

## Technical guide

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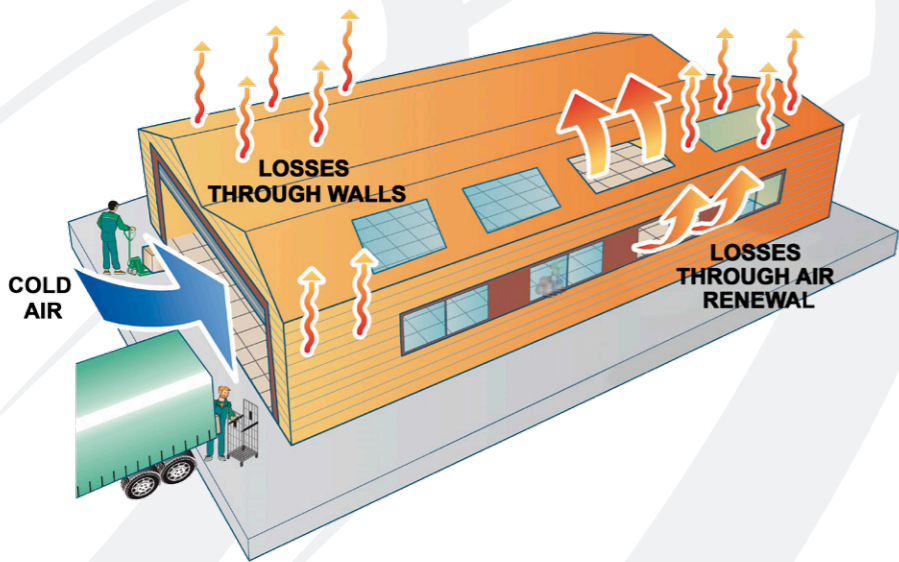
# Heating techniques

Buildings have to be heated to compensate for heat losses:

- through air renewal (dynamic losses)
- through walls (static losses)

It is therefore recommended to install equipment with a power at least equal to the total losses (the sum of the “static” and “dynamic” losses), and to provide for a fast warm up.

It is easy to understand that, the more insulated and well sealed a building, the fewer appliances need to be installed to meet comfort requirements.



## CHOICE OF TECHNIQUE

According to the height of the building and the type of insulation, the choice will be between hot air heating or radiant heating.

- For lower buildings, from 4 to 6 metres high, insulated and heated throughout, hot air is generally a more economical solution in terms of investment cost (Diagram A).
- On the other hand, radiant heating is used in buildings with high losses: large, fairly high buildings (5 metres or more), without insulation ... or to heat only **a zone** or **part of the building**.

This is because radiation heats surfaces (the floor, machines, people, etc.) and not the air; by its principle, comparable to that of lighting (Diagram B) it avoids unnecessary heating of large volumes.

