GARMATAAB®

RADIANT HEATING SYSTEM

Industrial spaces

IRAN MASHAL
environment engineering co.

Pars Khodro | **Tehran** | Heating total area of 20000 m2 of the factory with 117 devices

2005

گرماتاب®

تامین گرمایش بیش از

5'000'000 m²

سالن‌های مختلف در سراسر ایران از سال ۱۳۸۰

بهترین هایی که ما را انتخاب کرده‌اند

IRAN MASH'AL Co was founded as executive of great projects of public & industrial buildings in 1982. This company with credit of 30 years of experience took action to import manufacturing technology of radiant heating devices with cooperation of AMBIRAD UK company under the registered name of "GARMATAAB". IRAN MASH'AL Co founded an equipped lab in the location of its factory and succeeded .to achieve different certificates including Iran's National Standard of product

Supply heating of area of over 5 millions m2 in more than 4500 projects in different spaces using GARMATAAB heaters and also product export to various countries prove the commitment of company directors to maintain and enhance customer .satisfaction


جمهوری اسلامی ایران
وزارت صنایع و معادن ایران

پروانه بهره‌برداری


بسمه تعالی
وزارت صنایع و معادن
سازمان صنایع و معادن استان سمنان

تاریخ ۱۳۸۶/۶/۱۱
شماره ۴۳/۱۹۲۱۰

شرکت ایران مشعل

سلام علیکم

احتراما"عطف به نامه شماره ۸۶/۴۲۲۸ مورخ ۸۶/۵/۲۱ بدین وسیله به آگاهی میرساند درحال حاضر وبراساس اطلاعات موجود دربانک اطلاعات سازمان آنشرکت تنها تولید کننده دستگاه گرم کننده تشعشی می باشد.

علی نظری
رئیس سازمان

آدرس: سمنان - میدان معلم - مجتمع اداری کهربا - طبقه ۴ تلفن: ۳۲۸۷۵-۲۵۱۸ نمابر: ۴۴۴۱۴۱۹
آدرس الکترونیکی: INFO@IMO-SEMNAN.IR وب سایت: WWW.IMO-SEMNAN.IR

Iranian Syndicate of Industrial Companies

Member of Association of Irian Industries Industry

ISO17025 lab accreditation certificate

Association of Industries of Household Appliances of Iran

Only holder of radiant heater standard certificate 736816696

First & only holder of standard certificate of gas-fired radiant heating systems issued by Iranian National Standard Organization

گواهینامه تایید صلاحیت آزمایشگاه همکار

ISIRI 12871-1

گواهینامه تایید صلاحیت آزمایشگاه

Laboratory Accreditation Certificate

Research Laboratory of Radiant Heating Systems

www.garmataab.com

Certificate issued by standard administration of Tehran Province of IRAN as first & only collaborative lab

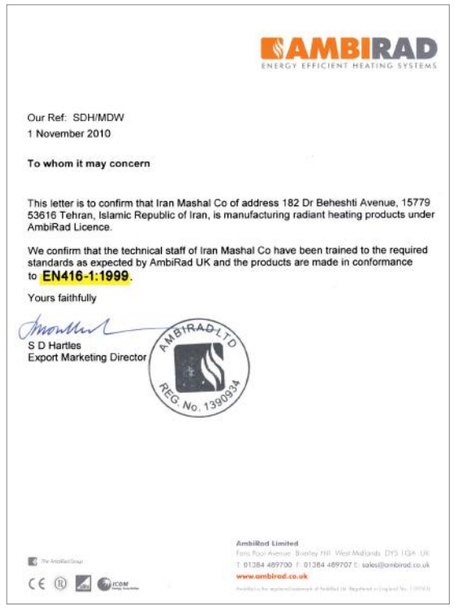
Test & Research Lab of IRAN MASH'AL Co has been implemented based on ISO17025 standard and succeeded to accredit by National Accreditation center of Iran NACI

Please consider necessity of safety & performance standard certificate in gas-fired devices

Standard of GARMATAAB product

Due to special importance of safety & performance of gas-fired devices, Iranian National standard Organization compiled "single burner gas-fired overhead radiant tube heaters for non-domestic use" standard with NO.12871-1 based on "BS EN 416-1;1999" reference in 2010

IRAN MASH'AL Co took action to found and equip Research Laboratory of Radiant Heating Systems by spending so much effort & cost for proving conformity assessment of its product based on mentioned standard



AMBIRAD

ENERGY EFFICIENT HEATING SYSTEMS

Our Ref: SDH/MDW

1 November 2010

To whom it may concern

This letter is to confirm that Iran Mashal Co of address 182 Dr Beheshti Avenue, 15779 53616 Tehran, Islamic Republic of Iran, is manufacturing radiant heating products under AmbiRad Licence.

