


اخگر تابش
Akhgar Tabesh
GENERAL CATALOG

About Us



About Us

Akhgar Tabesh industrial manufacturing company was officially founded in 2011 with the support of science and experience by employing skilled workforces; by then, it could provide the best solutions to resolve any problems associated with industrial, commercial, and residential cooling & heating utilities. This company also has a continuous engagement in the country's industrial self-sufficiency, aiming to more suitable and desirable utilization of energy to realize the public policies.

By designing and producing burners of capacities 20 to 300 kW fueled by natural gas, liquefied natural gas, and diesel fuels for different applications such as industrial sheds, international exhibition centers, sports halls, manufacturing shops, restaurants, open spaces, and various types of furnaces. this company has become one of the best between designers of modern cooling and heating systems.

It's our honor to provide a reasonable ground for optimally consuming energy and promoting an energy conservation culture by presenting the best solutions for cooling and heating systems.

► After Sales Service

The company established the after-sales service department in 2011 to provide and support customers with required services after selling products; it has engaged in infrastructure activities to prepare the appropriate Environment for good after-sales services In accordance with its vision and missions to create excellent values for customers.

Currently, the company takes steps towards increasing customer satisfaction by applying the management system in the main spare parts of supply chain, emphasizing employee training and development, developing an integrated network of authorized sales representatives, and establishing required infrastructures to enhance quality and continuously improve the product-service provision.

► Warranty Terms & Conditions

Regarding the respect for Customers rights, the during-sales and after-sales services and warranty conditions of the company are presented as follows:

- 2 year performance guarantee for spare parts
- 15 years warranty for providing after-sales services and supplying required
- Training users on operation, repair, and maintenance of products

► Goals of After Sales Services

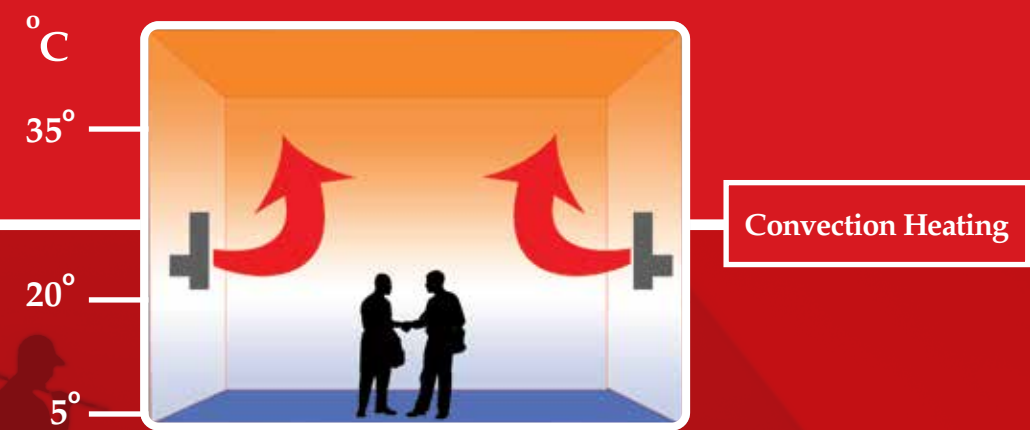
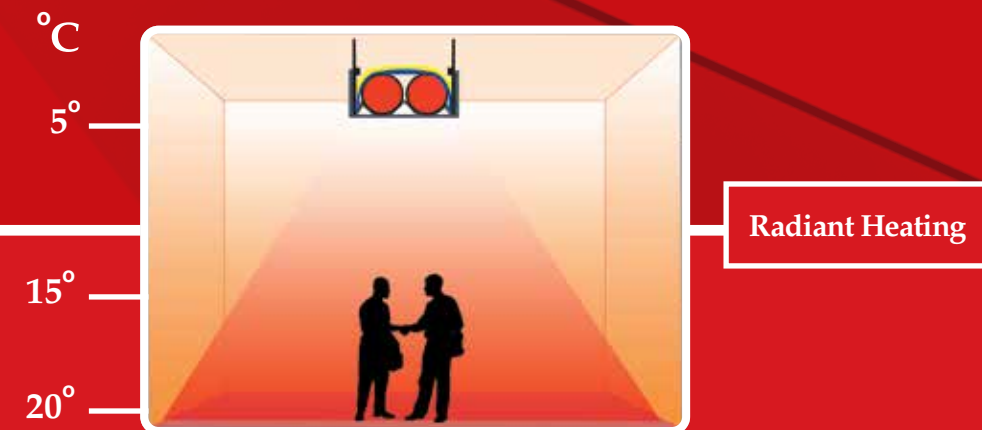
- Providing the best services for installation, repair, and spare parts supplying with the highest quality
- Customers' peace of mind and easy availability to services
- Transparency and honesty in providing services and support for products of the company for willingness of customers.
- Periodic repair and calibration services without incurring any cost during the warranty period and with the lowest cost after warranty expiration date
- Supplying and preparing Alternative components in the shortest possible time during the warranty and after-sales service period
- Holding periodic service campaigns with recalls for updating and upgrading devices
- A complete and clear understanding of customer needs and attempt to supply them.
- Good behavior with customers and observing customer orientation principles



Radiant Heating

The general pattern of radiant heating is adopted from nature and solar radiation. Unlike the convection heating pattern, in radiant heating, a significant part of heat exchange with the environment occurs through radiation with more than 50% of energy transfer. The high-altitude installation and floor heating are the most critical characteristics of radiant heating systems.

Regarding the lower density of hot air relative to cold air and the hot air accumulation under the ceiling, convection heating is not reasonable for ceilings of higher than 2.5 m, and only the radiant heating pattern can meet the uniform and desirable heating demand.



Industrial Units

Radiant heating system (**local-central**) can be installed in the manufacturing hall of factories and large industrial shops with a considerable ceiling height or places neighboring cold air. Since many workforces with long working hours are involved in these environments, it is essential to provide their comfortable temperature. In the **central radiant heating** system, the burner is located out of the hall, and the radiant strip warms the ambient air by circulating around the hall and reflecting electromagnetic waves. This system, installed at 6-24 m above the ground, does not require any gas piping and electrical wiring in the hall.

The **local radiant heating** system is produced in different sizes corresponding to the environment's heating demand and installed at the height of 3-6 m above the ground. In this system, pipelines, suction fan, and burner are placed in the site in an assembled form, and emitting electromagnetic waves warm the environment. In both systems, tubes are fixed in their place by specific supports, and a reflector made of **radiant plus of radiation coefficient 90% (more than twice the steel)** is placed above them. To increase the radiation flux, the reflectors are oriented downward, leading to greater efficiency of the device and lower energy consumption.



Sports Hall

In some sports halls, old equipment and devices are used for heating the hall interior medium. These systems include a central furnace room and auxiliary equipment, which are kept in operation on non-working days because the ambient temperature cannot reach the desired level immediately after turning on the furnaces. Keeping these systems in operation leads to further depreciation and higher energy consumption.

The radiant heating system is the most suitable type of heater for heating sports halls. In various types of radiant heating systems, the heat is emitted from the surface of tubes and transferred as electromagnetic waves, some minutes after turning on the system. The short time required by these systems for heating the hall has significant effects on reducing fuel consumption and, as a result, reducing costs.

Restaurants and Open Spaces

Nowadays, due to changes in the arrangement of restaurants and optimally using the outdoors, the heating of these environments has attracted more attention. The radiant heating system allows providing heating for spaces that are not possible to be heated so far because of heat transfer through radiation and not using air as an intermediate medium.



Repair Shop

In the winter, it has some challenges to provide heat for repair shops because of the cold air stream, heat exchange (regular opening and closing of doors), and the air pollution in the environment. Since the radiant heating system with corresponding thermal capacity directs thermal radiations towards the floor, it can be a proper alternative for workshop and air heaters.

Greenhouse

One of the influential factors on the growth of plants is the appropriate heating in greenhouses. The heat in the environment is transferred through sunlight to plants, and the radiant heating system provides the proper conditions for their growth based on the same mechanism. Applying radiant heating in greenhouses means the simulation of greenhouse conditions as the actual conditions governing nature. The type of structures employed in greenhouses and a large amount of heat loss from the ceiling cause the greenhouse heating costs to increase. Savings in fuel consumption, reduced need for electrical energy, the possibility of temperature zoning, ineffective negative internal pressure, and no heat accumulation are the most critical advantages of radiant heating systems in greenhouses.



Poultry Farm

One of the significant challenges that poultry men face is to provide heating for the poultry shed. In some sheds, brooders such as oil, electric, and gas heaters are applied to warm the environment. The use of these products has different shortcomings, of which the most important one is the heat accumulation under the ceiling.

Temperature increasing under the ceiling causes the Hall floor to be cooled, and as a result, the chicks gather around the heat source for warming up, which leads to an increased rate of suffocating and death between chicks. One of our products to resolve this problem is the radiant heating system. These systems are installed at a height, emit heat up-to-down as electromagnetic waves, and warms the environment uniformly. Thus, the uniform ambient temperature will help decrease fatalities and increase the feed conversion ratio.

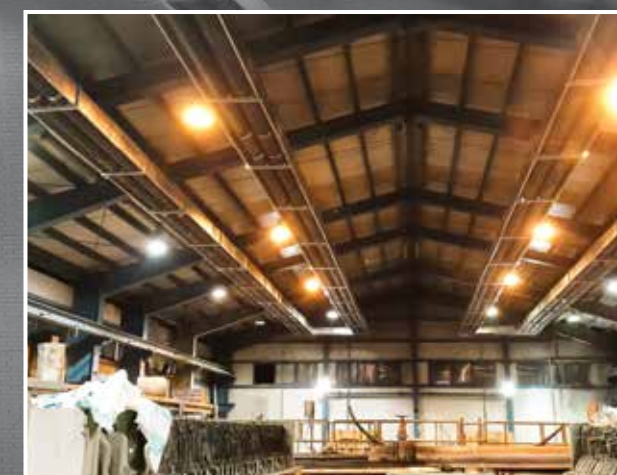
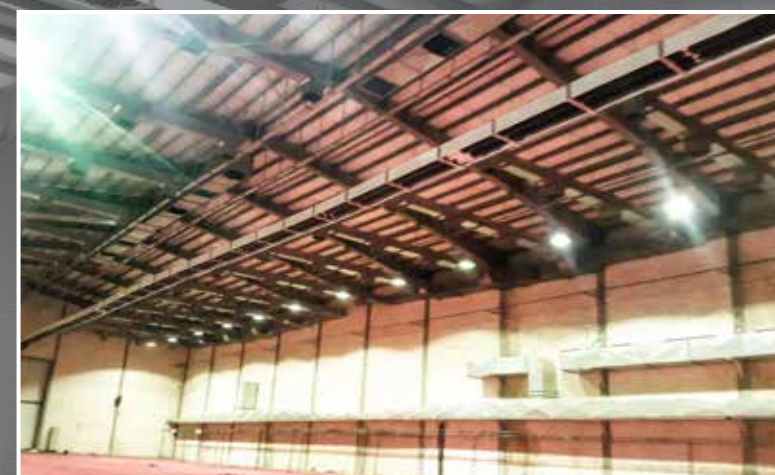


Central Unit (PARTO)

The central radiant heating system PARTO is a good choice for large industries such as factories, shops, and sports halls. Generally, this system includes ignition set (burner) and radiant strip set. In this system, the burner can be placed out of hall* and only install the radiant strip inside the hall. The radiant strip circulates around the hall and warms up the interior space by emitting electromagnetic waves.

