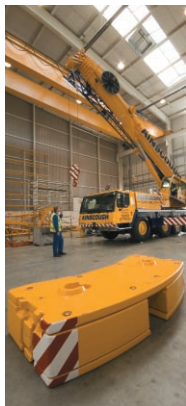


# ARC Series

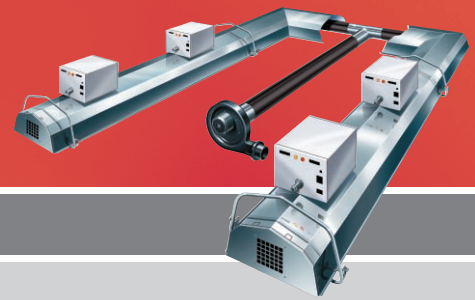
CONTINUOUS RADIANT TUBE HEATING SYSTEMS



 **AMBI RAD**  
ENERGY EFFICIENT HEATING SYSTEMS

# ARC Series

## CONTINUOUS RADIANT TUBE HEATING SYSTEMS



### Introduction

The ARC Series is a gas fired continuous radiant tube heating system, designed specifically for the building it is required to heat. The following criteria form the basis of each particular system design:

- Heat loss of the building for the required thermal environment
- Local climate conditions
- Type of activity in the building
- Specific architectural features relating to the structure
- Good visual appearance

AmbiRad always strives to become part of the 'design team', working in close conjunction with the engineer or end user to determine the specific design parameters for the ARC scheme layout. This contact between the company's engineers and the system designer or client will give the most effective ARC system.

The result is a completely tailored heating system for the building.

### Features & Benefits

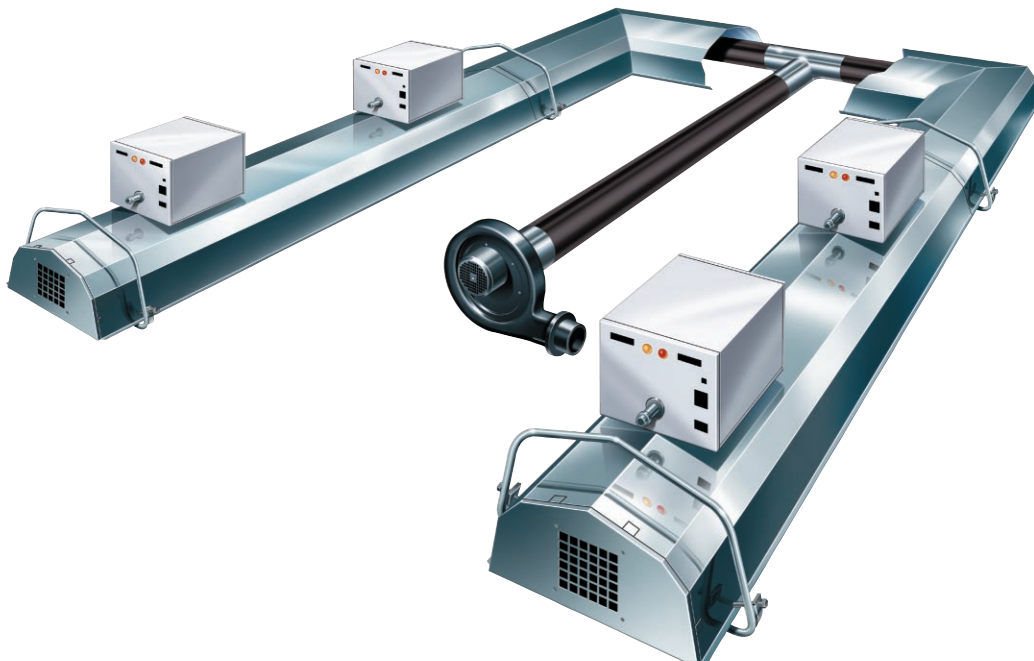
- In-line fuel efficient burners (inputs between 41,000 - 157,000 Btu/h)
- Common vacuum fan operation
- Stoichiometric or 'perfect' combustion
- 92% combustion efficiency
- New modulation option available
- Rapid heat-up times
- Low running costs. Savings of up to 60% of fuel costs can be achieved
- Good aesthetic integration with building
- Minimal vent penetrations – single vent system. Up to 800,000 Btu/h per single discharge
- Capable of running five burners in one radiant branch
- Widest range of burner inputs for any continuous system
- Uniform distribution of heat
- Reliability and safety of operation to the latest CSA standards

### Model Range

The ARC Series continuous radiant tube heating system includes six natural gas or propane burner models from 41,000 to 157,000 Btu/h, for maximum radiant tube lengths from 24 to 88 feet. Maximum tube temperatures range from 840°F to 900°F.