We confirm that the technical staff of Iran Mashal Co have been trained to the required standards as expected by AmbiRad UK and the products are made in conformance to EN416-1:1999.

Yours faithfully

S D Hartles
Export Marketing Director

ADVANTICA

Test Report

TR/02/267

Project No. 2/31978

Modification

Evaluation commenced 29.07.02
Evaluation completed 28.08.02

Appliance Type

Non-Domestic Forcad draught Combustion Radiant Tube Heaters

Model Reference(s)

AR50UTUK, AR45UTUK, AR40UTUK, AR35UTUK, AR22UTUK, AR22SLNUK27, AR35SLNUK42, AR35SLNUK50, AR40SLNUK42, AR40SLNUK50, AR45SLNUK50, AR45SLNUK60, AR50SLNUK50, & AR50SLNUK60

Conclusion

Type samples of the above appliances have been tested and examined to the relevant requirements of BS EN 416-1:1999 including Amendments 1&2 (*Single burner gas-fired overhead radiant-tube heaters*) and have been found to comply with these requirements.

Examining Engineer (David Hartlebury) Date: 27/8/02

Clearance by Authorising Officer: (GD McKay) Date: 28/8/02

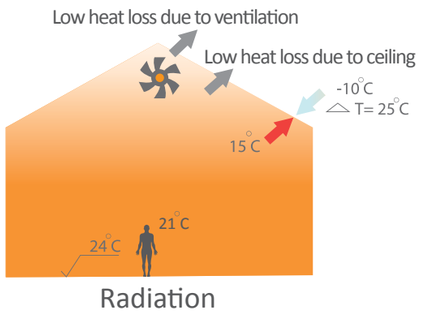
Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

©Advantica Technologies Ltd. Page: 1 of 10 ref: 04/02/1.3 416-1

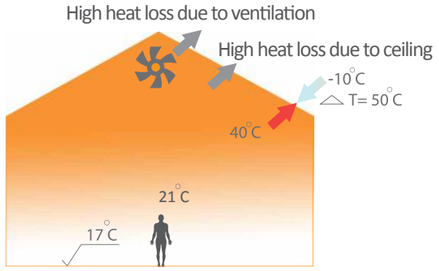
Conformity assessment of product based on "BS EN 416-1:1999" & under license certificate issued by AMBIRAD Co

Central repair shop of subway | **Tehran**

devices 110,2008



Radiation



Convection

Why is GARMATAAB the best option?

Nowadays, supply heating by using methods like central heating equipped with steam, hot & warm water, burner & unit heater or space heaters is not suitable & economical in long-height spaces. In these methods, major amount of energy is transferred below ceiling of building due to low density of hot air. Despite high consumption of energy, only low amount of consumed energy heats the space. By inventing radiant heating system in past decades, high percentage of combustion energy is transferred to the surfaces in the mode of radiation without air interference. Great advantages of radiant heaters for supply heating of large spaces provide desirable, optimal & fast heating with uniform distribution of temperature in addition to decreasing initial investment & high energy saving of fuel & electricity

Comparison of heaters cost

	Central heating	GARMATAAB®	Saving percentage
Cost of design	100	0	100
Equipments	Boilers, burners, piping, heaters(unit heaters), pumps, valves, controllers, insulators, pipe ducts, electrical panels 100	Devices & gas piping 40 to 60	40 to 60
Cost of implementation	100	10	90
Maintenance	100	5	95
Consumed fuel	100	40 to 60	40 to 60
Consumed electricity	100	10	90
Consumed water	100	0	100

Comparison between convection & radiation heating

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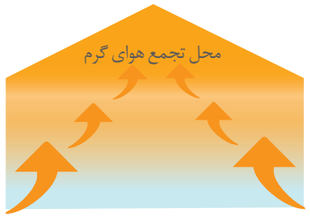
zdirecting the heating route can be occurred and heat is concentrated on closer surfaces to the floor & other required areas.



