



# **USER'S GUIDE TO CARRY OUT HEATING SYSTEMS BY HELIOS ELECTRIC INFRARED IRK**

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**Star Progetti's technology applied to industry  
for energy saving and Industrial Processing**

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# 1. THERMAL RADIATION

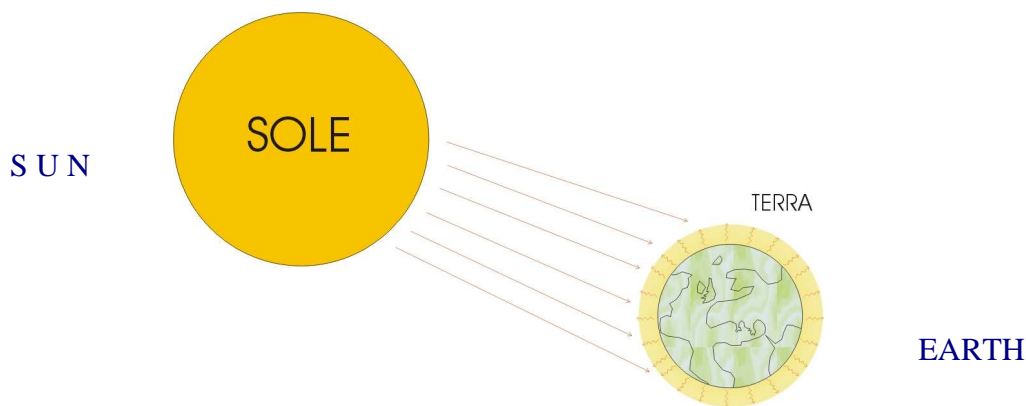
Before facing the implementation and sizing of a heating system by HELIOS ELECTRIC INFRARED IRK, it is useful to explain this kind of heat conveyance with some examples.

The example of the **SUN** and its way of heating the earth is the best example to mention when you talk about thermal radiation.

The sun, in fact, though millions of kilometers far away, emits rays passing through the sidereal space and only when they hit the earth heats it instantly. The result of this process is that the earth, in its turn, emits heat again, thus changing the ambient microclimate.

We can therefore state that the sun has not heated air up but this has subsequently been heated up by the heat given out by the surfaces that have been in their turn heated up by the sun.

This way of heating is called “thermal radiation by infrared rays”.

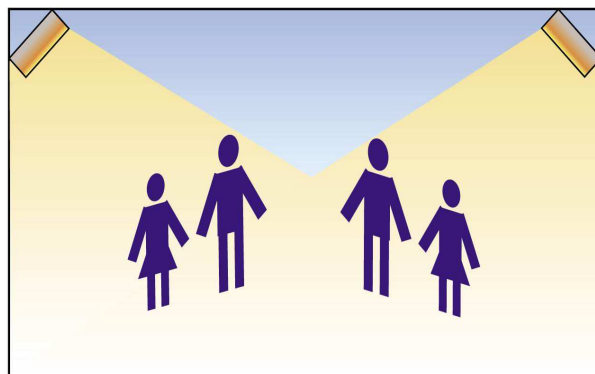


**Fig. A**

HELIOS ELECTRIC INFRARED IRK equipment by Star Progetti, acts just like a small sun. It emits heat rays directed towards people, objects and surfaces without having to heat up air, thus using the ecological principle already existing in nature.

The fact that air is not used to convey heat allows to reduce the dispersions caused by air recirculation, air currents, doors being opened and closed and high ceilings.

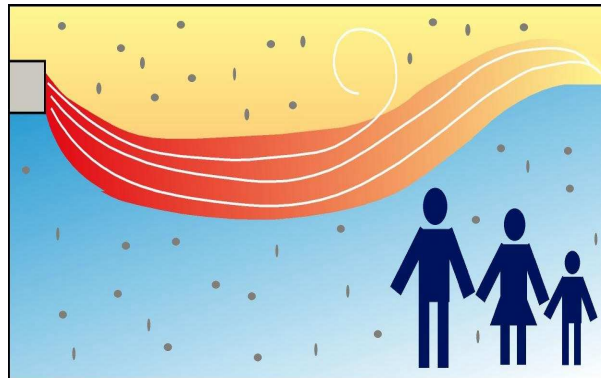
Heat is totally orientable and directable and the air is anyway heated up in a subsequent stage just like the sun does.



**Fig. B - HELIOS ELECTRIC INFRARED IRK**

In traditional heating instead, a source of heat heats up air in the environment, which, by shifting or moving the matter, flows in the environment and slowly heats up people and objects.

This way of heating has one more passage and, contrary to radiation, is not effective in large environments, outside or in those places where immediate heating is required. Hot air, in fact, for a physical principle, always rises upwards, sets up in layers, and tends to flow out of any opening. It is therefore necessary to heat up the entire volume of a space with resulting unuseful and expensive waste.



**Fig. C – HOT AIR**

## **SHORT WAVES INFRARED RAYS**

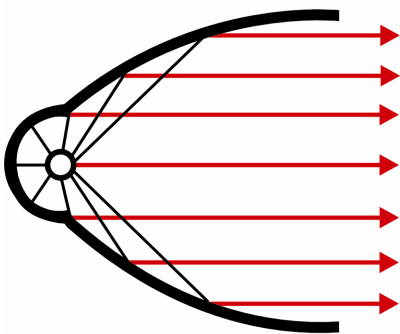
The perception of comfortable heat depends on the wave length used : the shorter the wave length of infrared rays, the higher is the heat perception; that is why Star Progetti's equipment, finalized to environmental heating, only utilize short wave infrared rays (IR-A).

	<b>SHORT WAVES IR-A</b>	<b>MEDIUM WAVES IR-B</b>	<b>LONG WAVES IR-C</b>
<b>Heating</b>	RADIATION	RADIATION/ CONVECTION	CONVECTION
<b>Sensitivity to air currents</b>	NO	YES	YES, MUCH
<b>Orientability with reflector</b>	YES	LITTLE	NO
<b>Instant heat</b>	YES	LITTLE	NO

The energy emission, according to the wave lengths forming the radiation, varies with the emitting body temperature : the hotter the body emitting the radiation (source), the more effective is the radiated heat.

## 1.2 REFLECTOR TECHNOLOGY

HELIOS ELECTRIC INFRARED IRK heaters optimise the refraction of short wave infrared rays by means of their REFLECTORS, which have a basic importance in radiation in general; in our equipment this importance accounts for more than 60%. This is because heat radiation obeys the laws of optics both in terms of reflection and refraction. Star Progetti has designed and produced a full range of special reflectors that optimise infrared performance using different reflectors tailored to the heaters application. Star Progetti reflector technology is the result of detailed theoretical research and experimentation.; all the reflectors have been designed in accordance with the foreseen application and market demand. Such great experience in the study of refraction has led to the development of symmetrical reflectors and subsequently asymmetrical reflectors.



**FIG. D – EXAMPLE OF SYMMETRICAL REFLECTOR TO AVOID UNEVEN RANDOM HEAT EMISSION**

The study on parabolic reflectors has led Star Progetti to experiment different materials or metal alloys and two different colours of the parabolic reflectors.

## 2.PERCEPTION OF COMFORT

A basic assumption should be made : the perception of comfort felt by an individual does not only depend on the air temperature measurable in degrees, but also on the kind of activity that individual is carrying out, the air dampness, the walls near which the individual is.

Within radiation heating, comfort is meant as the rise of heat sensation felt by individuals and objects, and caused by the infrared rays from the emitter.

On sizing the installation of HELIOS ELECTRIC INFRARED IRK heating system, the most important factors to be considered, that are usually deemed as of secondary importance for the traditional convection systems, are the following :

- 1) THE OCCUPANTS ARE TO BE HEATED UP, NOT THE AMBIENT AIR.
- 2) CALCULATIONS ARE TO BE CONSIDERED IN TERMS OF RADIATING COVERING OF THE ENVIRONMENT/AREA, NOT OF RISE OF AIR TEMPERATURE IN THE ENVIRONMENT.
- 3) CONSEQUENTLY CALCULATIONS SHALL BE MADE ON SQUARE METERS ( $m^2$ ) TO BE HEATED UP, RATHER THAN CUBIC METERS ( $m^3$ ).