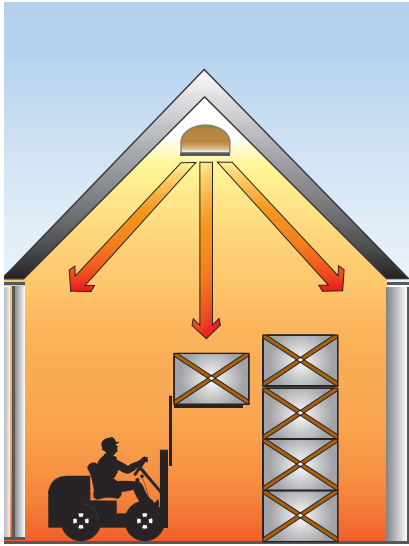
### Reduced Operating Cost

With today's ever-increasing world-market competition, corporations must continually find ways to reduce operating costs, especially where gas prices have risen dramatically. AmbiRad's high-efficiency, gas-fired continuous radiant tube heaters can do just that. With the increased comfort, along with a reduction in operating costs of up to 60% over conventional systems, AmbiRad will help keep your operating costs down.



## Radiant Heating

Radiant heat warms all solid objects and surfaces in its path through electromagnetic waves. Mounted overhead, AmbiRad radiant heaters produce infrared heat that is directed downwards to low level by a reflector. Infrared energy passes through the air dissipating as heat upon contact with people and surfaces thus creating a comfortable, all-round radiant warmth at lower air temperatures. This reduces wasteful heating of empty space and makes substantial energy savings over conventional boiler and air systems.



## Comfortable Warmth

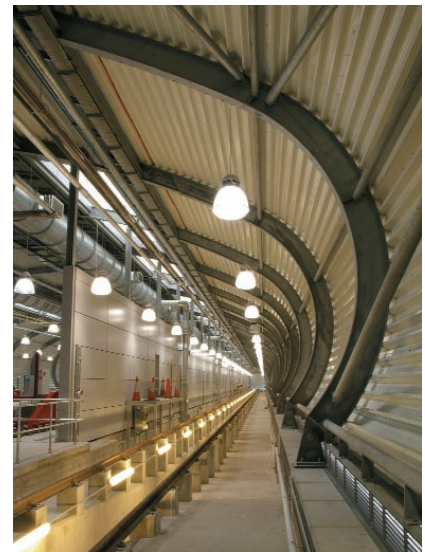
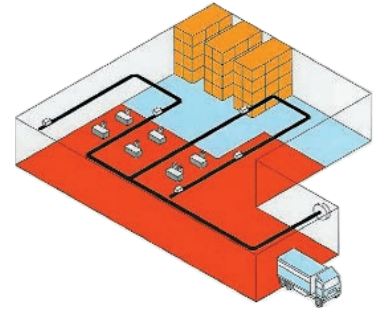
The ARC system exploits the concept of radiant heat. As radiant heat can be targeted effectively, energy savings can be achieved by heating only those areas which are occupied.

The ARC system has a rapid response to operating temperature and burns fuel at the point of use. This has significant advantages compared with large heating plant which suffers from distribution losses and slow response times.



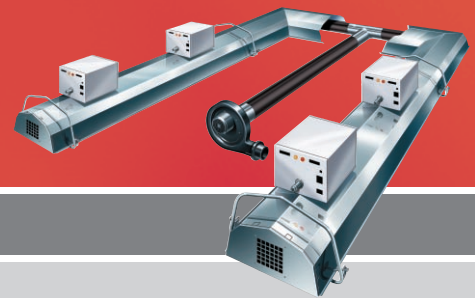
## ARC Series Applications

- Airplane hangars
- Garages and showrooms
- Greenhouses
- Museums
- New low energy factories
- Railway sheds
- Sports halls
- Superstore retail outlets
- Vehicle distribution centres
- Warehouses



# ARC Series

CONTINUOUS RADIANT TUBE HEATING SYSTEMS



## Specification

### Burning Control Housing

Consists of chassis with detachable pivoting lid.

