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## 1. Safety instructions & recommendations

- 1.1. Consult your specialist advisor/company with regard to **the specific national factors** governing the installation of a purely electrical heating system.
- 1.2. **Special Person Group 1**: The heating panel may be used by children aged eight and above, as well as persons with reduced physical, sensory or mental capabilities and individual lacking experience and know-how subject to the proviso that they are supervised, or have received instruction regarding the safe employment of the device, nor may they carry out cleaning and user maintenance without supervision.
- 1.3. **Special Person Group 2**: Children above the age of three and younger than eight may only turn the device on and off if they are supervised, or after having received instruction regarding its safe employment understand the related dangers. This is subject to the proviso that the device is placed or installed in a standard operational position. Children above the age of three and younger than eight may not insert the plug into a socket, regulate or clean the device, or carry out its maintenance.
- 1.4. **Children** below the age of three should be kept away from the heating panel unless they are subject to constant supervision.
- 1.5. The heating panel may not be placed or installed directly below an **electrical wall socket**.
- 1.6. **WARNING**: In order to prevent overheating or material damage, the heating panel may not be covered. The following pictogramm (with/without product information) points out this fact:



- 1.7. **WARNING**: The heating panel can become very hot and may cause damage or burns! Special care is required when children or persons requiring protection are in its vicinity.



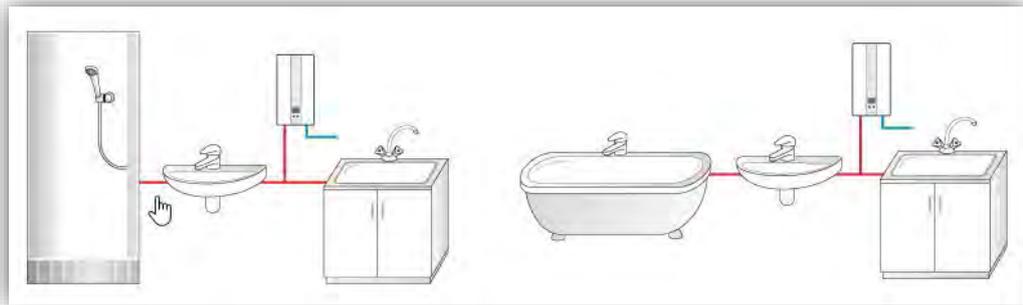
- 1.8. **HELIOLITH panels** (subsequently referred to as **HELIOLITHs**) emit an odour when **switched on for the first time**. Following initial use, this odour decreases steadily and is dissipated into the course of subsequent operation. This odour is in no way dangerous or hazardous to health (please see **13.3**).
- 1.9. **HELIOLITHs** may demonstrate a **slight curvature**. This is due to production and technical material factors, is characteristic and functionally irrelevant, and therefore cannot be the object of complaint.
- 1.10. **HELIOLITHs** can reach a **temperature of up to ~100 °C** when fulfilling their heating function. Accordingly, care must be taken that they are mounted in a manner that prevents babies/infants/children coming into prolonged contact with them, as this could lead to injury. Under no circumstances may a **HELIOLITH** be integrated into flooring or be installed upon it.
- 1.11. **Surface damage** (owing to transport/handling, installation) can be corrected with the appropriate repair kit. Please ask your specialist advisor for information.
- 1.12. Please pay particular attention to Clauses **2, 3, 8** in order to **ensure suitably safe operation**. Your specialist electrical company will be pleased to assist with any questions.
- 1.13. **HELIOLITHs** have a relatively **high dead weight** (accumulator core). It is therefore advisable that two people carry out the installation work and that the appropriate tools are employed (holding or stacking device).
- 1.14. For technical reasons, the **appearance of the reverse side** of the **HELIOLITH** does not correspond with that of the front surface or its edging (worked manually). This is functionally irrelevant and therefore cannot be the object of complaint.
- 1.15. The **reverse side** of the **HELIOLITH** is not insulated in order that the secondary radiation and lost heat on the respective installation surface (exterior/interior wall or false/final ceiling) is used. Reflectors are available to help where needed and optimise the situation (please see **8.7.3**).
- 1.16. The **>25 mm gap** on the reverse side of the **HELIOLITH** to the respective mounting surface facilitates installation and prevents dirty marks and stains.



- 1.17. When **HELIOLITHs** are installed as a heating system **national regulations, edicts, laws and stipulations** relating to an operational authorisation and/or a certificate regarding energy saving (e.g. the [EnEV](#) for Germany) may exist. As the equipment manufacturer, we can only offer experience values for energy saving and consumption. Valid recognised certification must be drawn up by an independent professional (certified energy consultant). Such experts will approach the respective objective appropriately and can therefore provide a concrete and thorough expertise.
- 1.18. Clarify the situation regarding electrical resistance heating as a system with your **insurer**. A realistic and objective review will provide you with a **payment reduction of up to 50 %** because as compared to other heating systems (oil/pellets/chips/firewood/gas/...), electrical resistance heating removes major risks (water damage in the heating system, no ignition or fire sources, no gases, no flue, no transport systems, bunkers/tanks, ...).
- 1.19. With a **photovoltaic or mini-power plant**, you can achieve partial independence and use the self-generated electricity. Discuss the possibilities available with your specialist electrical company, as these differ greatly between countries (political/legal framework conditions) and regions (climate). The public mains are to be included in planning as a standard feature or backup because with the current state of the art, complete independence is not economically feasible.



- 1.20. The question as to whether it is more economic to install geysers for the service water circuit **instead of a buffer tank** must be considered. As **HELIOLITHs** do not require a hot water circuit, one can optimise in this respect in line with the buzz phrase „**point of use**“ (space, heat loss, electricity consumption, investment costs, legionella issue, insurance rebate). Power consumption and the building connection value must be taken into account (please see **3**)!