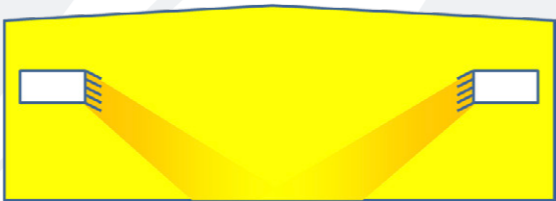


Diagram A

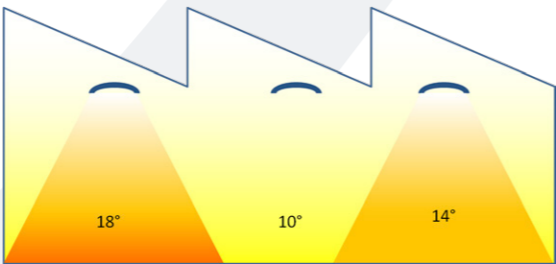


Diagram B

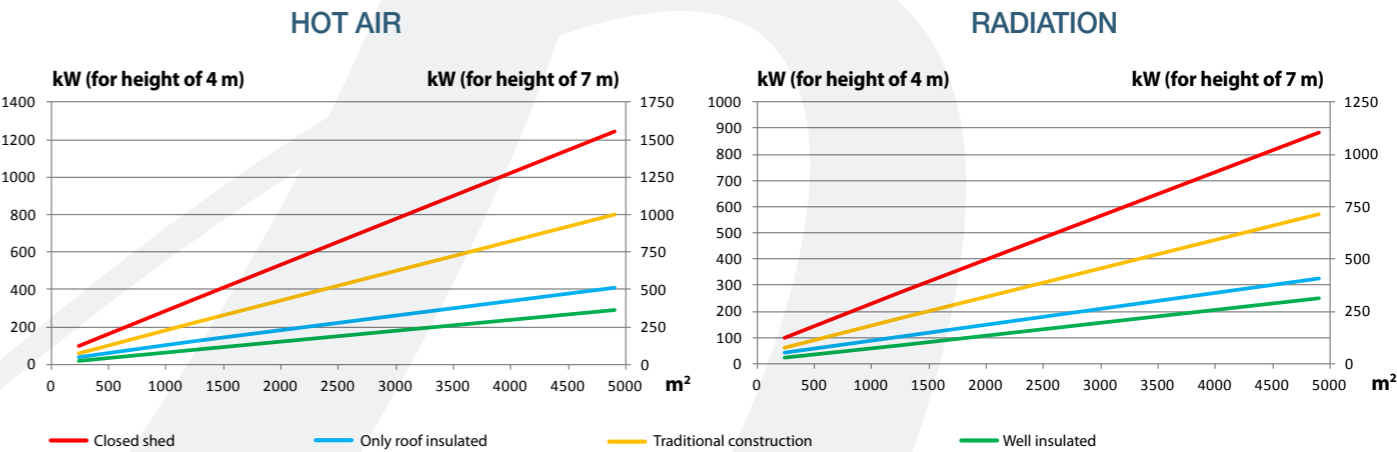
# Simplified selection method for Radiant and Hot Air products

## 1. Determining the power to install

### 1<sup>ST</sup> STEP: ASSESS THE TYPE OF BUILDING

SELECTION METHOD	
DEGREE OF INSULATION OF THE BUILDING	DESCRIPTION
Double skin cladding 50 mm	Well insulated
Skydome 10% of the roof	
Steel sheet cladding + 50 mm insulation	
Breeze blocks 200 mm	Traditional construction
Double glazing	
Steel sheet cladding + 30 mm insulation	
Breeze blocks 200 mm	Only roof insulated
Single glazing	
Concrete slab	
Concrete	Closed shed
Single skin steel cladding	

### 2<sup>ND</sup> STEP: SELECT THE POWER REQUIRED FROM THE CURVES BELOW\*



\* Established for a temperature difference of 24°C between the inside and the outside.

## 2. Selecting the equipment

### With infrared radiation

#### 2.1 DETERMINING THE HEATING APPLIANCES

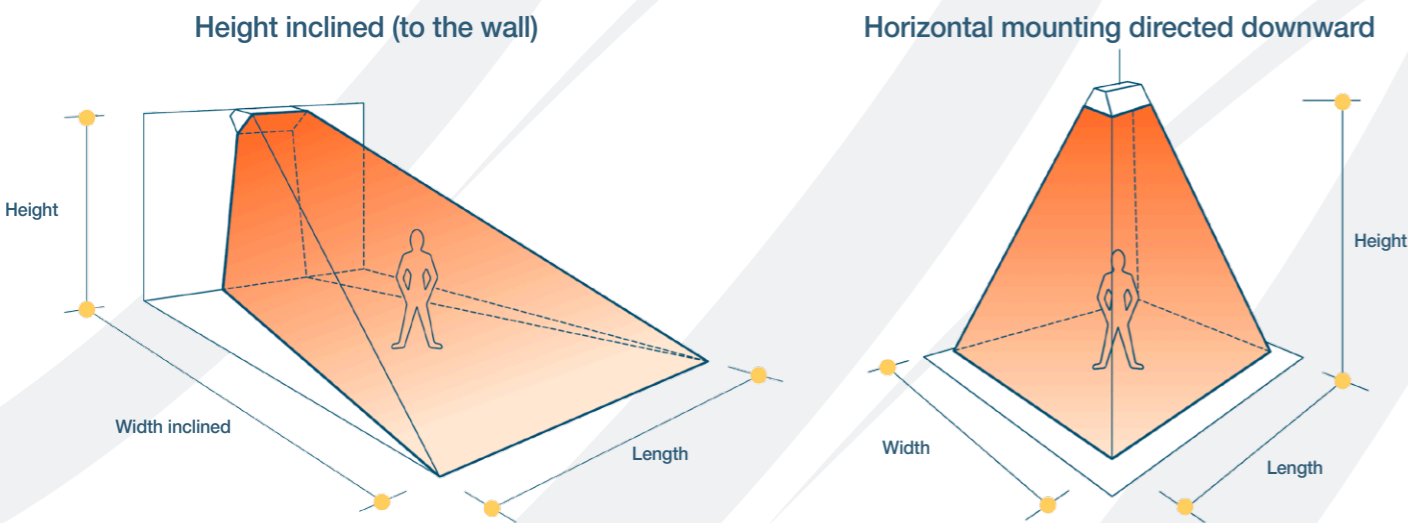
- The configuration is defined by 2 criteria:
- With each appliance radiating over a defined surface area, ensure that heat flows overlap to obtain optimal floor heating,
  - The unit power of appliances depends on the height at which they are fixed.