### Burner Head Assembly

A lightweight aluminum construction with a ceramic burner head insert. The aerodynamic shape reduces pressure drop across the burner head and promotes a greater volume flame at the bottom of the tube where maximum heat release is desirable.

### End Vent Module

At the start of each radiant branch an end vent module is connected to the rear of the first combustion chamber.

### Vacuum Fans

A range of fans is available for different system ratings.

### System Tube

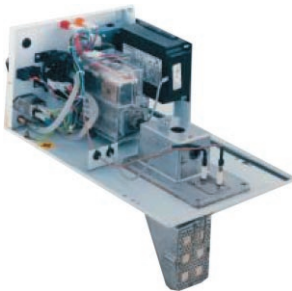
The tube is black mild steel, aluminized steel or schedule 40 pipe engineered according to specification. The tube fittings are connected together using specially designed stainless steel wrap-around couplings.

### Reflectors

The radiant tube sections of the system are fitted with reflectors made of stainless steel, aluminum or alumasteel to direct infrared rays downwards. The reflectors are a unique design profile to maximize the reflected radiant heat, minimize convective loss and maximize rigidity.

### Control Panel

A range of control panels specifically designed for ARC continuous radiant heating systems is available.



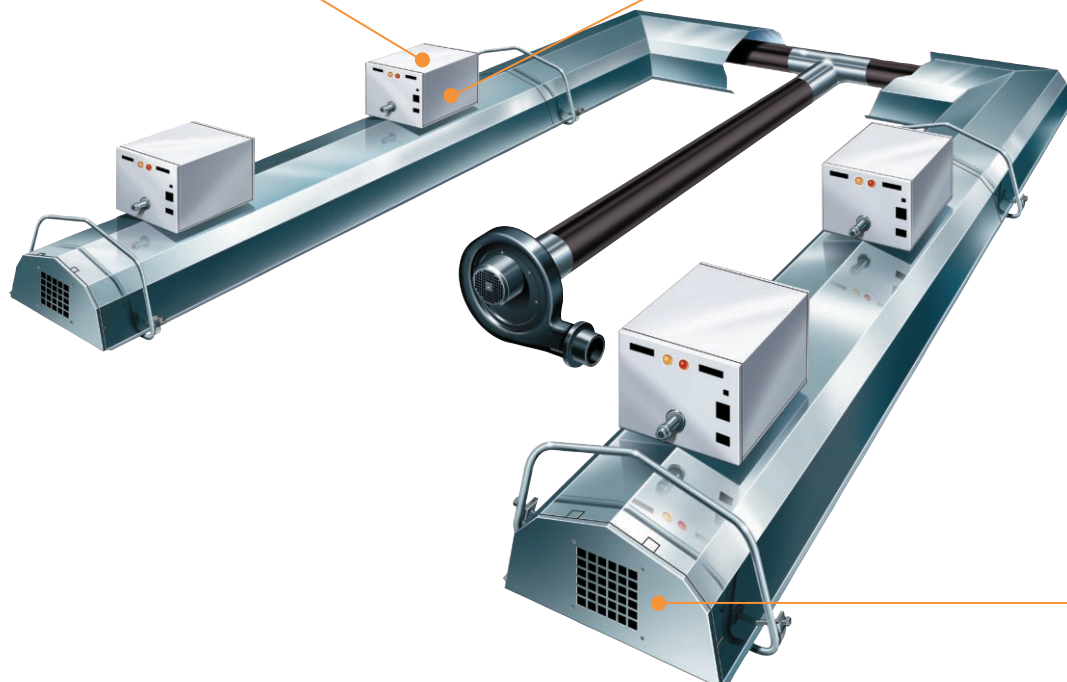
Burning control housing



Burner head assembly



End vent module



## System Operation

The system operates on a vacuum principle and utilizes a zero governor within a dedicated gas valve ensuring optimum efficiency, reliability and safety.

