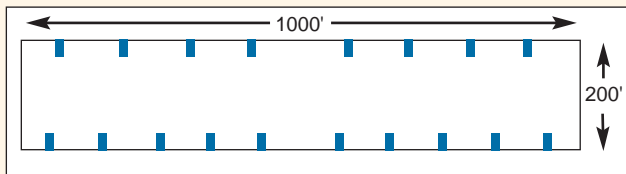
But "get used to it"? That's like getting used to a headache. Let Cambridge relieve some of the pain. An energy efficient Cambridge heating system can dramatically reduce gas consumption and we can prove it. If you're worried about accountability of the capital expense to install new energy efficient equipment, talk to us. We have solutions that will help you "do something about it".

Comparison Study - Cambridge Space Heaters vs. Unit Heaters



TWO IDENTICAL SIDE-BY-SIDE BUILDINGS
Each with 200,000 sq. ft. and 32 loading dock doors

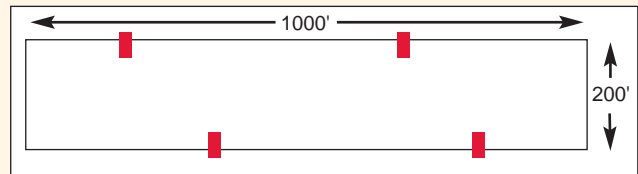
Building #1



Unit Heater System

- (18) indirect gas-fired unit heaters
- 5400 MBH total
- No ventilation with outside air
- ± 14°F indoor air temperature variation

Building #2



Cambridge System

- (4) direct gas fired S-Series Heaters
- 4,800 MBH total
- 27,800 CFM
- ±6°F indoor air temperature variation

Results: The unit heater system used 68% more gas.

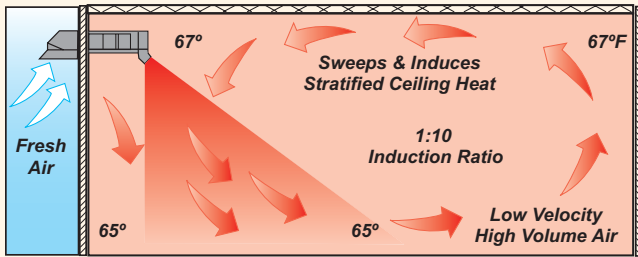
If building #1 had installed a high efficiency Cambridge system they could have saved



Gas Cost	Annual Savings
\$.50 / therm	\$ 16,000
.75 / therm	24,000
1.00 / therm	32,000

Cambridge Space Heaters versus Unit Heaters

It's hard to compare a Cambridge S-Series Space Heater to other types of heaters. The technology is so unique that there is really "Nothing Else Like It" for heating commercial and industrial buildings.



High efficiency Cambridge Space Heater

Most contractors, engineers, facility managers and building owners are familiar with gas-fired unit heaters so we are often asked the following questions.

How do you compare to unit heaters?"

ANSWER: *HOW BIG IS YOUR BUILDING?* Cambridge S-Series Heaters offer lower total cost, improved indoor air quality and more balanced temperatures throughout the building for space heating applications that require multiple unit heaters installed around the perimeter of a building. In other words, if your space heating application is over 10,000 sq. ft. or requires more than four unit heaters, you should give us a call.

Is Cambridge space heating technology more energy efficient?

ANSWER: *YES* Indirect gas-fired unit heaters typically are only 60% to 75% seasonally efficient. Higher fuel bills result from the energy loss that escapes up the flue and from wasted heat that rises to the ceiling. Cambridge direct gas-fired space heaters, with no flue or heat exchanger, deliver 100% of BTUs to the heated space. They can reduce energy costs by 30% to 50%. That translates into significant annual cost savings as shown in the comparative building study on page 2.

What about installation costs?

ANSWER: *YOU WOULD BE SURPRISED* One powerful Cambridge Space heater often replaces 4 to 10 unit heaters. This will dramatically reduce installation costs.

