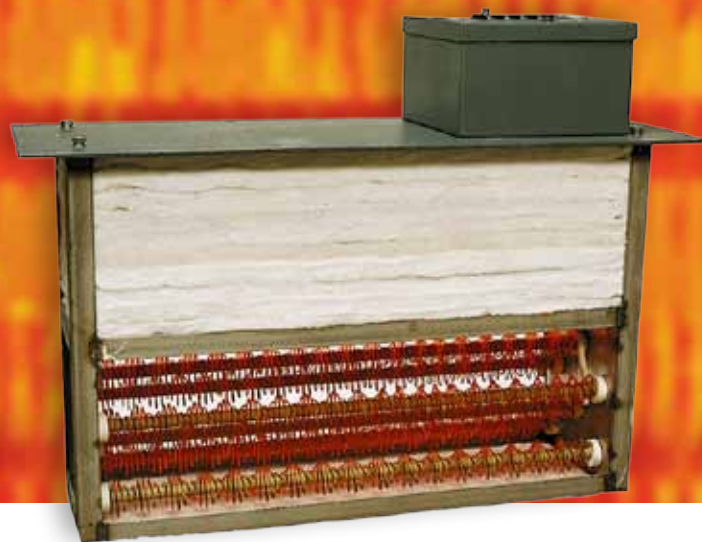


Kanthal® heating cassettes for heating of air and gas



KANTHAL

For industrial heating of air and gas up to 800°C (1470°F)

The common way to heat gases or air is to use tubular element which makes it possible to reach temperatures up to about 600°C (1110°F). With Kanthal® heating cassette you can go up to 800°C (1470°F)!

At temperatures below 800°C (1470°F), the radiant heat from the heating elements is often insufficient to provide the circulation necessary to maintain a uniform temperature throughout the furnace. The furnace atmosphere must somehow be made to circulate, so that heat transfer by forced convection will take place. Kanthal heating cassettes in conjunction with a suitable fan is the solution of this problem.

Excellent temperature uniformity

The air/gas is delivered by fans and is heated as it flows through the cassettes. With the system recirculating a high volume of air/gas several times through the heating unit, you can achieve a very high degree of even temperature. There are examples where the temperature in the furnace chamber has been kept to within $\pm 1^\circ\text{C}$ ($\pm 1.8^\circ\text{F}$). As a result of this it is possible to treat extremely sensitive materials.

Quick heating and cooling

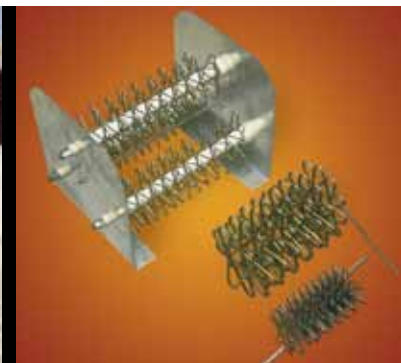
An important benefit is that the elements reach their working temperature virtually without delay and they also cool quickly. The elements can therefore be switched on for very short intervals, which provides major energy savings in certain applications, such as in shrinkfilm packaging.

