



# Textile Finishing with Infrared Heaters

**FOCUS** | Energy Efficiency and Custom Infrared Heating Processes



# Infrared Technology from Leister for the Textile Industry

## **Precise and Optimized Heating with KRELUS Infrared Heaters**

The powerful KRELUS infrared heaters from Leister are ideally suited for customer-specific infrared solutions in the textile industry. Whenever high radiation intensity, easy controllability, short reaction times, and custom solutions with optimum economic efficiency are required, KRELUS infrared solutions are your solution of choice. They have proven themselves worldwide.

**Leister. We know how.**

# **Content**

## **Heating Processes in the Textile Industry**

**Page 4**

---

## **IR Heaters in Textile Finishing**

**Page 5**

---

## **The Advantages of the IR Heater**

**Page 7**

---

## **Drying with KRELUS IR Heaters**

**Page 9**

---

## **Infrared Heaters**

**Page 12**

---

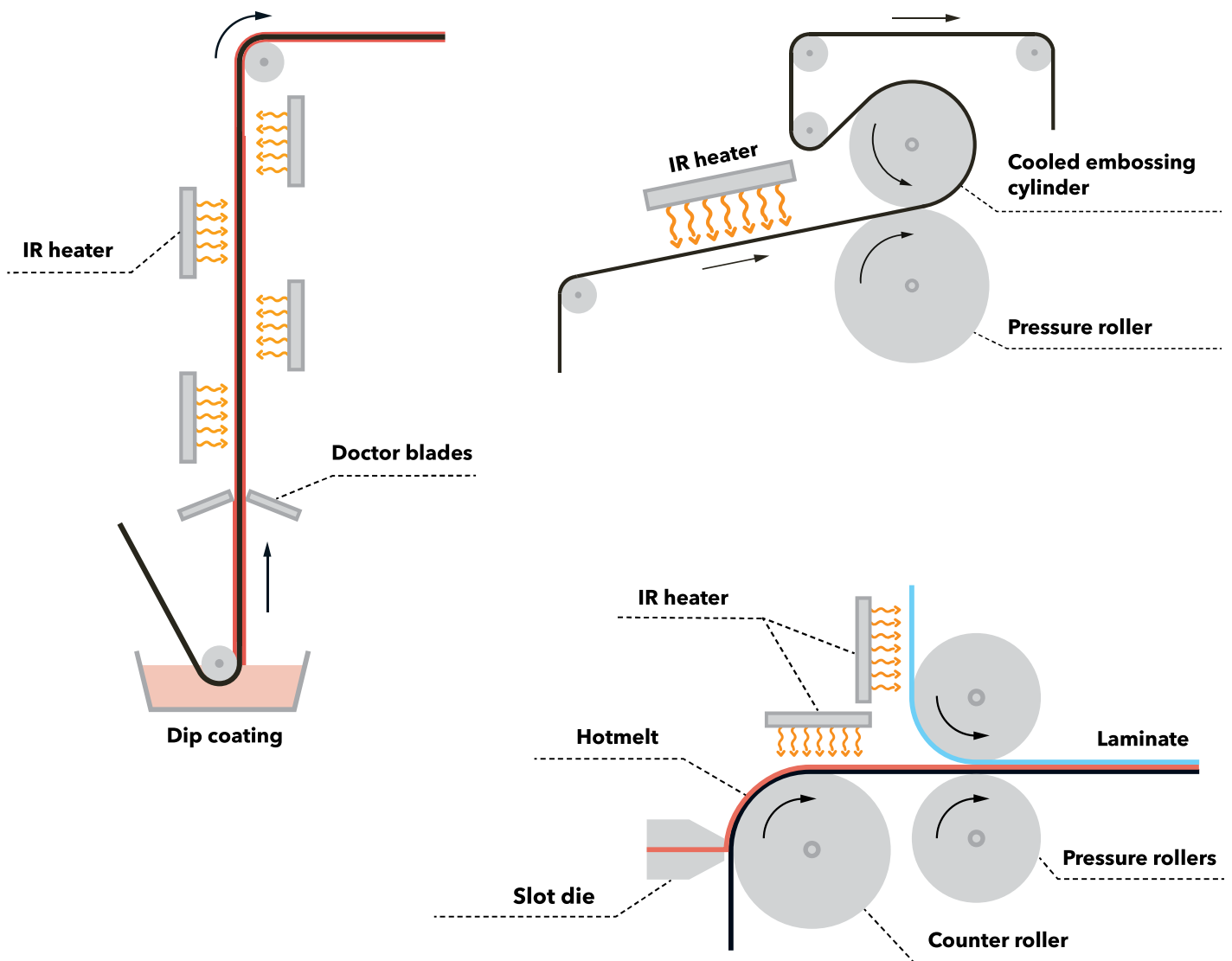
## **Controller**

**Page 14**

---

# Heating Processes in the Textile Industry

There are many processes in the textile industry that require heat. These are primarily processes for further processing and finishing of textile materials. These include coating, drying, heat-setting and embossing. Leister offers fast-reacting, energy-efficient infrared heaters (IR heaters).



Dip coating, embossing, laminate

# IR Heaters in Textile Finishing

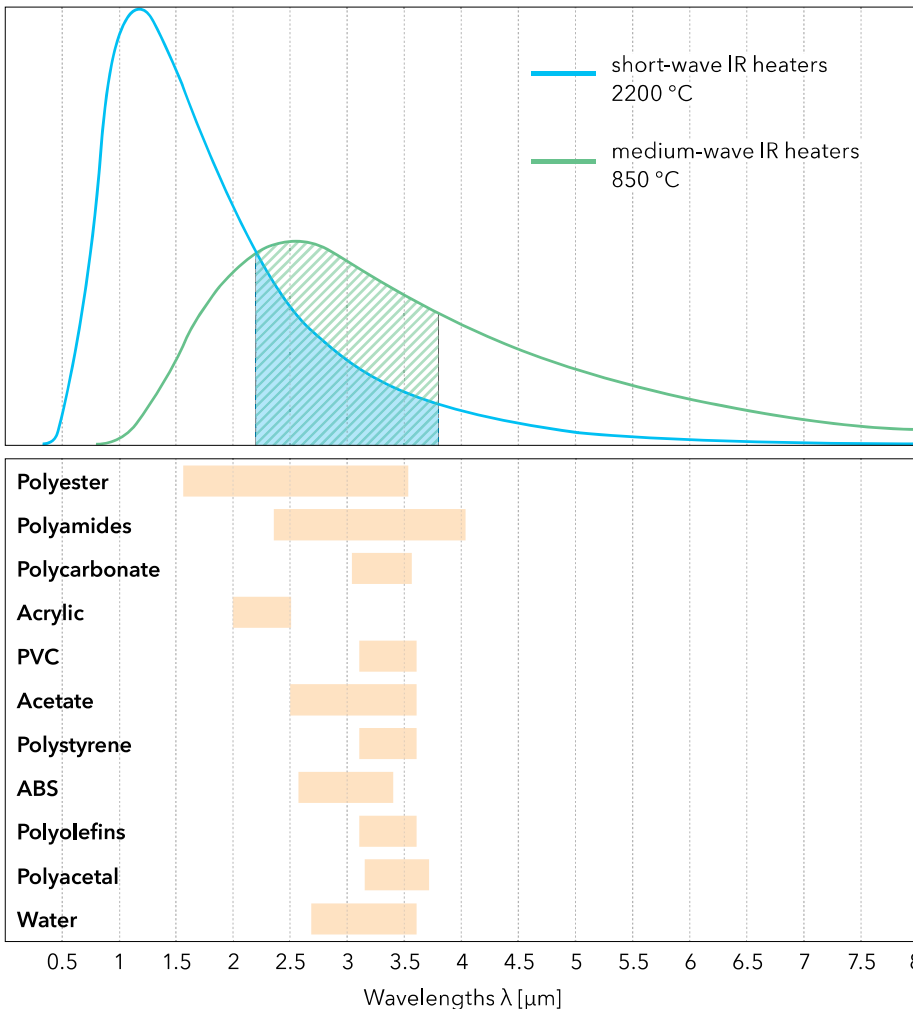
There are various IR heating processes in the textile industry. They mainly take place in the textile finishing production stage. To do so, short or medium-wave IR heaters are used. In terms of short-wave IR heaters, halogen or other glass tube heaters are common, while ceramic, quartz and metal film heaters are typical for medium-wave IR heaters.