#### 2.2 DETERMINING THE NUMBER OF APPLIANCES

This follows from the 2 previously defined criteria.

A radiant appliance radiates on a rectangle on the floor according to its shape, any inclination and above all, the height at which it is fixed.

#### HEATING SURFACES – FLOOR COVERING



The following tables are used to select the equipment to install according to the height.

The equipment can be installed “inclined” or “directed downward”. The area covered by the radiation depends on the height of the installation and the inclination of the appliance.

Select a type of product (heating power) and divide the power to install by the unit power. This gives the number of appliances to install. Then, using the following tables, check that the area covered by the infrared radiation is sufficient.

Installation height (m)		4	5	6	7	8	9
SRII21	Width (m)	5.2	6.5				
	Inclined (m)	6.4	8				
	Length (m)	5.2	6.5				
SRII31	Width (m)	5.2	6.5	7.8			
	Inclined (m)	6.4	8	9.6			
	Length (m)	5.2	6.5	7.8			
SRII41	Width (m)		6.5	7.8	9.1		
	Inclined (m)		8	9.6	11.2		
	Length (m)		6.5	7.8	9.1		
SRII42	Width (m)		6.5	7.8	9.1		
	Inclined (m)		8	9.6	11.2		
	Length (m)		6.5	7.8	9.1		
SRII61/62	Width (m)		6.5	7.8	9.1	10.5	
	Inclined (m)		8	9.6	11.2	12.8	
	Length (m)		6.5	7.8	9.1	10.5	
SRII81/82	Width (m)				9.1	10.5	11.8
	Inclined (m)				11.2	12.8	14.4
	Length (m)				9.1	10.5	11.8

Installation height (m)		3,5	4	5	6	7	8	9	10	11	12
SolarHP12	Width (m)	4.6	5.1	6.2	7.2						
	Inclined (m)	5.3	5.9	7.1	8.3						
	Length (m)	5.5	5.8	6.5	7.2						
SolarHP17	Width (m)	6	6.7	8.2	9.6						
	Inclined (m)	6.9	7.7	9.4	11						
	Length (m)	7.7	8.1	8.7	9.4						
SolarHP23	Width (m)			9.1	10.7	12.3	14	15.6			
	Inclined (m)			10.4	12.3	14.2	16.1	17.9			
	Length (m)			11.1	12.2	13.3	14.5	15.6			
SolarHP32	Width (m)				12	13.9	15.7	17.6	19.4		
	Inclined (m)				13.8	15.9	18.1	20.2	22.3		
	Length (m)				19.2	21.2	23.1	25.1	27.1		
SolarHP36	Width (m)					16.2	18.4	20.6	22.7	24.9	27.1
	Inclined (m)					18.6	21.1	23.6	26.1	28.7	31.2
	Length (m)					23.3	25.5	27.8	30.1	32.3	34.6
SolarHP43	Width (m)					19.7	22.4	25.1	27.7	30.4	33.1
	Inclined (m)					22.6	25.7	28.8	31.9	35	38.1
	Length (m)					26.9	29.2	31.5	33.8	36.1	38.4
SolarHP50	Width (m)					23.2	26.4	29.6	32.7	35.9	39.1
	Inclined (m)					26.7	30.3	34	37.6	41.3	45
	Length (m)					28.3	30.8	33.3	35.8	38.3	40.8