As above mentioned, a person receiving heat by thermal radiation behaves like a body receiving part of that energy : the body superficial temperature immediately increases and heat is instantly perceived.

## **2.1 HEALTH & SAFETY**

In order to avoid any doubt on the “dangers” of heating by infrared rays emitters, we will analyse a simple physiological action by the infrared on human body, animals and plants.

In physiology, the solar energy is indispensable to any form of life and infrared belongs to solar energy but it hasn't got any photo-chemical effect. The HELIOS ELECTRIC INFRARED IRK heaters emit heat only in the infrared band, therefore there is no presence of gamma, UV rays or other.

The short wave infrared rays show to be entirely beneficial for the human body. Some electro-medical equipment has been using short wave infrared rays for more than twenty years with results of therapeutic advantages.

The infrared rays heaters by Star Progetti use IRK PHILIPS bulbs which have a filament emitting the greatest part of energy in the infrared part of the electromagnetic spectrum. Since they are IRK sources, their advantage is a very low radiation depreciation and keep a quite constant effectiveness for their entire lifetime (7000 ore c.a.). The golden filter distinguishing them substantially reduces glare, producing the result of a pleasant view during their operation.

As already mentioned, the radiating emitters used in heating have the effect of giving the individuals a pleasant sensation of comfort, leaving the air surrounding them at a comparatively lower temperature. Subsequently also air shall be heated up since surfaces and objects heated up shall emit heat in their turn.

## **3. THE ADVANTAGES IN COMFORT**

HELIOS ELECTRIC INFRARED IRK radiation basically exploits the energy of short waves and therefore it does not involve the ambient air transport vector. It is evident that the system does not heat up the volume of the building but only the areas influenced by the radiation. The bodies receiving the direct radiation absorb part of the emitted radiating energy and re-emit it in their turn, helping in this way to heat whatever is near them, including the air in a time-space. Once the system and subsequently the building are in a steady state, the floor and the solid bodies heated up by radiation help to make even the thermal gradient of the entire operative area of the personnel employed. It is therefore evident that HELIOS ELECTRIC INFRARED IRK avoids temperature stratifications, dispersions caused by openings, that instead occur in the hot air convection heating (see fig. B and C). The physical phenomenon of hot air stratification with the traditional heating systems inevitably creates an environment that is not evenly heated and produces energy waste because of most part of the heat is dispersed where it is of no use.

The radiation heating, as well as determining an even thermal gradient, does not produce the heat stratification in the higher part of the environment.

Another advantage deriving from the uniformity of the thermal comfort, is that of the complete absence of air streams, normally created by the convective motions produced by the hot air plants.

The radiation heating by HELIOS ELECTRIC INFRARED IRK also eliminates dust circulation, dust from processing and noise of ventilation with a resulting advantage for the operators present in the environment.

### 3.1 ECONOMICAL ADVANTAGES of installation and operation

The HELIOS ELECTRIC INFRARED IRK heaters have no doubt great advantages from the installation point of view. The plant is made without major masonry works, with neither gas piping nor gas leak presence detectors; moreover, they do not require space and the thermal power plant costs are saved.

The possibility of reducing sizes even by one only pipe can be useful in many situations. As well as the advantages of the building and thermal comfort aspects, between radiation plants and traditional convection plants, there are advantages in terms of operation. With a convection heating, normally to achieve a useful thermal level, it is necessary to switch on the plant, in accordance with the kind of building, from 60 to 180 minutes beforehand and keep it in operation.

By HELIOS ELECTRIC INFRARED IRK radiation system, such pre-heating time is eliminated, with a resulting substantial energy saving. Moreover, such system can be stopped at any time and started again for the required time (such as light!)

The most significant operational advantage concerns the possibility of plant fractionation in several zones, even small zones, with the adoption of diversified working temperatures, which is not possible with a convection system. By Star Progetti radiating heaters, it is possible to heat up even a single workstation or a single zone.

In order to make the system highly flexible, it is however recommendable to make separate starts of the heaters. This is important above all in the presence of a large number of heaters, so that the user is able to heat up only where heating is needed (zoning).

**You can thus highly optimise consumptions and get substantial energy saving and primary energy saving.** In the hypothesis of plants studied and sized for working needs by production posts, you can even allow each operator to choose the wished temperature, without involving neither an entire zone nor his colleague working by his side.

## 4.GUIDE TO CHOOSE THE MODELS OF HEATERS

Before adopting the heating solution by HELIOS ELECTRIC INFRARED IRK radiation and before developing the plant design, you should ascertain whether the kind of building to be heated up and the kind of activity foreseen in that building shall be able to accept the system proposed in an optimal way.

### 4.1 – Building characteristics – Installation height

The first element to check is the kind of construction typology of the environment where “our” radiation heating system shall be installed.

We would like to remind you that the radiating factor varies in accordance with the distance of the zone to heat up, the radiation to the floor could turn out to be insufficient, if the installation height is too much, and annoying if the height is too little.

### 4.2 – Aeration and microclimate in the environment

The radiation heating system could not be recommended in certain cases because of the presence, inside the rooms, of excessive air streams (over 2,5 metres/sec.), since such phenomenon would give rise to the “wind” effect, which could reduce the benefit of the radiating factor. In that case, we recommend to shield the rooms by adequate modular screen system by Star Progetti.

You should pay a particular attention to the rooms where either water or humidity are much present, since its evaporation would produce a further temperature lowering for the people at work. In this case it is necessary to create a “chimney” effect, that is to make an opening in the upper part of the room in order to let the humidity flow outside.

### 4.3 – Partial Heating

Regarding the radiation heating of very small areas (about 30-40 m<sup>2</sup>), that are considered as “warm oasis” within a cold surrounding context, the quantity of thermal radiation to be calculated shall have to be increased by at least 30-40%, being many the negative factors affecting the concerned area. You shall have to foresee more than one emitting unit in order to obtain a crisscross radiation, instead of one-sided, as regards to the operator (Fig.5).

### 4.4 – Typology of Activity

To the purpose of avoiding negative effects as regards to comfort, during the design phase it will be necessary to adopt some simple but basic rules of sizing, selection of models, feasibility or non-feasibility of the plants, positioning of the heaters.

You should synthetically do the following :

- safeguard all time the comfort of the occupants, avoiding, as mentioned, to install the heaters either too close or too far from them.
- optimise the units distribution in order to obtain (wherever possible) a kind of crisscross radiation to avoid the forming of shadow zones, applying the theory of crisscross fields as used in lighting technique.
- assess the typology of the environment, considering :

- Industrial sector,
  - a) if people are motionless, they need more heat
  - b) if people are in motion, they need less heat
- Hospitality sector,  
according to the stay of the customers, the longer their stay, the higher is the radiation level to be considered.
- All sectors,  
the higher the humidity rate, the higher should be the radiation quantity.
- All sectors,  
consider that the individual need for heat is directly related to the heat dispersion of human body. In fact, the average level of comfort for an individual corresponds to a temperature ranging from 18 to 20°C.
- In all sectors consider that even the absence of noise, dust and humidity belong to the concept of comfort.
- In all sectors you shall have to consider an increase in radiation for the situations regarded as “difficult”.



## 4.5 – Assessments for installing HELIOS INFRARED IRK heaters based on environmental /temperature conditions

INDUSTRIAL SECTOR	PERCENTAGE OF THE ENVIRONMENT TO HEAT UP	ROOMS CLOSED BY WALLS W/m <sup>2</sup>	NON PROTECTED AREAS IN LARGE ENVIRONMENTS W/m <sup>2</sup>	AREAS IN LARGE ENVIRONMENTS PROTECTED BY DIVIDERS W/m <sup>2</sup>	AREAS WITH CANOPIES W/m <sup>2</sup>
Heavy duty, people in motion	10% 30% 70% 100%	200 150 130 130	220 200 180 180		250 220 200 200
Light work, people in motion (garages, workshops, laboratories etc.)	10% 30% 70% 100%	230 200 200 180	250 230 220 210		300 270 250 230
Sedentary light work, with room dividers	100%			200-220	

**Fig.E**

### SELECTION PRINCIPLES TO BE ASSESSED FOR INSTALLING HELIOS INFRARED IRK HEATERS

Calorific values taken in Watt per square metre 1 kW= 1000 Watt

#### INSTALLATION HEIGHT

Industry: from 2 to 5 m. \*

\*Installation height over 5 m. are possible by matching suitable heaters.