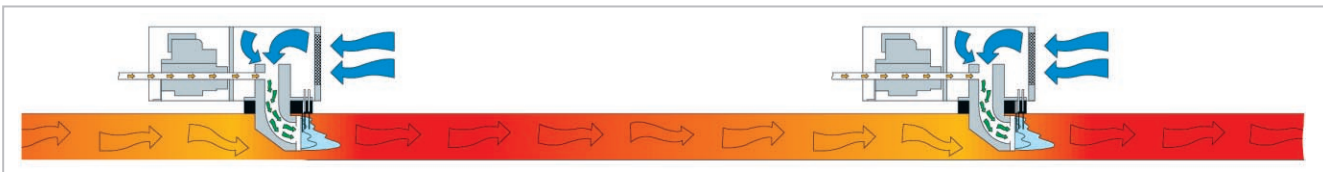
The zero governor will only allow flow of gas when a vacuum is created by the fan. Therefore apart from the standard failsafe (where the gas valve locks out with ignition or gas supply failure), the zero governor

also mechanically prevents gas flow in the event of vacuum shut down. The control of gas flow through the zero governor and the air flow into the mixing chamber, while under the influence of the vacuum fan, also enables stoichiometric combustion at the burner head.

Stoichiometric combustion permits the inclusion of further burners within the

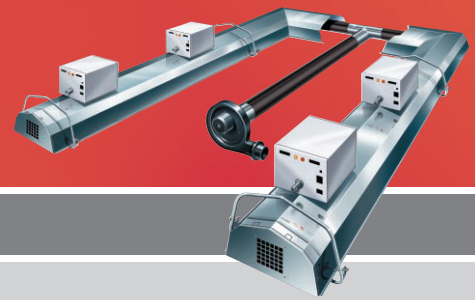
same tubing 'downstream' from the first burner, ensuring evenly distributed heat along the length of radiant tube.

A switch at the vacuum pump ensures that in the event of low vacuum, the system shuts down to give complete 'safety of operation'.



# ARC Series

CONTINUOUS RADIANT TUBE HEATING SYSTEMS



## Fully Modulating ARC System

### System Operation

The standard ARC radiant heating system operates with on/off control. As an option it is now possible to control the ARC system using modulation. Any heating system utilizing on/off control only uses the maximum capacity of the heating system to heat the building at all times, even when only a small proportion of the system capacity is required to maintain temperature. This can result in building temperature 'overshoot', lower comfort conditions and higher fuel usage with frequent burner cycling. Utilising modulation control with burner outputs varying between 60% - 100% of the maximum burner rating will reduce heater cycling, maintain tight temperature control and give improved comfort and lower heating bills.

### Features and Benefits

- Fully modulating radiant heating system
- Complete air fuel ratio control
- Maximizes thermal efficiency
- Maintains radiant efficiency
- Maximizes comfort
- Delivers significant energy savings
- Rapid heat-up times