## It all Depends on the Wavelength

All textiles, whether synthetic or natural fibers, absorb medium-wave IR radiation very well. The absorption bands are concentrated for almost all thermoplastics, organic materials, paper and wood in a wavelength range from 1.6 to 4.1  $\mu\text{m}$ . The absorption bands of water are also within this range at 2.8 to 3.7  $\mu\text{m}$ .

For most applications in the textile industry, the medium-wave KRELUS IR heaters from Leister are a great fit.

## Intensity distribution and absorption bands of plastics



Request a free  
expertise now





# The Advantages of the IR Heater

The various heater types for heating processes in the textile industry have differing characteristics. They emit short or medium-wave IR radiation and react quickly or slowly. The right wave length allows for good absorption, while the fast reaction time provides you with precise temperature control of your product and optimal operation.

## Energy Efficient and Application Specific

For non-contact heating with IR heating in textile processing, unlike convection and contact, no additional medium is heated. The direct input of energy into the product increases energy efficiency. Fast-response IR heaters such as short-wave glass tube heaters and medium-wave metal foil heaters allow for on-demand operation. They are only switched on when they are needed. Only then they consume electricity, thereby ensuring energy-efficient operation. Slow-reacting heaters, such as ceramic heaters, are not capable of offering demand-controlled operation.

## Versatile Areas of Application

The KRELUS IR heaters from Leister are suitable for various processes in textile finishing. They are especially well suited for the following applications:

- drying and pre-drying,
- activating adhesives (hotmelt or powder),
- gelling of polyvinyl chloride (PVC),
- sintering of polytetrafluoroethylene (PTFE),
- thermal fixing of fabrics and
- plasticization of surfaces prior to embossing.

## The KRELUS IR Heaters from Leister

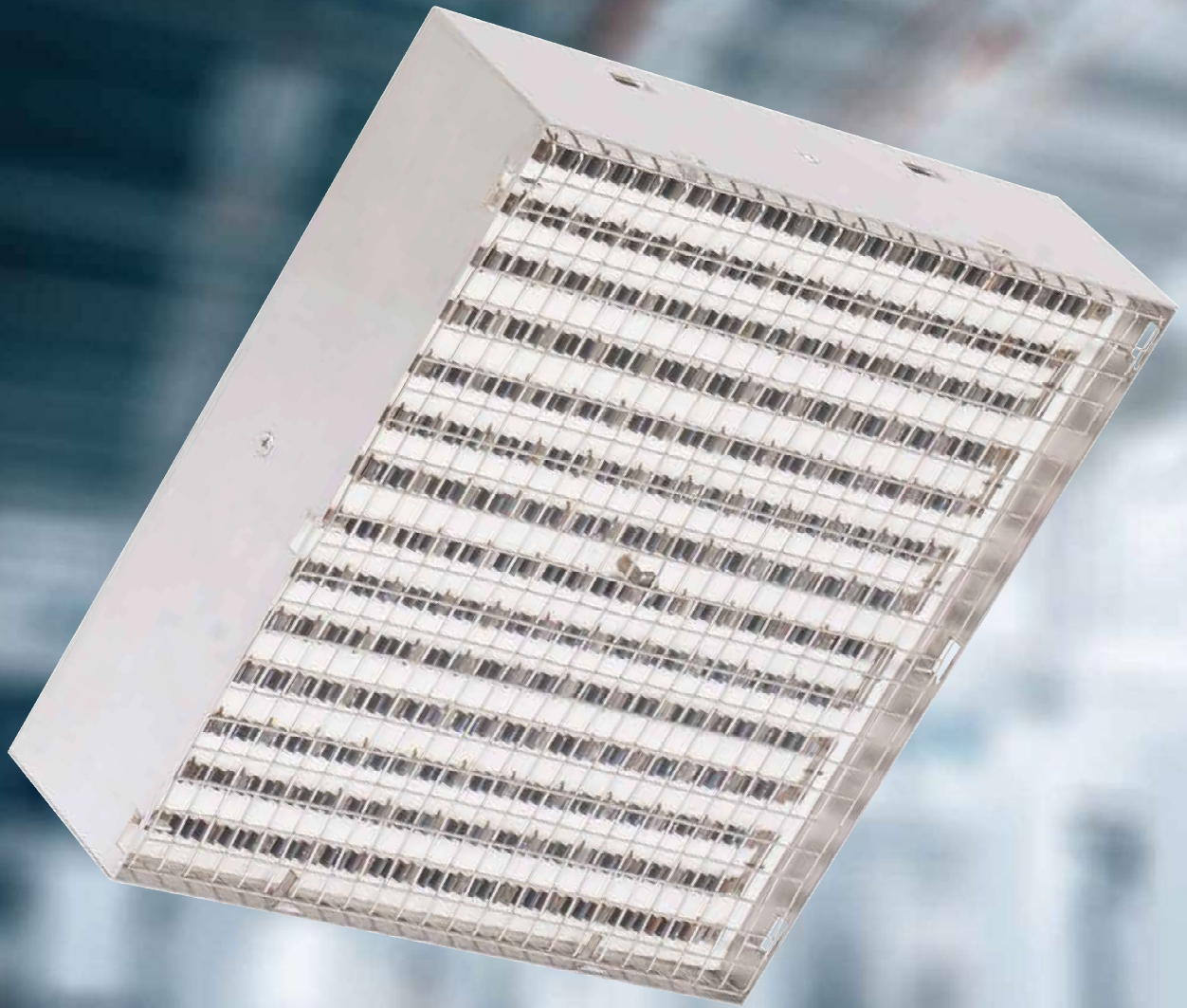
The KRELUS IR heaters from Leister belong to the class of heaters with the most advantages. The metal foil heaters are fast, efficient and easy to control. With their medium-wave IR radiation, they emit the best wavelength for textile finishing processes.