Public premises: from 1,90 to 3,0 m.

Positioning of crossed heaters at 45°

**NOTE :** CALORIFIC YIELDS CAN BE CONSIDERABLY INCREASED BY USING MODULAR ROOM DIVIDERS BY STAR PROGETTI TO BORDER THE AREA OR THE SPECIFIC POST. IN THIS WAY YOU GET AN AREA BEING MORE DEDICATED TO WORK, WITH A GREATER ADVANTAGE OF WELLNESS FOR THE OCCUPANTS AND WASTE REDUCTION.

#### REQUIRED CALORIFIC VALUES

The quantity of heat required in a building depends on the kind of activity, minimum and necessary temperature, sources for air change and the percentage of surface to heat up by radiating system. The enclosed table Fig. E is based on Star Progetti's experience with the different installations carried out and in the various sectors of application. In any case, you shall always have to consider the correct parameters as here below stated.

#### **PARAMETERS TO BE CONSIDERED :**

- KIND OF ENVIRONMENT (closed by walls, non protected area in large environments, completely open spaces, with canopies)
- KIND OF ACTIVITY
- PERCENTAGE OF THE AREA TO BE HEATED UP (partially or totally)
- SURFACE in square meters.
- MINIMUM ROOM TEMPERATURE
- ANY POSSIBLE HUMIDITY
- OPTIMAL TEMPERATURE TO REACH
- NUMBER AND ARRANGEMENT OF THE HEATERS FOR THE BEST HEAT DIFFUSION
- POSSIBLE LOAD WITH ENERGY COUNTER

**THE TABLE IS REFERRED TO THE UTILIZATION OF HEATERS PRODUCED BY STAR PROGETTI ONLY, HAVING EXCLUSIVE AND HIGH PERFORMING FEATURES.**

See the characteristics of each heater and relevant yields from page 15.

## **5. TOTAL RADIATION – PARTIAL RADIATION**

In this handbook, we have not yet mentioned that the indirect radiation can develop about half of the direct radiation, consequently the radiation that is produced shall affect the people in the environment. That is true only for the areas in the middle but not those adjoining to the walls that are directly exposed towards the outside. In this latter case, you should install the heater nearer to the wall, since, as mentioned, the feeling of physiologic wellness also derives from the neutralization of the negative radiation coming, for example, from walls and glass doors/windows. Moreover, should there be bulky or very high machines or processing plants, pay attention not to create “shadow areas”, thus uselessly radiating those equipment without heating up the people.

### **5.1 – Typologies of plant: total, partial, by workstation**

According to the specific needs, deriving from the building typology, the kind of layout (arrangement of the workstations in the shed or by the tables in a public local) or from the running needs, you can adopt different typologies of plant.

#### **- Total heating of an area bordered by walls**

#### **- Partial heating**

It is the most used heating in the industrial sector. It may happen that the need for heating is limited to a partial zone within the entire surface of the department, however quite wide to be considered as an homogeneous area. Since the peripheral zones of the area to be heated up are in contact, you should foresee more powerful heaters for the stations placed at the limits of our referenced area, or better arrange it with room dividers by Star Progetti (see Fig.F).

## - Heating of Workstation

It is much used in the industrial sector because it permits to create comfort to workstations that are occasionally used. Should those workstations be used more often, in this case as well, the shielding with dividing walls can be recommended (see Fig. F and Fig. G).



Fig. F – Partial heating with room dividers



Fig. G - Heating of workstation with room dividers

## 5.2 – Heat Controllers

It becomes basic to use the Heat Controllers by Star Progetti to regulate the comfort of people, to reduce waste in the half seasons or on warmer winter days (see the manual regarding the Heat Controllers).

## 6. POSITIONING OF THE HEATERS

The positioning of the heaters is of basic importance in the plant layout, since it must guarantee the most perfect covering of the areas to be heated. A base concept to be considered is that of illumination, that is we should consider the various sources projected as if we should light up the interest zone. Once you have installed the heaters, you should very carefully direct them correctly and assess the cones produced by the machines. The ideal typology of installation is the one providing the heaters installed fixed at the wall in such a way as to create a synergy and therefore a crossing among the rays of the opposed heaters.

**Fig. 1** shows the optimal distance between the opposed heaters. Otherwise, **fig. 2** shows an example of arrangement when the distance between the opposed heaters is too much and the best thing is to position the heaters at the ceiling but in any case inclined at  $45^\circ$  towards the opposed heaters.

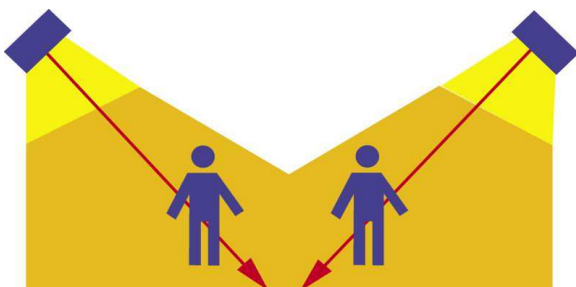


Fig. 1

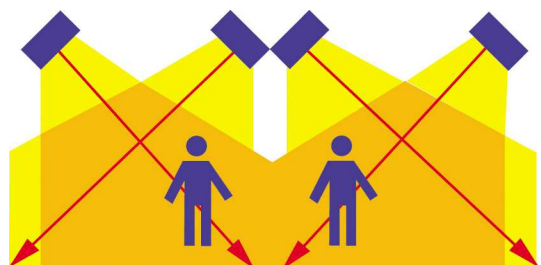
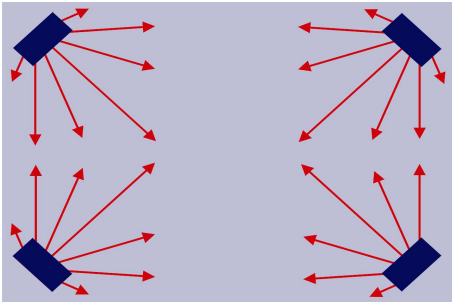


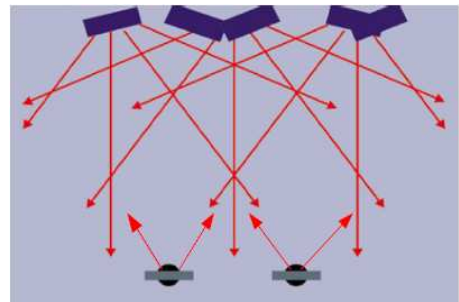
Fig. 2

**Fig. 3** shows a typical installation in environments having regular sizes where you can install Helios Infrared IRK heaters at its 4 angles.

**Fig. 4** is recommended when it is not possible to make the cross opposite positioning because the people work near one only wall. In this case the heaters should be placed on the wall and could be directed on the workstations even diagonally, this in order to produce more uniform radiations on the people. Another easy solution is that of using Helios Infrared IRK heaters in front of them standing on the floor on a mobile support, thus creating the crisscross effect.



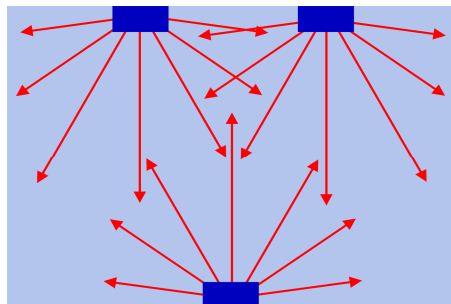
**Fig. 3**



**Fig. 4**

### **CROSSED ALTERNATE INSTALLATION**

This is an excellent installation because it permits to have a homogeneous heat on the area.