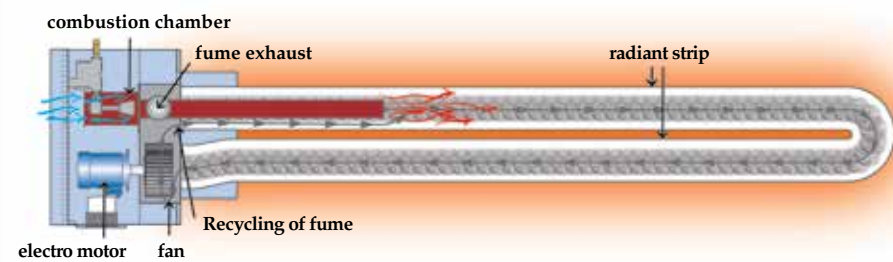
The thermal capacity of these burners is about 100 to 300 kW and because of high thermal capacity, some low capacity systems can be replaced by a parto system and results in considerable savings by decreasing the hidden costs related to piping, wiring, and electrical panel.

* If it is required, they can also be installed inside the hall and the fume can be released to the open space through an exhaust.



Central Unit (Parto)

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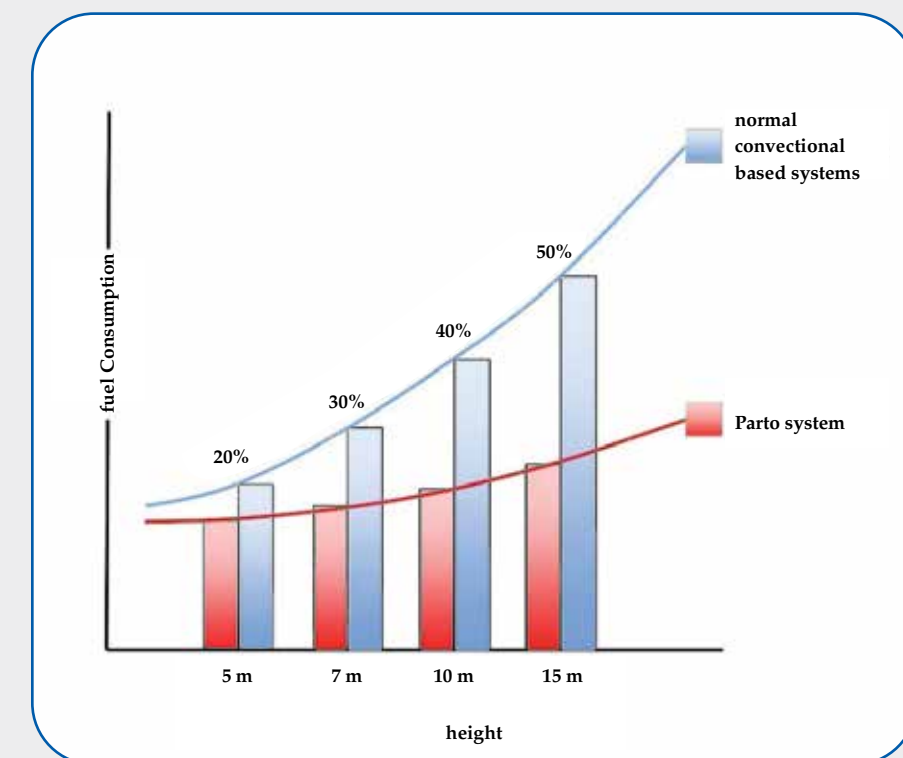
The thermal power and particular form of the combustion chamber in central units of Akhgar Tabesh Co. result in positive outcomes such as improving the suction fan performance, ensuring the waste heat recovery* by flow rates amounting to 4000 m³/h; this causes the gas (fuel) pressure reduction in the mixing process of air and gas, efficiency increment, and a decrease in the energy consumption. The uniform heat distribution resulting from the special radiant tubes (differs from those used in local units) ensures the system's increased efficiency and maximum power.

* Fume again enters the combustion chamber after recirculating within the radiant strip and decreasing in temperature. Thus, lower energy is consumed to warm up the intake air of the burner.

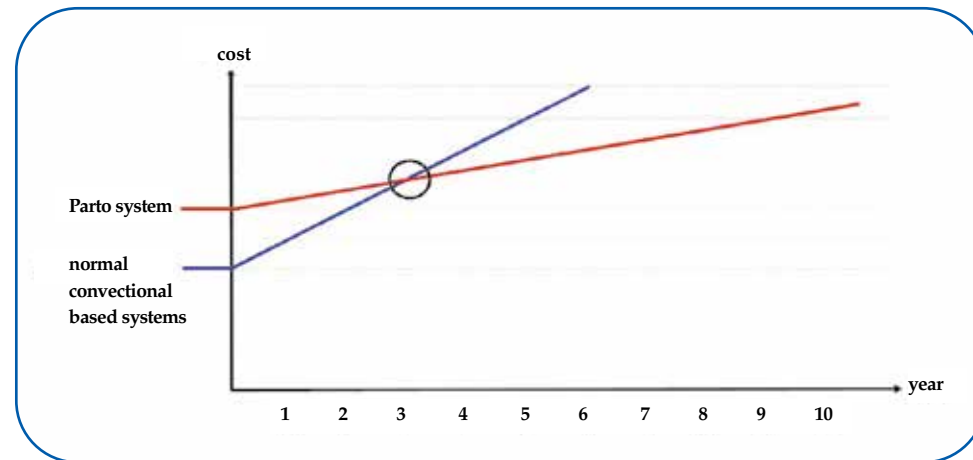
Advantage of Central Unit

Reduction of Fuel Consumption and Cost-Effective

Using the central unit of Akhgar Tabesh Co., a considerable decrease in fuel consumption is obtained compared to conventional heating systems (convection heating) and deploying radiation heating patterns. The thermal comfort in the central unit is conveniently obtained due to the lack of air circulation, which means lower energy consumption. In a general estimation, the efficiency of central units is higher than 93%. As shown in the following figure, the energy loss because of replacing conventional systems (mainly convective types) with central units is highly considerable, especially in halls and sheds with a great ceiling height (more than 5 m).

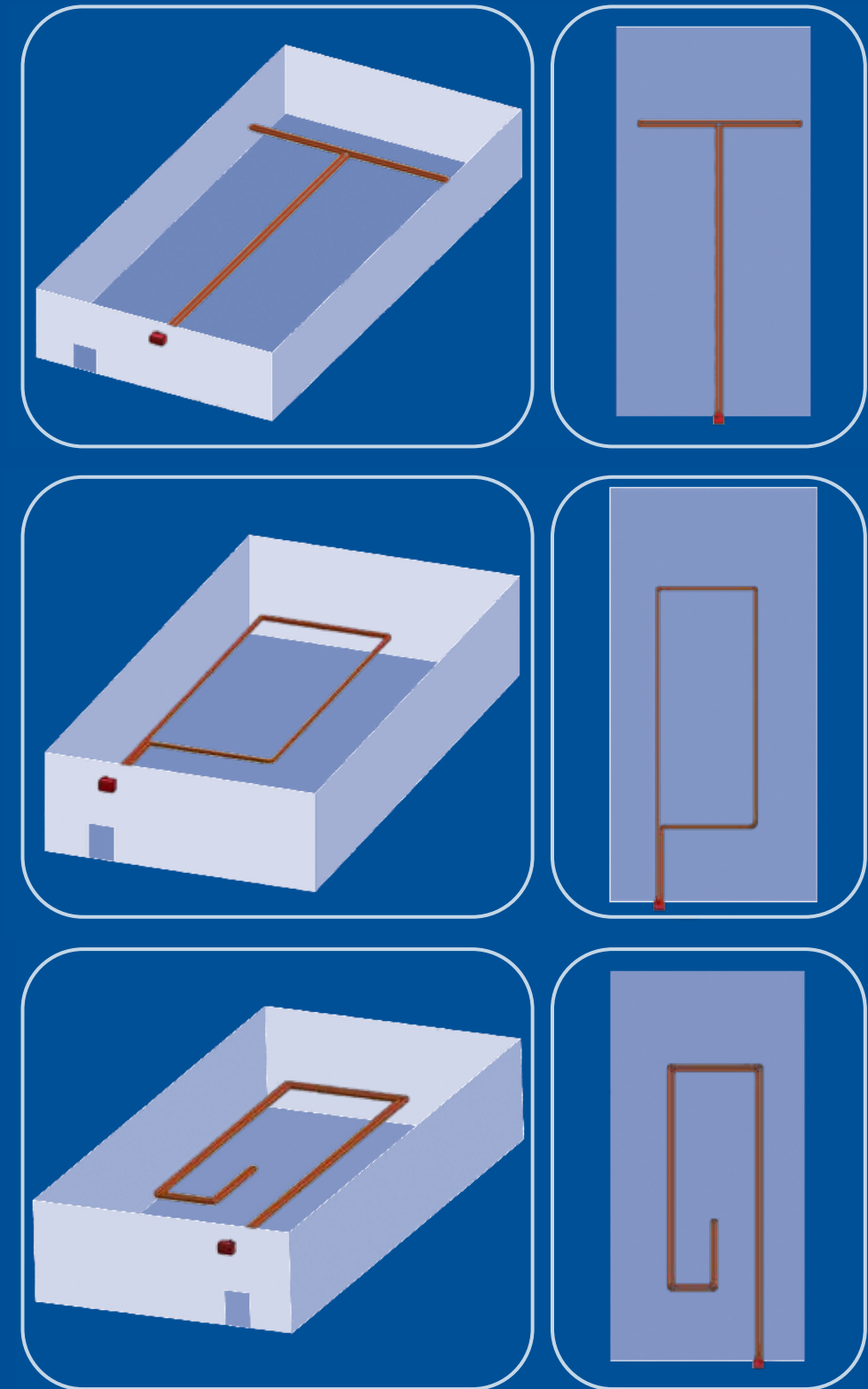


The following diagram shows the payback period for using the central unit. According to this diagram, although the initial cost of equipping the hall with a central unit is higher than that of a conventional convection heating unit, decreased energy consumption of the central unit causes its costs to be equal to the conventional types after three years. Then, the ascending cost related to the energy supply of the convection heating unit quickly goes far from the central unit with a steep slope.



Radiant strip Adaptability to Each Type of Structure

PARTO unit can be adapted to each type of structures (conventional and non-conventional) concerning its flexible radiant strip.



Three examples of proposed design for radiant strip

Easy Installation and Maintenance

Because of the considerably few electricity supply equipment and wiring, the PARTO unit will be quickly installed compared to other conventional heating products; also, its maintenance is more convenient concerning the presence of only a simple burner. Since the burner is typically installed out of the hall, it is more convenient to access it, and the maintenance and repair process make no disturbance in the daily operation of the hall.

