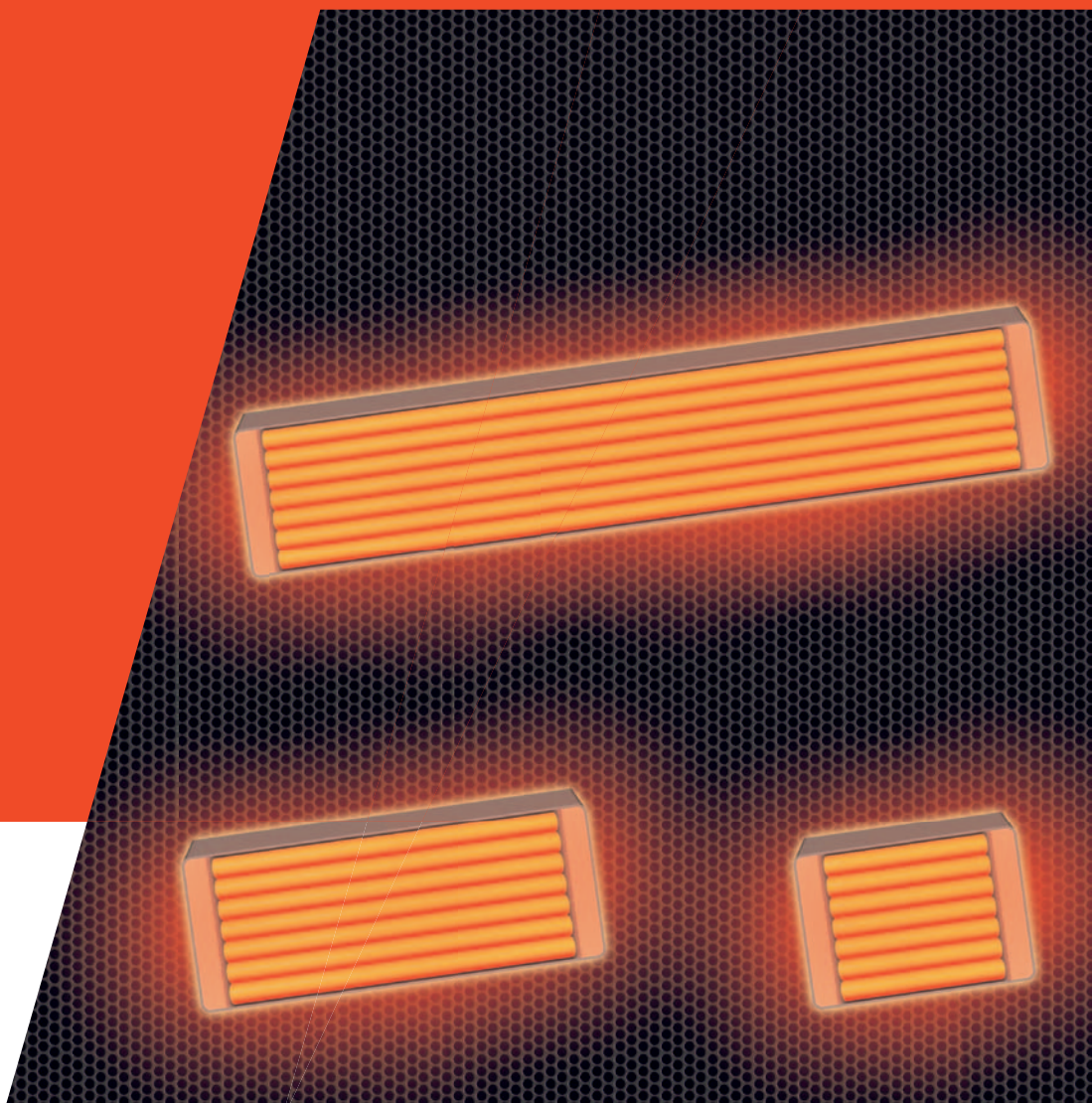
TQS®
Technical Quartz Solutions

Infrared-Heaters

- Infrared Quartz Cassette Heaters (CLASSIC, FAST, RAPIDIUM)
- Infrared Quartz Square Tube Heaters
- Infrared Quartz Omega Heaters
- Infrared Quartz Monotube Heaters
- Infrared Quartz Twintube-Heaters with Gold Plating
- Infrared Quartz Barrel Heaters



Infrared-Heaters

TQS produces medium-wave infrared heaters with their typical wavelength of 1400 to 4000 nanometers.