Installation height (m)		3,5	4	5	6	7	8	9	10	11	12
SolarHP <sup>R</sup> 12 SolarHP <sup>RC</sup> 12	Width (m)	5.1	5.7	6.9	8.1						
	Inclined (HPR) (m)	5.9	6.6	7.9	9.3						
	Length (m)	6	6.4	7.3	8.1						
SolarHP <sup>R</sup> 23 SolarHP <sup>RC</sup> 23	Width (m)			9.8	11.6	13.4	15.2	17			
	Inclined (HPR) (m)			11.3	13.3	15.4	17.4	19.5			
	Length (m)			12.2	13.6	15	16.3	17.7			
SolarHP <sup>R</sup> 36 SolarHP <sup>RC</sup> 36	Width (m)					17.2	19.6	21.9	24.2	26.6	28.9
	Inclined (HPR) (m)					19.8	22.5	25.2	27.9	30.6	33.2
	Length (m)					24.3	26.7	29.2	31.6	34	36.4

Installation height (m)		3,5	4	5	6	7	8	9	10	11	12
SolarHP23L	Width (m)	5.5	6.2	7.5							
	Inclined (m)	6.4	7.1	8.7							
	Length (m)	14.9	15.5	16.6							
SolarHP36L	Width (m)			9.7	11.5	13.3					
	Inclined (m)			11.2	13.2	15.3					
	Length (m)			26.1	28.4	30.7					
SolarHP50L	Width (m)				16.5	19.1	21.6	24.2			
	Inclined (m)				19	21.9	24.9	27.8			
	Length (m)				33.2	35.1	37.1	39			

# With hot air

## DETERMINING THE HEATING APPLIANCES

Once the power to install for heating the building is determined, the comfort level is obtained according to three factors in the hot air technique:

- The **USEFUL RANGE** of appliances, limited in distance. For example, if unit heaters with an air range of 20 metres are placed in a room 60 metres long, at least 3 will be required along the length.
- The **OUTPUT** installed. This must be slightly higher than the losses (for rapid warm up).
- The **AIR FLOW** through the appliances. It mixes the air in the room. The resulting mixing rate must be sufficient to overcome the stratification of the hot air which tends to be concentrated towards the top of the room.

The usual mixing rates are shown in the table below:

Building volume (m³)	Minimum recommended mixing rate (building volumes per hour)
less than 5 000	3.5
5 000 to 20 000	3
20 000 to 50 000	2.5
over 50 000	2

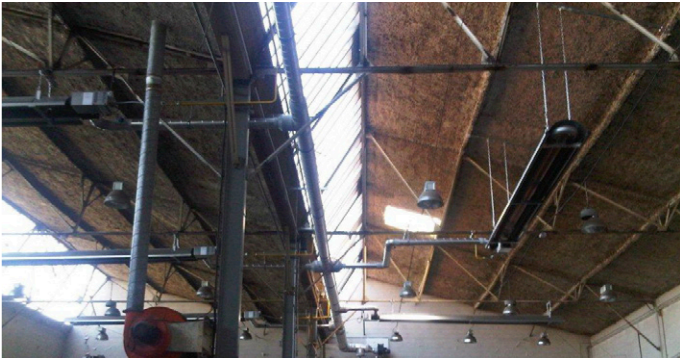
Model	Air flow rate at 15°C (m³/h)	Air range (m)
MH16 - AR1H	1 350	12
MH21 - AR2H	1 450	12
MH28 - AR3H	2 050	16
MH35 - AR4H	2 900	23
MH45	4 000	26
MH55 - AR5H	4 900 - 4 700	28
MH75 - AR6H	5 800	30
MH95 - AR8H	8 000	30
MCF35	5 400	30
AEC 3000-4000	1 700 - 4 850	13
AEC 5000	4 400 - 6 500	15
AEC 6000-7000	5 700 - 10 100	18
AC-H30	2 700	16
AC-H40	3 450	23
AC-H50	4 600	26
AC-H70	5 500	29
Hot air generators + diffusion plenum	1 950 - 69 500	From 16 to 118 m according to the air flow rate

# Combustion product evacuation - Building renovation solutions with radiant tubes

## COLLECTED TUBES

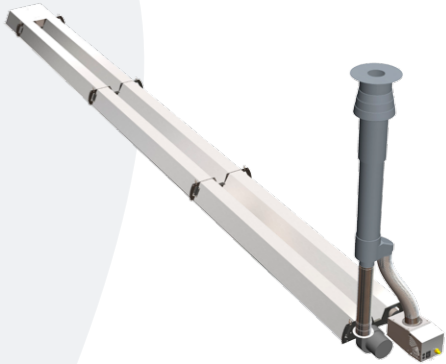
The extraction network is installed in such a way as to collect the burnt gases discharged from each appliance.  
The temperature of the gas discharged from the appliances is of the order of 200°C; in the collected network, it is of the order of 80°C.