**Fig. 5**

### **INSTALLATION AT CEILING**

In the case of perpendicular positioning to the ground, therefore at the ceiling, we always recommend the inclination of the heaters towards the people to heat up. As fig. 2 and fig. 6 show, the two heaters installed at ceiling have been however installed at 45° inclination.



**Fig. 6**



## 6.1 RADIATION DIAGRAMS

The radiation diagrams supply a useful help to the implementation of a plant for the **heating by zones** and the **heating by workstation**. Concerning the **homogeneous heating** of large zones or large environments, we suggest you should send the drawings to the technical department of Star Progetti.

## 6.2 RECOMMENDED HEIGHT OF INSTALLATION

The following diagrams show the models of Star Progetti's heaters, data and suggestions about installation. **As in lighting technique, the more the installation height, the wider the opening cone will be. But, please carefully note : the more the installation height, the lesser intense the radiation reaching the floor will be.** It is also necessary to assess the starting temperature and the people to heat up, whether they are standing, sitting or in motion, and the kind of wellness that you want to give (Delta). This in order to esteem the intensity of radiated heat you want to perform.

## 6.3 DISTANCE BETWEEN HEATERS

The distances between one heater and the other can be different among them. The distances stated in the following diagrams are the most used ones for the room heating. **It is important to remember that the colder the room, the shorter the pitch must be between one heater and the other.** You should take into account that the radiation cones of the heaters should not cross on the ground, but at a height of at least 1.5 m.. The following radiation charts show a distance in positioning between one heater and the other already foreseeing such cross at 1.5 m. height.

## 6.4 THE IMPORTANCE OF THE CORRECT DIRECTING

Once the heaters have been positioned, it is important to correctly direct them on the areas to heat up. The concept is the same as in lighting technique. Therefore, you should ascertain that the projection of infrared rays is correctly directed on the zones to heat up. To help this regulation, we suggest you should check it without light. In this case you shall be able to perfectly notice the rosy rays projected on the wished zones.

## 6.5 CHOOSING THE MODEL : THE AFFECTING FACTORS

One of the basic aspects in choosing the heater model is above all based on the number of heaters to install. In fact, calling back the methodology of lighting technique, it is important to have more sources developing heat than have one or two very strong sources. Consequently, once you have considered all the aspects and assessments on the plant to make, you shall have finally to keep into account choosing more sources on the interest zone, so as to obtain a zone that is as much homogeneously heated as possible and having the best environmental comfort. Choosing the model depends on both installation height and required heat.

## 6.6 GEOGRAPHICAL AREAS

Should the installation be carried out in geographical areas where there are high peaks of cold, assess the installation of a few more heaters in advance.

# **7. RADIATION DIAGRAMS**

## **HELIOS INFRARED IRK**

### **Electric Infrared Rays Heaters**

# HELIOS INFRARED IRK

## Mod. HP 1-15

## HP 1-20

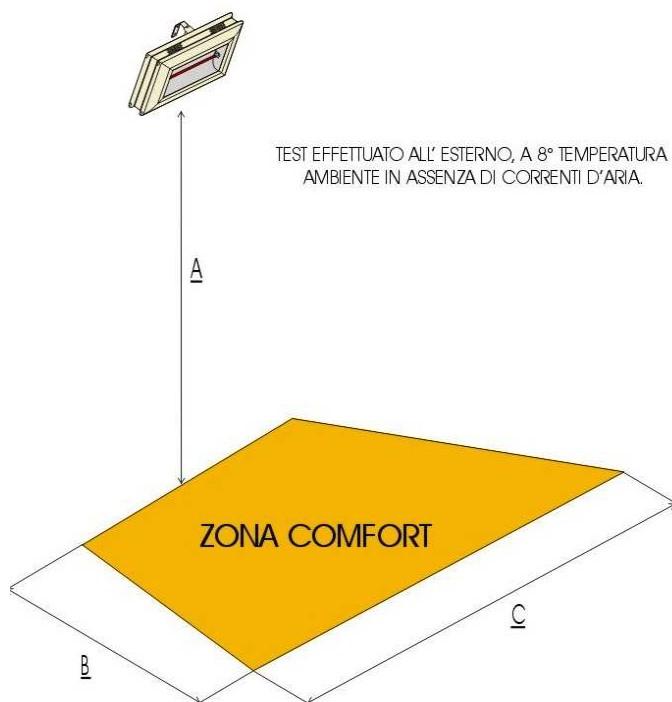


MODEL		RECOMMENDED HEIGHT
HP 1-15	1,5 kW	2,50/2,70 m
HP 1-20	2,0 kW	2,70/3,00 m
PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)		



MODEL		DISTANCE BETWEEN HEATERS
HP 1-15	1,5 kW	2,50/2,70 m
HP 1-20	2,0 kW	2,70/3,00 m
WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS		

### RADIATION DIAGRAM –WALL INSTALLATION



Model	A	B	C
HP 1-20	2,8 m	3,0 m	4,0 m

#### THERMAL TESTS - Heater mod. HP 1-20

- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

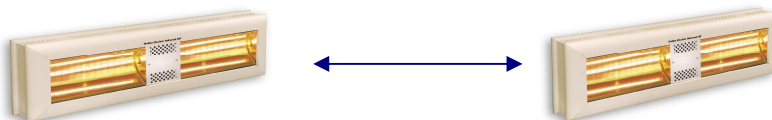
	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
AVERAGE GRADIENT	79,3 °C	50,1°C	37,5°C	21,0°C	17,4°C	16,6°C	15,4°C





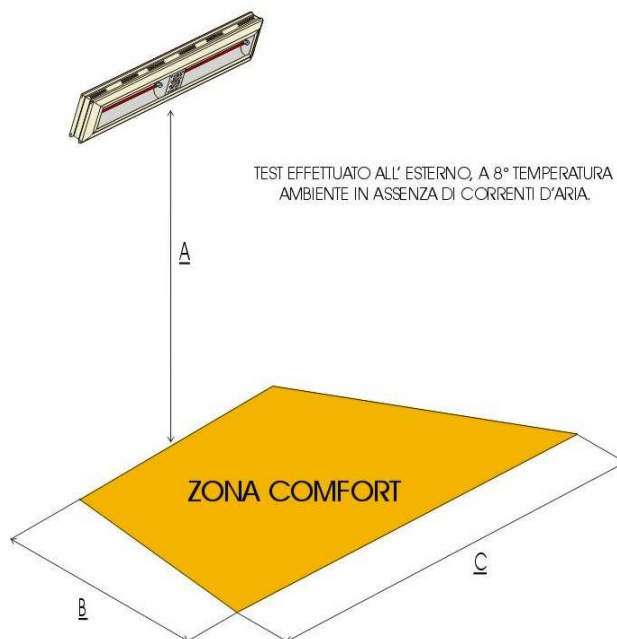
## HELIOS INFRARED IRK Mod. HP 2-30 HP 2-40

MODEL		RECOMMENDED HEIGHT
HP 2-30	3,0 kW	3,20/3,50 m
HP 2-40	4,0 kW	3,40/4,00 m
PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)		



MODEL		DISTANCE BETWEEN HEATERS
HP 2-30	3,0 kW	3,50/4,20 m
HP 2-40	4,0 kW	4,30/5,00 m
WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS		

### RADIATION DIAGRAM –WALL INSTALLATION



MODEL	A	B	C
HP 2-40	3,5 m	5,0 m	6,0 m

#### THERMAL TESTS - Heater mod. HP 2-40

- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
AVERAGE GRADIENT	78,6 °C	51,3 °C	36,9 °C	27,8°C	24,4 °C	21,0 °C	18,8 °C