Are buildings with high ceilings a problem?

ANSWER: *NO* Unit heaters with propeller fans have a very low velocity air throw and must be mounted near the floor to be effective. One rule-of-thumb is that unit heaters can lose 2% efficiency for every foot of mounting height over 15 feet. However, the high velocity discharge air of Cambridge blow-thru space heaters make them an

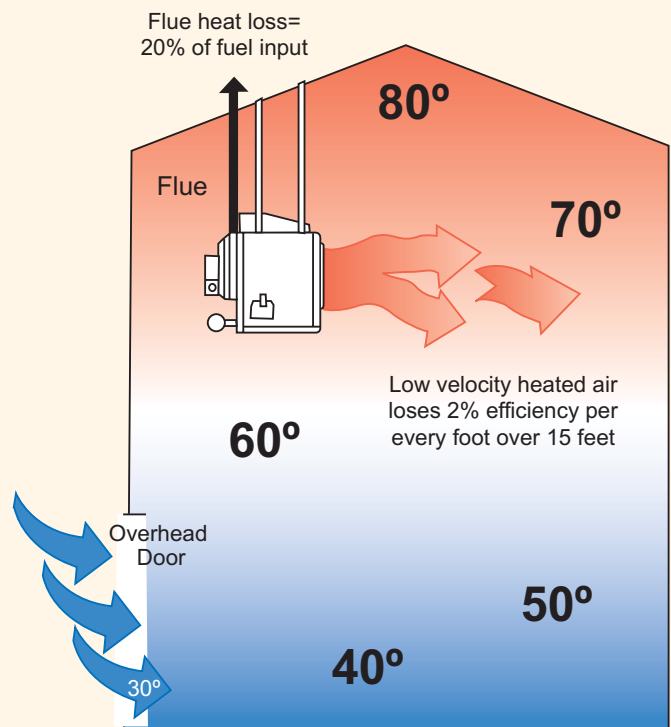
ideal choice for high bay manufacturing and warehouse facilities where heaters are mounted 25 to 50 feet above the floor.

Can Cambridge heaters solve my negative building air and indoor air quality problems?

ANSWER: *YES* Most unit heaters provide no building ventilation with fresh outside air. They just re-heat and re-circulate contaminated indoor air. When an exhaust system is used, the building is starved for make-up air (MUA). This creates a constant path of cold air drafts when dock doors open or renders the exhaust system ineffective when the building is closed up tight. Indoor air quality (IAQ) problems can then occur in negative pressure buildings and flue gas can back draft into the facility. Replacing the unit heaters with Cambridge non-recirculating, direct gas-fired space heaters can help solve all these problems and even reduce operating costs.

Are there other advantages of using Cambridge Space Heaters?

ANSWER: *YES* Low hanging unit heaters mounted around the perimeter of a building for circular airflow often do not focus heat where it is most needed at cold dock doors. They also "get in the way", are easily hit by forklift trucks and can consume valuable vertical racking space. Fewer, but more powerful, Cambridge Space Heaters can be installed just about anywhere in the building to solve all these problems.



Unit heater problems

That Heater is "Just Like Cambridge"

We hear this comment a lot from competitors, engineers, contractors and building owners who think another brand of space heating equipment is "just like" Cambridge. Don't be misled. Other heaters may be described in similar terms or even look similar but the patented technology inside a Cambridge S-Series Heater is quite different. No other space heater can match the low operating costs and overall performance of a Cambridge high efficiency, blow-thru space heater for large commercial and industrial building applications.

Here are a few fictitious "Just Like Cambridge" comments you might hear that are a dead giveaway something's not right.

