

TUBOTHAL® – THE MOST POWERFUL METALLIC ELEMENT SYSTEM

Tubothal® is an ideal electric element used in combination with powder metallurgy tubes because of its great advantages, such as – very high power – long life – low weight – easy to design to existing power controls and supply. Combined with Kanthal APM™ tubes, a “maintenance free system” is obtained with high reliability and with no need to remove elements, clean or rotate tubes, if correctly designed.

The variety of applications where the Tubothal system can be used is vast. The main areas of use are in heat treatment, aluminium and steel industry furnaces.

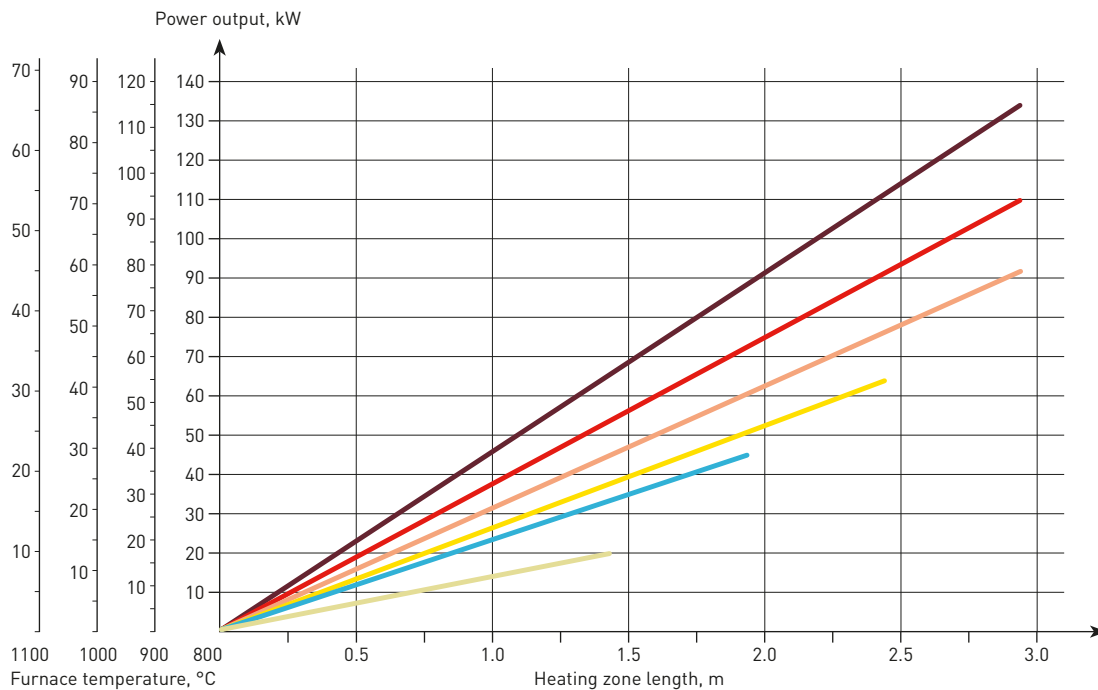
The high loading capabilities of both Tubothal elements and Kanthal APM tubes can be exploited to the full in new furnaces and conversions from traditional radiant tube designs. In both cases, higher power and/or higher temperatures can be obtained, or a similar output can be achieved with fewer assemblies installed, lead-

ing to improved furnace flexibility and lower costs. The longer life obtained with the Tubothal system, ensures highly reliable production and uninterrupted furnace operation.

Tubothal element assemblies are available in a wide range of standard diameters, to suit the sizes of tubes currently available. In principle, the length of element is virtually unlimited, but the practicalities of packing, shipping and installation may impose restrictions on the usable length. Tubothal elements are suitable for both horizontal and vertical installations.

Normally, horizontal tubes are simply supported at both ends. With very long radiant tubes, it may be necessary to provide supports along the tube length. Kanthal APM rod has proved ideal for fabricating suitable support systems, hooks, etc.