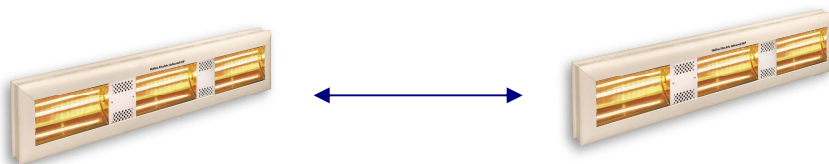
# HELIOS INFRARED IRK

## Mod. HP 3-60

## Mod. HP 3-45

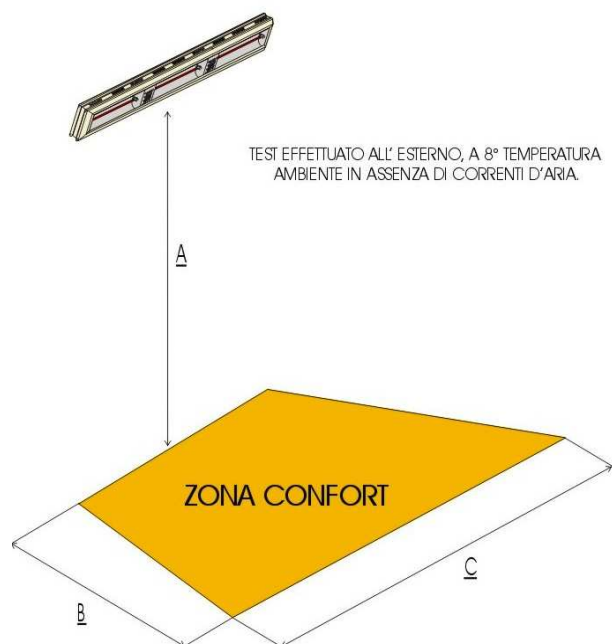


MODEL		RECOMMENDED HEIGHT
HP 3-45	4,5 kW	4,00 / 5,00 m
HP 3-60	6,0 kW	5,00 m
PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)		



MODEL		DISTANCE BETWEEN HEATERS
HP 3-45	4,5 kW	4,00 / 4,50 m
HP 3-60	6,0 kW	5,00/5,50 m
WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS		

## RADIATION DIAGRAM –WALL INSTALLATION



MODEL	A	B	C
HP 3-60	5 ,0m	6,0 m	7,0 m

### THERMAL TESTS - Heater mod. HP 3-60

- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
Average Gradient	81,7°C	53,9°C	40,3°C	34,6°C	30,7°C	25,3°C	21,7°C



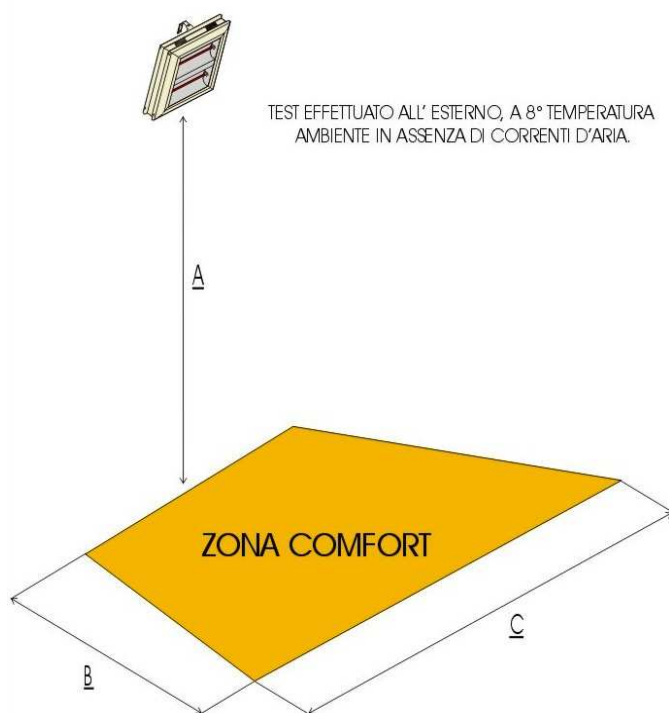
# **HELIOS INFRARED IRK** **Mod. HPV2-30** **Mod. HPV2-40**

MODEL		RECOMMENDED HEIGHT
HPV2-30	3,0 kW	3,20 / 3,50 m
HP V2-40	4,0 kW	3,50 / 4,00 m
PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)		



MODEL		DISTANCE BETWEEN HEATERS
HPV2-30	3,0 kW	3,00 m
HP V2-40	4,0 kW	3,50 m
WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS		

## **RADIATION DIAGRAM –WALL INSTALLATION**



MODEL	A	B	C
HPV 2-40	3,5 m	5,5 m	5,0 m

### **THERMAL TESTS - Heater mod. HPV 2-40**

- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
Average Gradient	106,1°C	66,6°C	40,7°C	32,2°C	28,1°C	24,5°C	21,3°C

# HELIOS INFRARED IRK

## Mod. HPV3-45

## Mod.HPV3-60

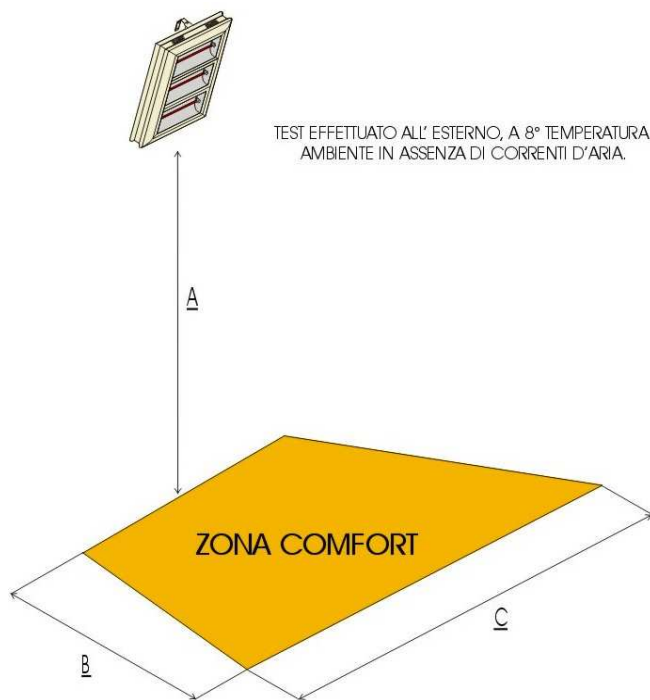


MODEL		RECOMMENDED HEIGHT
HPV3-45	4,5 kW	5,0 m
HP V3-60	6,0 kW	5,0/5,50 m
<b>PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)</b>		



MODEL		DISTANCE BETWEEN HEATERS
HPV3-45	4,5 kW	3,50/4,00 m
HP V3-60	6,0 kW	4 m
<b>WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS</b>		

### RADIATION DIAGRAM –WALL INSTALLATION



MODEL	A	B	C
HPV 3-60	5,0m	6,5 m	6,0 m

#### THERMAL TESTS - Heater mod. HPV 3-60

- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
<b>Average Gradient</b>	109,9°C	70,6°C	43,3°C	36,0°C	30,5°C	25,4°C	21,4°C



## HELIOS INFRARED IRK

### Mod. EH1-15N

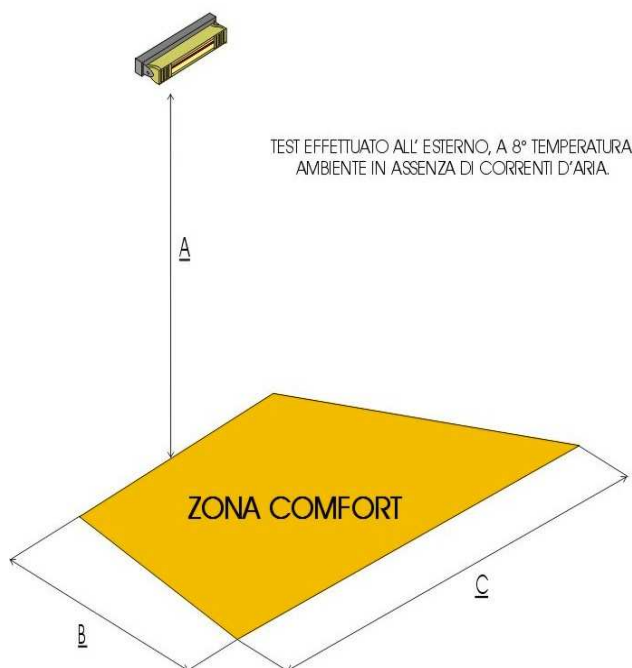
### Mod.EH1-20N

MODEL		RECOMMENDED HEIGHT
HEH 1-15N	1,5 kW	2,20/2,50 m
HEH 1-20N	2,0 kW	2,50/2,80 m
PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)		