According to customers‘ individual performance requirements TQS calculates the electrical parameters of each heating element and then starts the production of the central components of each heater, the TQS high precision heating coils.

Only European made resistance wires will be used for TQS‘ production of heating coils.

Decades of experience and self-developed quality standards give TQS the leading edges as a market leader of medium-wave infrared heaters.

All heating elements are subject to a 100% quality control, guaranteeing the same high level of permanent functionality and durability.

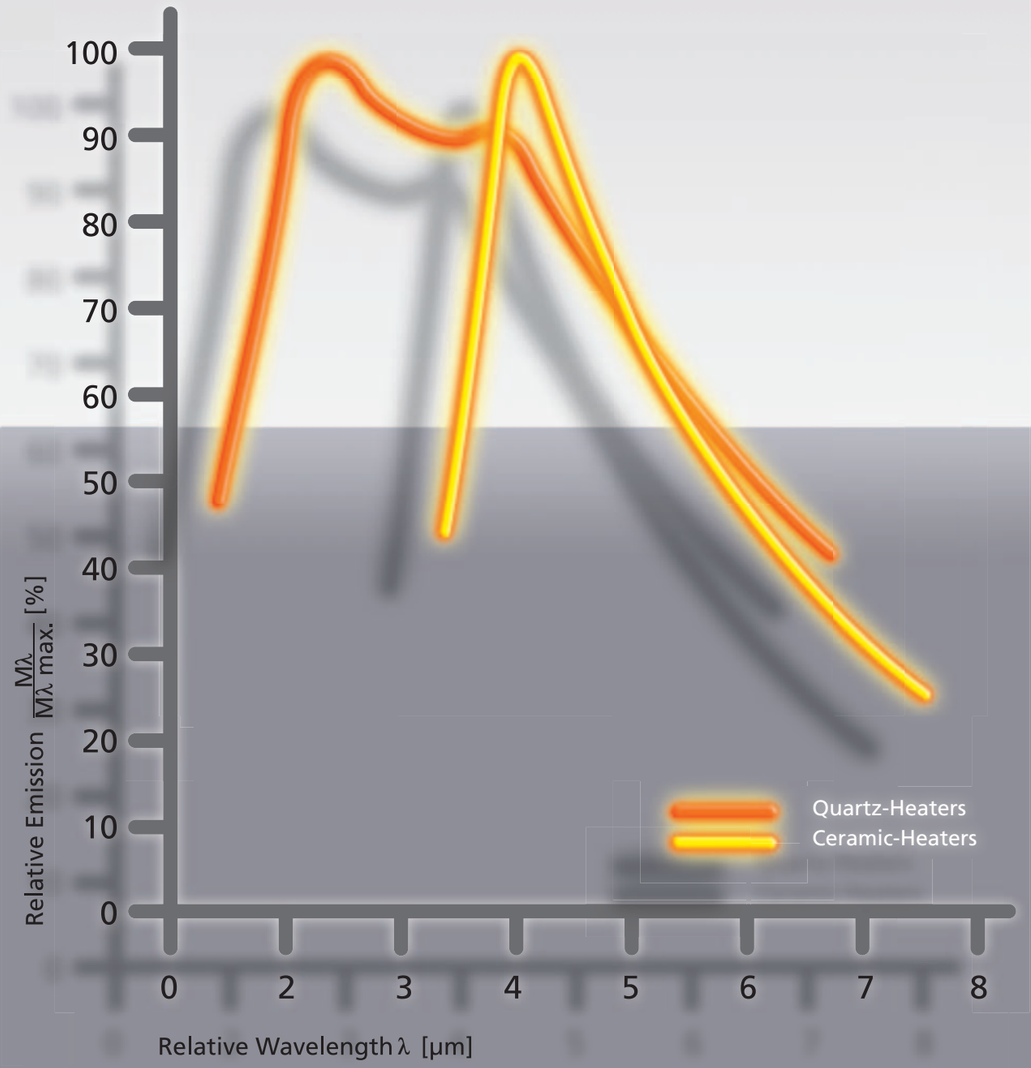
We‘re using only the best raw materials and components which are subjected to a strict system quality control.