- 1.21. No heating system (oil/pellets/chips/firewood/gas/...) functions **without electricity**, as in order to operate the instrumentation/control/pump and transport technology require electrical power. Therefore, as a rule, it is suggested that together with every heating system, which includes those using **HELIOLITHs**, an **autonomous, non-water carrying stove** is also installed as backup. This can be employed as a heat source that is independent of the electricity supply (ideally with a cooking and/or baking capability) using, e.g. wood/wood chips/pellets. Such stoves can be obtained relatively cheaply and your advisor at an appropriate specialist dealer will be pleased to supply information.



- 1.22. **During the dimensioning process**, take into account the influence of the heating requirement of adjacent rooms (please see **8.7.2**)
- 1.22.1. On the same level (living rooms heated/unheated)
  - 1.22.2. Above (insulated/non-insulated lofts, living rooms heated/unheated, ...)
  - 1.22.3. Below (cellar, living rooms heated/unheated, ...)
- 1.23. For information regarding proven and actual infringements of **our utility model patent** (please see **13.5**) and **trademark protection** (please see **13.6**) a reward of 25 % of the damages awarded to us will be granted.



## 2. Safety technology

2.1. **Appliance Class** II (Standard)

2.2. **International Protection Marking**

2.2.1. *IP20 – when the device is supplied ex-works with a connection box and cable within the scope of delivery >> standard*

2.2.2. *IPxx – **only a specialist electrical company** may alter the type of protection through the exchange/installation of a connection box and cable in line with requirements/the application.*

2.2.3. *Heating devices employed in greenhouses or on construction sites must at least meet the IPX4 standard.*

2.3. **Explosion Protection** no (standard)

Only a specialist electrical company can provide explosion protection through the exchange/installation of a connection box and cable in line with requirements/the application to the extent that HELIOLITHs are certified in accordance with the 2014/34/EU ex-directive (please see [5.6](#)).

2.4. Safe operation is also guaranteed with **maximum surface temperature** (please see [5.1](#), [7 continuing](#)).

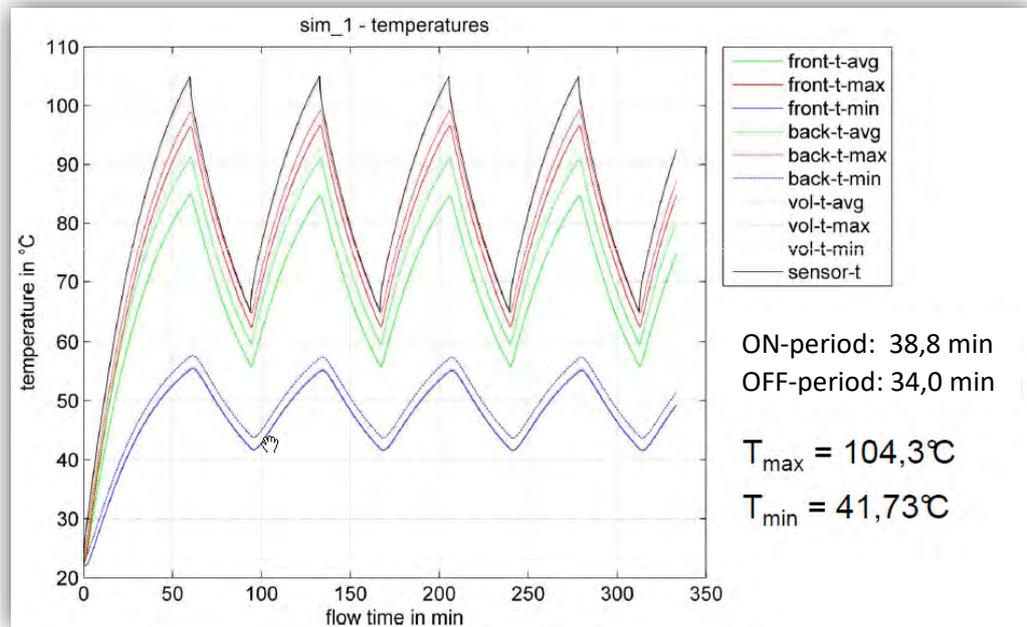
2.5. Should the **mains cable** of the device be damaged, it must be exchanged for a special replacement, which is available from the manufacturer or its customer service/partner company.

2.6. Should the heating panel be **fractured**, it must be disconnected from the mains immediately and may no longer be put into operation.



### 3. Application & dimensioning

- 3.1. Basically, the **HELIOLITH** heat accumulators are foreseen for employment as a heating system (relatively long warming up and cooling down periods – please see the simulation right below from **13.4**), but are also suitable as complimentary heating.



- 3.2. **HELIOLITHs** are ideal for all interior areas in connection with new buildings, renovations, conversions, extensions, revitalisation/restoration as

#### 3.2.1. Complementary heating (in addition to existing heating systems)

- private sector (brick-/prefabricated houses, garages/prefabricated garages, allotment sheds, ...)
- industry & commerce (laboratories/clean room, offices/store-rooms/containers, workshops, ...)
- hotels & catering (hotels, motels, restaurants/pubs, cafés, bistros, ...)
- historical buildings (castles, museums, half-timbered houses, ...)
- healthcare sector (rooms for allergy sufferers/asthmatics, wellness areas, ...)
- public sector (hospital, prison, ...)

#### 3.2.2. Heating systems („SMARTHOMEs“)

- private buildings (brick-/prefabricated houses, garages/prefabricated garages, allotment sheds, ...)
- industry & commerce (laboratories/clean room, offices/store-rooms/containers, workshops, ...)
- hotels & catering (hotels, motels, restaurants/pubs, cafés, bistros, ...)
- historical buildings (castles, museums, half-timbered houses, ...)
- healthcare sector (rooms for allergy sufferers/asthmatics, wellness areas, ...)
- public buildings (hospital, prison, ...)