This network is de-pressurised by an extractor installed on the roof or a wall. The functioning of these appliances is servo-linked to the functioning of the extractor.



## WALL (OR ROOF) MOUNTED BALANCED FLUE

The entire range of SolarHP, SolarHP<sup>R</sup> and SolarHP<sup>RC</sup> gas-fired radiant tubes is available for sealed connection, allowing them to be mounted by wall balanced flue, including those with long lengths of conduit.

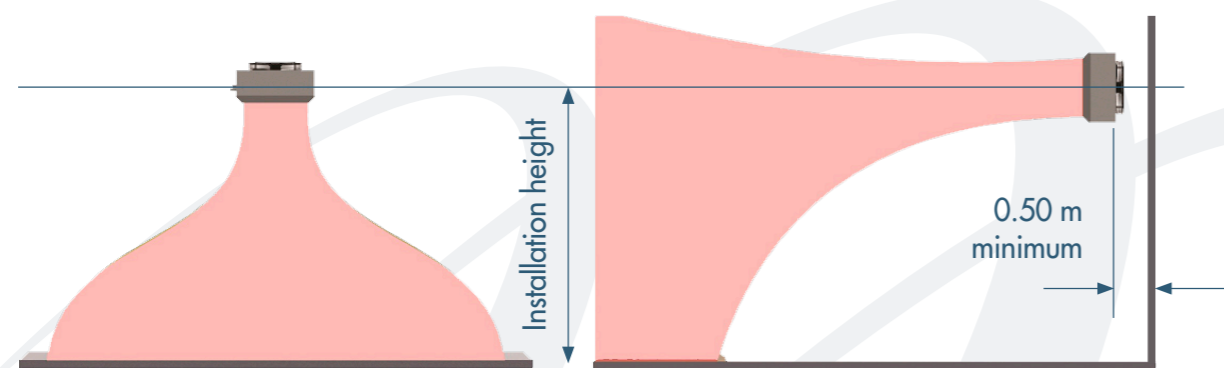


## NON-CONNECTED TUBES

Like radiant panels, tubes are also type A, non-connected tubes, approved. This use is possible, provided there is mechanical or static ventilation of 10 m³/h per kW installed, in compliance with European standard NF EN 13410. (This type of mounting is not authorised in establishments open to the public)

# Installation height for hot air appliances

## – Destratification



Model	Installation	Installation height
MH16	wall	3 - 4 m
MH21 - MH28	wall	3 - 6 m
MH35 - MH45	wall	4 - 8 m
MH55	wall	4 - 9 m
MH75 - MH95	wall	4 - 10 m
MV36	ceiling	4 - 6 m
MV55 - MV75 - MV95	ceiling	6 - 12 m
CA40	ceiling	4 m
CA60	ceiling	6 m
CA100	ceiling	10 m
MRA-H 45	ceiling	6 m
MRX 50	wall	3 - 6 m
Ventilation curtain	wall - ceiling	6 m
AEC3000	wall	3 m
	ceiling	3.5 m
AEC4000	wall	3.2 m
	ceiling	3.5 m
AEC5000	wall	3.6 m
	ceiling	4.5 m
AEC6000	wall	4 m
	ceiling	5 m
AEC7000	wall	4.2 m
	ceiling	5.5 m

# Air compensation and renewal

To complement the heating installation, high flow rate air extraction requires temperate compensation to:

- optimise the installed heating power and avoid over-dimensioning
- keep the building under slightly negative pressure
- guard against the infiltration of cold air and bad weather
- control the air speeds and temperatures in the building

Because of the variability of outside conditions, modulating gas burners are the best solution for new air renewal at constant temperature, close to the ambient temperature.