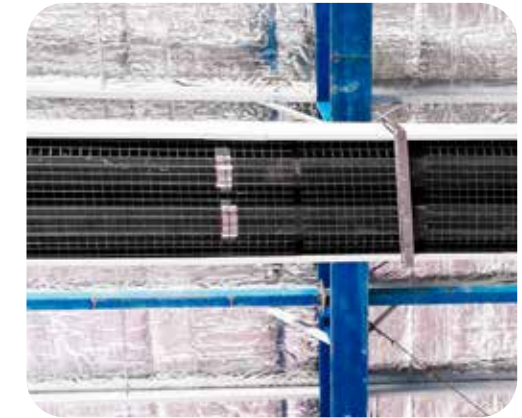


Extra Safety

The safety of units is a vital issue that industry owners and sport spaces consider. Akhgar Tabesh Co. has been conducted different investigations on this issue resulting in the design and employment of a burner so that the hot air is not stagnated in any part of the radiant strip due to the forced suction; thus, the tube temperature will always be below $.300\text{ }^{\circ}\text{C}$

Another point emphasized by using central units is the placement of burner out of the hall, which omits the probability of ball impact in the sports hall and moving machines in manufacturing halls; therefore, the possibility of performance unbalancing for the burner or caching .Firing Reduces

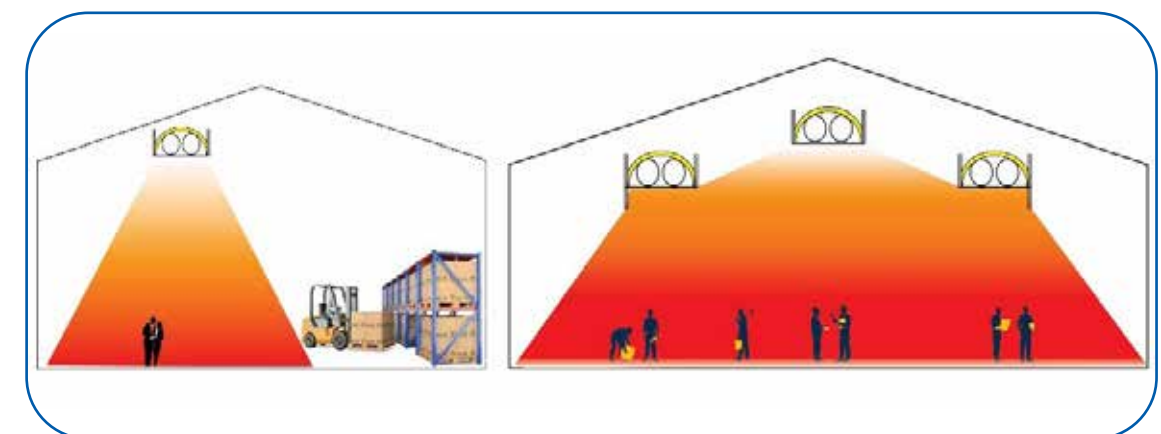
Also, the radiant strip can be confined by **special safety nets** in sports halls, eliminating the probability of ball impact with hot tubes



Heat Management and Environmental Health

The arrangement of the PARTO unit allows the heat management proportional to the consumer demand by directing the electromagnetic radiations. Thus, the energy is consumed as demanded, and the fuel loss is prevented. Eliminating the air circulation – the nature of convection heating in conventional units – in the central unit prevents the dispersion of dust and sometimes hazardous suspended particles and ensures a healthy working environment.

The below figure shows how the central unit works, emphasizing the radiant heat concentration.

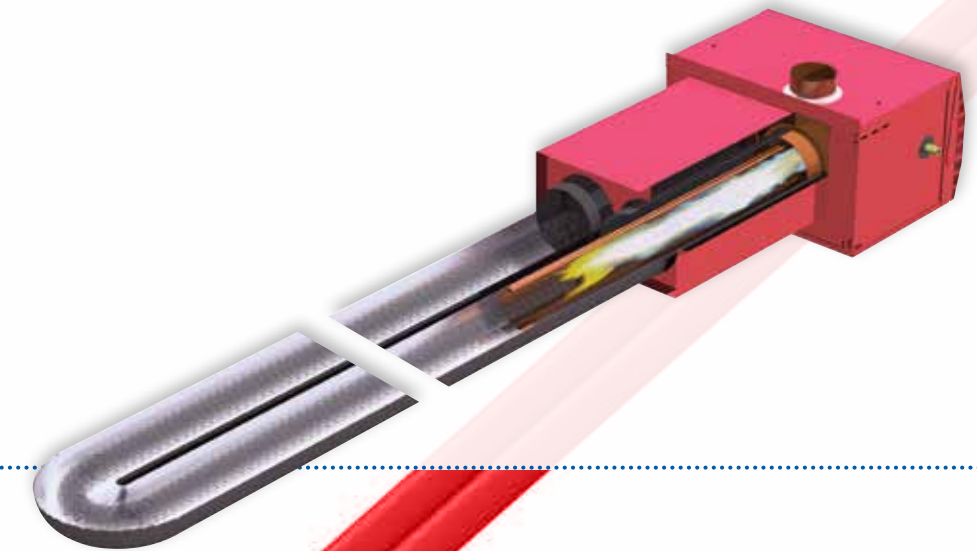


The combustion chamber set of the PARTO unit is designed to optimize the radiation performance. The placement of a forced suction burner in the long and tight chamber guarantees the best quality of the ignition process.

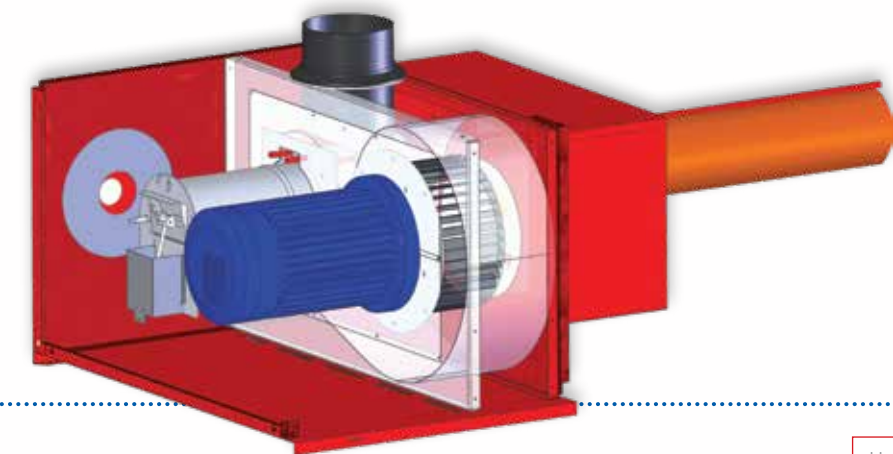
Exclusive Features of PARTO combustion chamber

- The use of forced suction burner for decreasing the gas pressure and post-combustion process
- Uninterrupted modulation of heating power to pressure and temperature ratios
- Uninterrupted modulation of recirculation of thermal fluid in radiant tubes using inverter technology
- The inverter technology provides the following benefits for the PARTO unit:
 - Decrease in volume and weight of transformer due to increased frequency
 - Excellent control over pulsation (the possibility of frequency adjustment relative to other variable parameters such as current and voltage)
 - Low sensitivity to initial (input) voltage swings
 - High and optimal coefficient of performance
 - Increased efficiency and decreased energy consumption

The efficiency of the radiant heating unit and its fuel consumption is directly related to the material and length of the combustion chamber. A long and tight combustion chamber made of stainless steel is used in the PARTO unit; this avoids the direct contact of flame with radiant tubes and ensures extended life. The following figure indicates the exclusive shape of the combustion chamber in the PARTO unit.



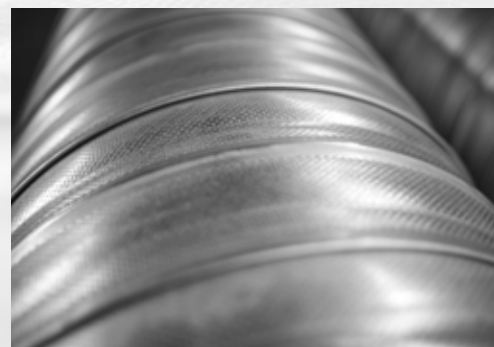
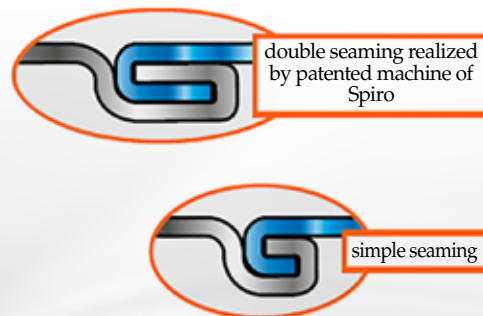
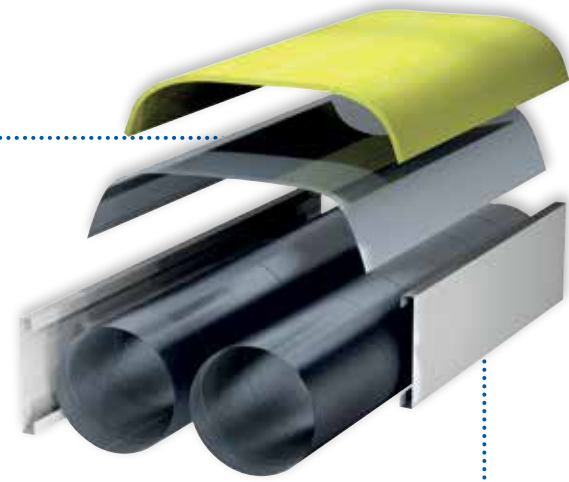
In order to maximize heat exchanges, the PARTO unit follows a specific pattern which recirculates the fume gas into the combustion chamber; so that 80% of produced gases are recirculated through the combustion chamber and burned again. Thus, the recirculation process of fume gas significantly reduces fuel consumption.



Radiant Strip

The radiant strip consists of some parts with the following features:

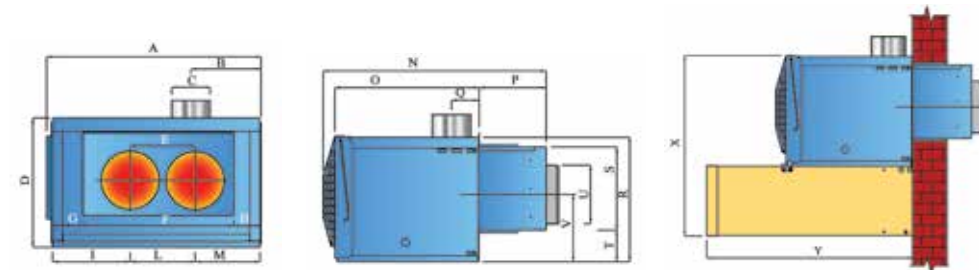
- The radiant tube's external thickness is 30 mm and the length is 6 m, it is made of aluminized or galvanized steel and external surface of tube is covered with black color which is heat resistant up-to 800 Celsius degrees. In order to maximize the radiation coefficient from the outer surface of tubes, the black color is selected due to its greatest radiation coefficient ($\alpha=1$) between color spectra.
- Double seaming is used for producing these tubes, which have greater strength relative to conventional simple seaming. This choice is necessary for ensuring the gas-tight of connections under thermal stresses.
- Expansion joints are designed in such a manner that neutralizes the elongation of tubes due to longitudinal expansion to the extent required. These joints are covered with thick refractory glass fibers and thermal adhesives.
- With the help of steel plates and reflectors placed over tubes, the downward radiation flux increases up to 20%, increasing the unit efficiency and reducing energy consumption.
- The insulating glass sheets cover up the reflectors and avoid the heat loss from the radiant bands upper area, thus reinforcing the electromagnetic wave radiation process more than ever.
- Galvanized supports are designed to retain tubes and reflectors. These supports, which are hung from the ceiling by plated steel chains, allow the user to adjust the radiant strip height above ground.