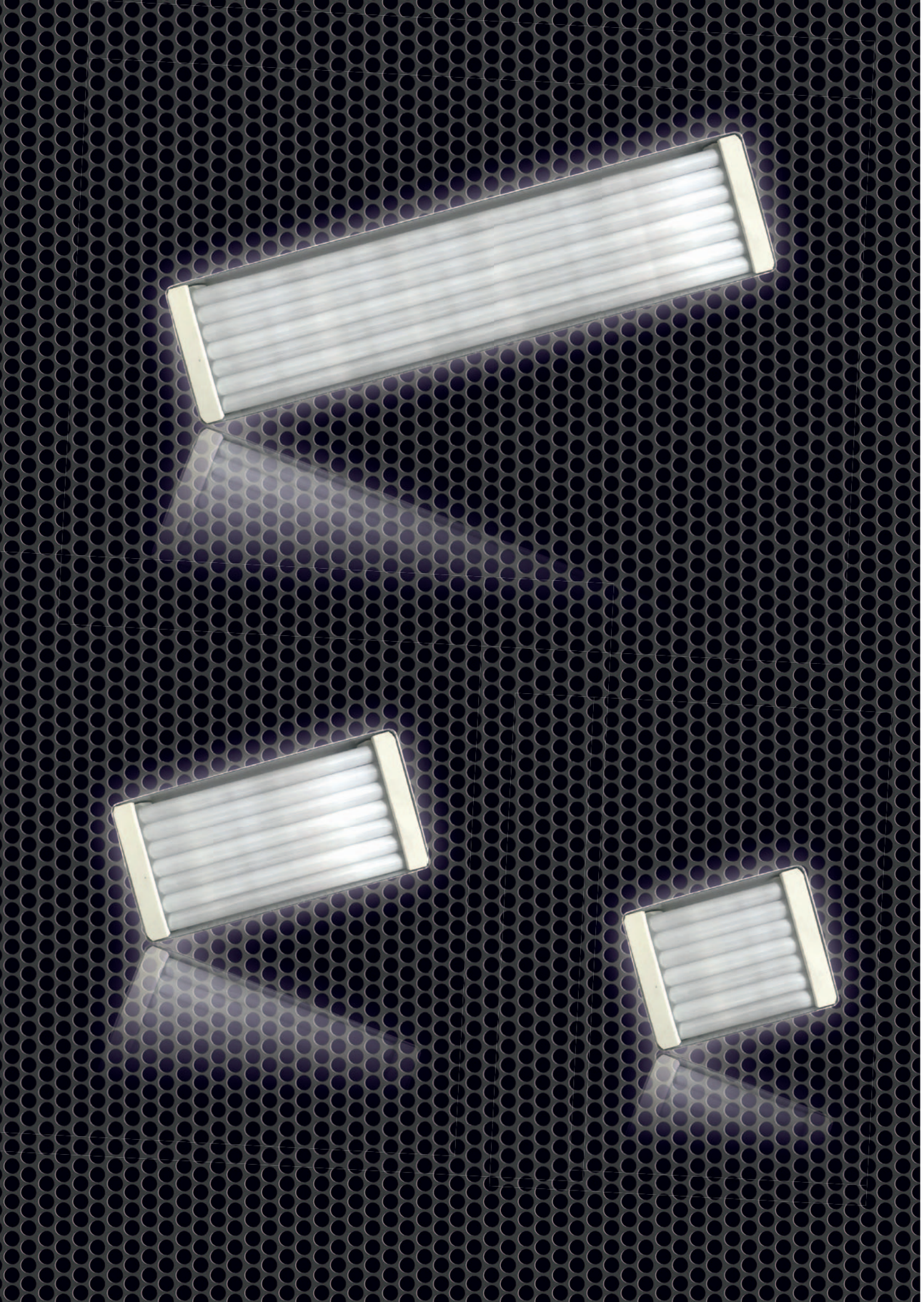
For highest emission efficiency and IR-transmission only high-purity (99,98% SiO2) quartz glass tubes will be used as protection of the TQS high precision heating coils.

TQS quality and service for a machine lifetime. All TQS infrared heaters are exclusively produced in Mainz-Kastel/Germany.

We are producing Quartz heaters with special designs/forms/ power consumptions: You need a special infrared heater? Please contact us!