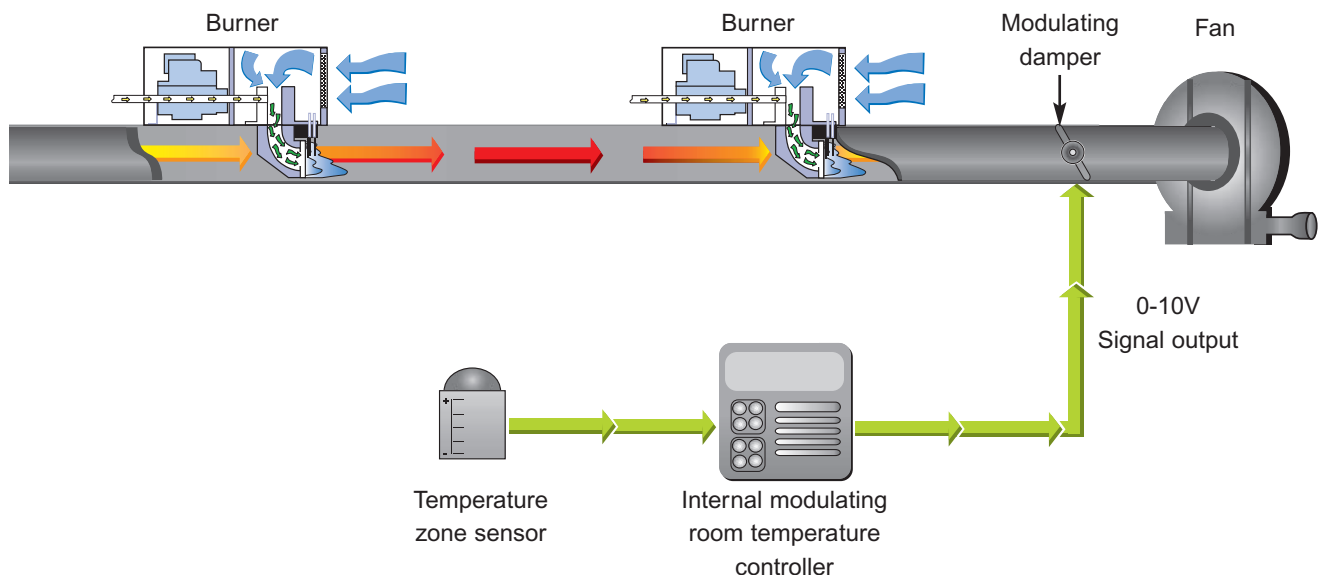
### Specification

The AmbiRad ARC system continuously modulates between 60% - 100% of the rated input depending on the air temperature inside the building. At an internal building temperature of 8°F or more below the design temperature, the system will operate at full capacity. With building temperatures between 8°F below and the design temperature, the system will modulate continuously to achieve the design building temperature whilst minimizing fuel consumption.

The control panel contains the room temperature controller which is connected to a remote air temperature zone sensor within the building. This controller produces 0-10V output which is related to the building temperature.

The 0-10V signal operates a motorised damper at the vacuum fan inlet for each multi-burner ARC system. As the building temperature increases, the controller output voltage decreases modulating the damper which reduces the vacuum in the system, thereby reducing the burner output.

As gas flow in each burner is controlled by a governor to give zero gas pressure, the gas/air ratio at each burner is maintained to give a constant mixture under all conditions. This will ensure that the building design temperature is reached and maintained with little fluctuation in temperature and minimum fuel consumption.



## Customer Service and Design

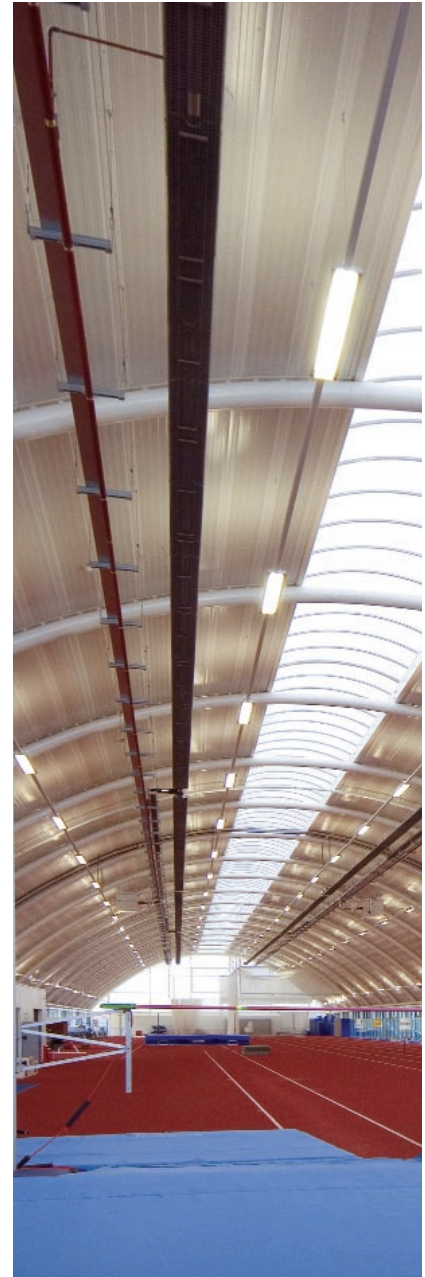
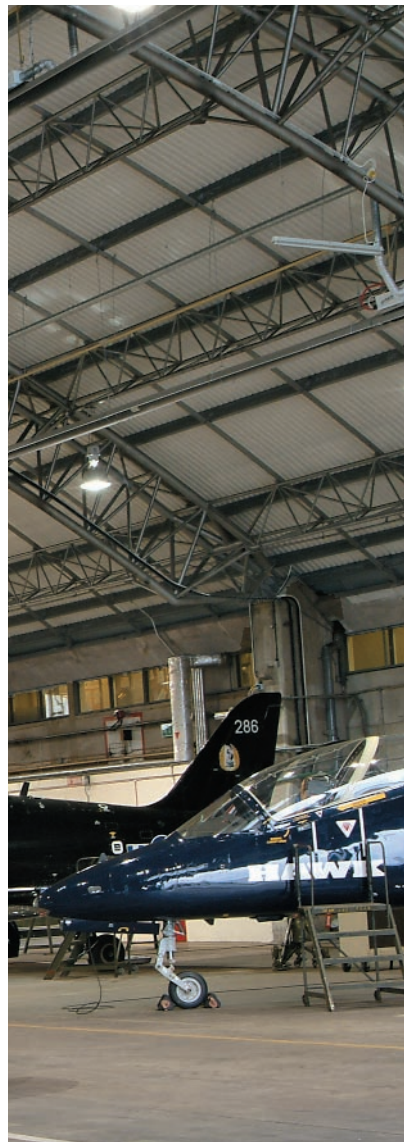
For your support, the ARC system is backed by AmbiRad's in-house engineering and technical staff, along with our distributors located throughout the United States.