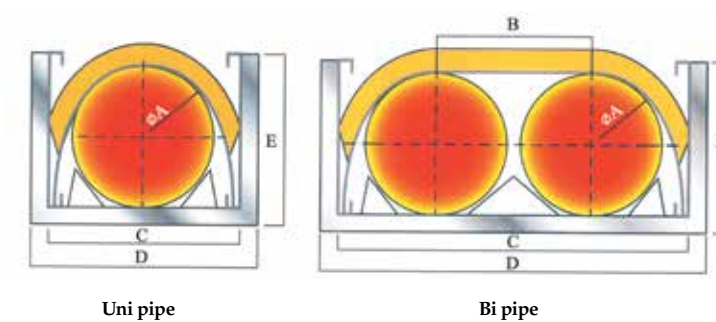
technical features and dimensions of PARTO

Dim.	Dimension(mm)		Dim.	Dimension(mm)	
	Pipe Ø 300 mm			Pipe Ø 300 mm	
A	1095	N	1142		
B	349	O	740		
C	200	P	343		
D	664	Q	142		
E	333	R	637		
F	774	S	426		
G	157	T	162		
H	134	U	300		
I	398	V	344		
L	333	X	1049		
M	333	Y	1202		

Specifications		C100	C150	C200	C300	
Heating Power	kCal/hr	86000	129000	172000	258000	
	kW	100	150	200	300	
Combustion Efficiency		%				
		94				
Energy Consumption	Natural Gas	Nmc/h	10.5	15.8	21.16	31.75
	Diesel	kg/h	7.77	11.65	15.54	23.31
Electricity Consumption		V/Hz	380V 50 Hz			
Gas Connection		Inches	$\frac{3}{4}$	1	1	1
Weight		kg	90	230	240	260
Maximum Length		m	60	70	100	120
Minimum Length		m	50	60	70	100
fume pipe diameter		mm	200			



Specifications of Radiant Band in PARTO

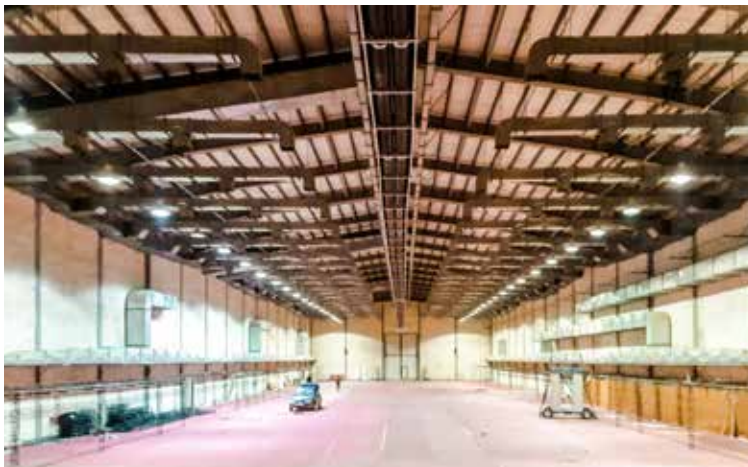
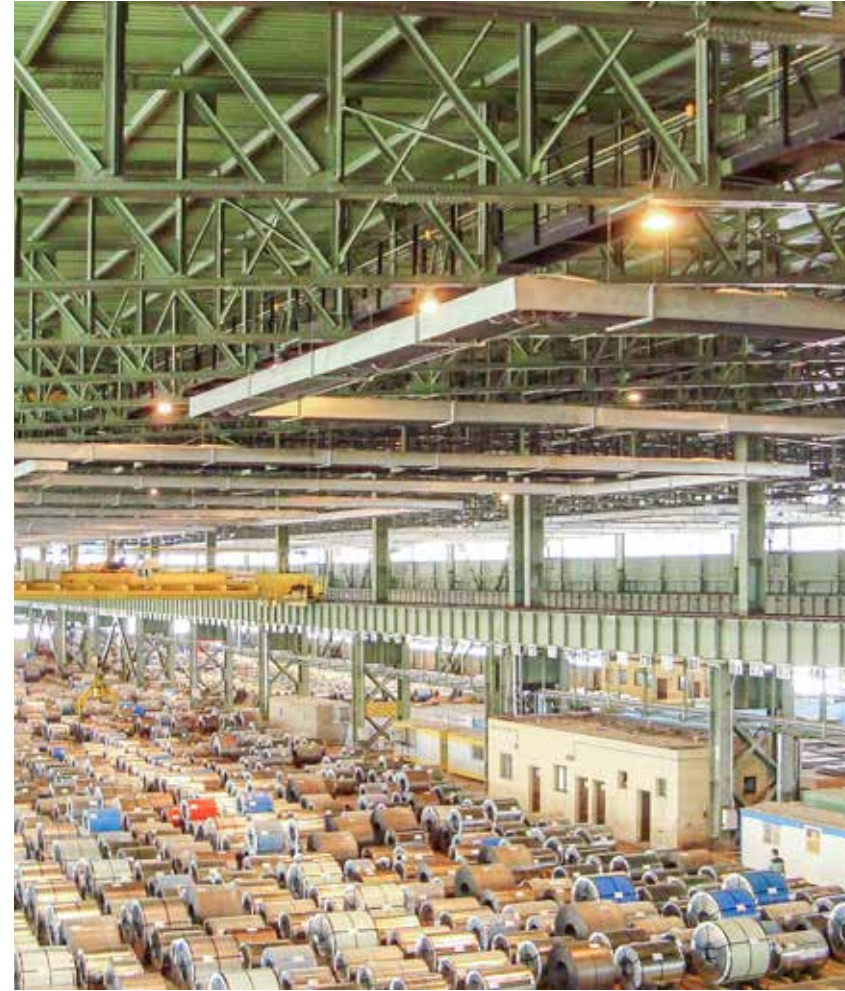


Uni pipe

Bi pipe

Radiant Strip Dimensions		
Radiant Strip	Single Tube Circuit	Double Tube Circuit
A	300	300
B	-	335
C	512	850
D	580	918
E	374	374
Weight(kg/m)	9	18

Central Heating and Cooling Projects









Local Unit

The local radiant heating unit is the best-known type of radiant heating system in the country. In these units, the burner, suction fan, and tubes are installed in the intended place altogether. These units are applied to provide the heating for the entire hall (depending on the hall surface area and required heating power).

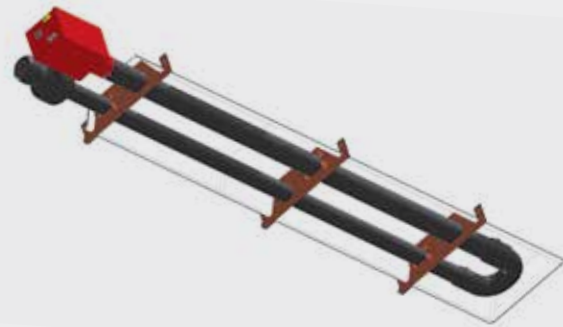
Local units are designed and produced in three models: AZAR, TABAN, FANTAB, differentiating based on the tube arrangement. The AZAR model has two rows of the tube; Meanwhile, it is one row in TABAN and FANTAB models.

Both TABAN and FANTAB models are implemented in work environments with a low ceiling height (suitable for poultry sheds and greenhouses). The reason is attributed to the lower temperature of the tube surface compared to the AZAR model. However, the TABAN model may occasionally be used in spaces with the conventional ceiling due to the lack of need for high temperatures. Thus, different types of local radiant heating units can be applied to provide heating for different spaces depending on the application, ceiling height, and required heating demand.



Local Unit

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AZAR Series



FANTAB Series



TABAN Series

Local Unit Advantages

The most critical advantages of local units can be stated as follows:

- Possibility of Managing heating and preheating for the environment based on working hours automatically
- No dispersion of dust and environmental Pollution because of using radiation heating instead of convection
- Uniform heating for the hall with the minimum energy consumption Compared to other systems
- Networking of radiant heating units and control them from one location (controlling panel and computer)
- Possibility of monitoring the status of each unit and removing it individually as required
- Elimination of central furnace room, complicated facilities, and related problems
- No occupying the useful workspace, installation at a given height above ground, and floor heating
- 50% reduction in gas consumption and 90% in electricity consumption



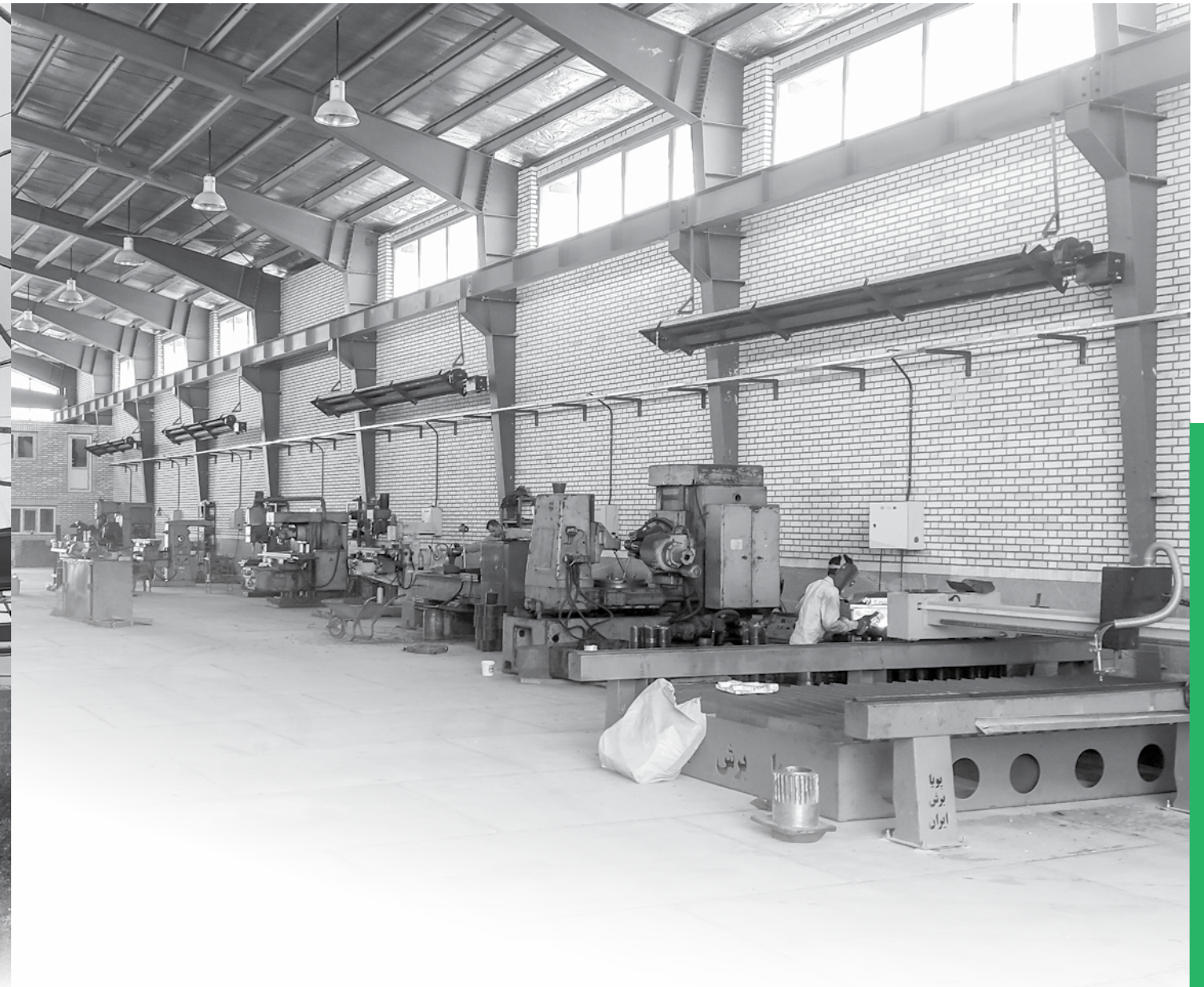
Radiant Strip

- The fire tube is coated with paints resisting temperatures up to 800 °C. In order to maximize the radiation coefficient, the black paint color is selected for covering tubes because it has the highest radiation coefficient between different color spectra.
- By placing reflectors made of radiant plus with a radiation coefficient of 90% (more than twice the steel radiation coefficient) over the tubes, the radiation flux flowing downward increases; this leads to an increase in the unit efficiency and a decrease in energy consumption.
- Insulating plates cover the reflectors to inhibit the heat loss from the upper area of the radiant strip. Thus, electromagnetic wave radiation is reinforced more than ever and focused on the intended area.
- Supports are designed to retain tubes and reflectors. These supports, which are hanged from the ceiling by plated steel chains, allow the user to adjust the radiant strip height above ground.