Take advantage of many benefits of the KRELUS IR heaters and optimize your heating process. They offer you:

- quick response times,
- demand-controlled and energy-efficient operation,
- precise control of the product temperature and
- a high degree of safety in case of production interruptions (emergency stop situations).



KRELUS IR heaters from Leister in use in a textile finishing machine | © Kampf LSF GmbH, 2017



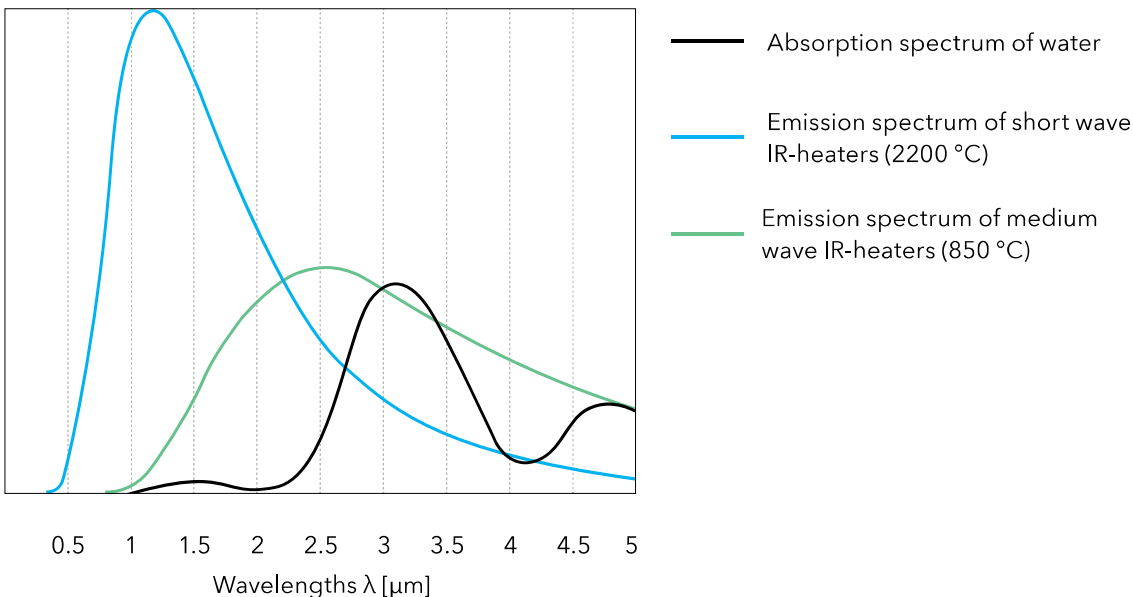
# Drying with KRELUS IR Heaters

Drying processes are used in various finishing methods. For example, for drying fabric after wet treatment, during bleaching or after applying finishes. Here, the aim in the finishing is specifically low energy consumption, short processing times and precise temperature control. The KRELUS IR heater from Leister offers all of these advantages.