This comprehensive customer service package includes Computer-Aided Design (CAD), building heat loss/fuel cost calculations, on-site support, training and system commissioning.



## Quality Process

The ARC system, as with all AmbiRad products, is manufactured under the strict quality assurance guidelines and is CSA approved to guarantee quality and reliability.



## SPECIFICATION

Burner Model		ARC12LR	ARC18LR	ARC24LR	ARC32LR	ARC38LR	ARC46LR
<b>Input rating</b>	Btu/h	41,000	61,000	82,000	109,000	130,000	157,000
<b>Gas consumption</b>							
Natural gas	ft <sup>3</sup> /h	40.5	60.8	81.1	106.4	126.4	153.0
Propane	ft <sup>3</sup> /h	16.4	24.6	32.8	43.0	51.1	61.8
<b>Inlet gas pressure</b>	wc Max	12	12	12	12	12	12
	wc Min	4.8	4.8	4.8	4.8	4.8	4.8
<b>Radiant tube length (distance between burners)</b>							
	ft Min	17	24	31	46	59	75
	ft Max	24	34	43	59	75	88
<b>Maximum tube temperature</b>	°F	840	840	840	900	900	900
<b>Electrical supply</b>	120V, 60Hz						
<b>Current rating</b>	0.1 amps. Vacuum fan load excluded						

## NOISE RATING

Burner Model		ARC12LR	ARC18LR	ARC24LR	ARC32LR	ARC38LR	ARC46LR
<b>At 10ft below burner</b>							
dB(A)		46	47	47	48	50	51
NR <sup>±2</sup>		40	41	41	42	44	45

## DISTANCE FROM COMBUSTIBLES

Burner Model		ARC12LR	ARC18LR	ARC24LR	ARC32LR	ARC38LR	ARC46LR
<b>Below tube</b>		End vent/inline					
Without undershield	in	44/50	44/50	44/50	56/67	63/83	67/83
With undershield	in	30/34	30/34	30/34	30/37	31/41	31/41
<b>Above tube</b>	in	4	4	4	4	4	4
<b>Horizontal</b>							
Standard reflector	in	24/31	24/31	24/31	28/34	28/39	28/39
Perimeter reflector	in	12/18	12/18	12/18	12/20	12/24	12/24

## MINIMUM MOUNTING HEIGHT

Burner Model		ARC12LR	ARC18LR	ARC24LR	ARC32LR	ARC38LR	ARC46LR
	ft	10	12	13	15	18	20

## SYSTEM WEIGHT

System Type	ARC12LR	ARC18LR	ARC24LR	ARC32LR	ARC38LR	ARC46LR
Burner	14.2 lb					
Radiant branch (without burner or ducted air)	5.6 lb/ft					
Radiant branch + Slimline 'M' decorative grille	7.3 lb/ft					
Radiant branch + protective guards (without burner or ducted air)	6.7 lb/ft					
Tail Pipe	Various					
Max. weight per suspension point at end vent position (less ducted air, chain and grilles)	55 lb					

Note: All supporting chains excluded from above.



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