TABAN series specifications

Specifications	I6		I9		I12		I18		
	22SL	35SL	22SL	35SL	40SL	45SL	60SL	65SL	
Heating Power	kCal/h	19,000	30,000	19,000	30,000	35,000	39,000	51,000	56,000
	KW	22	35	22	35	40	45	60	65
Thermal Efficiency	%	88	88.2	88	88.2	89	90	91	91
Energy Consumption	Natural Gas	2.1	3.3	2.1	3.3	4	4.6	6.2	6.7
	LPG	1.5	2.45	1.5	2.45	3	3.5	4.7	5
Electricity Consumption	V/Hz	220/50							
Power	W	100							
Gas Connection	inches	3/4							
Weight	Kg	65	80			99		137	
Length	m	7	10			13		19	
Width	cm	50							
Exhaust Diameter	cm	12							

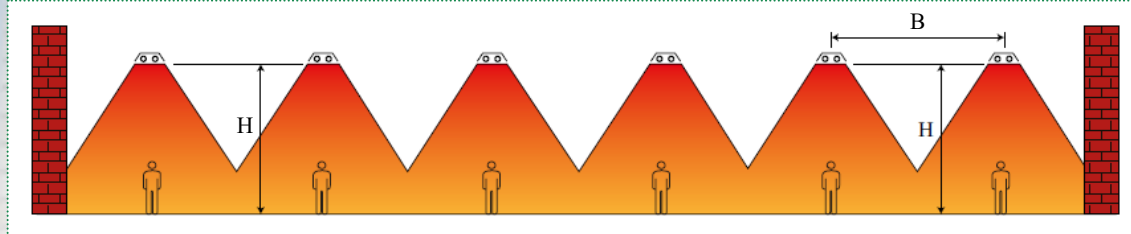


AAZAR series specifications

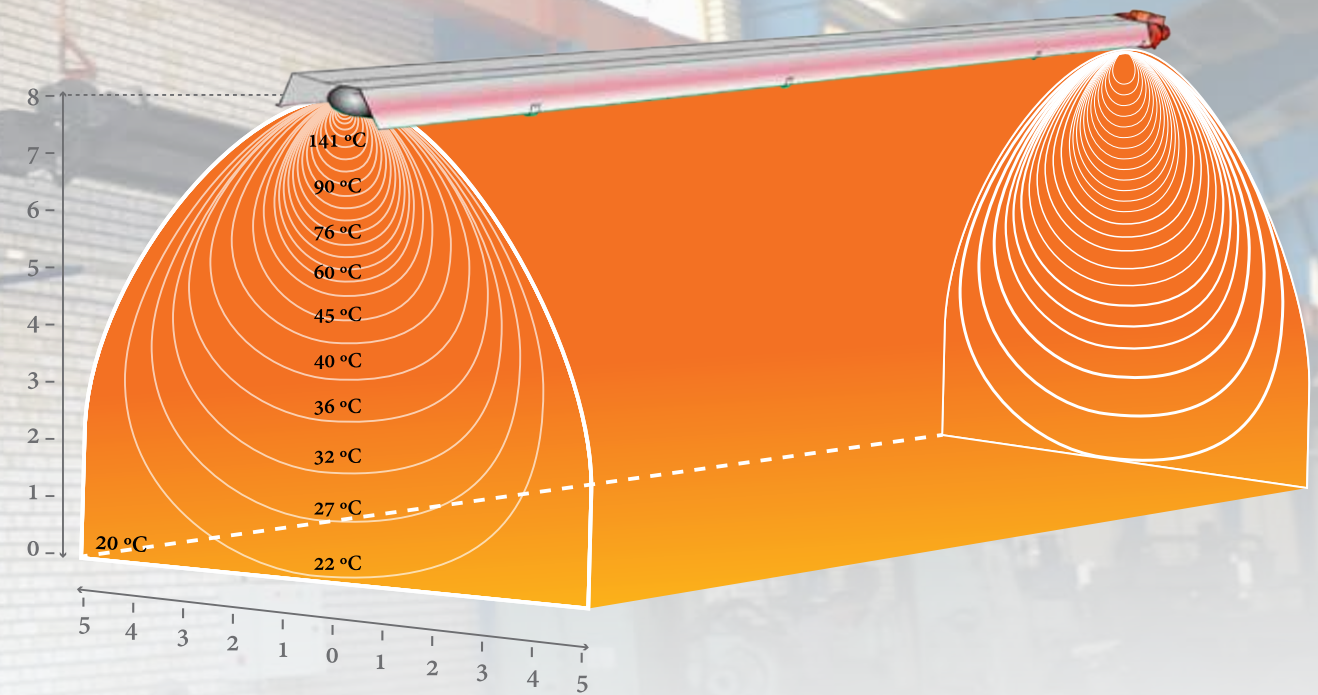
Specifications	U3		U4		U6		U9		U12		
	22SL	35SL	22SL	35SL	40UT	45UT	50UT	55UT	60UT	65UT	
Heating Power	kCal/h	19,000	30,000	19,000	30,000	35,000	39,000	43,000	47,000	51,000	56,000
	KW	22	35	22	35	40	45	50	55	60	65
Thermal Efficiency	%	88	88.2	88	88.2	89	90	91	91	91.7	91.7
Energy Consumption	Natural Gas	2.1	3.3	2.1	3.3	4	4.6	5.3	5.7	6.2	6.7
	LPG	1.5	2.45	1.5	2.45	3	3.5	4	4.4	4.7	5
Electricity Consumption	V/Hz	220/50									
Power	W	100									
Gas Connection	inches	3/4									
Weight	Kg	60		70		94		130		167	
Length	m	3.7		4.7		6.7		9.7		12.7	
Width	cm	60									
Exhaust Diameter	cm	12									

Covered area and recommended installation height for TABAN and AZAR series

Specifications		U3	U4	U6	U9	U12	L6	L9	L12	L18
Radiant Strip Length	m	3	4	6	9	12	6	9	12	18
Recommended Installation Height (H)	m	4 - 6	4 - 6	5 - 9	5 - 12	5 - 12	4 - 6	4 - 6	5 - 9	5 - 12
Covered Area	m×m	13×8	14×9	18×10	21×11	24×11	13×6	16×7	21×9	27×10



U6 Unit's Temperature Distribution



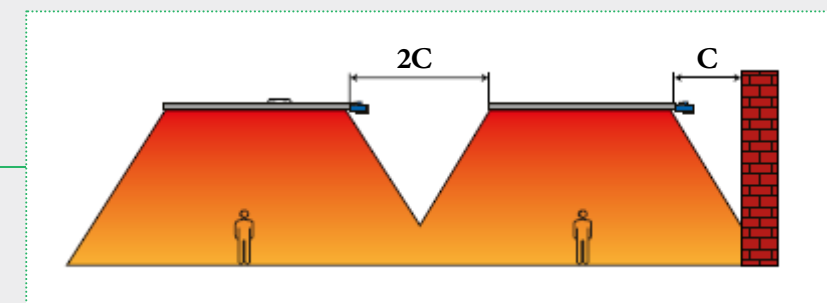
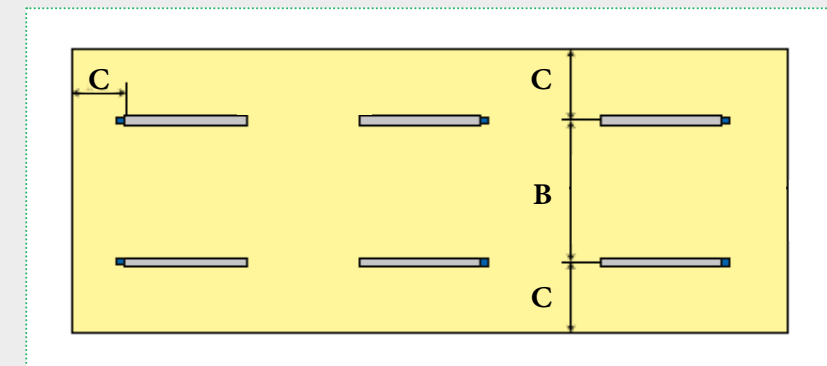
Test conditions: maximum radiant tube temperature 450 °C, floor material: cement

Temperature distribution after 90 of thermal radiation, operating temperature: 16 °C, and air flow velocity: 0.15 m/s

Appropriate installation parameters for TABAN and AZAR series

Model		U4 - U3			U6				U12 - U9								
Installation Height (H)	m	4	5	6	5	6	7	8	9	5	6	7	8	9	10	11	12
Maximum Transverse Distance between Heaters (B)	m	5	6.5	8	6	8	9	10	10	6	8	9	10	10	10	10	10
Maximum Distance between Heater and Wall (C)	m	2.5	3	3.5	3	3.5	4	4.5	4.5	3	3.5	4	4.5	4.5	4.5	4.5	4.5

Model		L9 - L6			L12				L18								
Installation Height (H)	m	4	5	6	5	6	7	8	9	5	6	7	8	9	10	11	12
Maximum Transverse Distance between Heaters (B)	m	5	6.5	8	6	8	9	10	10	6	8	9	10	10	10	10	10
Maximum Distance between Heater and Wall (C)	m	2.5	3	3.5	3	3.5	4	4.5	4.5	3	3.5	4	4.5	4.5	4.5	4.5	4.5



Advantages of FANTAB unit

Advantages of FANTAB unit

- Possibility of automatically adjusting the time of heating and preheating for the environment based on working hours
- Uniform heating of the hall with the minimum energy consumption compared to other heating units
- Possibility of indicating the status of each unit and turning off every unit as required
- Possibility of networking between FANTAB units and controlling them through one device (control panel and computer)
- Elimination of central furnace room, complicated facilities, and related problems
- 50% reduction in gas consumption and 90% in electricity consumption
- No occupying the useful workspace and floor heating
- Air circulation and uniform heat distribution
- Installation at a given height above ground and heat at the floor



FANTAB is the best solution to meet heating demand in poultry farms and greenhouses