#### 3.2.3. A substitute for NIGHT STORAGE heaters because in particular

- necessary electrical installation infrastructure is already available
- inertia of night storage heaters is obsolete
- electricity consumption can be reduced markedly
- comfort levels and perception of warmth are greatly improved

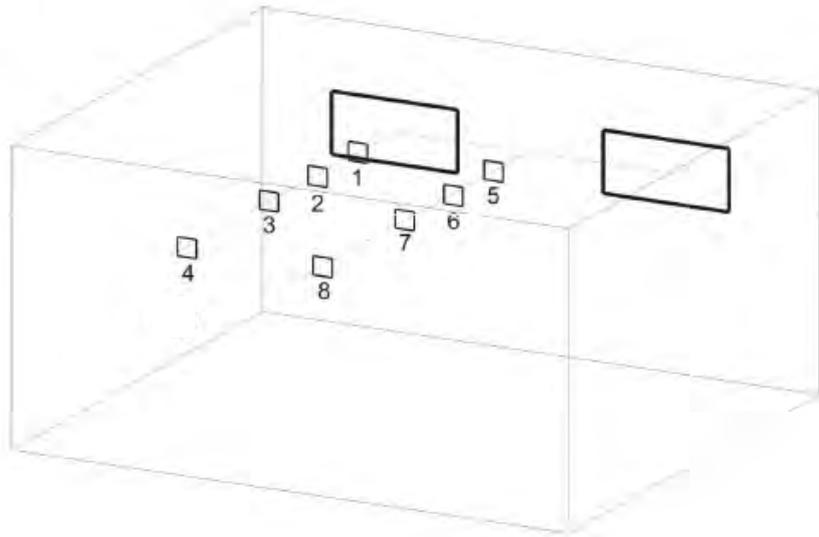


- 3.3. **HELIOLITHs** are suitable for use in **damp and wet areas** (baths/washrooms) when the related, specific national installation regulations and primarily **2, 8 continuing** are observed. In a bathroom, the heating device must be installed in such a way that a person in the bath or under the shower cannot touch the switch and the other controls.
- 3.4. **HELIOLITHs** are **suitable for virtually every installation position** (exterior/interior walls, false and final ceilings) when first and foremost **2, 8 continuing** are observed.
- 3.5. **HELIOLITHs** are only suitable for the **OUTDOOR area** to a limited extent because at a maximum, infrared, low-temperature devices merely provide 60 % radiated heat and therefore a high convection percentage of at least 40 %. This is disadvantageous and the overall warmth effect is unsatisfactory (first and foremost please see **7 continuing**). High-temperature, infrared devices (>350 °C surface temperature) are to be recommended for the OUTDOOR area, if they offer a radiated heat share of >70 %. Should an OUTDOOR area application be nonetheless relevant, then only subject to special attention regarding **2, 8 continuing**.
- 3.6. **HELIOLITHs** are suitable for **EX-protected areas**<sup>A</sup> when **2,3** is accounted for.
- 3.7. **HELIOLITHs** are particularly suitable for timber structures because the hybrid warmth (please see **7.1**) allows WOOD as a natural product to “breathe” (natural moisture exchange with the air in the room/surroundings).
- 3.8. **HELIOLITHs** dimensioning is to be selected in accordance with the energy parameter of the respective room/object and you should consult your specialist electrical or heating company in this regard. The following reference room simulation contained in **13.4** may be used as a basis.

- room dimensions
  - model room according to AgBB\*-evaluation scheme  
L x B x H = 3,0 m x 4,0 m x 2,5 m
- \* *Committee for the Health-related Evaluation of Buildings Products*
- North, East: interior wall (adjoining room behind)  
South, West: exterior wall  
Floor: cellar below  
Ceiling: adjoining room above
- Ambient temperatures:
  - adjoining room 22 °C
  - cellar 15 °C
  - outdoor temperature -10 °C



### ■ Sketch:



### ■ Walls

- Wall thickness:
  - interior wall 15 cm
  - exterior wall 45 cm
  - floor/ceiling 30 cm
- Heat conductivity (compare [www.ziegel.at](http://www.ziegel.at)):
  - interior wall/ceiling 0,4 W/(m<sup>2</sup>K)
  - exterior wall 0,4 W/(m<sup>2</sup>K)
- Heat transfer coefficients (purs. ÖNORM EN ISO 6946):
  - interior wall room air 0,4 W/(m<sup>2</sup>K)
  - exterior wall outdoor air 25 W/(m<sup>2</sup>K)
- Emission level (depending upon material 0.9 ... 1.0, see various literature):
  - interior walls 0.95

This means that with two wall-mounted H32-RE (621 W/pce), a power requirement of 62.1 W/m<sup>2</sup> or 24.84 W/m<sup>3</sup> is needed in order to achieve a stationary final air temperature value of 24.92 °C. In the case of ceiling mounting, 15 % must be added to this figure or be accounted for with a reflector (please see [8.7.4](#)).