The following ranges of our products provide ideal handling of new air:

### For interior mounting:

- Centrifugal modulating unit heaters:
  - from 2 700 to 4 500 m³/h
  - Direct discharge (or by duct)

### Interior or exterior mounting:

- Hot air generator with condensation:
  - from 4 700 to 24 000 m³/h
  - Discharge by plenum or by duct
  - Variable flow rate possible
- Hot air with modulating burner:
  - From 6 000 to 70 000 m³/h
  - Discharge by plenum or by duct
  - Variable flow rate possible

# Solaronics Technical Service


Our Technical Management represents the company and the profession in the following bodies:

- European Leading Association of Radiant Gas Heater Manufacturers [www.elvhis.eu](http://www.elvhis.eu)
- The European Committee for Standardization [www.cen.eu](http://www.cen.eu):
  - TC180: Decentralised gas heating
  - TC234/WG11: Gas / “Gasqual” gas quality infrastructures
- Gas standardization board [www.afgaz.fr](http://www.afgaz.fr)
  - BNG180
  - BNG234/Gr11
  - Pilot study on gas quality
- Energy Savings Certificate club (C2E) of the ATEE (Energy and environment technical society): Industry Working Group [www.atee.fr](http://www.atee.fr)

The work aims in particular at:

- revising European product standards in view of the application of the directive ErP 2009/125/CE (eco-design of energy-related products);
- drafting the European standard on gas quality H;
- establishing standard energy savings operation sheets (for obtaining CEE / Energy-saving certificate)





Certificats d'économies d'énergie  
Opération n° IND-BA-110

**Déstratificateur ou brasseur d'air**

**1. Secteur d'application**  
Industrie.

**2. Dénomination**  
Mise en place d'un déstratificateur ou brasseur d'air pour l'homogénéisation de la température de l'air d'un local industriel chauffé par un système convectif et ou radiatif.  
Les systèmes radiatifs de chauffage de « zone » ou de « poste » ne sont pas éligibles à l'opération.

**3. Conditions pour la délivrance de certificats**  
La mise en place est réalisée par un professionnel.

Le local industriel a une hauteur sous plafond ou sous faîtière d'au moins 5 mètres.

Le déstratificateur ou brasseur d'air est équipé d'un thermostat.

La preuve de la réalisation de l'opération mentionne la mise en place d'un déstratificateur ou brasseur d'air équipé d'un thermostat.

À défaut, la preuve de réalisation de l'opération mentionne la mise en place d'un équipement avec ses marque et référence et elle est complétée par un document sous du fabricant indiquant que l'équipement de marque et référence installé est un déstratificateur ou un brasseur d'air équipé d'un thermostat.

**4. Durée de vie conventionnelle**  
15 ans.

**5. Montant de certificats en kWh cumac**  
Installation d'un déstratificateur ou brasseur d'air dans un local chauffé par un système convectif :

Zone climatique	Coefficient tenant compte de la hauteur du local (h en mètre)	Mode de fonctionnement du site	Montant en kWh cumac par kW	Puissance nominale totale du système convectif de chauffage en kW
H1	1,0	1x24h	1 500	P
H2	1,1	2x24h	2 700	
H3	1,4	3x24h avec arrêt le week-end	2 900	
		3x24h sans arrêt le week-end	4 000	



# / EDIBATEC

RT2012 (thermal regulation) favours products with certified performance. This is because these are the only products that are not penalised for performance in the calculation engine.

RT2012 requires a thermal study for every project, carried out using a certified compliant software application.

We have entered all the technical data and performance figures of our products in the free database Edibatec ([www.edibatec.com](http://www.edibatec.com)).

We have written and have available help sheets for entering products into these applications.

Projet exemple tertiaire - RTExistant (RT Existant)