جـا بجـا یـی

In convection heating system, heat is concentrated below ceiling of building, so closer surfaces to the floor & place of staff activity don't have suitable temperature and energy loss from ceiling is very much.

Heat loss

In radiation heating system, heat is not absorbed to the room air and air change heat loss is very insignificant.

In convection heating system, heat loss is very much due to movement & exhaust of hot air from non-insulted surfaces, walls, doors, windows & ventilators.

Zone heating

In radiation heating system, zone heating & control & high flexibility of radiant system creates heating in selected areas according to design requirements.

In convection heating system, it's not possible to direct and control air movement, so hot air enters to unrequired spaces and leads to increase fuel consumption & cost.

Discomfort due to suspended

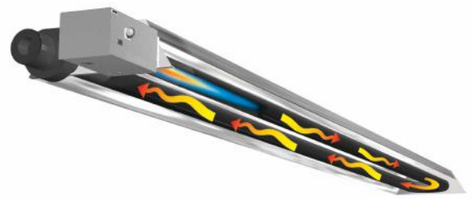
There is no air circulation in radiant heating system, so suspended matter and air dust strongly are reduced and it has positive effects on work environmental health.

Convection heating depends on hot air movement. In paint workshops, food industry & other industries, air movement creates unrequired dust and leads to reduce quality of workspace & product.

Heat transfer speed

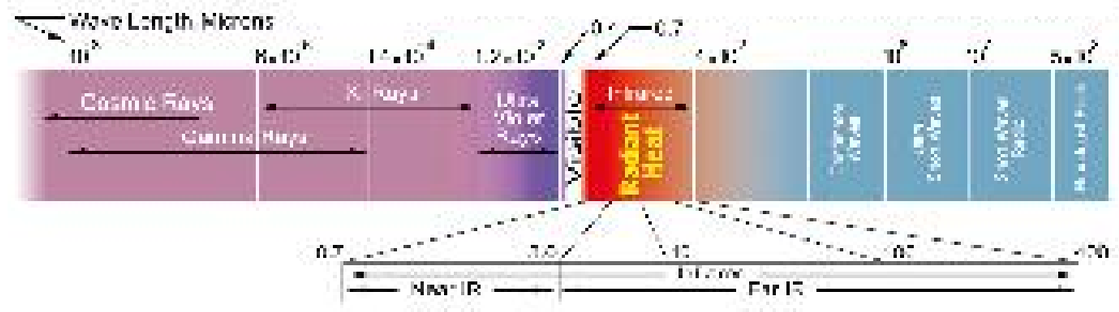
Heat transferred by radiation warms directly floor, objects and people located in the required zone without any requirement to warming whole amount of air. So the space is heated faster by radiant heat transfer. The shortening of heating time will save energy & time significantly. Fast preparation of staff & workplace & no need to turn on the heating system before & after useful working hours are other advantages of this system.

In convection heating system, space heating occurs slowly after warming whole air of the room and it's not possible to turn off the heating system in non-working hours and despite high consumption of fuel, areas close to workplace (floor of the room) warm later.



In this heater, natural gas burns by a specific burner with long flame in a tube with high radiation factor. The generated heat is transformed into infrared waves and is radiated to the specified places by trapezoidal reflector surfaces located above the device. In contact with surface, these waves are transformed into heat due to their properties and create very pleasant sensation in human like heat of the sun.