3.9. **Reference values** for dimensioning based on [k-value \[m<sup>2</sup>\\*K\]](#)

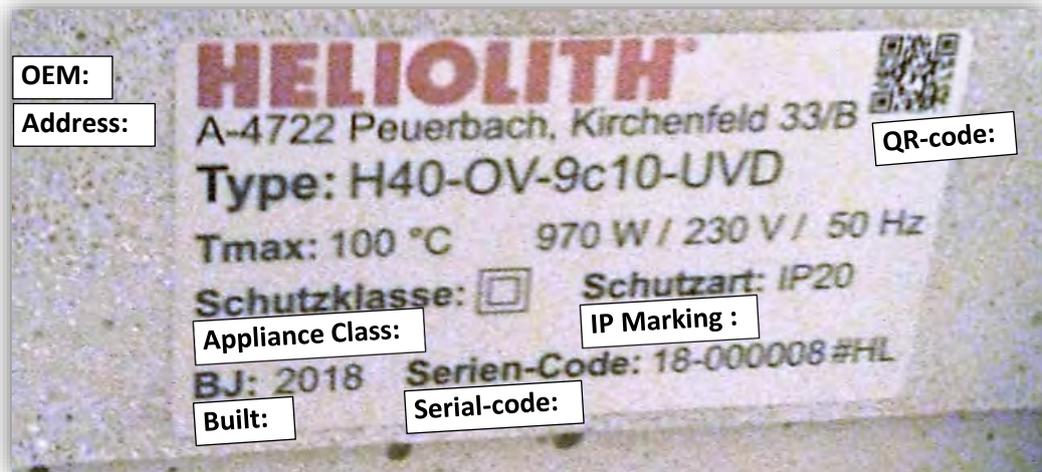
|  |            | W/m <sup>2</sup> -room - guiding value |        |        |        |       |
|--|------------|--|--------|--------|--------|-------|
| heat-transfer  | k-category | worst                                  | bad    | medium | good   | best  |
|  | k-value    | 1.50                                   | 0.80   | 0.40   | 0.30   | 0.20  |
| outer walls<br>(massive - eg bricks,<br>porous concrete) | 0          | 90.00                                  | 80.00  | 70.00  | 60.00  | 50.00 |
|  | 1          | 103.50                                 | 92.00  | 80.50  | 69.00  | 57.50 |
|  | 2          | 119.03                                 | 105.80 | 92.58  | 79.35  | 66.13 |
|  | 3          | 136.88                                 | 121.67 | 106.46 | 91.25  | 76.04 |
|  | 4          | 157.41                                 | 139.92 | 122.43 | 104.94 | 87.45 |

- 3.10. **HELIOLITHs** are only suitable for spontaneous, localised warmth requirements to a limited extent (please see [3.1](#))
- 3.11. The W connection value calculated on the basis of W/m<sup>2</sup> is decisive for the determination of **electricity consumption** and not the final W figure derived from the **HELIOLITHs**. The latter is the result of the included reverse (generally 15 %) and the possible of larger **HELIOLITHs** for optical reasons (e.g. because the ring-shaped **HELIOLITH** is only available as H40-RE with 970 W).



## 4. Connection/Power

- 4.1. **Voltage** 230 V
- 4.2. **Frequency** 50 Hz
- 4.3. **Power** 2,2 kW/m<sup>2</sup> (in relation to the heating-map)
- 4.4. **Type plate** – fixed on the reverse side of the **HELIOLITH** – provides all relevant data.



When several **HELIOLITHs** are employed (for complementary purpose or as a heating system), a specialist electrical company must examine the **power requirement** in order to ensure that a secure and sufficient electricity supply is guaranteed. If necessary, the specialist electrical company should undertake appropriate measures (increase the object's connected load, install a separate electrical circuit, control/clocking, ...).