Special Advantages of FANTAB for Poultry Farms

- Providing the temperature control, especially at the initial days of incubation
- Improving the feed conversion ratio through creating thermal comfort conditions
- Reducing the number of broiler chicks diagnosed with ascites
- Uniform heat distribution and avoiding the poultry gathering around one source
- Air humidity control and make dry the hall's floor
- Possibility of washing and sterilizing the unit
- Preventing air conditioning problems, especially in cold months

Special Advantages of FANTAB for Greenhouses

- Making close the greenhouse conditions to natural environment due to higher temperature of soil relative to the air (up to 5 °C)
- Increasing the temperature of plants' leaves and decreasing the rate of fungal diseases
- Increasing condensation on leaves and preventing the leaf blight disease
- Providing suitable heating for the environment similar to the sunlight
- Avoiding the formation of thermal clouds under the ceiling

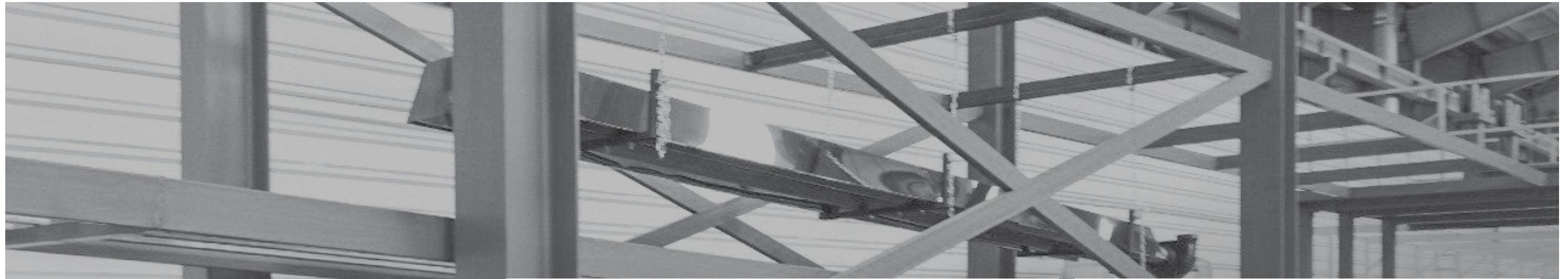
Specifications of FANTAB radiant heating unit

Specifications		LP6		LP8		LP9		LP12	
Heating Power	kCal/h	25000	35000	25000	35000	39000	45000	39000	45000
	KW	30	40	30	40	45	50	45	50
Energy Consumption (Natural Gas)	Nmc/h	3.1	3.8	3.1	3.8	4	4.7	4	4.7
	V/Hz	220/50		220/50		220/50		220/50	
Gas Connection	inches	1/2		1/2		3/4		3/4	
Weight	Kg	90		230		240		260	
Length	m	6		8		9		12	

Local Unit Projects







Radiant Furnace

Nowadays, radiant furnaces are increasingly used instead of convection ones because of their low energy consumption and high efficiency. Regarding the closed medium inside a furnace, the heat produced by radiation is utilized again in a convection process, and the heat can also be transferred in a combined process (convection-radiation). The radiant tubes emitting electromagnetic waves (radiation) are extended in the length of the furnace (floor, ceiling, and walls).



Radiant Furnace

GENERAL CATALOG



Radiant furnaces have different applications in the Industries of which the critical ones relate to the drying and dehumidification process of following items:

- Tile and ceramic
- Sand and gravel
- Salt
- Stones
- Wood
- Painted parts
- Insulating lacquer of rotor and stator
- Fruits

The radiant furnace allows to carry out the drying process with temperatures up to 300 °C. The following figure shows the provided temperature for a stone drying oven.



Radiant Furnace Advantages

Separated control of each burner

By applying the control panel designed by Akhgar Tabesh Co., it is possible to manage and control the performance of each burner independently and temporarily remove a given burner from the system as needed.

Preheating and adjusting the heating time

This function can be provided either manually or automatically using the control panel for the radiant furnace. Also, the radiant heating pattern with a high heat transfer rate can supply the desired preheating quickly compared to the convection heating unit.

Improved safety

The unit safety has to be ensured for two reasons: 1- Burners are activated with the lowest gas pressure, which significantly affects the safety improvement, and 2- The unit safety is improved due to no emission of flue gases in the environment.

Environment health and sanitation

Employing the radiation pattern instead of convection prevents the dispersion of dust or suspended particles in the work environment. This issue affects either the employee health or specific requirements of the work environment.

Continuous performance

Due to the independence of each burner, the furnace failure is not probable; in the case of any defect in the burner performance, the performance of the entire unit is not disturbed, and there is no need to shut down the unit for repairing the failed burner.

Reduced costs and energy consumption

Generally, replacing the convection heating pattern with the radiant one leads to decreased costs and energy consumption because of differences in heat transfer rate.

Easy maintenance and installation

Compared to other drying units, the installation and implementation of radiant furnaces are conducted with higher readiness and rapidity.

پنل کنترل دمای سامانه های گرمایش تابشی

Akhgar Tabesh
Delta 500
Control Panel



Temperature Control Panel

The control panel is applied to keep the ambient or room temperature in a specified range. The control panel Delta 500 designed by the company is exclusively utilized in the company's radiant heating units.

This control panel is designed in such a manner that to turn on or off the heating unit based on the defined minimum and maximum temperatures as required by the user to keep the room temperature in the selected range. Delta 500 has four channels to which one to four radiant heating units are connected.



Thermal Control Panel

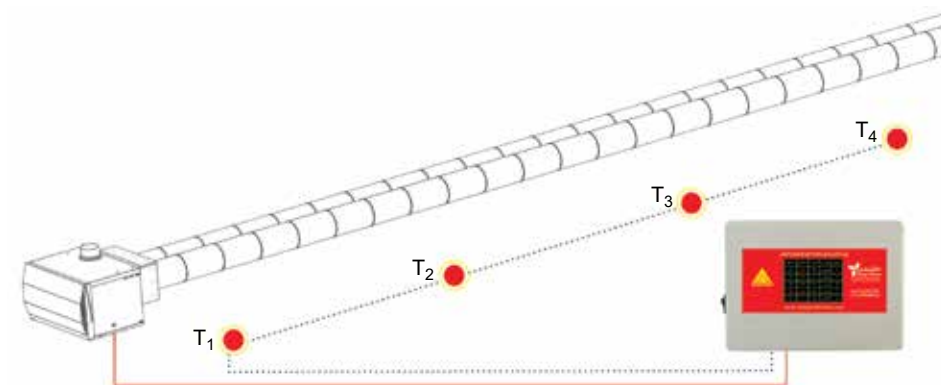
GENERAL CATALOG

Advantages of Temperature Control Panel

The main advantages of this control panel in radiant heating units are as follows:



- Simultaneously controlling four burners in manual and automatic modes
- Individual sensor for each unit on the cable
- Capability for individually adjusting each zone temperature
- Indicating the ambient temperature of each zone on the control panel
- Indicating the mean temperature and command output based on this temperature
- Simple user interface and touchscreen

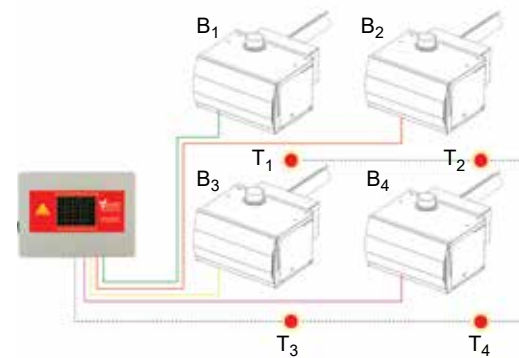


Zonal temperature: T_1, T_2, T_3, T_4

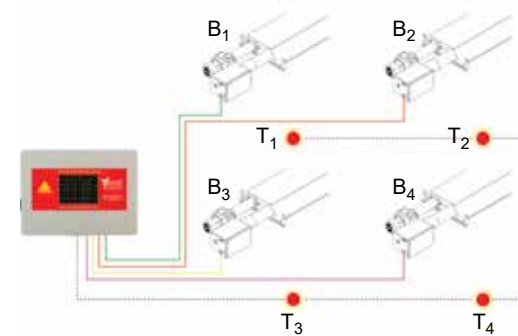
Burner: B_1, B_2, B_3, B_4

Mean temperature: T_m

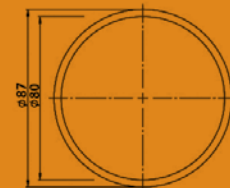
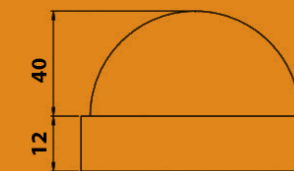
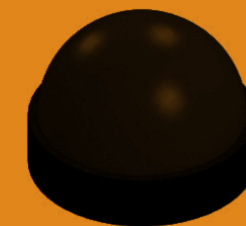
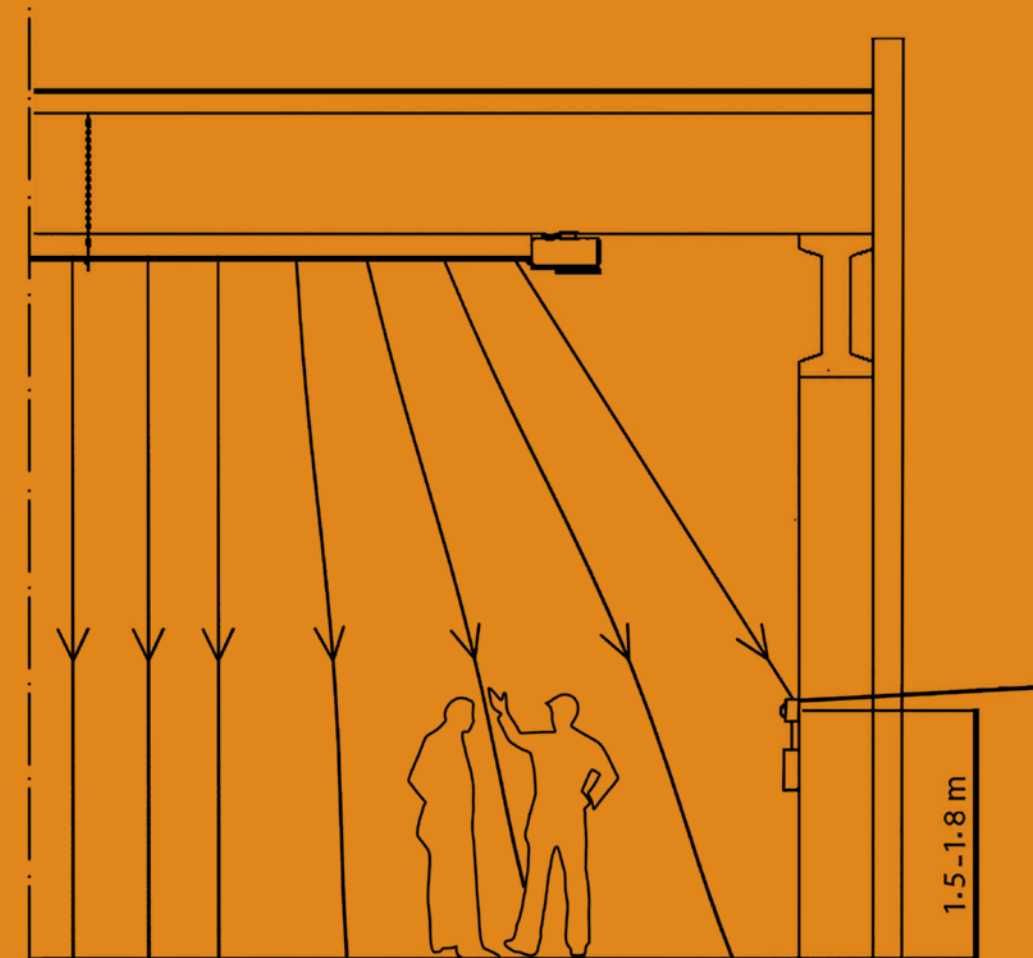
$$T_m = \frac{\sum_{i=1}^n T_i}{n}$$



Control panel connection to 4 central burners



Control panel connection to 4 local burners



A digital temperature sensor (RDS) is considered for each unit. The sensor is installed at 1.5-1.8 m above the ground, where the spherical tracker is in the scope of effect of radiant tubes. The sensor receives data and passes it to the control

panel under the effect of infrared waves emitted from tubes. The thermal comfort is provided as a result of keeping the temperature in the selected range conveniently and without a need for human intervention.