Quartz-Heaters vs. Ceramic-Heaters





TQS-Infrared Cassette Heating Elements

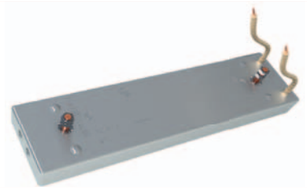
Application:

TQS-Infrared Cassette Heating Elements are used in thermoforming-machines, packaging machines, wood drying machines, food heating systems, as well as paint and lacquer drying plants... everywhere where infrared heat is necessary.

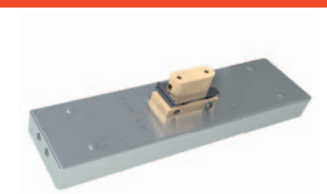
Types:

TYPE	CLASSIC	FAST	RAPIDIUM
Heat-up time	approx. 220 seconds	approx. 180 seconds	approx. 6 seconds

Sizes:

FS	FSK	FSM
		
L x W x H: 248x63x25 mm	L x W x H: 124x63x25 mm	L x W x H: 80x63x25 mm

Mounting systems:

H2	HM	Plug-in
		
• Lead wires available in different lengths • Available for sizes FS, FSK and FSM	• Ceramic middle mounting • With feeder clip system • Guarantees a fast removal of the heating elements • Available for sizes FS and FSK	• Guarantees the fastest removal of the heating elements • Available for sizes FS, FSK and FSM

Modifications:

- With Thermocouple K (available in two different speeds: Pilot and Pilot+)
- Voltage: 110 V – 480 V or more, even specials like 347 V
- Power: 100 W – 1000 W
- Longer leads: 110 mm – 8000 mm or more
- Longer bolts for H2 mounting-system
- With stabilized heating coil (e.g. for vertical mounting or longitudinal movement in machines equipment)

Accessories:

- 67Z0010 - Ceramic socket with two flat plug-distributors (3-pole) and with fixing spring
- 02F1032 - Fixing clip (necessary: 1 piece per FSK, 2 pieces per FS)
- 67Z0020 - Ceramic bush with locking ring
- 54H1001 - Ceramic distributor two-pole up to 2,5 mm²

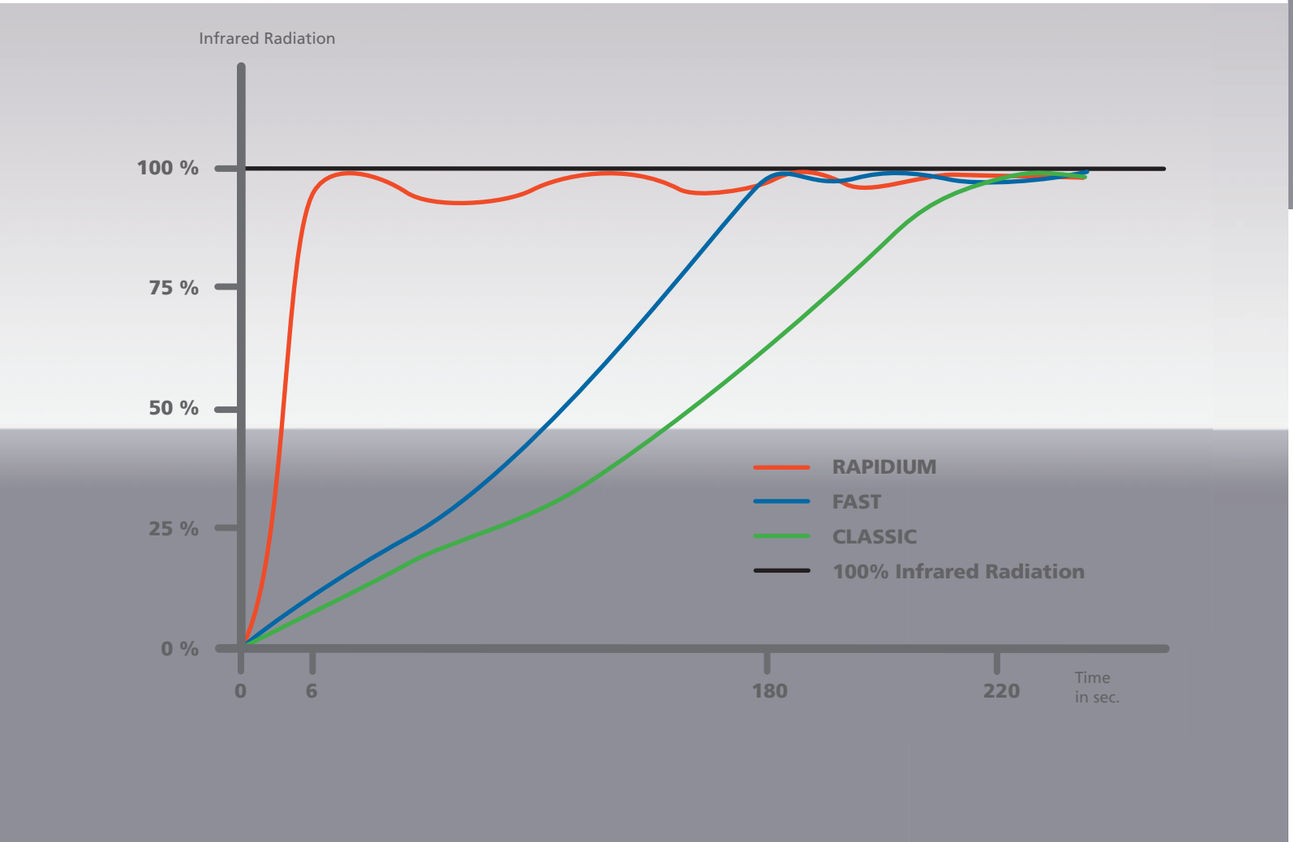
Other special versions of a heater, modifications, or accessories on request: info@tqs-quartz.com