## 5. Selection possibilities

### 5.1. Status 17-08-2019<sup>1</sup>

|   |   |  |  |
|---|---|--|--|
|   |   |  |  |
| Rectangle   | Square  | Circle   | Oval   |
| <b>Small H21-RE</b><br>475 x 272 mm / 8 kg / 265 W / 3,8 m <sup>2</sup>       | <b>Small H21-QU</b><br>358 x 359 mm / 8 kg / 265 W / 3,8 m <sup>2</sup>       | <b>Small H21-RD</b><br>405 x 405 mm / 8 kg / 265 W / 3,8 m <sup>2</sup>      | <b>Small H21-OV</b><br>530 x 310 mm / 8 kg / 265 W / 3,8 m <sup>2</sup>    |
| <b>Medium H32-RE</b><br>718 x 408 mm / 15 kg / 820 W / 8,9 m <sup>2</sup>     | <b>Medium H32-QU</b><br>541 x 541 mm / 15 kg / 820 W / 8,9 m <sup>2</sup>     | <b>Medium H32-RD</b><br>611 x 611 mm / 15 kg / 820 W / 8,9 m <sup>2</sup>    | <b>Medium H32-OV</b><br>860 x 454 mm / 15 kg / 820 W / 8,9 m <sup>2</sup>  |
| <b>Large H40-RE</b><br>895 x 508 mm / 23 kg / 970 W / 13,9 m <sup>2</sup>     | <b>Large H40-QU</b><br>675 x 675 mm / 23 kg / 970 W / 13,9 m <sup>2</sup>     | <b>Large H40-RD</b><br>780 x 780 mm / 23 kg / 970 W / 13,9 m <sup>2</sup>    | <b>Large H40-OV</b><br>1000 x 580 mm / 23 kg / 970 W / 13,9 m <sup>2</sup> |
| <b>X-Large H46-RE</b><br>1028 x 583 mm / 30 kg / 1280 W / 18,3 m <sup>2</sup> | <b>X-Large H46-QU</b><br>775 x 775 mm / 30 kg / 1280 W / 18,3 m <sup>2</sup>  | <b>X-Large H46-RD</b><br>874 x 874 mm / 30 kg / 1280 W / 18,3 m <sup>2</sup> | <b>X-Large</b><br>On request   |
| <b>Standard colours</b><br><br>RAL 9010 / 7016 / 9005 / 6005 / 5002           | <b>Standard colours</b><br><br>RAL 9010 / 7016 / 9005 / 6005 / 5002           | <b>Standard colours</b><br><br>RAL 9010 / 7016 / 9005 / 6005 / 5002          | <b>Standard colours</b><br><br>RAL 9010 / 7016 / 9005 / 6005 / 5002        |
|   |   |  |  |
| Ring  | Heart   | Flower   | Star   |
| <b>Small</b><br>Unavailable   | <b>Small</b><br>Unavailable   | <b>Small</b><br>Unavailable  | <b>Small</b><br>Unavailable  |
| <b>Medium</b><br>Unavailable  | <b>Medium H32-HE</b><br>600 x 511 mm / 15 kg / 820 W / 8,9 m <sup>2</sup>     | <b>Medium H32-FL</b><br>658 x 658 mm / 17 kg / 820 W / 8,9 m <sup>2</sup>    | <b>Medium H32-ST</b><br>929 x 929 mm / 17 kg / 820 W / 8,9 m <sup>2</sup>  |
| <b>Large H40-RI</b><br>800 x 800 mm / 23 kg / 970 W / 13,9 m <sup>2</sup>     | <b>Large H40-HE</b><br>831 x 787 mm / 23 kg / 970 W / 13,9 m <sup>2</sup>     | <b>Large</b><br>Unavailable  | <b>Large</b><br>Unavailable  |
| <b>X-Large</b><br>On request  | <b>X-Large</b><br>On request  | <b>X-Large</b><br>On request   | <b>X-Large</b><br>On request   |
| <b>Standard colours</b><br><br>RAL 9010 / 7016 / 9005 / 6005 / 5002           | <b>Standard colours</b><br><br>RAL 3020/4003                                  | <b>Standard colours</b><br><br>RAL 4003                                      | <b>Standard colours</b><br><br>RAL 1028                                    |
|   |   |  |  |
| Horse   | Wave  | Cloud  | Individual shapes  |
| <b>Small</b><br>Unavailable   | <b>Small</b><br>Unavailable   | <b>Small</b><br>Unavailable  | <b>Small</b><br>On request   |
| <b>Medium</b><br>Unavailable  | <b>Medium</b><br>Unavailable  | <b>Medium H32-CL</b><br>885 x 445 mm / 17 kg / 820 W / 8,9 m <sup>2</sup>    | <b>Medium</b><br>On request  |
| <b>Large H40-HH</b><br>876 x 985 mm / 23 kg / 970 W / 13,9 m <sup>2</sup>     | <b>Large</b><br>Unavailable   | <b>Large</b><br>Unavailable  | <b>Large</b><br>On request   |
| <b>X-Large</b><br>On request  | <b>X-Large H46-WV</b><br>1185 x 850 mm / 34 kg / 1280 W / 18,3 m <sup>2</sup> | <b>X-Large</b><br>On request   | <b>X-Large</b><br>On request   |
| <b>Standard colours</b><br><br>RAL 9001/8012/5015                             | <b>Standard colours</b><br><br>RAL 9010/8012/5015                             | <b>Standard colours</b><br><br>RAL 9010/8012/5015                            |  |

5.2. **Special wishes** relating to geometry (in connection with the existing 265/620/970 W power classes) are welcome and will be examined as to their viability.

<sup>1</sup> The portfolio is subject to continual enlargement in line with market requirements and customer wishes.  
#gfo\*17-08-2019



## 6. Controls

- 6.1. **An Internal**, non adjustable control is cast into **HELIOLITHs**
- 6.1.1. *Safety switch (EMERGENCY OFF) – this turns off the power at 120 °C (-5,0 K)*
  - 6.1.2. *Function switch (for the energy economy mode, please see 7.3) – this turns off the power at 100 °C (+5,0 K)*
  - 6.1.3. *In addition, the heating mat of the **HELIOLITHs** is so designed as to allow the theoretical attainment of a maximum of 120 °C*
- 6.2. **An external control** is not included in the scope of delivery
- 6.2.1. *Pursuant to the [EU-Ecodesign-Directive 2015/1188](#), as from 1 January 2018 the installation and commissioning of infrared heating is only permissible in connection with external thermostats, which possess an electronic room temperature control and weekday regulation (e.g. radio thermostat), or devices for the adaptive regulation of the start of heating (e.g. time switches with a weekly program).*
  - 6.2.2. *In accordance with 6.2.1, appropriate controls are to be employed for single room solution. These are available in various forms from appropriate retailers and your specialist electrical or heating company will be pleased to supply relevant information.*
  - 6.2.3. *Controls are available for heating systems („SMARTHOME“), which at a minimum are mandatorily prescribed for their use and that of **HELIOLITHs** on the basis of 6.2.1. Your specialist electrical or heating company will be pleased to provide you with concrete information regarding your needs/application.*



## 7. Function

- 7.1. With regard to their **heating function**, **HELIOLITHs** provide hybrid warmth in a balanced ratio (pursuant to **13.2**) as follows:
- 7.1.1. *Radiated warmth (~35 % - IR radiation)*
  - 7.1.2. *Convection warmth (~65 % - air is warmed)*
- 7.2. At a **core temperature of 100 °C** (+5.0 K), the **HELIOLITHs** reach a maximum **surface temperature of 100 °C** (+/-5.0 %). Therefore, **HELIOLITHs** number among the low-temperature devices (as per definition up to ~200 °C; above this figure devices are classified as high-temperature).
- 7.3. At a **core temperature of 100 °C** (+5.0 K), an integrated thermostat interrupts the electrical circuit. Once the temperature has fallen to 65 °C (+5.0 K) the circuit will be closed again and the **HELIOLITHs** resume heating up to a level of 100 °C (+5.0 K). This cycle is repeated until:
- 7.3.1. *the mains cable of the **HELIOLITHs** is disconnected or*
  - 7.3.2. *a time switch upstream of the mains connecting cable interrupts the electrical circuit or*
  - 7.3.3. *an external thermostat interrupts the electrical circuit.*