In many cases, KRELUS IR heaters are used after wet treatments for drying. The drying process is often followed by the crosslinking process, which can also be supported by IR heaters. Heat input via medium-wave IR heating in drying processes is very efficient for heating wet fabrics to

evaporation temperature. Both the water and the material absorb the medium-wave IR radiation very well in most cases. This type of direct heat input is more efficient than indirect heating via convection.

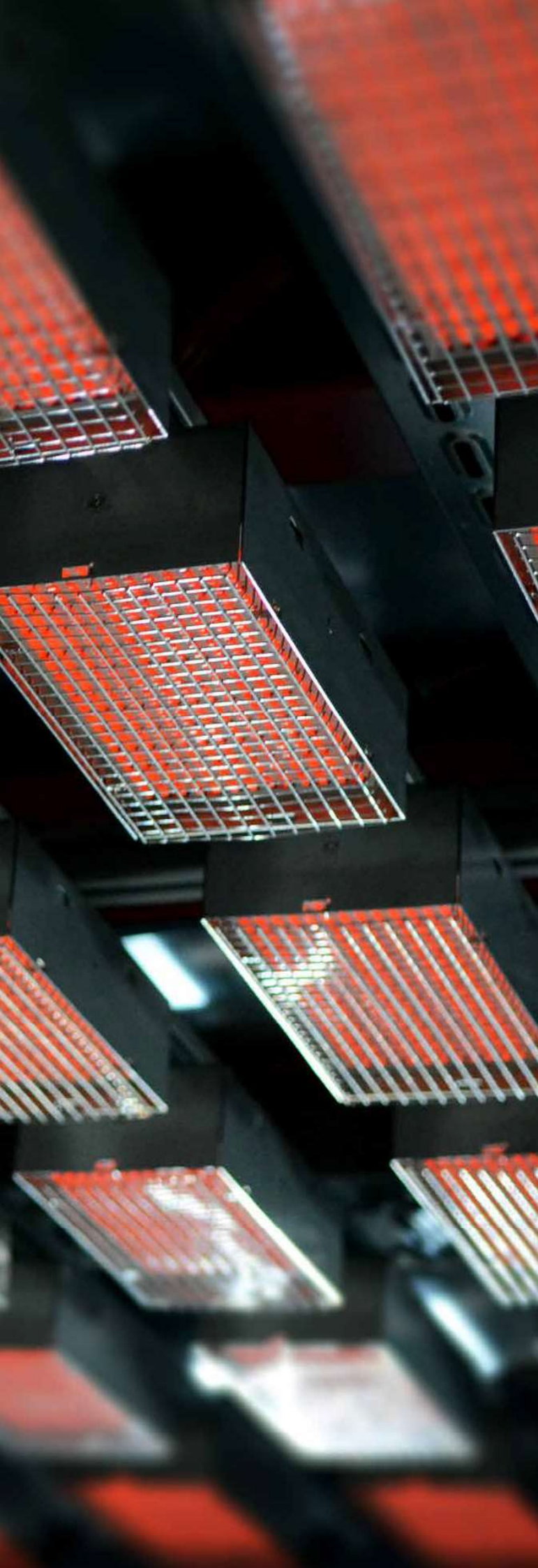
## Absorption of Water



Set up a consultation  
with experts







## **Infrared Heaters**

---

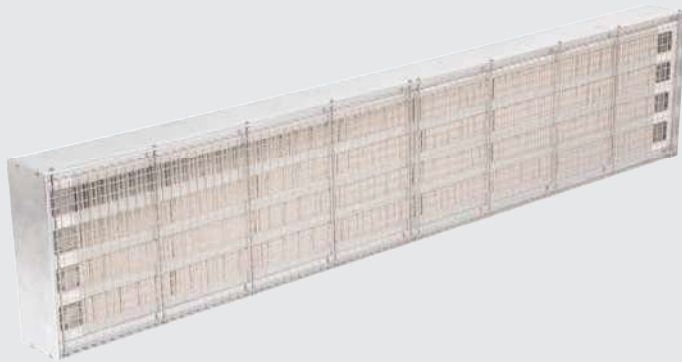
KRELUS Profile Heater	12
KRELUS G14-25 MINI	12
KRELUS G7-50 MINI	13
KRELUS G14-25 MINI-MINI	13

## **Controller**

---

KRELUS Controller	14
-------------------	----

# KRELUS Profile Heater



The KRELUS Profile Heater are the series of customized IR heaters, which are mainly used as large area heaters. The heaters can be very individually adapted to the customer's requirements in terms of size and power density.