AGREEN

The most up to date radiant heating system, suitable to heat small, medium, and large halls

Capability to install the burner outside of the hall with no need for chimneys



Central Unit (AGREEN)

GENERAL CATALOG

Technical Specifications:

- 85% combustion efficiency of the burner
- Recycling system for combustion fume products
- Electronic control system for the burner equipped with temperature and pressure sensors
- Flame and vacuum detection safety systems
- Two-pipe radiant band of spiral type with 180mm diameter and two-layer pressing
- 18% extra thermal efficiency compared with the common radiant heating systems
- AGREEN radiant heating system



Radiant band

The radiant band has the most significant role in radiative heat transferring. Radiant Plus reflectors are utilized in this system to provide maximum thermal efficiency with extremely high radiant factors compared with the regular models. This reflector radiates the highest amount of heat towards the hall floor.

Thermal insulation and cover could be used in specialized models fabricated according to the customer order to ensure maximum thermal efficiency on the hall floor and minimum thermal loss from the radiant band's upper section.



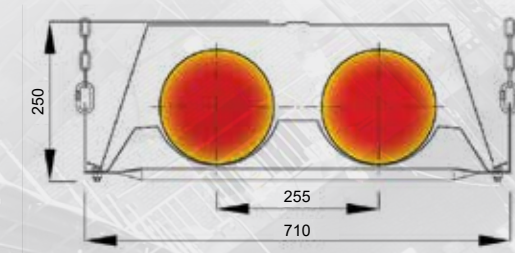
Specialized Radiant Band (Customized)

Radiant band weight is 10kg per meter.



Standard Radiant Band

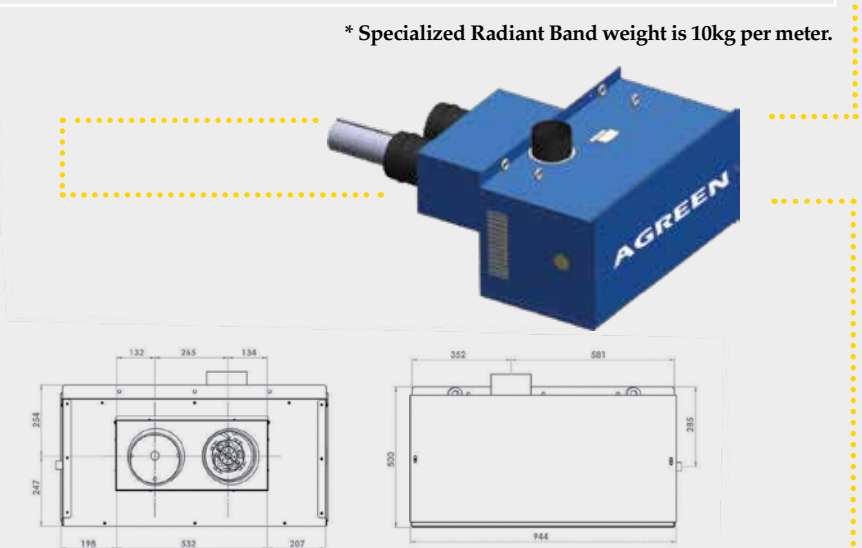
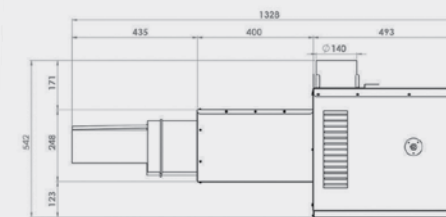
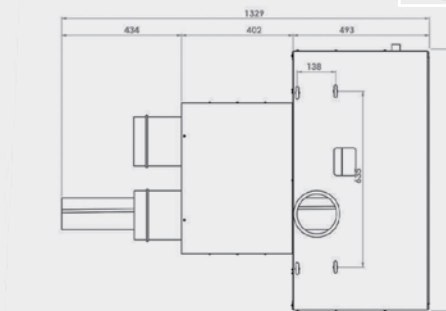
Radiant band weight is 8kg per meter.



Technical features and dimensions heating unit of AGREEN



Model		AGREEN 18	AGREEN 24	AGREEN 30	AGREEN 36	
Thermal capacity	kCal/hr	47.000	62.000	86.000	94.000	
	kW	54	72	100	110	
Combustion performance	%	82	82	83	85	
Gas consumption	Natural Gas	m3/h	6	8	9.5	10.5
Electrical power supply	V/Hz	380V / 50 Hz				
Gas connection	Inches	3/4				
Required gas pressure	mbar	20				
Burner weight	kg	75				
Standard radiant band weight	Kg/m	8				
Band length	m	18	24	30	36	
Fume pipe diameter	mm	140				

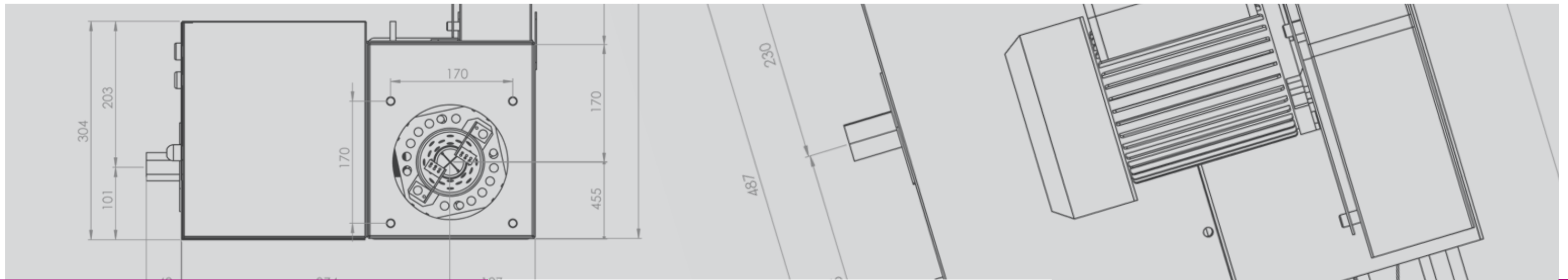


* Specialized Radiant Band weight is 10kg per meter.

AGREEN Features:

- Can Install the burner outside and inside of the hall
- Installable at higher points and not occupying useful workspaces
- Easy and rapid installation
- 18% more thermal efficiency compared with local heating systems
- Uniform distribution of the heat all over the hall
- Eliminating cold distances compared with heating systems
- Temperature and torch capacity reconfigurability according to customer requirements
- Gas consumption reduction up to 50%
- Power consumption reduction up to 90%
- 10-year guarantee for stainless steel combustion chamber Using nipple joints to connect the radiant band
- Automatic controllability of temperature and time by installing a control panel



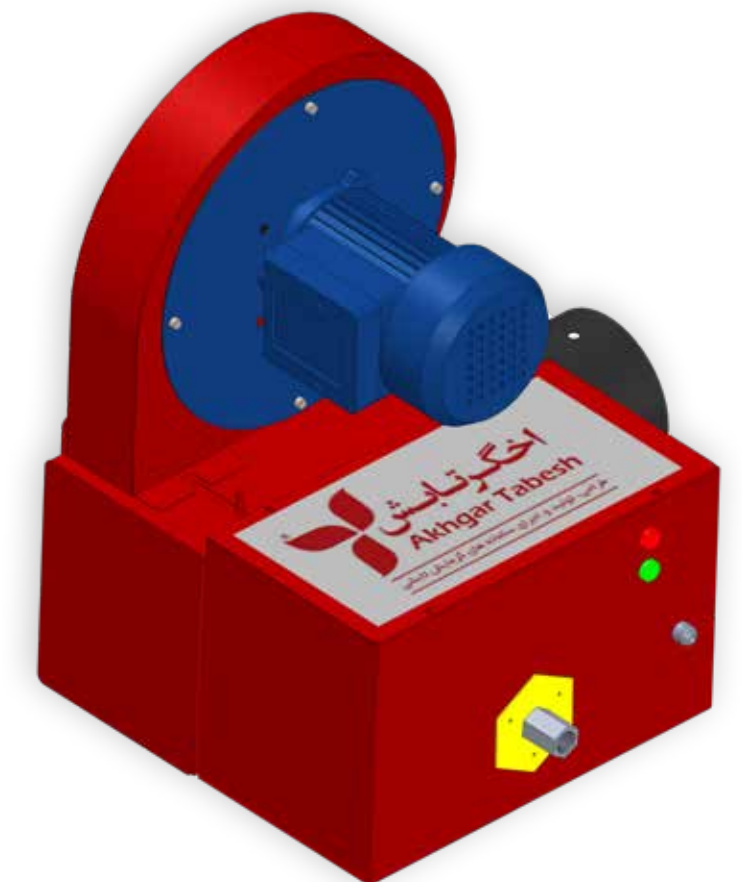
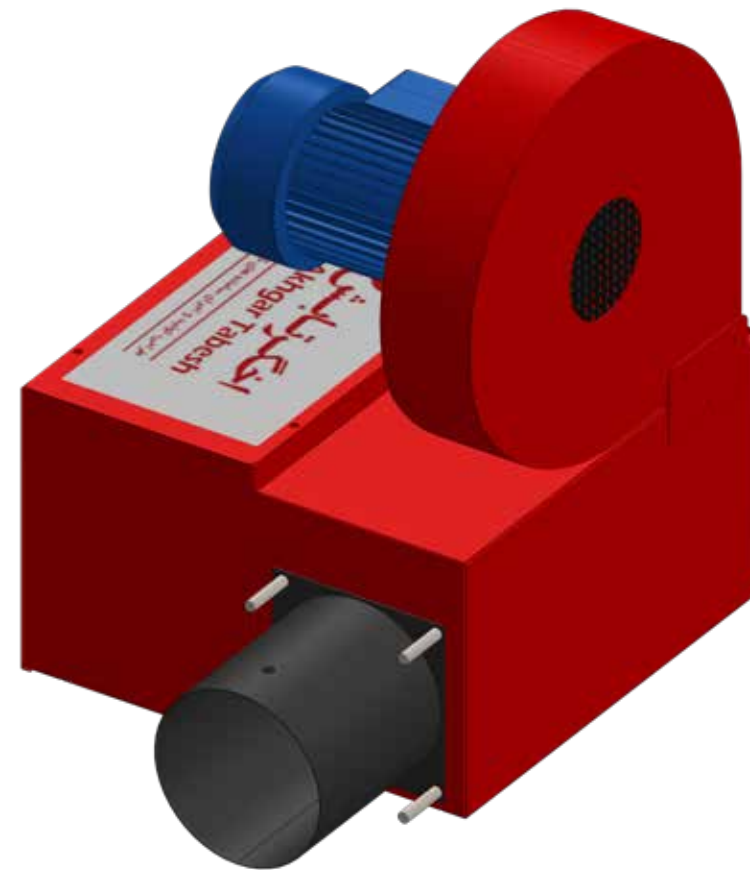