TQS-Infrared Cassette Heating Elements

Advantages:

- Available with thermocouple K (Pilot, Pilot+)
- Available for horizontally mounting or vertical mounting applications
- TQS high precision coils leads to more homogeneous IR emission than competitors
- Highly effective reflector made of a composite metal → avoiding loss of radiation, and lowering loss by convection heat
- Equipped with acid and alkaline resistant quartz tubes
- works perfectly with multi-channel power controller, transformers, thyristors like Hetronik, Siemens or Mitsubishi
- Very insensitive to high temperature fluctuations
- Highest longevity
- Short delivery time

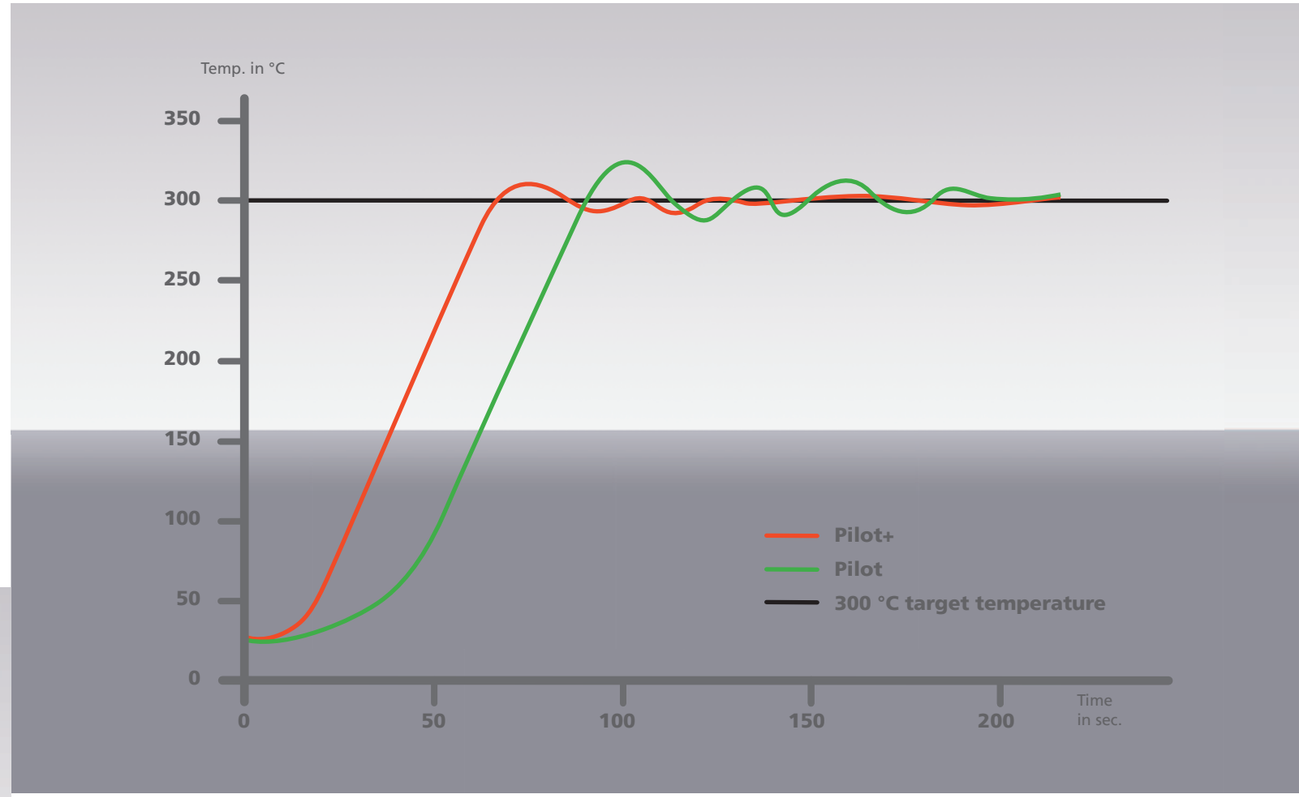
Infrared radiation curve CLASSIC vs. FAST vs. RAPIDIUM