## Technical data

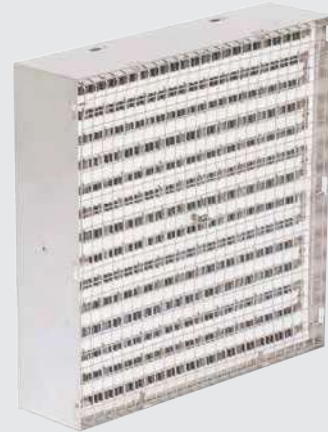
Voltage	110-660 V	
Power density	5.0-45.0 kW/m <sup>2</sup>	3.22-29.03 W/in <sup>2</sup>
Length	500.0-7000.0 mm	19.68-275.59 in
Width	100.0-600.0 mm	3.93-23.62 in
Height	70.0 mm	2.75 in

Customized solution upon request



Configure product

# KRELUS G14-25 MINI



KRELUS G14-25 MINI square infrared modular heaters are ideal for larger or smaller fields with one or more separately controlled heating zones.

## Technical data

Voltage	200-240 V	
Frequency	50/60 Hz	
Power	1350-3600 W	
Power density	22.0-58.0 kW/m <sup>2</sup>	14.19-37.41 W/in <sup>2</sup>
Max. ambient temperature	500 °C	932 °F
Length	248.0 mm	9.76 in
Width	248.0 mm	9.76 in
Height	65.0 mm	2.55 in
Weight	2.7 kg	5.95 lb
Approvals	CE	
Protection class (IEC 60529)	IP20	
Protection class	I	

## Product articles

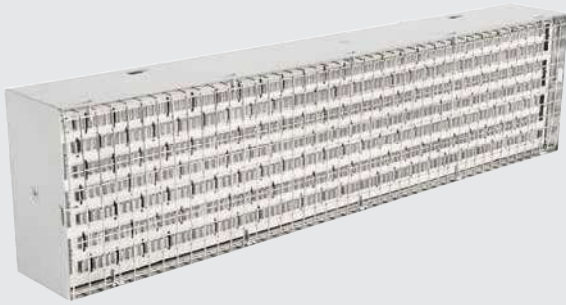
KRELUS IR-Heater G14-25 MINI 4, 230 V/1360 W	116.688
KRELUS IR-Heater G14-25 MINI 5, 230 V/1700 W	116.690
KRELUS IR-Heater G14-25 MINI 6, 230 V/2000 W	116.691
KRELUS IR-Heater G14-25 MINI 7.5, 230 V/2500 W	116.692
KRELUS IR-Heater G14-25 MINI 9, 230 V/3100 W	116.769
KRELUS IR-Heater G14-25 MINI 10.5, 230 V/3565 W	122.539
KRELUS IR-Heater G14-25 MINI 6, 200 V/1740 W	126.933
KRELUS IR-Heater G14-25 MINI 6, 220 V/2000 W	126.934
KRELUS IR-Heater G14-25 MINI 6, 240 V/2000 W	126.935
KRELUS IR-Heater G14-25 MINI 6 PS, 230 V/2000 W (w pyrom.-hole std.)	116.949
KRELUS IR-Heater G14-25 MINI 6 PC, 230 V/2000 W (w pyrom.-hole center)	117.101

more product articles available



Configure product

# KRELUS G7-50 MINI



KRELUS G7-50 MINI rectangular infrared heaters can be combined into heater fields. They can also be used with KRELUS G14-25 MINI heaters in one heater field.

# KRELUS G14-25 MINI-MINI



KRELUS G14-25 MINI-MINI rectangular heaters are half the size of the KRELUS-MINI heaters. That means it offers great flexibility when setting up heater fields.