AFROOZ Gas burner

A burner to heat different kinds of furnaces, pools, and reservoirs

Technical Specifications

- 90% combustion efficiency
- Burner electronic control system
- Flame detection safety system
- Radiant band with different dimensions and lengths
- Full combustion with minimum contamination
- Convective and radiative heating



AFROOZ Gas Burner

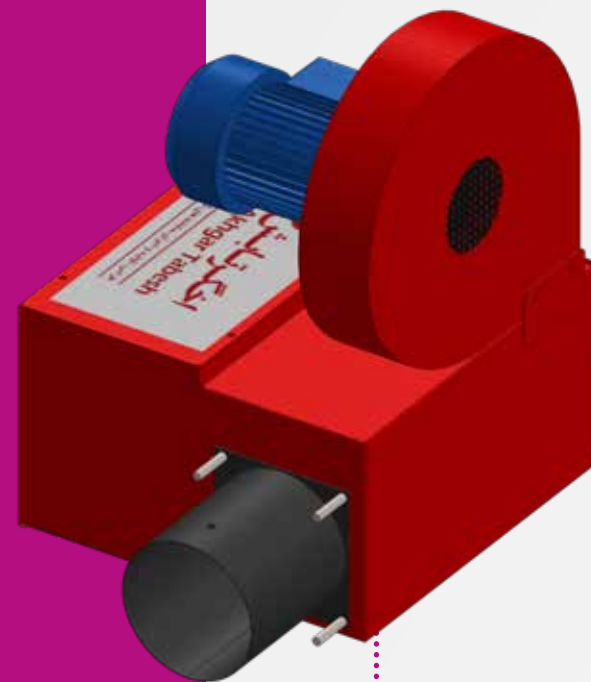
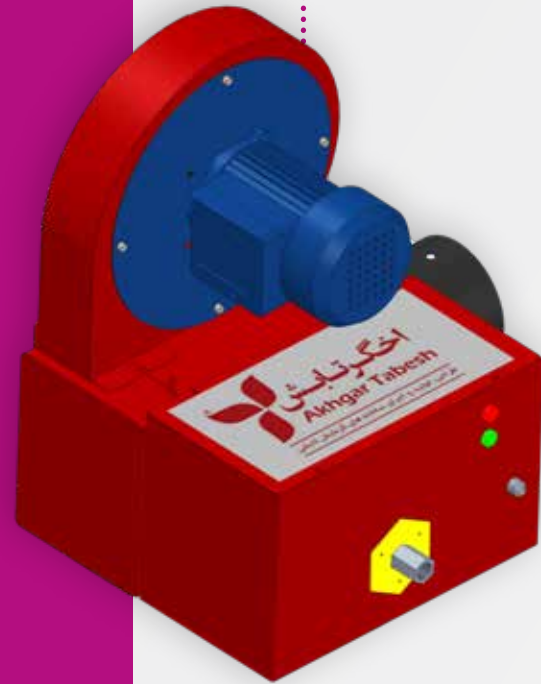
GENERAL CATALOG

Applications:

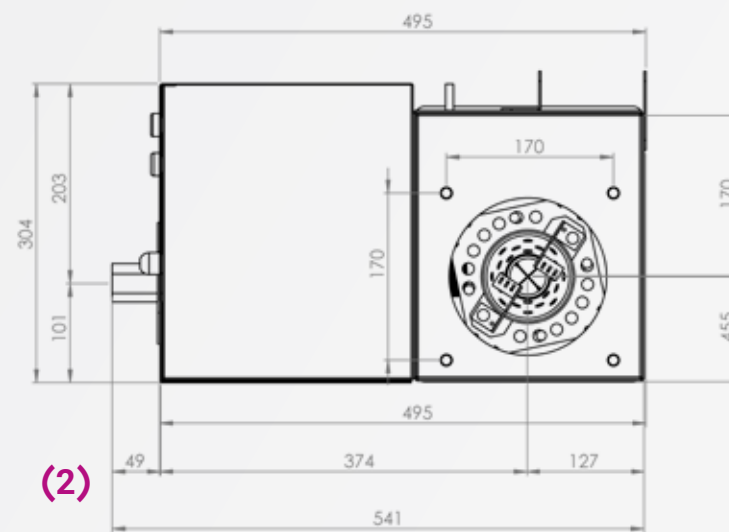
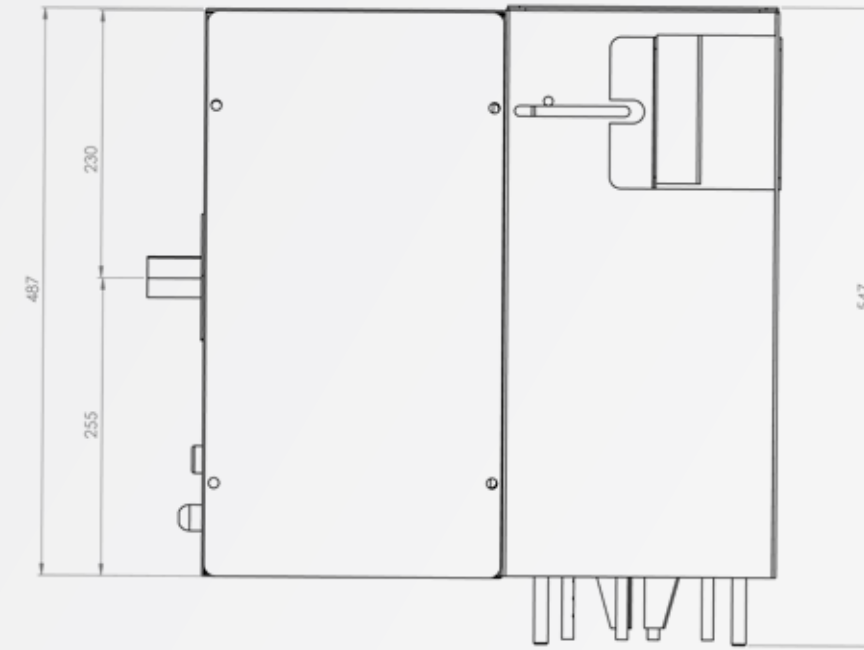
- hot-air furnaces such as drying oven, kiln, etc
- in the food industry for producing steam
- Fluid Reservoirs heater
- Fluid pools heater

AFROOZ features:

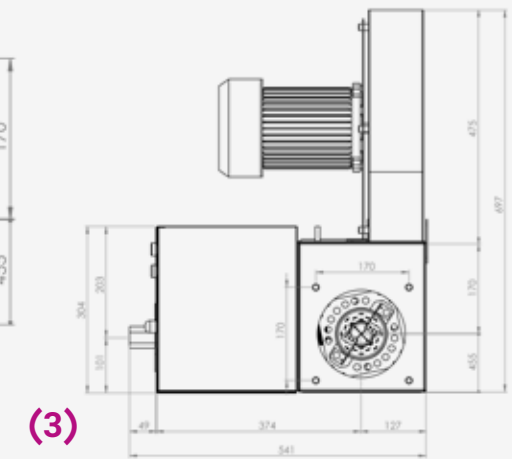
- Variable thermal power
- Burner capacity adjustability and temperature control according to the requirements
- Gas consumption reduction up to 50%
- Ability to install at various places due to different lengths and diameters of the pipes
- Using steel pipes in corrosive conditions



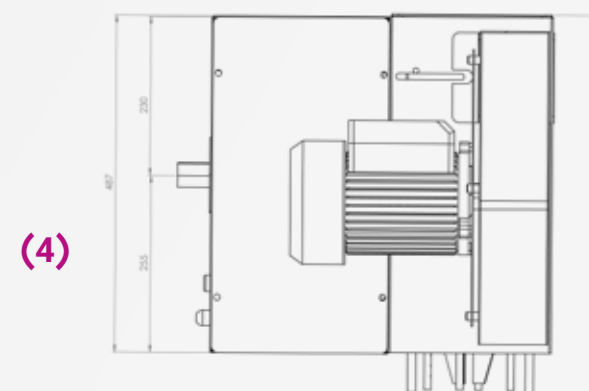
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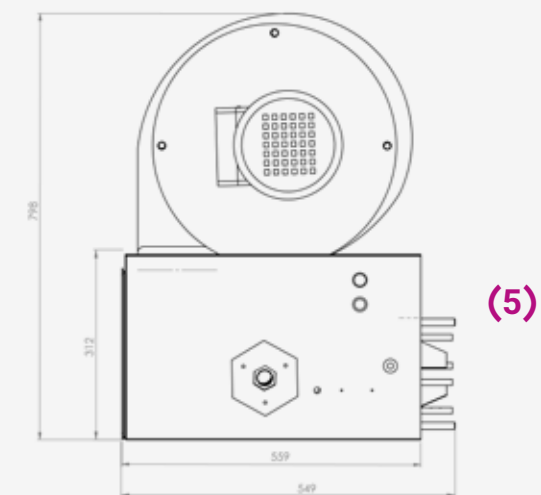
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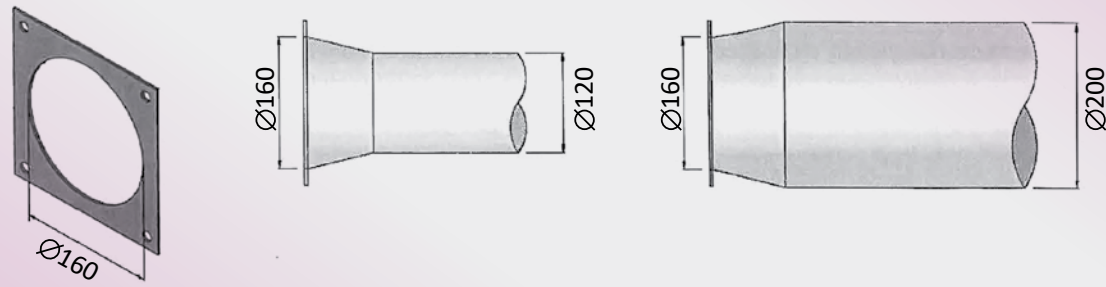
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Technical specifications of AFROOZ

Model		BAF 100	BAF 200	BAF 300	
Thermal capacity	kCal/hr	86000	172000	25800	
	kW	100	200	300	
Combustion performance	%	87			
Gas consumption	Natural Gas	m3/h	10.5	21.2	31.1
Electrical power supply	V/Hz	380 V / 50 Hz 3/N/PE			
Gas connection	Inches	$\frac{3}{4}$	1	1	
Required gas pressure	mbar	20	30	30	
Electromotor power	W	550	1100	1500	



Radiation tube flange Minimum pipe diameter Maximum pipe diameter

Dimensions of AFROOZ heating system pipe

Model	Minimum pipe diameter (mm)	Minimum pipe length (mm)
BAF 100	120	3000
BAF 200	160	4000
BAF 300	180	6000

The length and diameter of the pipe are determined based on the project conditions and limitation.

GENERAL CATALOG




Certificates



Design, Production, Installation
of Radiant Heating Systems



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