## 8. Installation

- 8.1. The **anchorage and dowelling methods** employed are to be matched to the respective possibilities and the following checked:
  - 8.1.1. *The nature of the ceiling/wall/...*
  - 8.1.2. *The surrounding area with regard to additional loads,*
  - 8.1.3. *The heat resistance of bonded anchorage (where this is used)*
  - 8.1.4. *Suitable mounting and installation tools*
- 8.2. **HELIOLITHs** are fitted with four moulded-in M08x30 hexagonal screws<sup>2</sup> at intervals of 200 mm (arranged in a square). Should you not employ the **delivery standard HELIOLITH-mounting**, you must suitably adapt the VESA mount or other mounting bracket that you have selected.
- 8.3. **HELIOLITHs** are optimised for **VESA-mounts**, which are available from appropriate specialist retailers in numerous versions (rigid/pivotal/tiltable/rotable, with a hinged/telescopic arm, on a tripod (three-legged/easel)). Please consult your respective specialist advisor.
- 8.4. Always mount your **HELIOLITHs** in such a way that they are **not located directly behind any objects**, as otherwise the radiated warmth will not achieve its full effect. However, basically **HELIOLITHs** can be installed anywhere on walls or ceilings, although a gap of ~100 mm must always exist between the lateral sides of the **HELIOLITH** surfaces and walls/fixtures and fittings.
- 8.5. **HELIOLITHs** should radiate warmth **into a room over a maximum distance of 3.0 m** and secondary radiation also proves effective within this range. Always orientate your **HELIOLITHs** with this in view and take special note for whether two smaller **HELIOLITHs** might be more effective than one large one. One **HELIOLITH** might be possibly be sufficient mathematically on the basis of the respective W/m<sup>2</sup>, but the radiated warmth may only prove effective to a limited local extent.
- 8.6. The majority of **window manufacturers** use a special gas to insulate their products, which reflects radiated warmth and can therefore be used as a secondary radiation. Consult your specialist window advisor in this regard.
- 8.7. **Installation** should always fulfil the following criteria:
  - 8.7.1. *On an interior wall between two adjacent rooms, two **HELIOLITHs** should not be mounted congruent to each other (hot spot!). For example, this means that they should be installed with an offset of ~2 m (centre/centre).*

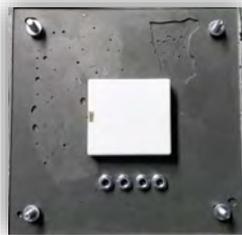
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<sup>2</sup> In some cases the HELIOLITHs may have moulded-in M08x14 threaded sleeves.

- 8.7.2. *During installation on interior walls/false ceilings, one should always bear in mind that the rooms adjacent/above will be heated indirectly.*
- 8.7.3. *During installation on interior walls/final ceilings, one should always take into account that this will also increase the insulation value and have a positive effect in general for basic structure of a building.*
- 8.7.4. *If required, the emissions of radiated warmth can be largely transferred to the front side through the installation of our NIRO reflectors, which are available as an option or upon request. A NIRO reflector is simply screwed onto the respective bracket on the reverse side of the **HELIOLITH**.*

8.8. Thanks to the square screw layout of our **HELIOLITHs**, the following are possible:

- 8.8.1. *Horizontal or vertical (90° offset) installation or orientation with a VESA mount (please observe the installation instruction for the respective VESA bracket).*
- 8.8.2. *Orientation and mounting in intermediate positions using our universal **HELIOLITH**-adapter.*
- 8.8.3. *The photos below show the universal adapter installation of a **HELIOLITH**, which in this case is fitted a reflector that is available as an optional extra.*



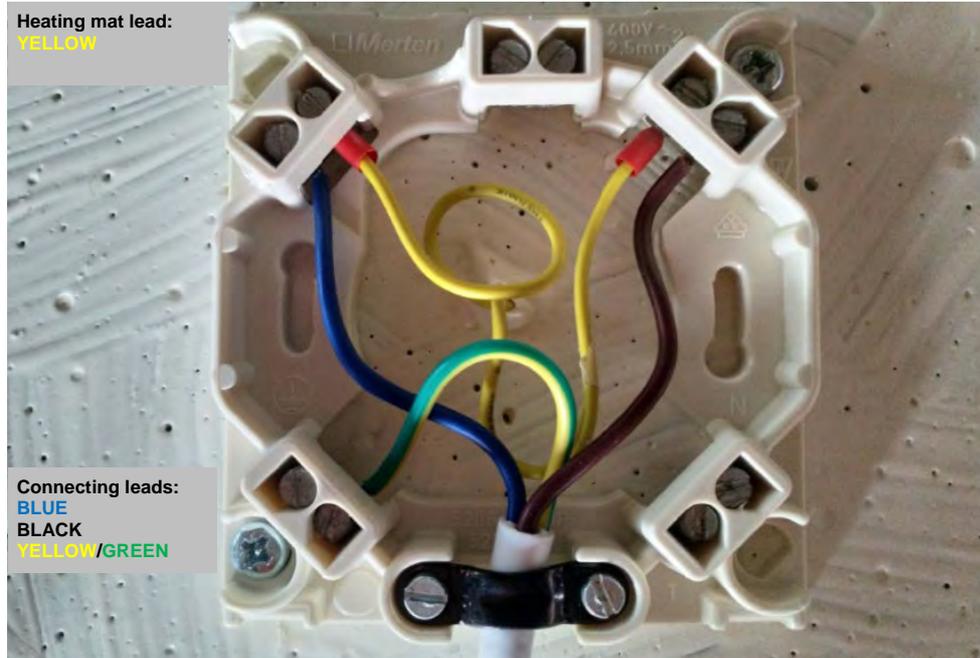
8.9. In the case of **installation on suspended/fals/final ceilings**, the following must be noted:

- 8.9.1. *NIRO-reflectors (please see **8.7.4**) might be relevant.*
- 8.9.2. *A gap of ~100 mm to any ceiling should be considered (hot-spot!).*
- 8.9.3. *Wall mounting is always preferable to ceiling installation for as stated in **13.4**, in the case of the latter ~15 % of warmth output in the respective room is lost. In some situations, this is acceptable because wall mounting is impossible, or the 15 % loss on the ceiling has a positive aspect, as one wishes to heat the room above additionally in this manner.*



8.10. You can **connect HELIOLITHs** as follows:

- 8.10.1. *Directly to the mains using the device connecting cable. However, nonetheless consider **2, 3**.*
- 8.10.2. *Through an e-installation directly on the connection box prepared by your specialist electrical company. It should be noted that the cable and the individual leads can be subject to a temperature of 100 °C and therefore they must possess corresponding heat resistance (e.g. H05SS, ...).*



- 8.10.3. *If a fix-mounted device is not fitted with a mains connection cable and a plug, or another means of disconnection from the mains, which on every terminal must have a contact opening width in line with the **Overvoltage Category III** conditions for complete separation, the instructions shall require that such a disconnecting device has to be integrated into the fixed electrical installation in accordance with the related regulations.*
- 8.10.4. *If the insulation of the line conductor of a device, which should be connected permanently to the fixed leads (??) comes into contact with parts that demonstrate an increase in temperature in excess of 50 K, the instructions must lay down that the fixed cable must be protected, e.g. by an appropriately heat resistant insulation sleeve.*
- 8.10.5. *If connected directly to the connection box, the device may be used in damp and wet rooms (>> full insulator), as well as ex-rooms, when the HELIOLITHs have certification in line with the 2014/34/EU explosion protection directive (**3.6**). In all cases, only a specialist electrical company may complete the installation work.*



## 9. Application example

Apartment block, 96.3 m<sup>2</sup> - ceiling and wall installation





## 10. Cleaning

- 10.1. The coated surfaces of the **HELIOLITHs** may be cleaned with a **damp cloth**.
- 10.2. In general, **no aggressive cleaning agent** may be used on the surfaces.  
This also applies to the entire storage heater and in particular the area around the type plate.
- 10.3. In **cases of doubt**, your specialist advisor should be consulted.



## 11. Artistic design possibilities

- 11.1. **UV printing** can be applied to **HELIOLITHs**. This service can be provided by #HELIOLITH, but UV printing can also be added at any subsequent point in time.
- 11.2. **WT printing (dipping)** can be applied to **HELIOLITHs**. This service can be provided by #HELIOLITH, but WT printing (dipping) can also be added at any subsequent point in time.
- 11.3. **HELIOLITHs** can be laminated with **special, top quality printed photo films**.
- 11.4. **HELIOLITHs** can be painted with **acrylics**.
- 11.5. **HELIOLITHs** can be **etched**.
- 11.6. **HELIOLITHs** can be worked to a **max. depth of 3.0 mm on the flat front side** (e.g. for the application of decorative stones). Such work may only be carried out by appropriately qualified personnel.



## 12. Guarantee & warranty

- 12.1. **HELIOLITHs** possess **TÜV AUSTRIA SERVICES plc** certification
  - 12.1.1. *Electrical safety pursuant to EN 60335-1:2012 + AC:2014 + A11:2014 and EN 60335-2-30: 2009 + Cor.:2010 + A11:2012 in the non-accredited area*
  - 12.1.2. *IP-Marking IP20 pursuant to EN 60529 1:1991+A1:2000+A13:2013+AC:2017*
  - 12.1.3. *Electromagnetic fields (EMF) pursuant to EN 62233:2008*
- 12.2. **HELIOLITHs** carry a **functional guarantee** of
  - 12.2.1. *96 months from date of dispatch or*
  - 12.2.2. *94 months from date of commissioning (commissioning confirmation!)*
- 12.3. **The Guarantee is cancelled and shall be inaplicable** in the case of improper use and installation, negligence, or damage caused by incorrect transport and storage.
- 12.4. **#HELIOLITH** shall not be liable for **any indirect damage** caused by the use of its products.
- 12.5. The following are to be provided/undertaken in the case of every possible **guarantee or warranty claim**
  - 12.5.1. *An exact description of the flaw/defect, possible cause, end effect during use or for the user*
  - 12.5.2. *Meaningful photos of the flaw/defect*
  - 12.5.3. *Documentation signed and stamped by the specialist electrical company*
  - 12.5.4. *The provision of the original invoice together with the documentation*
  - 12.5.5. *At the request of the manufacturer, the return of the goods that are the object of the claim*



### 13. Certification & expertise & confirmations

13.1. Your **HELIOLITHs** and the components that they contain possess important certificates, which confirm their operational and health safety, and functionality

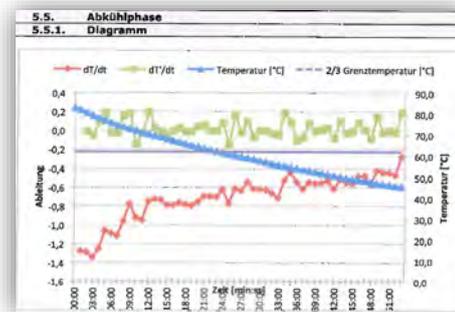
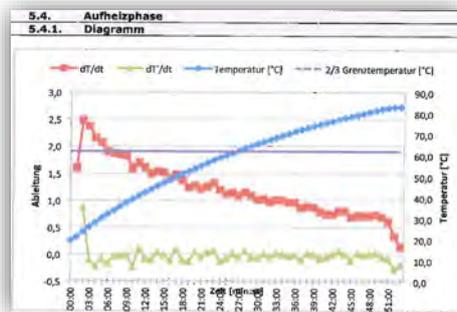
13.1.1. TÜV certification (please see [12.1](#))