MODEL		DISTANCE BETWEEN HEATERS
HEH 1-15N	1,5 kW	1,90/2,30 m
HEH 1-20N	2,0 kW	2,20/3,00 m
WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS		

## RADIATION DIAGRAM –WALL INSTALLATION



MODEL	A	B	C
EH1-20N	2,5 m	2,8 m	3,0 m

### THERMAL TESTS - Heater mod. HEH 1-20N

- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
Average Gradient	39,7°C	24,8°C	18,4°C	16,2°C	14,5°C	13,8°C	13,3°C

# HELIOS INFRARED IRK Mod. EH2-30N Mod. EH 2-40N

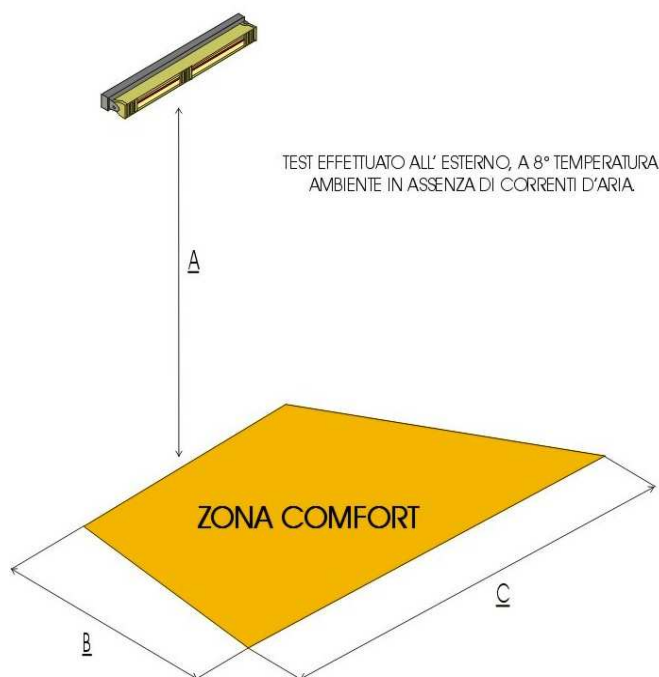


MODEL		RECOMMENDED HEIGHT
HEH 2-30N	3,0 kW	3,0/3,30 m
HEH 2-40N	4,0 kW	3,30/3,60 m
PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)		



MODEL		DISTANCE BETWEEN HEATERS
HEH 2-30N	3,0 kW	3,20/3,50 m
HEH 2-40N	4,0 kW	3,60/4,30 m
WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS		

## RADIATION DIAGRAM –WALL INSTALLATION



MODEL	A	B	C
EH2-40N	3,3 m	4,0 m	5,0 m

### THERMAL TESTS - Heater mod. EH 2-40N

- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
Average Gradient	60,9°C	41,6°C	29,4°C	24,8°C	20,7°C	19,4°C	18,4°C

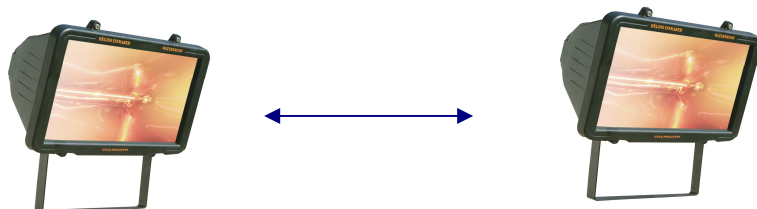


# HELIOS INFRARED IRK

## Mod. EHWP1/7

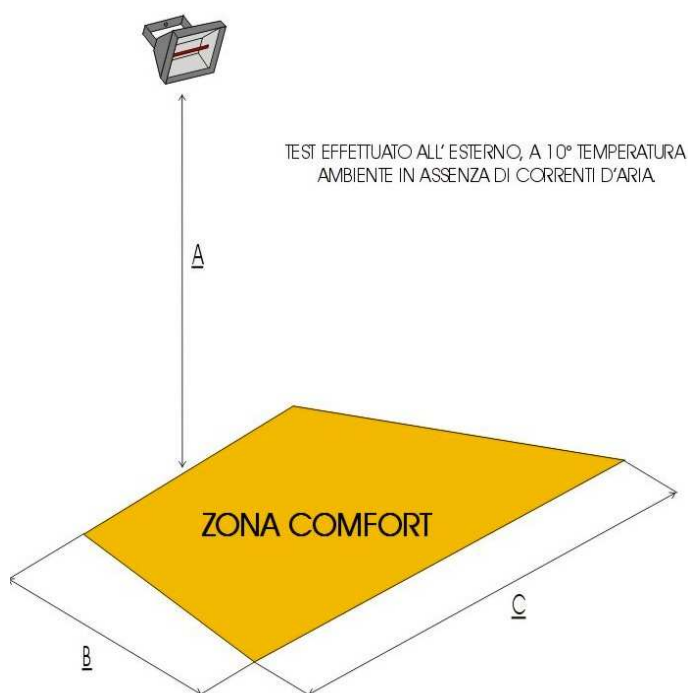
### WATERPROOF IP 54

MODEL	RECOMMENDED HEIGHT
EHWP1/7 1,3 kW	1,90/2,20 m
PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)	



MODEL	DISTANCE BETWEEN HEATERS
EHWP1/7 1,3 kW	1,50 / 2,0 m
WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS	

## RADIATION DIAGRAM –WALL INSTALLATION



MODEL	A	B	C
EHWP1/7	1,9 m	2,5 m	2,8 m

### THERMAL TESTS - Heater mod. EHWP1/7

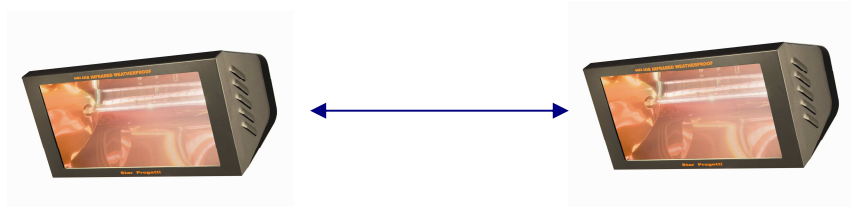
- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
Average Gradient	49,0°C	37,3°C	27,3°C	22,7°C	19,5°C	17,9°C	15,9°C

# HELIOS INFRARED IRK Mod. EHWP65/15 WATERPROOF IP X5

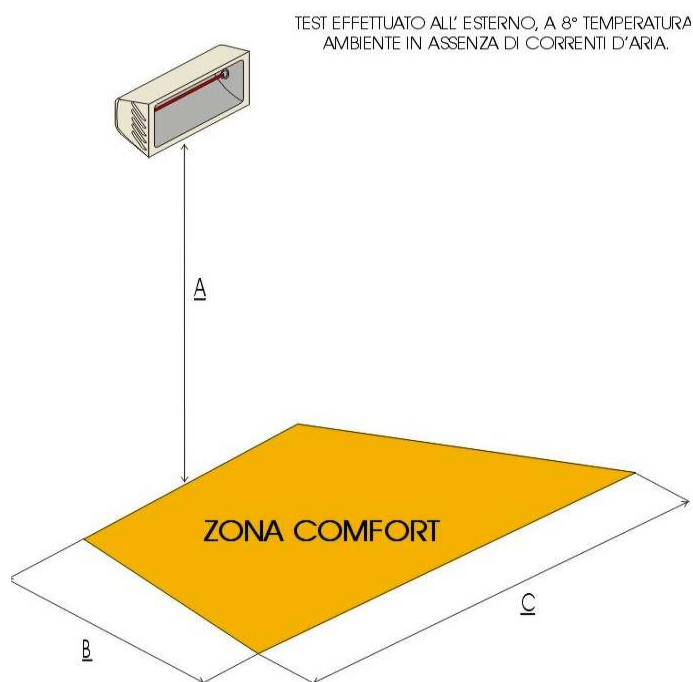


MODEL	RECOMMENDED HEIGHT
EHWP65/15 1,5 kW	2,50 / 3,0 m
PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)	