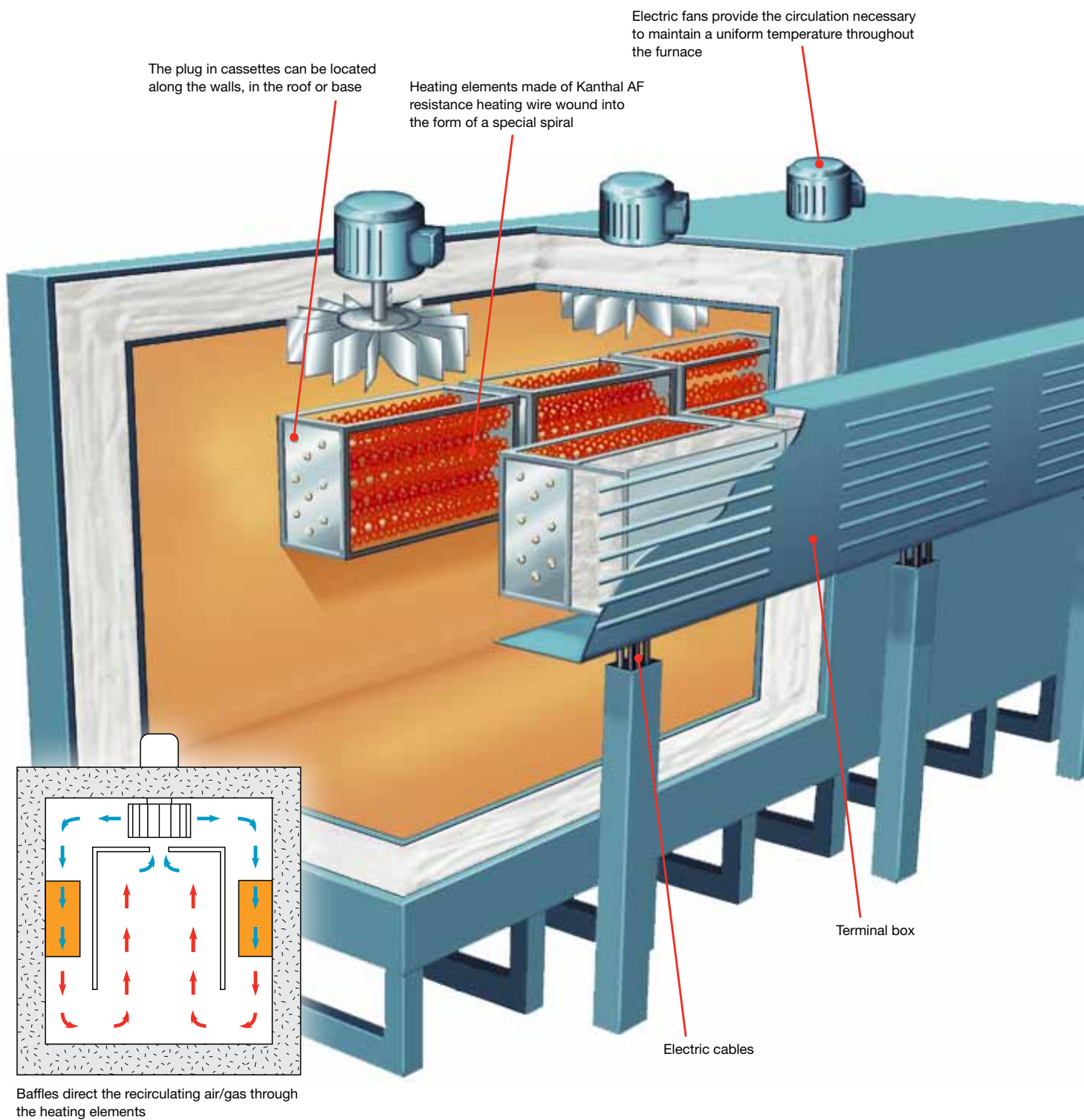
Safe and reliable operation

Kanthal heating cassette is a well-proven solution in many applications all over the world. Experience show that the cassettes are safe and reliable with low maintenance costs.



To get in contact with your local representative, visit www.kanthal.com or show this QR-code to your smartphone.





The plug in cassettes can be located along the walls, in the roof or base

Heating elements made of Kanthal AF resistance heating wire wound into the form of a special spiral

Electric fans provide the circulation necessary to maintain a uniform temperature throughout the furnace

Terminal box

Electric cables

Baffles direct the recirculating air/gas through the heating elements

PROPERTIES FOR EXISTING OR NEW FURNACES / PROCESSES

- Compact design
- Long life heating elements
- Easy to install
- High power
- Light weight
- Modular standard system

Unique heating elements with efficient heat transfer

The unique design permits higher thermal loads

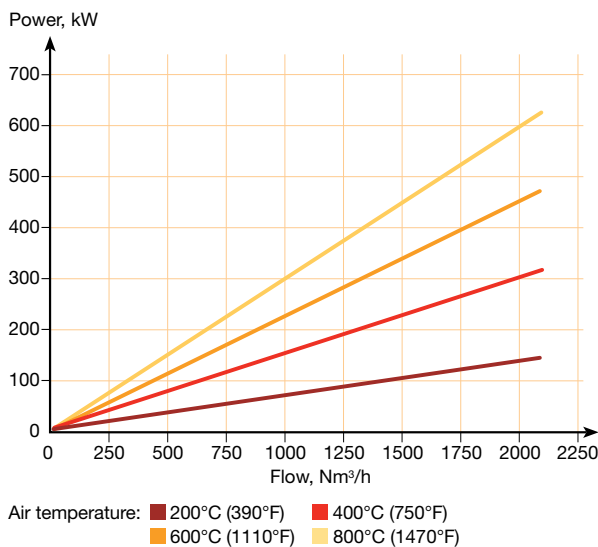
The design of the heating element makes it possible to pack considerable power into a small space. They are made of Kanthal® AF resistance heating wire wound into the form of a special spiral and mounted on ceramic tubes which, when fitted into the cassettes and its final position in the furnace, must be horizontally mounted.