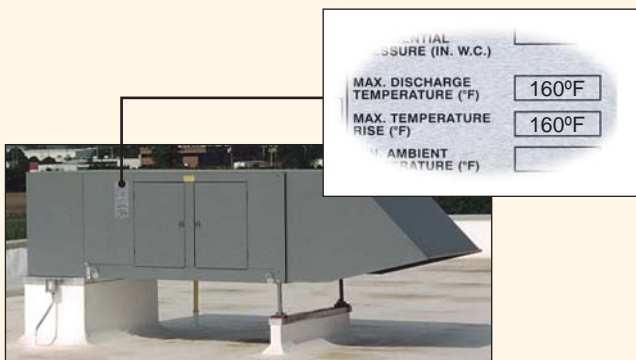
1. Fiction: That other heater has been tested and certified (by CSA, ETL or UL) to ANSI Standard Z83.4 and the nameplate shows a 160°F max temperature rise, so it is "just like Cambridge"

Fact: Many manufacturers are certified to the new ANSI Standard Z83.4, but only Cambridge Space Heaters have been tested and certified to the maximum 160°F rating that covers both temperature rise and discharge temperature.

The Cambridge heater can take 0°F inlet air and heat it through a 160°F temperature rise to achieve a max discharge temperature of 160°F. Beware; some manufacturers are now artificially raising their ratings by "pulling a fast one". The max discharge temperature rating for their heater is still only 120°F, but now their specs, quotes and nameplates say 160°F max temperature rise is available, but they don't tell you it is based on - 40 °F inlet air. In other words if it ever gets any warmer than - 40 °F, forget it. They can't match the Cambridge performance because their draw-thru heater design is only certified for 120°F max discharge temperature.

The heater's max temperature capability is crucial for space heating applications. Higher temperature ratings translate into a better Btu/CFM ratio, smaller units, lower horsepower motors, the need to heat less outside air and lower operating costs.

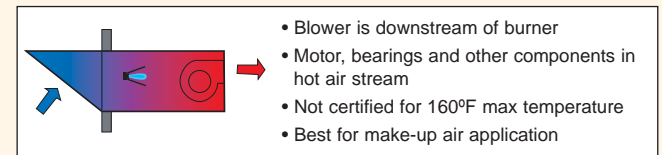
Only Cambridge can have the heater nameplate show 160°F for both discharge temperature and temperature rise as shown below:



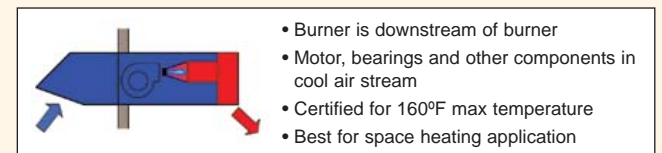
2. Fiction: I can match the Cambridge S-Series MBH (Burner Input) and CFM (Blower) capacities that are specified for your job with my "draw-thru" heater system and the building owner won't know the difference.

Fact: No way that can happen! The Cambridge S-Series Heater uses "blow-thru" space heating technology where our patented burner is downstream of the blower. That means the S-Series Heater, with its 160°F max discharge temperature capability, provides more rated heat output (Btu/CFM) than any draw-thru design. A draw-thru design can never match both the Blower CFM and Burner MBH ratings of a Cambridge blow-thru space heater. For example, in order to match Cambridge MBH capacities, low temp, draw-thru heaters will always require a larger CFM rating that will reduce the rated heat output (Btu/CFM). That means bigger units, larger horsepower motors and higher energy costs to heat all that additional air.

Draw-Thru Heater



Cambridge Blow-Thru Heater



3. Fiction: All direct gas-fired air heaters are about the same when it comes to energy efficiency and operating costs because there are no heat exchanger efficiencies to compare or worry about.

Fact: Actually there are three distinct types of direct gas-fired air heating technologies used for space heating and tempered make-up air applications. Cambridge has manufactured all three types. After over 40 years of R&D work, practical experience and hundreds of building studies we can prove that our S-Series blow-thru space heater design is the most energy efficient and cost effective way to heat large commercial and industrial buildings.

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- Update your mailing address
- Remove your name from HOTLINE mailing list