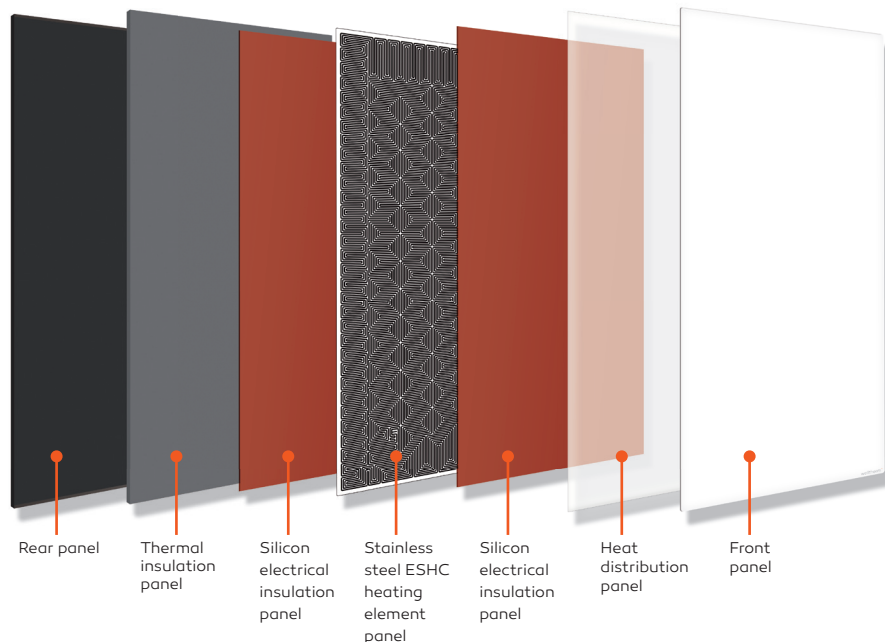




Welltherm ESHC technology - The most efficient of all infrared heaters on the market to date

ESHC (Entire Surface Heat Conductor) technology is a highly efficient heating technology developed by Welltherm in Germany that is used in process heat applications. Welltherm's infrared heaters are the only infrared heaters in which more than 70% of the surface area to be heated is covered by heating elements. This ensures that heat is distributed to maximum effect, increasing efficiency. ESHC technology is currently used by a number of German Dax and top biotechnology companies.

Structure of Welltherm ESHC infrared heaters



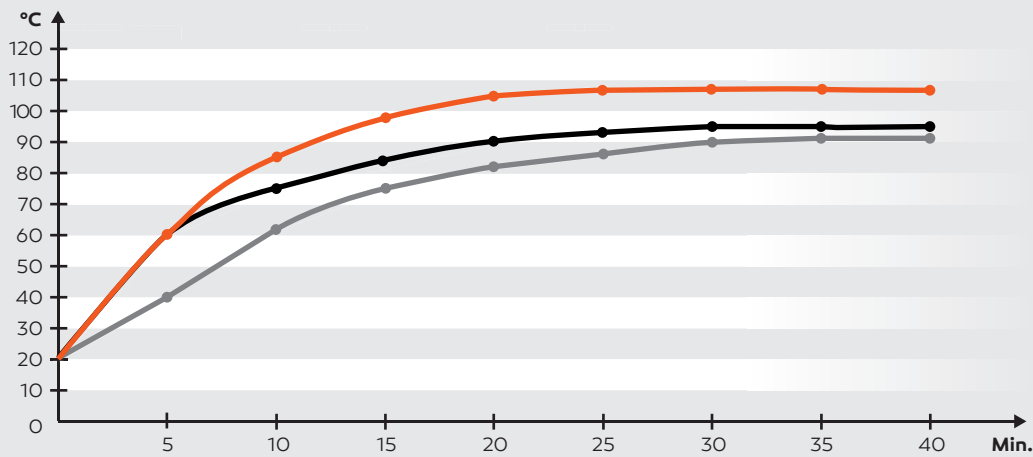
Advantages of ESHC:

- Extremely energy efficient
- Even surface temperature
- Does not contain or release any toxins or odours
- Low electromagnetic emissions
- Reduces heating costs by up to 30%

The exploded drawing above shows the structure of Welltherm infrared heaters. The image of the middle panel clearly shows the extensive coverage achieved through the geometry of the high-quality stainless steel ESHC heating element panel. The heating circuits run in opposing directions to neutralise any unwanted magnetic fields. The front and back of the heating element panel are insulated by thermally resistant silicone insulation panels. These insulation panels are only 0.8 mm thick, which ensures that heat can be optimally transferred to the infrared heater's front panel while still guaranteeing a maximum level of electrical safety. The rear of the heater features an additional thermal insulation panel that reduces heat loss at the back.

ESHC Technology – Analysis

welltherm[®]



ESHC:
100% heat output
after 25 minutes

Competitor A •

Size approx. ca. 60 x 90 cm
Output approx. ca. 500-600 W

Surface area that radiates heat:
74,3 %

Radiation coefficient:
0,51

Max. temperature:
95 °C



ESHC •

Size approx. 60 x 90 cm
Output approx. 510 W

Surface area that radiates heat:
85 %

Radiation coefficient:
0,6

Max. temperature:
107 °C



Wettbewerb B •

Size approx. ca. 60 x 90 cm
Output approx. ca. 500-600 W

Surface area that radiates heat:
62,9 %

Radiation coefficient:
0,44

Max. temperature:
91 °C



The surface area that radiates heat is calculated from the ratio between the radiation coefficient and a maximum radiation efficiency of 0.7. The radiation coefficient was measured using a method based on DIN EN 416-2 and IEC 60675 and describes the ratio of radiated infrared heat and the electrical power expressed as a percentage.

In comparison to other technologies, Welltherm's exclusive ESHC technology ensures that 85% of the surface area radiates heat and has a radiation coefficient of 0.6 and a maximum temperature of 107 °C.

Conclusion: Welltherm's ESHC technology is 30% more cost effective than other infrared heating systems.

Note:

All of the test results for our ESHC technology-based infrared heating systems were taken from an independent and neutral test report completed by the DVGW Research Centre at the Engler Bunte Institute (EBI) of the Karlsruhe Institute of Technology (KIT). Please contact us for a copy of the whole test report.