The air is delivered by fans and is heated as it flows through the cartridges. Due to the compact design of the element, a very large proportion of its surface is in contact with the air. Heat transfer is efficient and the

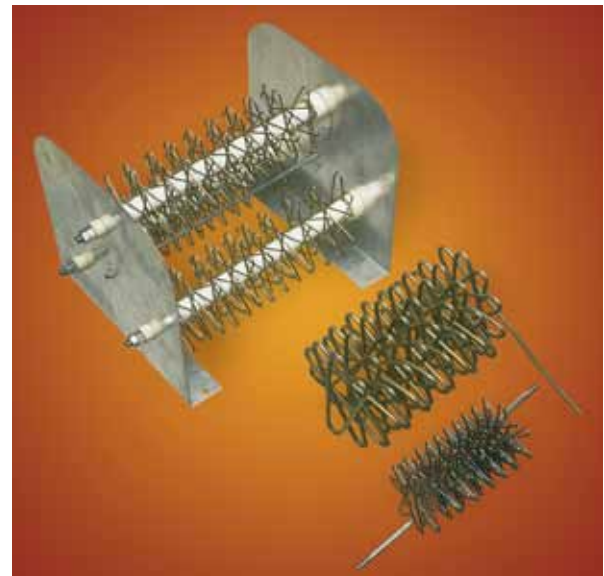
turbulence of the air around the element prevents overheating. As a result, these elements can withstand higher thermal loads than, for instance, tubular elements or conventional spiral elements on ceramic tubes.

All of the elements in a cassette are usually of the same length and diameter, but the rating can be varied by varying the wire diameter. Cassettes of different ratings can thus easily be produced by selecting the appropriate wire diameter or by varying the number of elements in the cassette.

Needed power for different temperatures



The diagram shows the needed power for different air/gas temperatures and flows when starting from room temperature.



The heating elements are made in form of a special spiral and mounted on ceramic tubes.

Modular cassettes for any furnace application

Designed to fit any furnace

There is a large freedom to design Kanthal heating cassette for different applications. The lightness of the construction makes it in most cases possible to just fit it to the casing.

There are examples of installations into tubes and the cassette can be designed to fit in any existing furnace. In most cases the cassettes can be designed so it is possible to install them from outside the furnace. The plug-in unit can be located along the walls, in the roof or base.



The pusher furnace at Hydro Aluminium Holmestrand, Norway. The 7-ton slabs are heated to 600°C (1110°F) before rolling by eight Kanthal heating cassettes, four on each sidewall.

Application assistance

Sandvik can assist you

- in choosing suitable element material, element type, support systems and insulation
- with the design and calculation of the elements and heating system
- by supplying complete heating elements or heating systems ready for installation
- with the upgrading of old furnaces or the conversion of gas/oil heated furnaces to electricity

Simple installation and change

In all cases, the installation is very simple. The cassettes can be designed to fit in any furnace. All power connections are inside the terminal box. Just plug in the cassette, connect and switch on the furnace.

A change of cassette can in most cases be done from outside without cooling down the furnace and charge. If a unit should fail or if the rating is to be changed, the individual elements are very easy to replace. Existing furnaces can easily be converted to Kanthal® heating cassette units without major modifications.



Just plug in, connect and switch on the furnace.

Examples of applications

- Heating of aluminum before rolling and prior to hardening
- Heat treatment in the metallurgical industry
- Drying of ore concentrates
- Baking in large bakery ovens
- Drying of materials in the wood processing industry
- Roasting and drying in the food industry
- Sealing and shrink-film packaging in the packing industry
- Drying of various materials in the chemical industry
- Drying and stoving of paints (stoving furnaces)

Ask for our reference list.



Kanthal heating cassettes are in operation in a great variety of furnaces and other processes for heating, drying, baking, roasting and sealing.

Sandvik Group

The Sandvik Group is a global high technology enterprise with 47,000 employees in 130 countries. Sandvik's operations are concentrated on three core businesses: Sandvik Tooling, Sandvik Mining and Construction and Sandvik Materials Technology – areas in which the group holds leading global positions in selected niches.

Sandvik Materials Technology

Sandvik Materials Technology is a world-leading manufacturer of high value-added products in advanced stainless steels and special alloys, and of medical implants, steel belt-based systems and industrial heating solutions.

Kanthal is a Sandvik owned brand, under which world class heating technology products and solutions are offered. Sandvik and Kanthal are trademarks owned by Sandvik Intellectual Property AB.

Quality management

Sandvik Materials Technology has quality management systems approved by internationally recognized organizations. We hold, for example, the ASME Quality Systems Certificate as a materials organization, approval to ISO 9001, ISO/TS 16949, ISO 17025, and PED 97/23/EC, as well as product approvals from TÜV, JIS and Lloyd's Register.

Environment, health and safety

Environmental awareness, health and safety are integral parts of our business and are at the forefront of all activities within our operation. We hold ISO 14001 and OHSAS 18001 approvals.

Recommendations are for guidance only, and the suitability of a material for a specific application can be confirmed only when we know the actual service conditions. Continuous development may necessitate changes in technical data without notice.

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