AIR HEAT

Indirect-Fired Air Heat

Problem: Direct-Fired Air Heat

Safety:

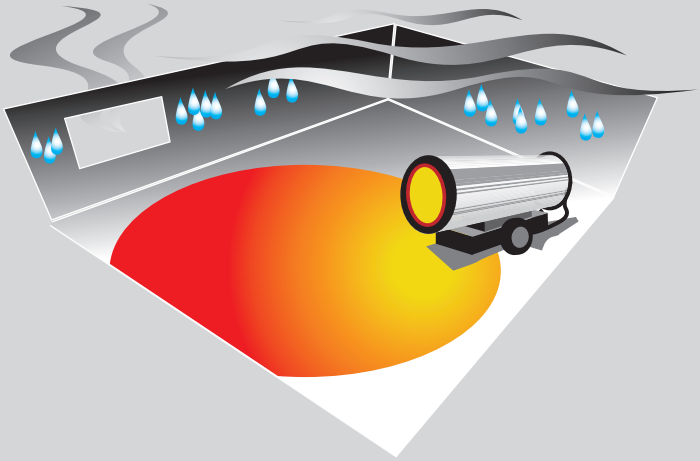
- Combustion by-products = Poor air quality
- Many fuel lines = Fire hazard

High Cost:

- Venting workspace = Higher fuel usage
- Added Moisture = Mold and bacteria growth
- Open flame = High insurance premiums

Poor Project Quality:

- Uneven heat distribution = Construction delays
- 100,000 BTUs of fuel burned = 1 gallon H_20
- Combustion by-products = Potential damage to materials



Best Solution: Indirect-Fired Air Heat

With indirect-fired air heat, combustion by-products and flame never enter the workspace.

By placing the unit outside of the structure, warm, dry air can be routed safely to the inside via ducting or portable heat exchangers, thereby eliminating the need for additional ventilation.

Maintain even temperatures and minimize fuel consumption. Our unique Recircul-Air™ design re-uses warm, inside air, pressurizes, and provides even temperatures while saving up to 50 percent in fuel costs!

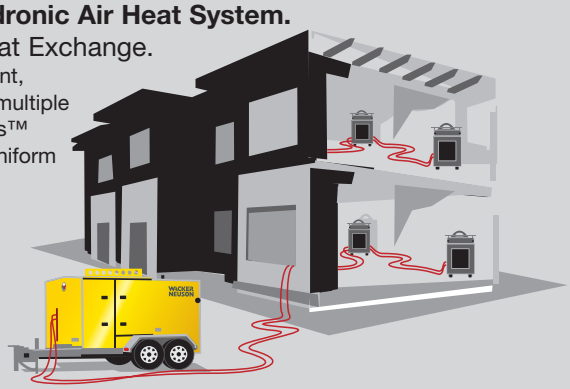
Dry, hot air removes excess moisture and helps keep projects on track while preventing a mold growth environment. The absence of an open flame helps reduce the risk of fire, and helps lower insurance costs.

Indirect-Fired Air Heat System.
Air-to-Air Heat Exchange.

Unique adjustable Recircul-Air™ panel provides pressurization, while the unit maintains even temperatures and reduces fuel costs.

Pureheat™ Hydronic Air Heat System.
Liquid-to-Air Heat Exchange.

Optimal air movement, pressurization, and multiple heat Heat Xchangers™ provide clean, dry uniform heat throughout.



WACKER NEUSON

AIR HEAT

Multiple Applications:



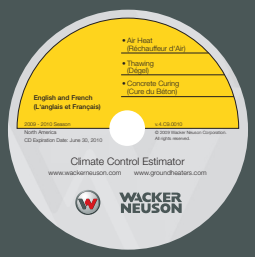


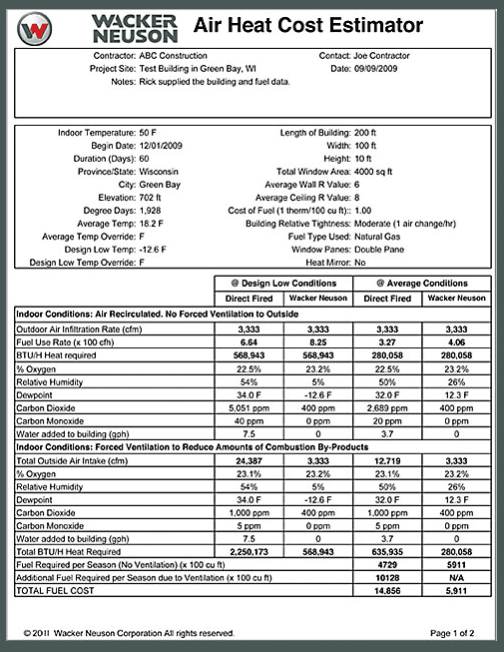
Indirect-fired air heat creates an ideal environment that allows contractors to work year round and extend the work season, even in harsh and cold weather. Whether it's residential or commercial building construction, pipeline or oil field maintenance, special events, mining, or utility, indirect-fired air heat provides a consistent and safer heat source.

Cost Estimator

Wacker Neuson Climate Control knows it's all about the bottom line. So we developed our electronic heat cost estimators for ground thawing, concrete curing, and air heat to help you bid jobs more accurately!

Please visit www.groundheaters.com to locate your local Wacker Neuson Climate Control dealer to see the value of using our equipment and try different scenarios to fully explore your cost options.





WACKER NEUSON **Air Heat Cost Estimator**

Contractor: ABC Construction
Project Site: Test Building in Green Bay, WI
Notes: Rick supplied the building and fuel data.
Contact: Joe Contractor
Date: 09/09/2009

Indoor Temperature: 50 F		Length of Building: 200 ft		
Begin Date: 12/01/2009		Width: 100 ft		
Duration (Days): 60		Height: 10 ft		
Province/State: Wisconsin		Total Window Area: 4000 sq ft		
City: Green Bay		Average Wall R Value: 6		
Elevation: 702 ft		Average Ceiling R Value: 8		
Degree Days: 1,928		Cost of Fuel (1 therm/100 cu ft): 1.00		
Average Temp: 18.2 F		Building Relative Tightness: Moderate (1 air change/hr)		
Average Temp Override: F		Fuel Type Used: Natural Gas		
Design Low Temp: -12.6 F		Window Panes: Double Pane		
Design Low Temp Override: F		Heat Mirror: No		

	@ Design Low Conditions		@ Average Conditions	
	Direct Fired	Wacker Neuson	Direct Fired	Wacker Neuson
Indoor Conditions: Air Recirculated. No Forced Ventilation to Outside				
Outdoor Air Infiltration Rate (cfm)	3,333	3,333	3,333	3,333
Fuel Use Rate (x 100 cfh)	6.64	8.25	3.27	4.06
BTU/H Heat required	568,943	568,943	280,058	280,058
% Oxygen	22.5%	23.2%	22.5%	23.2%
Relative Humidity	54%	5%	50%	26%
Dewpoint	34.0 F	-12.6 F	32.0 F	12.3 F
Carbon Dioxide	5,051 ppm	400 ppm	2,689 ppm	400 ppm
Carbon Monoxide	40 ppm	0 ppm	20 ppm	0 ppm
Water added to building (gph)	7.5	0	3.7	0
Indoor Conditions: Forced Ventilation to Reduce Amounts of Combustion By-Products				
Total Outside Air Intake (cfm)	24,387	3,333	12,719	3,333
% Oxygen	23.1%	23.2%	23.1%	23.2%
Relative Humidity	54%	5%	50%	26%
Dewpoint	34.0 F	-12.6 F	32.0 F	12.3 F
Carbon Dioxide	1,000 ppm	400 ppm	1,000 ppm	400 ppm
Carbon Monoxide	5 ppm	0 ppm	5 ppm	0 ppm
Water added to building (gph)	7.5	0	3.7	0
Total BTU/H Heat Required	2,250,173	568,943	635,935	280,058
Fuel Required per Season (No Ventilation) (x 100 cu ft)			4729	5911
Additonal Fuel Required per Season due to Ventilation (x 100 cu ft)			10128	N/A
TOTAL FUEL COST			14,856	5,911

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