MODEL	DISTANCE BETWEEN HEATERS
EHWP65/15 1,5 kW	3,0 m
WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS	

## RADIATION DIAGRAM –WALL INSTALLATION



MODEL	A	B	C
EHWP65/15	2,50 m	4,0 m	4,0 m

### THERMAL TESTS - Heater mod. EHWP65/15

- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
Average Gradient	94,0°C	57,0°C	41,0°C	31,5°C	26,0°C	23,9°C	21,1°C



# **HELIOS INFRARED IRK Mod. EHWP2000 WATERPROOF IP 23**

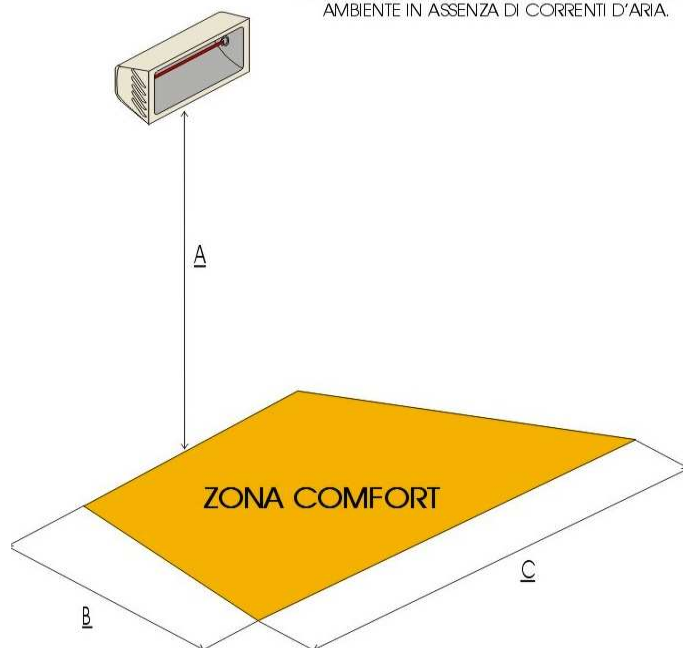
MODEL		RECOMMENDED HEIGHT
EHWP2000	2,0 kW	2,50 / 3,0 m
PAY ATTENTION TO THE POSITION OF PEOPLE (WHETHER STANDING OR SITTING)		



MODEL		DISTANCE BETWEEN HEATERS
EHWP2000	2,0 kW	3,0 m
WITH LOW TEMPERATURE, WE RECOMMEND THE SHORTEST DISTANCE BETWEEN THE HEATERS		

## **RADIATION DIAGRAM –WALL INSTALLATION**

TEST EFFETTUATO ALL' ESTERNO, A 8° TEMPERATURA AMBIENTE IN ASSENZA DI CORRENTI D'ARIA.



**WP2000 SEASIDE  
2000 WATT IP 23  
WITH GLASS, FULLY IN  
POLISHED STAINLESS  
STEEL  
SPECIFIC FOR SEASIDE  
AREAS WITH CORROSION  
PROBLEMS  
(agricultural sector)**

MODEL	A	B	C
EHWP2000	2,50 m	4,0 m	4,0 m

## **THERMAL TESTS - Heater mod. EHWP2000**

- Room temperature: 10°C
- Heater position: 45° inclination
- Tests carried out: on different targets at the above stated distances

	At cm 100	At cm 150	At cm 200	At cm 250	At cm 300	At cm 350	At cm 400
<b>Average Gradient</b>	83,6°C	53,5°C	40,3°C	30,8°C	25,2°C	22,7°C	20,1°C



## **8. ADVANTAGES OF HELIOS INFRARED IRK IN INDUSTRY**

- ➔ IT IS ABSOLUTELY THE MOST ADVANTAGEOUS SYSTEM ON THE MARKET : IT HEATS UP ONLY THE INTEREST AREAS, WITHOUT ANY WASTE OF ENERGY AND MONEY;
- ➔ NO NEED OF PRE-HEATING: THE UTMOST HEAT IN FEW MOMENTS;
- ➔ LARGE AREAS HEATED UP;
- ➔ THE HEAT IS CONCENTRATED IN VERY OPEN AND DIFFICULT SPACES, THE HEAT IS NOT AFFECTED BY AIR STREAMS;
- ➔ EASY AND FAST TO INSTALL: YOU JUST NEED AN ELECTRIC SYSTEM;
- ➔ FLEXIBLE: IF LOGISTICS CHANGE, THE HEATERS CAN BE EASILY MOVED FROM ONE PLACE TO ANOTHER;
- ➔ THEY DO NOT REQUIRE MAINTENANCE;
- ➔ THEY DO NOT STIR UP ANY DUST: ECOLOGICAL, THERE IS NO COMBUSTION;
- ➔ NO EMISSION OF CO<sub>2</sub> IN THE AIR AND GREAT SAVING OF PRIMARY ENERGY;
- ➔ POSSIBILITY OF HEAT REGULATION ON EACH SINGLE WORKSTATION!
- ➔ POSSIBILITY OF TIMER, THERMOSTAT AND START BY PRESENCE DETECTOR.

## 9. HELIOS INFRARED IRK REAL HEATING SAVING



**Up to 70%** reduction in heating expenditure  
TARGETED INSTANT HEAT, ON WORKING POSTS AND WHEN NECESSARY



**50%** saving on the installation costs : you need only an installation cable



**40%** saving on the appliance costs

### WHY HAVE OUR CUSTOMERS CHOSEN HELIOS INFRARED IRK?

➔ **IT IS THE MOST CONVENIENT ON THE MARKET**

Heating just the specific areas, without waste of energy nor money

➔ **LARGE HEATED AREA**

➔ **HEAT REMAINS LOCALIZED** : in wide open environments, heat is not affected by draughts

➔ **EASY and FAST** to install; **FLEXIBLE SYSTEM** : in case of changing logistics, it can be easily moved

➔ **NO MAINTENANCE**

➔ **DOES NOT STIR UP DUST**: ecological, no combustion, silent

➔ **NO HARMFUL EMISSION**

➔ **APPROVED BY IMQ – ITALIAN INSTITUTE FOR QUALITY**

➔ **SINGLE ADJUSTMENT OF HEAT** : it is possible on each post.  
Possibility of timer, thermostat and start by presence detector and remote controller.