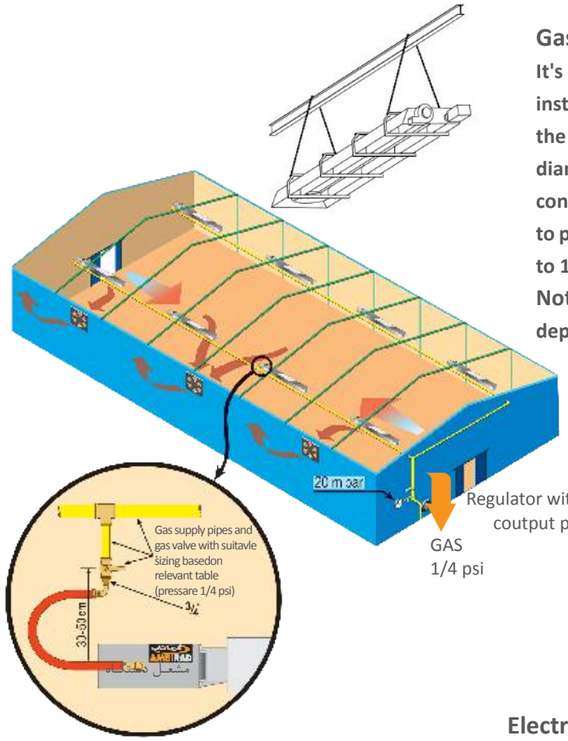
Electromagnetic spectrum



Hepco factory | **Arak**

20 devices-2012

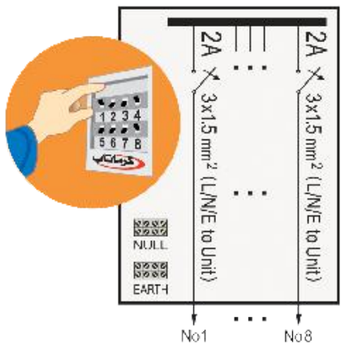
Installation details guide



Gas piping

It's better to implement gas piping of GARMATAAB device after installation (based on technical specification table) by following the standards of national gas company in terms of size, pipe diameter & suitable capacity of regulator. Also, it's necessary to consider details of the following figure for connecting the device to piping system. It's recommended to install a pressure gauge (0 to 100 mbar) after regulator.

Notification: In case of using LPG, please notify to technical department of company before sending the devices.



Electrification

Electricity consumption of each device is about 40 to 100 Watts. In order to proper performance of devices, it's better to install a separate & independent electrical panel including null, Earth terminals & 2A miniature switches (based on the number of device on figure) in suitable place of the building. Also, cabling of each device is performed independently by 3*2.5 cable (phase, null, earth)

Ventilation of the space

Suitable ventilation of GARMATAAB radiant heating system is important in 2 aspects:

-Supply the required air of combustion

-Exhaust of combustion products

The amount of required air for perfect combustion of device is 11 to 13 times the amount of consumed natural gas.

Based on European credible standard (BS EN 13410), if natural ventilation is more than 10 cubic meters per hour per Kilowatt of device, the device can be applied without any chimney.

In spaces with insufficient ventilation or dense dust, it's necessary to supply the required air of combustion from outdoor air by a tube connected to the burner. Also, in these spaces, it's necessary to install a suitable chimney connected to the fan for exhaust of combustion products (the following figure)

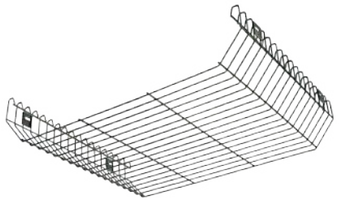
Beton Sanat Beris | Hamedan

32 devices-2012

Technical specification of UT type of GARMATAAB

Model		22 UT	35 UT	40 UT	50 UT
Overall length (m)		5/24	5/89	6/10	7/62
Overall width (cm)		49	67	67	67
Weight (Kg)		63	95	97	144
Heat capacity	Kcal/hr	20,000	30,000	34,400	45,000
	KW	22	35	40	50
Max natural gas consumption (pressure 17.8 mbar) (m3/hr)		2/1	3/3	3/8	4/7
Min mounting heights (m)	Wall-mounted	3/6	4/3	4/3	5/7
	Ceil-mounted	3/0	3/6	3/6	5/0
Min clearance distances (cm)	Above device	50	50	50	50
	Beneath tubes	125	150	210	210
	To the sides of device	60	60	60	60
Electrical supply		40 to 100 Watts220- volts-single phase			
External fuse (A)		2A			

-UT type of GARMATAAB
-With high power radiation
-For heating of long-height spaces