13.1.2. RoHS certification

13.1.3. PAK certification

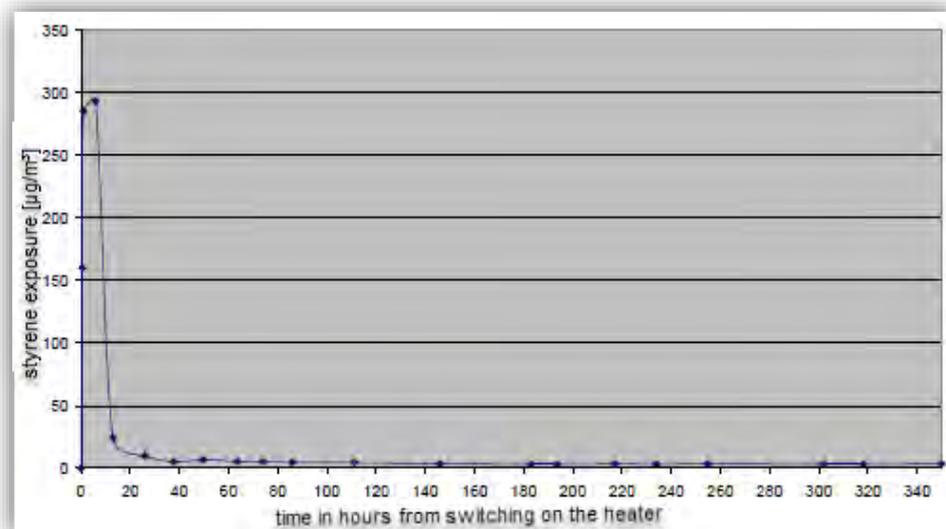
13.1.4. CE confirmation

13.2. **Expertise** from [TU Kaiserslautern, Mr Dr-Ing Peter Kosack](#) regarding the degree of radiation efficiency – two relevant excerpts below (H21-RE):

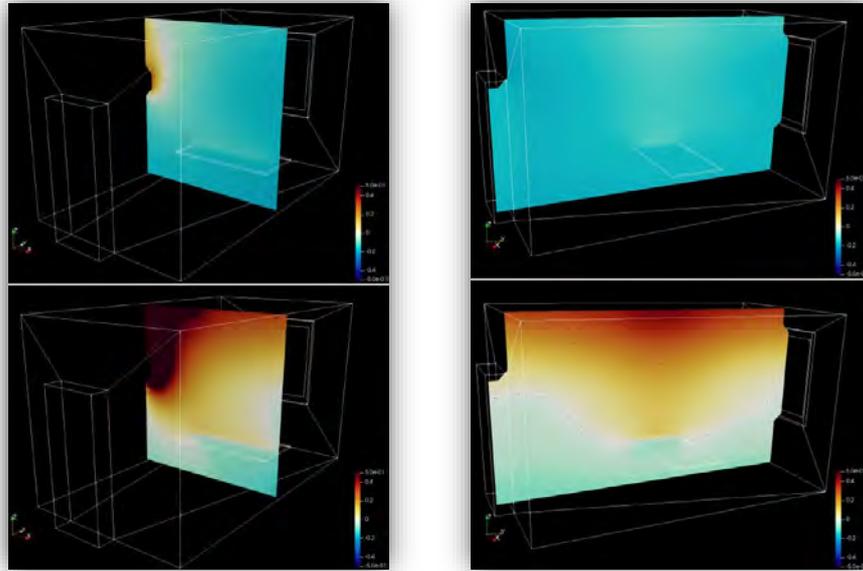


13.3. **Expertise** from [IBO GmbH](#) regarding

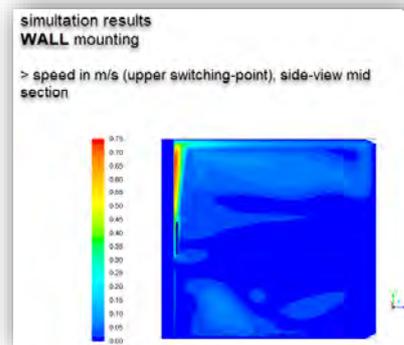
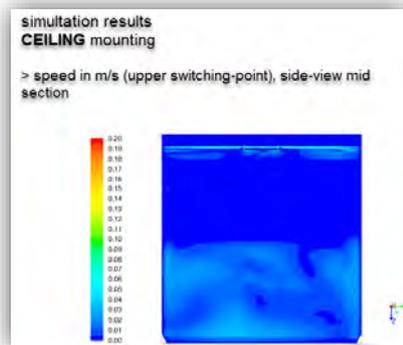
13.3.1. VOC-consistence (particularly with regard to styrene content) – one relevant excerpt below (H21-RE):



13.3.2. **Comfort** (pursuant to Mr Ole FANGER-methode) – two relevant excerpts below (H32-RE):



13.4. **Expertise** from the [Institut of Fluid Dynamics and Heat Transfer, Johannes Kepler University Linz](#) regarding heat radiation and convection



13.5. **Protection of utility model** [DE202013002591 U1](#)

13.6. **Trademark protection** [EUIPO-Nr 017589029](#)



## 14. Contacts

### 14.1. **Production Partner**

[MAILLITH GmbH](#)

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### 14.2. **Developer (product owner)/Sales**

[HELIOLITH eU](#)

Att Mr Gerhard Forst  
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<sup>A</sup> At present, HELIOLITHs do not have certification pursuant to the 2014/34/EU ex-protection directive. If needed, product certification can follow upon request.

Subject to technical modifications – all information in all conscience but no responsibility is accepted for the accuracy and completeness!