Fichier Utilitaires Biblio-Tech **Données thermiques** Projet Étude

Clima-Win

Chercher dans : C:\Users\pdegru

Projets récents : 2 projets

RTExistant

2012

Projet Clima-Win - 23-0

Composants

Environnement

Enveloppe

Outils complémentaires

Comportement

**Générateurs**

Systèmes

Impression des catalogues

Données générales

Référence

Sauvegarder les critères

**Tubes et panneaux radiants : 20 produits sélectionnés sur 20**

Banque de données

SOLARONICS

PANNEAU RADIANT LUMINEUX

SOLARTUBE EVOLUTION

SOLARTUBE EVOLUTION HAUTE PERFORMANCE

**TUE 17 HP**

TUE 27 HP

SOLARTUBE EVOLUTION ETANCHE

Données générales

Référence

Sauvegarder les critères

**Générateurs d'air chaud : 69 produits sélectionnés sur 69**

Banque de données

SOLARONICS

Minigaz EVOLUTION HELICOÏDE

Minigaz EVOLUTION HELICOÏDE VERTICAL

Minigaz EVOLUTION CENTRIFUGE

Minigaz EVOLUTION MODULANT HELICOÏDE

Minigaz EVOLUTION MODULANT CENTRIFUGE

AEROTHERME GAZ CONDENSATION MODULANT

**AC-H30**

AC-H40

AC-H50

AC-H70

GENERATEUR D'AIR CHAUD

GENERATEUR D'AIR CHAUD A CONDENSATION

[http://www.edibatec.com/index.php?option=com\\_wrapper&view=wrapper&Itemid=70](http://www.edibatec.com/index.php?option=com_wrapper&view=wrapper&Itemid=70)

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**EDIBATEC**  
ASSOCIATION

ACCUEIL EDIBATEC DICTIONNAIRE BASE DE DONNEES APPLICATIONS ACTUALITES CONTACT

**BASE DE DONNEES**



Ce fabricant propose des produits dans les rubriques suivantes :

- Générateurs d'air chaud
- Tubes radiants solaires

# General terms of business\*

## 1. GENERAL

These general terms of business apply to all sales made by Solaronics Chauffage.

All our sales are subject to these general terms of business and the Purchaser shall agree to them unreservedly. No clause or condition indicated on the Purchaser's order or correspondence that contravenes these general terms of business shall prevail over the general terms of business of Solaronics Chauffage without the formal and written agreement of Solaronics Chauffage.

The information and indications in the catalogues, prospectuses, price lists, brochures, leaflets and diagrams are given solely as a guide. Solaronics Chauffage reserves the right to modify in any way the layout, form, colour, dimensions or material of the products offered. Our company shall be bound by the orders handled by its employees or legal representatives only after the Purchaser has sent an acknowledgement of receipt.

## 2. SCOPE OF THE OFFER

When our company issues an offer, the prices, terms and conditions inherent in this offer (delivery times, terms of payment, etc.) concern only the products (quality and quantity) that are specified in the offer, and absence of any express stipulation, are valid for one month.

## 3. STUDIES AND PROJECTS

Our company shall not assume any responsibility for the advice or recommendations that it may be asked for. Its competence remains limited to the technical characteristics of the products. Any Purchaser or User who wishes to obtain or guarantee specific results or performance must obtain the advice of professionals who are authorised and accredited for determining the equipment to be used for this purpose.

## 4. PRICE, TERMS OF PAYMENT AND TAXES

Our prices are given in Euros, excluding tax, ex-works (including packaging), including technical information.

For all professionals, the payment of the sums due later than the eligibility date on the invoice shall incur an increase as of right of the amount of the sums due by a flat indemnity of 40€. If there is a regulatory modification of the amount of this flat sum, the new flat indemnity shall as of right be substituted for that appearing in these general terms of business. The application as of right of this sum shall not prevent the application of a supplementary indemnity of the receivable after justification, in accordance with the above-mentioned text, at the rate of the whole of the such sums, whatever the nature, to cover the receivable.

In consideration of the overhead costs borne by Solaronics Chauffage, all sales shall be subject to a minimum invoice of 150€ excluding tax.

## 5. PAYMENT

No complaints or litigation including those calling into effect the guarantee, concerning any provision, product or service shall absolve the Purchaser from settling his invoices in due time. Payment default on a single item or a single invoice shall incur the expiry of the payment term and render all the debts to our company, even those not at term, payable immediately. The late payment penalties are due on the date following the payment date shown on the invoice, at a rate equal to one and a half times the legal rate of the country. In case of delay in payment, we reserve the right to suspend dispatches of other goods ordered by the same customer without prejudice to damages, if any.

## 6. LEAD TIMES

Lead times (production and delivery) are given as accurately and in as good faith as possible but may vary according to supply and transport constraints imposed upon Solaronics Chauffage by its suppliers or service providers. Delays related to these constraints cannot justify cancellation of the order or give rise to withholdings or to payments of damages. No commitment may be imposed on our company in case of force majeure (strike, natural catastrophe, fire, etc.)

## 7. MODIFICATION OR CANCELLATION OF ORDER

Any order modification or cancellation requested by the Purchaser can only be considered if it is sent in writing to our company before the products or goods are dispatched. If agreement is reached with Solaronics Chauffage, the Purchaser must bear all the costs related to this modification or cancellation. In case of refusal, our company shall retain its right of payment of the said costs, and deposits paid by the Purchaser shall also be acquired by Solaronics Chauffage.