➔ **HEATING WORKING AREAS WHERE OTHER SYSTEMS ARE NOT POSSIBLE.**

**Some of our important customers in Italy who have decided to save with HELIOS INFRARED IRK:**

<ul style="list-style-type: none"> <li>• BARILLA</li> <li>• POSTE ITALIANE</li> <li>• TRENITALIA</li> <li>• SDA EXPRESS COURIER</li> <li>• FINCANTIERI</li> <li>• ILVA</li> <li>• PORSCHE ITALIA</li> <li>• ORIENT EXPRESS HOTELS</li> <li>• COMPOSAD</li> <li>• BORGHITRASPORTI</li> <li>• MC DONALD'S</li> <li>• AUTOGRILL</li> <li>• ARCA SPA</li> <li>• COPRON</li> <li>• MOBILDEA</li> <li>• ACCIAIERIETRAVI&amp;PROFILI</li> <li>• ACCIAIERIEVALBRUNA</li> <li>• MERCATI GENERALI DITORINO</li> <li>• MANULI RUBBER SPA</li> <li>• HOTELVILLA SAN MICHELE FIESOLE</li> <li>• HOTEL SPLENDIDO PORTOFINO</li> <li>• C.R.I. ITALIA</li> <li>• PEG PEREGO SPA</li> </ul>	<ul style="list-style-type: none"> <li>• MERCATI COMUNALI MILANO</li> <li>• BANCA BCI</li> <li>• IKEA ITALIA</li> <li>• HOTEL FIERA MILANO</li> <li>• PESSINATUBI MILANO</li> <li>• RISTORANTE PUNY</li> <li>• ITALCEMENTIGROUP</li> <li>• TETRAPACK</li> <li>• TENARIS DALMINE</li> <li>• STERILGARDA</li> <li>• ESSELUNGA</li> <li>• SEGAFREDO</li> <li>• GUCCI SPA</li> <li>• ARMANI</li> <li>• FIAT GROUP</li> <li>• GRUPPO CARRARO</li> <li>• CEMENTIZZILLO SPA</li> <li>• MISTERDAY</li> <li>• RATTI SPA</li> <li>• RAMPINELLI SPA</li> <li>• CREMONINI SPA</li> <li>• SHIMANO ITALIA SPA</li> <li>• PEG PEREGO SPA</li> </ul>
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## **10. THE HEAT OF HELIOS ELECTRIC INFRARED IRK & PHILIPS IN INDUSTRIAL PROCESSING**

The heaters are efficient and inexpensive for the most varied industrial applications where heat is required. The heaters, with their adjustable heating source, are suited for a series of industrial applications. Above all in the mechanical sector, food, packaging, textile, chemical, nautical industry, livestock, agribusiness. In many cases, moreover, they have permitted to significantly diminish the processing times and a resulting substantial cut in production costs.

STAR PROGETTI has solved the problems wherever a targeted adjustable heat is required, as well as the problem of keeping a stable temperature in the plants, diminishing the processing times in many sectors, but above all reducing the production costs.

The engineers from Star Progetti are at disposal of the company managers to analyse the problems to be solved and bring the experience acquired with the installations already carried out. Out of those analyses, heaters have been conceived specifically for the industry needs, as well as the standard heaters that are already used by customers. Star Progetti, with its own engineers, guarantees the best collaboration to search the most innovative solutions suited for the industry and for great savings, within an absolute privacy.

Helios Electric Infrared IRK solves the problems of :

- ➔ Elimination of humidity
- ➔ Production of a specific temperature
- ➔ Drying
- ➔ seasoning of materials
- ➔ polymerization of resins
- ➔ activation of catalysis in resin processing
- ➔ drying of paints
- ➔ keeping a stable temperature in plant areas
- ➔ caloric treatment of materials before processing
- ➔ thermo-sterilization
- ➔ production of specific modular ovens

## **11. USING HELIOS INFRARED IRK IN INDUSTRIAL PROCESSING**

Helios Infrared heaters have been employed in the industrial processing many times; here below we list of the most representative ones in various sectors.

### **FIAT – CAR SECTOR**

- ✓ Activity : moulding of dashboards
- ✓ Factories in Avellino – Frosinone – Pistoia

### **GRUPPO CARRARO – AIR FORCE**

- ✓ Application: Drying of materials in painting carrousel plants
- Keeping of stable temperature of helicopter blades for emergency

### **M.T.L. - COMO**

- ✓ Activity : manufacturer of equipment for digital printing on fabric
- ✓ Application : at present our heaters are currently applied on their equipment.

### **SIAP SPA – PORDENONE**

- ✓ Application: drying of paintings on carrouseles

### **CEMENTIZZILLO SPA**

- ✓ Application: Drying of cement moulds

### **SIT SPA**

- ✓ Application: Drying of hardboards

### **ACQUALI SPA**

- ✓ Application: keeping of stable temperature in water suction pumps (to avoid freezing)

### **DANIELI CARS**

- ✓ Application: Drying of trailers just painted

### **MISTERDAY**

- ✓ Activity : Production of cookies
- ✓ Application: drying of cookies before the final packaging

### **STEEL GARDA SPA**

- ✓ Application : Keeping of stable temperature in milk suction pumps

### **MANTOVANI SPA**

- ✓ Application : Drying of moulds (quarter-decks) where the cement is poured in winter

### **MECONDOR SRL – Production of Fabrics**

- Application : Integration of drying of their gas kiln, thus increasing the product quality

### **DEANA SPA (Udine)**

- ✓ Application : a faster drying of materials in concrete

### **COMPANIES in the sector of MARBLE**

- ✓ Application: Water blending, resin application, drying

### **COMPANIES in the sector of OVEN MANUFACTURING**

Economic, fibre-glass sector, painting of carousel, boating

### **FURNITURE**

- ✓ Application : drying and painting of parts of furniture on production chains

### **TEXTILE**

- ✓ Application : Drying of ink on valuable fabrics

### **HYDRAULIC EQUIPMENT**

- ✓ Application : keeping of stable temperature and fluidity of hydraulic oil.

### **LAUNDRIES**

- ✓ Application : Paintings of fabrics – drying of water colours –rapid colour fixing

### **RESINS**

- ✓ Application : keeping of stable temperature and fluidity suited for the processing

## **12. CASE-HISTORY OF HELIOS INFRARED APPLIED FOR ZONE HEATING**

### **RATTI SPA (Varese)**

- ✓ To solve various technical problems and to heat up a shed of 10.000 square meters.
- ✓ Saving yearly € 50.000,00 by zone heating.

### **RAMPINELLI SPA**

- ✓ Metal processing
- ✓ To heat up about thirty workstations in a shed of 8.000 square meters.
- ✓ The company used to spend € 28.000 of diesel oil yearly.
- ✓ The investment has been amortized in one year
- ✓ After overcoming the problem of authorizations by the Fire Department, the company is in accordance with the standards.

### **DALMINE TENARIS**

- ✓ Shed surface : 15.000 square meters.
- ✓ Heating only on workstations
- ✓ Saving about 80% if compared to other systems

### **GRUPPO SDA – ITALIAN POSTAL SERVICE –BOLOGNA Branch**

- ✓ Shed surface : 10.000 square meters.
- ✓ Heating only on workstations around the machinery for sorting of postal packages

### **GRUPPO SDA – ITALIAN POSTAL SERVICE**

- ✓ Heating of workstations in the sheds in the main Italian cities.

### **FOOD INDUSTRY**

The food industries are subject to the cold chain, Helios Infrared IRK heaters do not interrupt the cold chain and heat up only the people's workstations.

## IF YOU WANT TO SAVE UP TO 60% ON YOUR HEATING COSTS RELY ON STAR PROGETTI & PHILIPS



### HELIOS INFRARED IRK IS SIMPLE AND NEEDS JUST A MINIMUM INVESTMENT

- Installation in short time: you just need an electric wiring
- Instant adjustable heat: just one click is enough
- Silent, does not stir up dust and does not disperse heat
- Does not need maintenance, compatible with photovoltaic systems
- Contributes to the energy saving

**IDEAL FOR SHEDS, WORK STATIONS (both indoor and outdoor), LABORATORIES, WORKSHOPS, WAREHOUSES, SHOWROOMS**

In this reality of business costs reduction and energy saving, Star Progetti & PHILIPS give the possibility to assess a new heating system by infrared rays, that is more modern and already used by many industries in Europe.



**EUROPEAN INDUSTRIES WITH HELIOS INFRARED IRK SAVE THOUSANDS OF EUROS  
ON THEIR HEATING COSTS**

Informazione: la Vostra compagnia, ricevuta in base dei dati e sarà elaborata in conformità con la legge 196/2003. In qualsiasi momento, Voi potete cambiare le Vostra dati, o rifiutare di ricevere informazioni, inviando messaggio al nostro indirizzo, o inviando messaggio al nostro indirizzo [info@starprogetti.com](mailto:info@starprogetti.com) o inviando Fax al numero: +39 02 906 39 262 al nome della nostra filiale esportazione. Edizione 02\_08



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