TQS-Infrared Cassette Heating Elements with Thermocouple K - PILOT and PILOT+

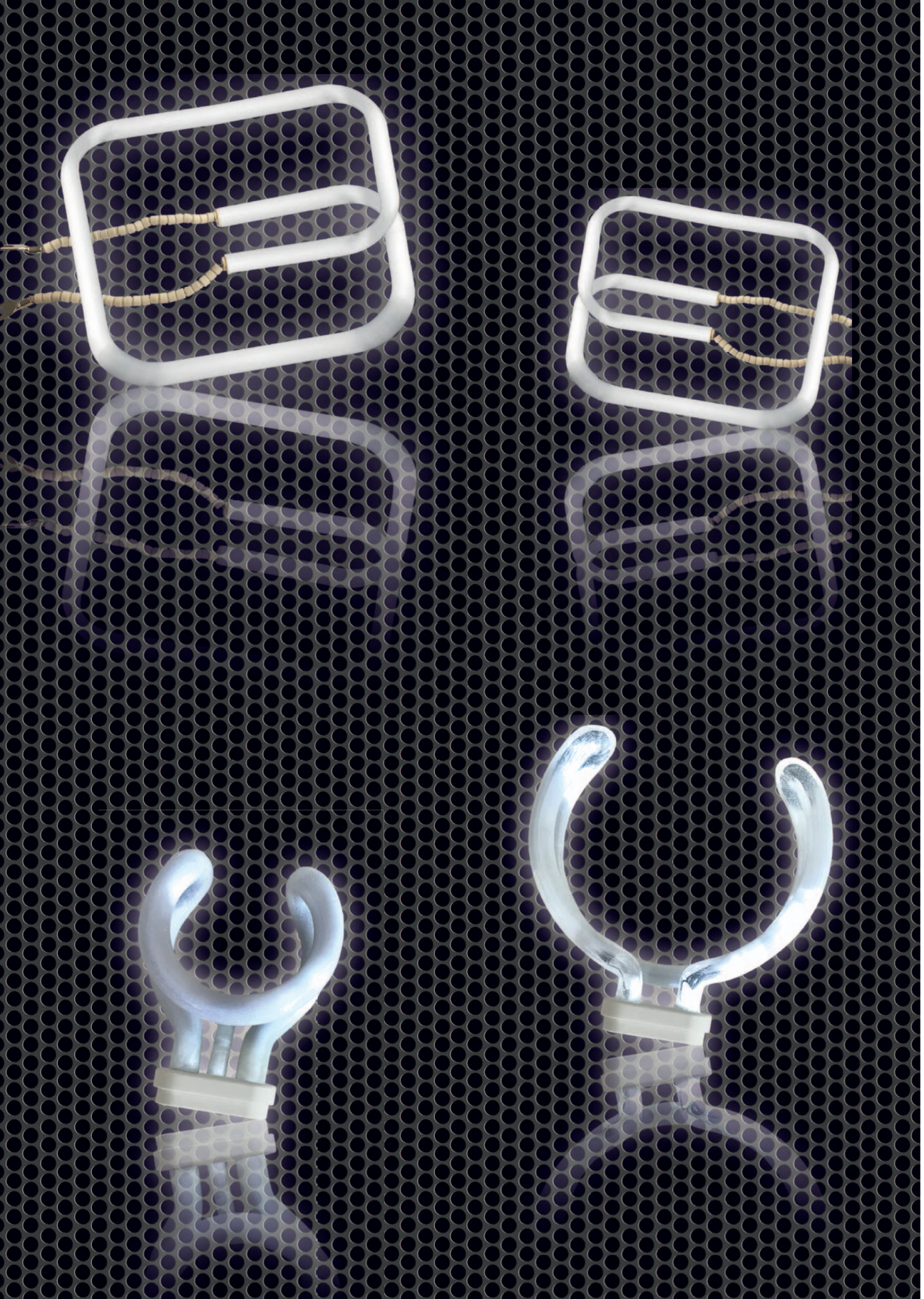
The TQS PILOT and PILOT+ are Infrared Quartz Cassette Heating Elements for cost saving heat detection. The TQS PILOT+ combines sensationally reduced temperature measuring time with all other advantages of TQS heating elements.