Galvanized reticulated guard
For beauty & protection of tube

Technical specification of SL type of GARMATAAB

Model		22 SL	35 SL	40 SL	50 SL
Overall length (m)		8/02	12/62	12/70	15/15
Overall width (cm)		29/5	46	46	46
Weight (Kg)		72	117	118	134
Heat capacity	Kcal/hr	20,000	30,000	34,400	45,000
	KW	22	35	40	50
Max natural gas consumption (pressure 17.8 mbar) (m3/hr)		2/1	3/3	3/8	4/7
Min mounting heights (m)	Wall-mounted	3/6	4/3	4/3	5/7
	Ceil-mounted	3/0	3/6	3/6	5/0
Min clearance distances (cm)	Above device	50	50	50	50
	Beneath tubes	125	150	210	210
	To the sides of device	60	60	60	60
Electrical supply		40 to 100 Watts220- volts-single phase			
External fuse (A)		2A			

-SL type of GARMATAAB
-With long length
-For heating of short-height spaces

55% saving in fuel combined with flexibility of control & polution-free atmosphere

Iran Khodro Diesel Factory | Karaj

MAPNA INDUSTRIAL FACTORY

Mapna Boiler factory | **Karaj**

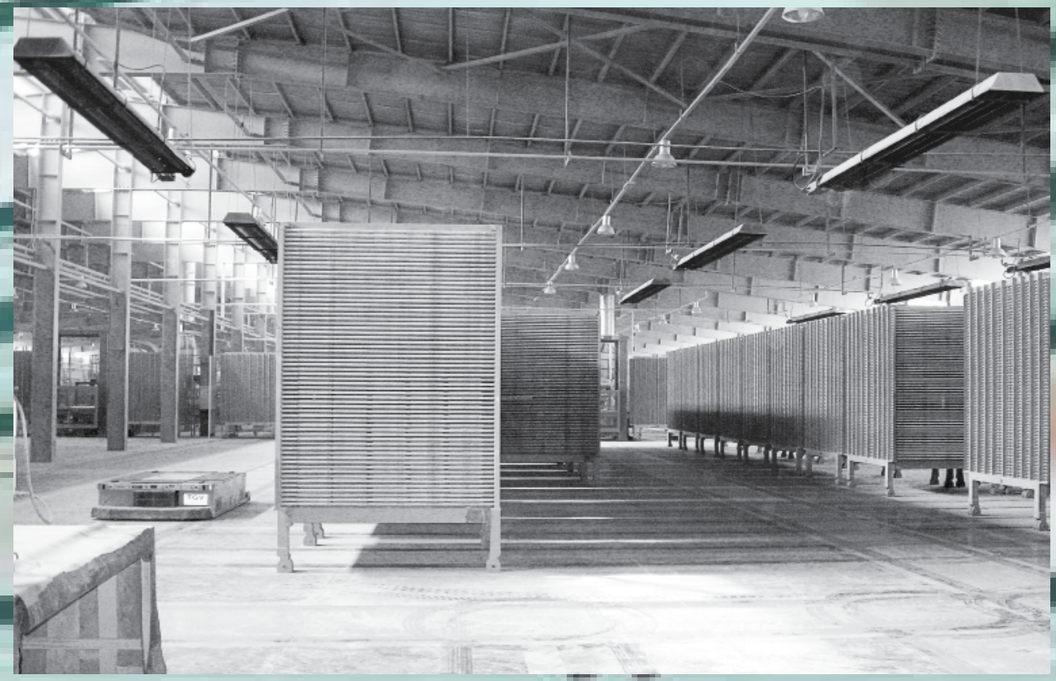
43 devices-2011

Profil Sazan Azhineh factory | Karaj

Radiant heat warms all solid objects and surfaces in its path through infrared waves