## 8. DELIVERY AND TRANSPORT

Our products and goods are transported at the consignee's risk, whether or not carriage paid. During delivery, it shall be up to the consignee or their representative to check the number of parcels and the condition of the parcels received. In case of damage or missing items, the consignee or their representative 1/ must state this on the delivery receipt, 2/ confirm it by registered letter with acknowledgement of receipt within 48 hours to the transporter, 3/ send a copy of this registered letter to Solaronics Chauffage. If the three above-mentioned conditions are not fulfilled within 48 hours, no recourse against Solaronics Chauffage shall be possible and the whole of the loss or damage shall be borne by the Purchaser.

The products and goods delivered are not unloaded. It is the Purchaser's responsibility to make arrangements to carry out this operation at the consignee's works.

## 9. RETURNS AND EXCHANGES

No product or goods can be returned or exchanged without the prior written agreement of our company. Failure to comply with this provision may result in the return of the equipment to the Purchaser at their sole expense. All equipment must be returned in its original packaging and may be subject to expert opinion. A quotation for any repairs shall be sent to the paying customer for prior approval. Returns or exchanges shall only be handled by Solaronics Chauffage on written request by the paying customer.

All returns of new equipment following a proven error on the part of Solaronics Chauffage shall be redeemed in full with a credit note. All returns of new equipment following a proven error on the part of the Purchaser shall be redeemed with a discount of 30%.

Credit notes are non-reimbursable. They are assigned to the payment of a future or current order.

## 10. ASSEMBLY, STARTING UP, ADJUSTMENTS

The costs of assembling, starting up and adjusting of our products are charged to the Purchaser. If, after delivery, the characteristics or performance of the equipment are contested and require corrective measures on the site, the Purchaser shall bear the costs incurred by Solaronics Chauffage if our specifications, recommendations or advice prove not to have been followed by the person in charge of the installation.

## 11. RETENTION OF OWNERSHIP

Solaronics Chauffage retains ownership of products sold until payment in full of the price in principle and accessories. The transfer of ownership to the Purchaser shall only be effective after payment in full of the price, even in the case of collective procedure. Despite retention of ownership, the items sold are under the responsibility and keep of the Purchaser who shall insure them against all risks and use them for the purpose for which they are intended.

In case of non-payment of the price of products or goods on the due date, Solaronics Chauffage may at any time require the products or goods delivered to be returned, at the Purchaser's exclusive expense and whoever the owner, eight days after formal notice given by registered letter with acknowledgement of receipt.

As from delivery, the Purchaser shall assume responsibility for risks and losses, theft or damage of the products together with responsibility for any resulting damage.

## 12. GUARANTEE

Products, equipment and accessories must be installed by qualified professionals in accordance with the regulations in force, the acknowledged rules of the art and with the instructions given in our technical sheets. If the above-mentioned conditions are respected, our products are guaranteed for parts and labour (apart from travel). The guarantee shall come into effect on the invoicing date established by Solaronics Chauffage.

We decline all responsibility and no guarantee shall apply in the case of negligence by the customer, defective connections, immediate or subsequent damage following faulty handling during transport, defective, unsuitable or non-compliant installations or installations not complying with the regulations in force. Only manufacturing or raw material defects are concerned. The guarantee shall not apply in case of a defect resulting from maintenance or servicing not complying with the recommendations of Solaronics Chauffage.

Solaronics Chauffage does not guarantee that its products can attain objectives or performance set by the purchaser without its express written agreement. No replacements made during the guarantee period can under any circumstances prolong the duration of the guarantee. No damages can be claimed for direct,

commercial or other prejudice. Whether with regard to the Purchaser or to any other person, our company cannot be held responsible under any circumstances for personal injury or damage to equipment of any nature whatsoever which may be caused by our products or which are the direct or indirect result of the use of the said products.

## 13. LITIGATION AND JURISDICTION

All disputes related to the interpretation or execution of these general terms of business and to orders (and their follow-up) accepted by Solaronics Chauffage shall be subject to the exclusive competence of the Lille Commercial court, and French law shall apply.

**Reminder:** *The diagrams and photographs in our catalogues are non-contractual*