MAXIMUM DESIGN POWER OUTPUTS FOR ALL STANDARD ELEMENT DIAMETERS AT DIFFERENT FURNACE TEMPERATURES



Element diameter: ■ Ø170 mm ■ Ø154 mm ■ Ø124 mm ■ Ø110 mm ■ Ø80 mm ■ Ø68 mm

HIGHER POWER OUTPUT

Tubothal elements will operate at a far higher power output than standard designs of radiant tube elements. A single Tubothal assembly may be capable of replacing up to three heaters of a more conventional design, leading to major savings in replacement and maintenance costs.

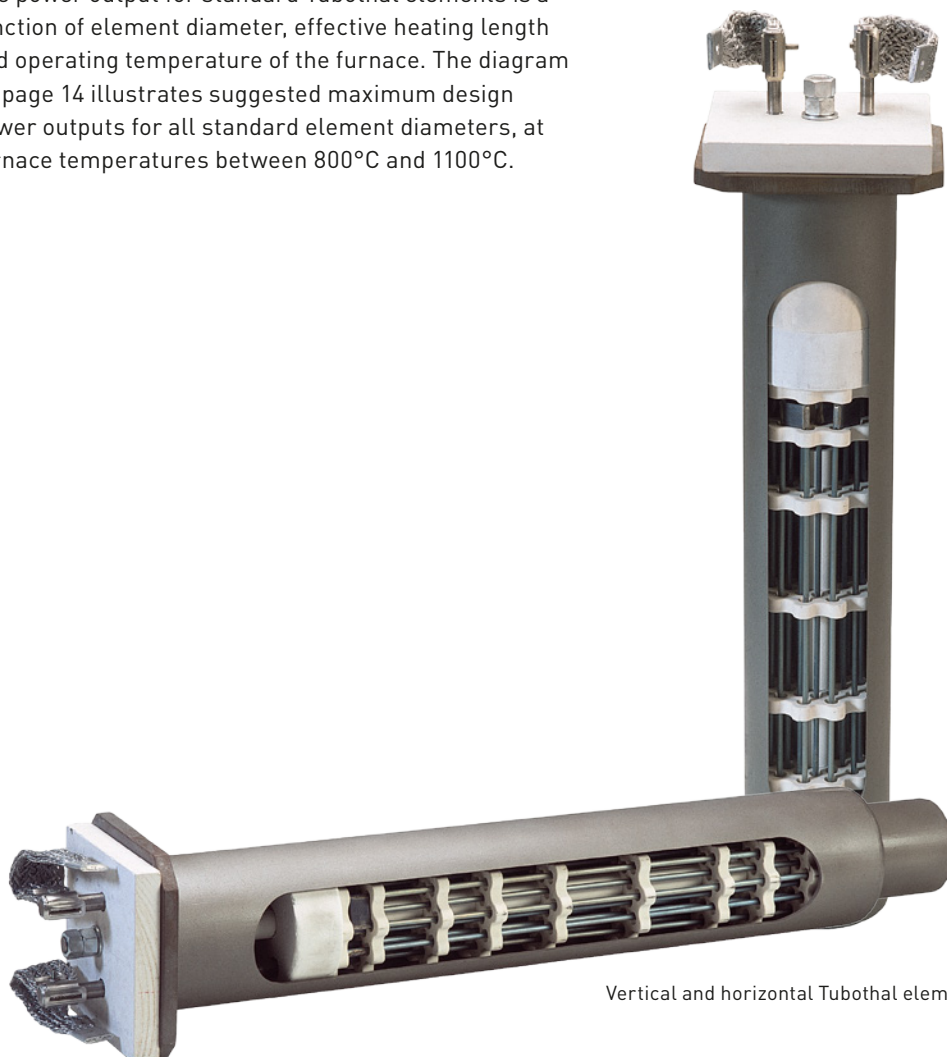
In other cases, a change to Tubothal, combined with uprated power input to the existing furnace, has resulted in improved furnace capacity at a much lower cost compared to a completely new furnace.

Fitting a few Tubothal assemblies in an existing furnace can in some cases increase productivity by over 50%.