Boronz industrial group | **Karaj**

Modiran Khodro | **Karaj**



Kimiya Seram tile factory | **Meybod,Yazd**

60 devices-2007

Sahand Jam factory | **Tabriz**

36 devices-2009 to 2011

Working in the same way as
the sun

Azhand Borj industrial factory | **Arak**

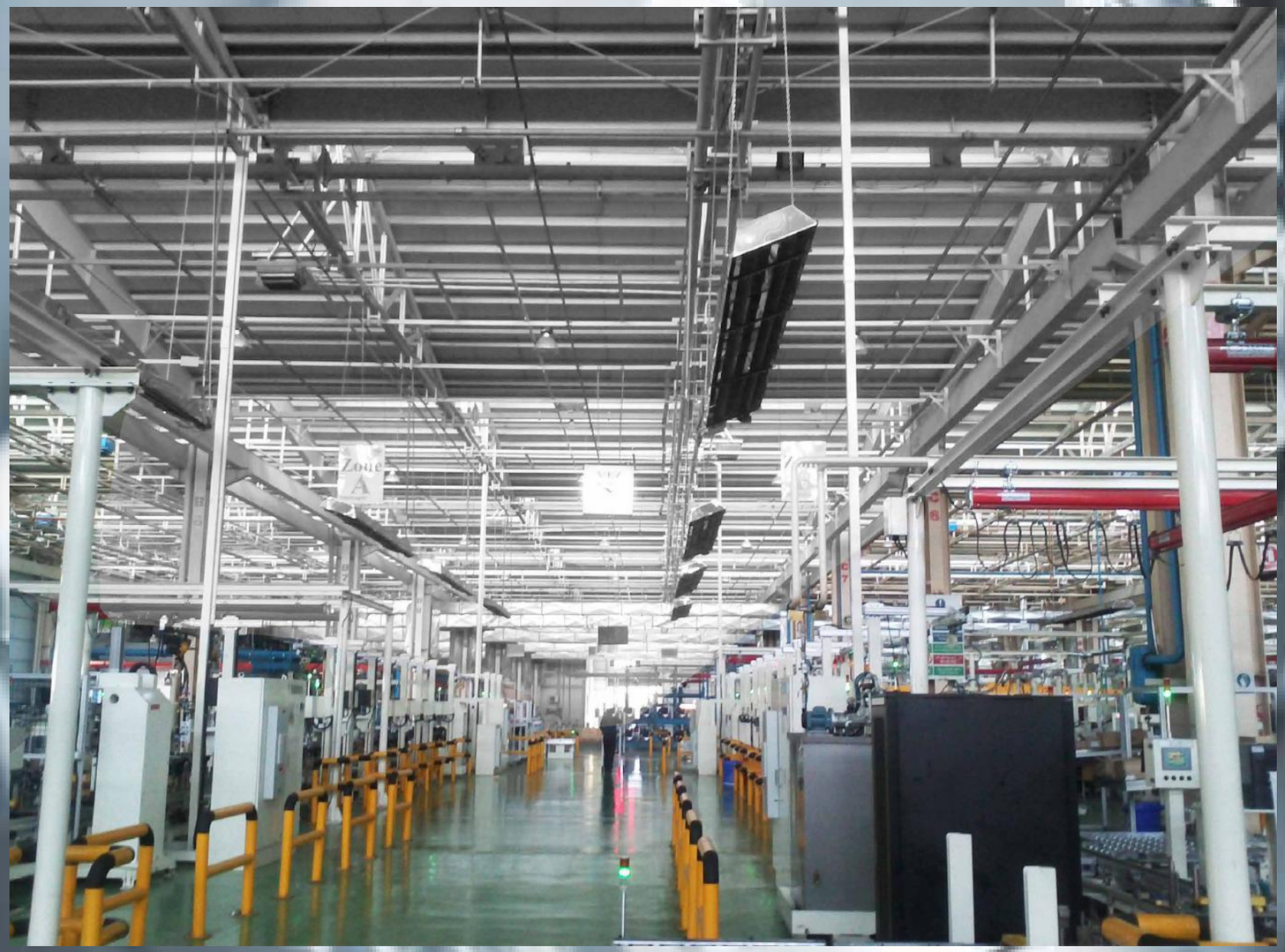
Nobough Sarmayesh factory | **Markazi province**

27 devices

Iranian Industrial Pumps factory | **Hashtgerd**

37 devices-2011

Mega Motor factory | Karaj



Looleh Polymer Espadana factory | Isfahan

Sabalan Khodro factory, bus manufacturing | **Ardebil**
60 devices-2011

Iran Transfo factory, power substation development | **Zanjan**

Radiant heat takes only minutes to reach comfort temperatures, so energy is never wasted

Electrogen factory | **Karaj**

Pars Generator (Mapna) | Karaj

61 devices-2014

Mammut industrial group | Karaj

46 devices-2013

15 years customer service

3 3 years warranty

10 10 years warranty of radiant tubes

Gratis visit & installation

Kerman motor factory | Karaj

IRAN MASHAL
environment engineering co.

First manufacturer of radiant heater &
only holder of national standard certificate
based on ISIRI 12871-1 in IRAN under the
registered name of GARMATAAB

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