## Technical data

Voltage	200-240 V	
Frequency	50/60 Hz	
Power	1350-3600 W	
Power density	22.0-58.0 kW/m <sup>2</sup>	14.19-37.41 W/in <sup>2</sup>
Max. ambient temperature	500 °C	932 °F
Length	496.0 mm	19.52 in
Width	123.0 mm	4.84 in
Height	65.0 mm	2.55 in
Weight	2.7 kg	5.95 lb
Approvals	CE	
Protection class (IEC 60529)	IP20	
Protection class	I	

## Technical data

Voltage	200-240 V	
Frequency	50/60 Hz	
Power	760-1300 W	
Power density	24.0-42.0 kW/m <sup>2</sup>	15.48-27.09 W/in <sup>2</sup>
Max. ambient temperature	500 °C	932 °F
Length	248.0 mm	9.76 in
Width	123.0 mm	4.84 in
Height	65.0 mm	2.55 in
Weight	1.35 kg	2.97 lb
Approvals	CE	
Protection class (IEC 60529)	IP20	
Protection class	I	

## Product articles

KRELUS IR-Heater G7-50 MINI 4, 230 V/1360 W	117.770
KRELUS IR-Heater G7-50 MINI 5, 230 V/1700 W	119.412
KRELUS IR-Heater G7-50 MINI 6, 230 V/2000 W	119.424
KRELUS IR-Heater G7-50 MINI 7.5, 230 V/2500 W	119.452
KRELUS IR-Heater G7-50 MINI 9, 230 V/3100 W	119.453
KRELUS IR-Heater G7-50 MINI 10.5, 230 V/3565 W	130.387
KRELUS IR-Heater G7-50 MINI 6, 200 V/1740 W	128.195
KRELUS IR-Heater G7-50 MINI 6, 220 V/2000 W	128.216
KRELUS IR-Heater G7-50 MINI 6, 240 V/2000 W	128.451
KRELUS IR-Heater G7-50 MINI 6 PS, 230 V/2000 W (w pyrom.-hole std.)	117.131
KRELUS IR-Heater G7-50 MINI 6 PC, 230 V/2000 W (w pyrom.-hole center)	119.469

more product articles available

## Product articles

KRELUS IR-Heater G14-25 MM 3, 200 V/757 W	123.848
KRELUS IR-Heater G14-25 MM 3, 220 V/915 W	123.850
KRELUS IR-Heater G14-25 MM 3, 230 V/1000 W	122.604
KRELUS IR-Heater G14-25 MM 3, 240 V/1090 W	123.852
KRELUS IR-Heater G14-25 MM 3.3, 200 V/904 W	124.623
KRELUS IR-Heater G14-25 MM 3.3, 220 V/1090 W	124.624
KRELUS IR-Heater G14-25 MM 3.3, 230 V/1200 W	122.609
KRELUS IR-Heater G14-25 MM 3.3, 240 V/1300 W	124.629
KRELUS IR-Heater G14-25 MM 3 PS, 230 V/1000 W (w pyrom.-hole std.)	122.657
KRELUS IR-Heater G14-25 MM 3.3 PS, 230 V/1200 W (w pyrom.-hole std.)	122.785

more product articles available



Configure  
product



Configure  
product

# KRELUS Controller



For all infrared modular heaters and infrared heater fields, as well as for all customized infrared heaters, there is always the right KRELUS Controller. Tailored, versatile and efficient.

## Technical data

Phases	1×/3×
Voltage	200-480 V
Frequency	50/60 Hz
Length	variable
Width	variable
Height	variable

Customized solution upon request



Configure  
product

## Legal Notices

### Contents

We endeavor to ensure all information is correct, up-to-date and complete while carefully preparing the contents of this brochure. We cannot assume any liability for the information offered. We reserve the right to change or update all information provided at any time without further notice.

### Copyright/Industrial Property Rights

Texts, images, graphics and their arrangement are subject to copyright protection and other protective laws. The reproduction, modification, transfer or publication of part or all of the contents of this brochure is prohibited in any form, except for private, non-commercial purposes.

All marks contained in this brochure (protected trademarks, such as logos and business names) are the property of Leister AG, Leister Brands AG or third parties and may not be used, copied or distributed without prior written consent.

### Modifications

Modifications can be made at any time.

© Leister AG  
Galileo-Strasse 10  
6056 Kaegiswil  
Switzerland

leister.com  
leister@leister.com  
+41 41 662 74 74



**Sign up now  
for the newsletter**



# Leister

Leister Technologies AG is an ISO 9001 certified enterprise.