Temperature curve PILOT+ vs. PILOT to heat-up to 300°C



ADVANTAGES OF TQS PILOT+:

- The delay time of the TQS Pilot+ heating elements until regulation is only ± 6 seconds
- Approx. 40% faster heat detection
- Provides more precise temperature control
- Faster heat detection leads to more reliable thermoforming results
- Compact design: TQS high precision heating coils and thermo-couple K in the same cassette
- Reduced installation effort compared with other solutions, e. g. with heat cameras
- TQS high precision coils leads to more homogeneous IR emission than competitors
- Works perfectly with multi-channel power controller like Hetronik, Siemens or Mitsubishi
- Sensational price-performance ratio compared with external solutions, e. g. with heat cameras
- Available for all TQS cassette heating elements (CLASSIC, FAST and RAPIDIUM)
- TQS quality and service for a machine lifetime



TQS-Infrared Square Tube Heaters

Advantages:

- TQS-Square Tube Heaters, due to their parallel and rectangular shaped quartz tubes, provide a homogeneous radiation over a greater square area. In combination with reflectors, the radiation efficiency is even intensified by using the backside radiation
- TQS high precision coils leads to more homogeneous IR emission than competitors
- Mounting in any position possible: horizontal, vertical, over-head, upright, in 45 deg. angles, etc. There are no mounting restrictions
- TQS-Square Tube Heaters come complete with beaded connecting wires of 100 mm length and forked cable lugs
- Differing lengths of the beaded connecting wires and differing power ratings can be provided upon request
- Available in two sizes: 100 x 100 mm and 140 x 140 mm

You can find the list of standard TQS-Infrared Square Tube Heaters products on page www.tqs-quartz.com.

TQS-Infrared Omega Heaters

Advantages:

- Due to their perfect Ω-shaped quartz tube, provide a homogeneous centrical radiation
- TQS high precision coils leads to more homogeneous IR emission than competitors
- Perfect for cable shrinking applications
- Mounting in any position possible: horizontal, vertical, over-head, upright, in 45 deg. angles, etc. There are no mounting restrictions
- TQS-Omega-heaters come complete with beaded connecting wires and forked cable lugs.
- Available in two sizes: inner diameter 58 mm and 125 mm

TQS-Infrared Monotube Heaters

TQS-Infrared-Monotube-Heaters provide the optimum extended in-line radiation for certain industrial applications, e.g. in thermoforming machines for production of illuminated displays. Also for these TQS-Infrared – Monotube heaters only high-purity (99,98% SiO2) quartz glass tubes will be used as protection of the heating coils. Differing lengths and power ratings can be provided upon request.