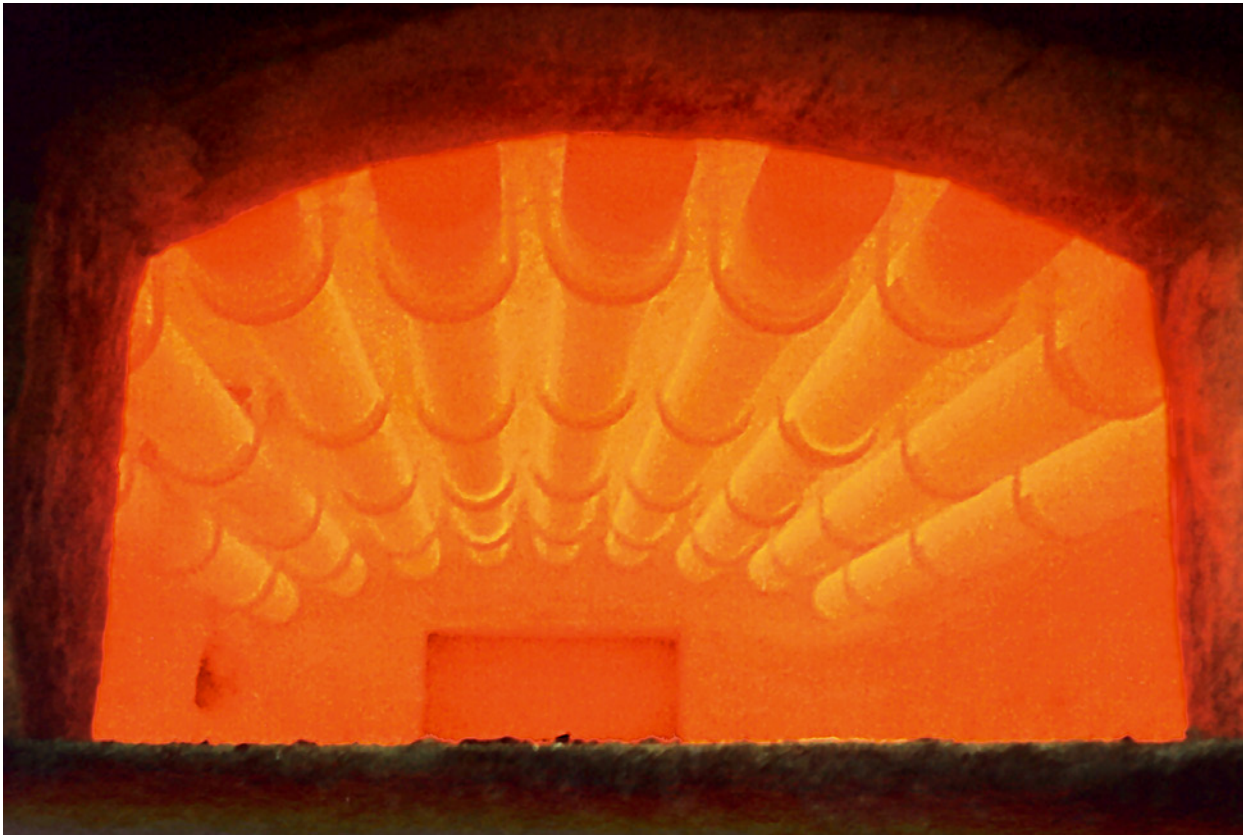
The power output for standard Tubothal elements is a function of element diameter, effective heating length and operating temperature of the furnace. The diagram on page 14 illustrates suggested maximum design power outputs for all standard element diameters, at furnace temperatures between 800°C and 1100°C.

POWER SUPPLY

Although individual elements can operate at a voltage lower than that of the supply. In multiple element installations, groups of elements can be series – connected directly to the main voltage without the need of transformers. There is no significant ageing of the Kanthal APM elements, so a variable voltage supply is not required. On/off control can be used, but three-term control, using fast or slow, cycle fired thyristors, will ensure a more stable element temperature and a longer element life, as well as offering better control of the furnace temperature.



Vertical and horizontal Tubothal elements.



TUBOTHAL® BENEFITS

- Very high power levels
- “Maintenance free”, longer service intervals
- Low ageing
- Low element weight
- Low thermal mass
- Standardised product for fast delivery and reliability
- Design flexibility
- Kanthal® powder metallurgy tubes can also be used for gas heated solutions