TQS-Infrared-Twintube-Heaters with Gold Plating

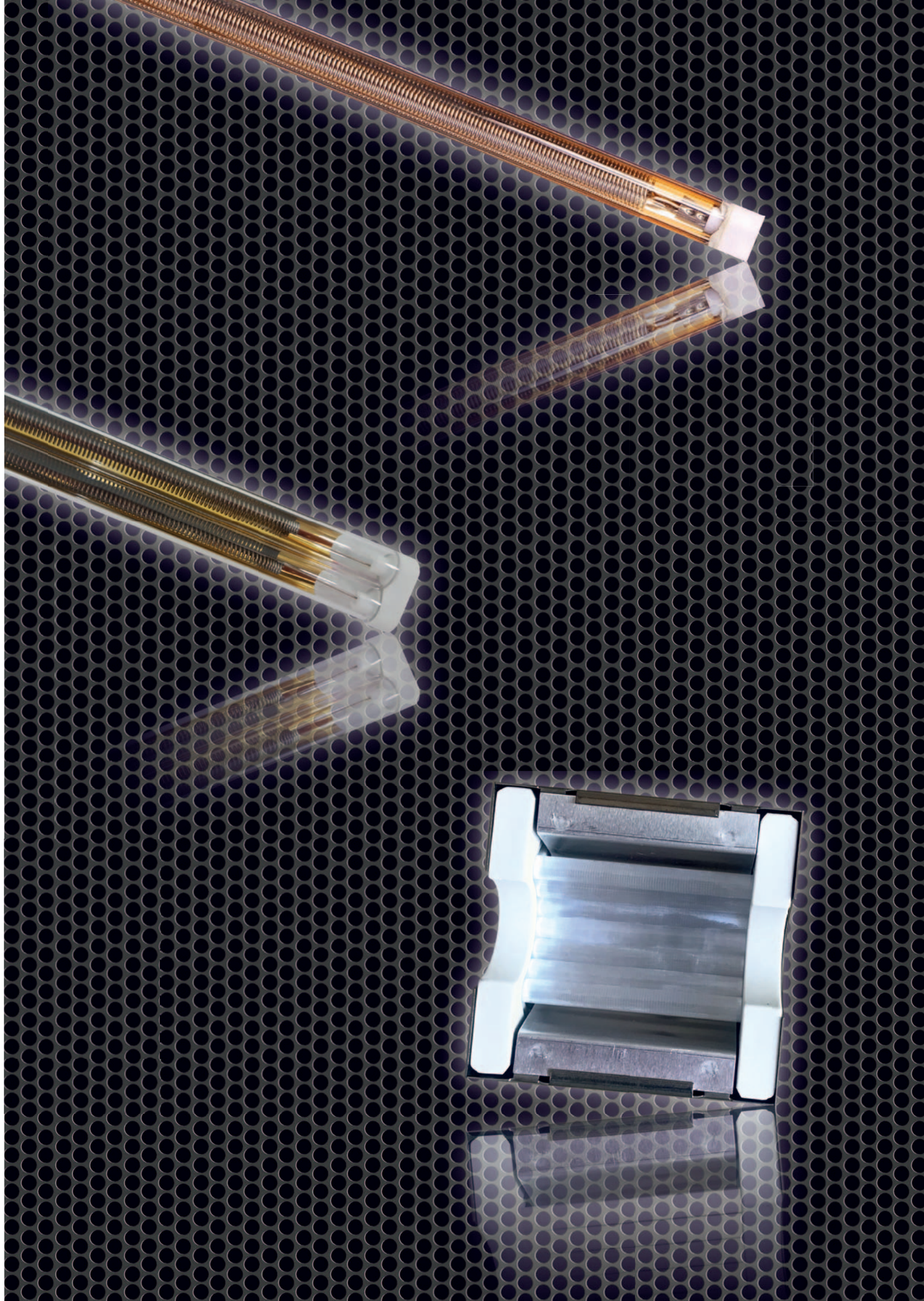
TQS Infrared Twintube heaters are produced only from high-purity (99,98% SiO2) quartz glass tubes. Additionally, for highest possible radiation efficiency a golden reflector is applied according to customers' requests. Shape and placement of the reflector can be discussed. The gold plating reflects the IR-emission optimally onto the product. The TQS-Infrared Twintube heater design offers a high radiation yield in combination with high mechanical stability – for twin lengths up to L 6500 mm. The TQS – Infrared-Twintube Heaters with Gold Plating come complete with L 1000 mm leads. Differing lengths and power ratings can be provided upon request.

TQS-Infrared-Barrel Heaters

TQS – Infrared-Barrel Heaters heaters are mainly used in shrinking machines, typical for shrinking automotive cable harnesses. In contrast to the horizontally flat positioned quartz tubes of cassette heaters, the quartz tubes in the barrel heaters are positioned on a circle segment. Usually, two of these barrel heaters are

working against each other, guaranteeing maximum IR emission on the shrinking tubes. Due to high IR density in the close-up position, the TQS Infrared barrel heaters need only a relatively modest power rating.

Differing connecting wires lengths and power ratings can be provided upon request.



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