



## CABLE-TYPE-HEATER

### Klöpper-Therm Cable Type Heater (CTH)

Klöpper-Therm cable type heaters are applicable for a variety of industrial applications. The heating of liquid or gaseous media such as steam superheating, heating of hydrogen, and nitrogen etc., are just a few examples. Their field of application is particularly for processes where high heating power in the MW range, high pressure (up to 1000 bar), and/or process temperatures of up to 450°C are required. The outer sheath of the heating cable, which is manufactured in a complex procedure, can withstand almost any chemical stresses.

The technology originates from Haldor Topsoe. The Danish specialist for catalytic processes developed this type of heater for starting up ammonia synthesis reactors (Haber Bosch process). In 2004, this sophisticated technology was taken over by Klöpper-Therm and has been continuously developed since then. Today, it supplements the product range of Klöpper-Therm, the traditional company specialized in electrical heating systems.

Electric cable heaters are particularly safe, and therefore, predestined for use in potentially explosive atmospheres. Without local emission sources, electric cable heaters offer great advantages from an environmental perspective, as opposed to gas fired heaters.

Due to a high flexibility of the electronic control, the cable heaters are very user-friendly. Depending on the application, the heaters can be controlled either manually or automatically; by switching on/off, by a star/delta connection, or by a continuous power control with a thyristor controller.

## Klöpper- Therm offers cable type heaters in two different designs



### External Cable-Type-Heater (CTH external)

The Klöpper-Therm external Cable-Type-Heater is a compact, self-contained unit designed for installation in a pipeline or a pressure vessel. It consists of one or more sections in which one or three cables are wound up into a coil.

### Internal Cable-Type-Heater (CTH internal)

The internal heaters are designed as a „plug-and-play“ solution for installation from above in an (ammonia) converter. They consist of one or more sections. Each section includes meandering curved heating cables which are mounted on a special bracket. The heater design can be customized to individual customer specifications in lengths (up to 15m) and diameters (up to 1,5m).



## Advantages of the Klöpper-Therm Cable Type Heaters

- Safety (no explosion hazard)
- High performance power density
- Rapid response (no test procedure, no waiting time)
- Easy operation
- Continuous power control (Thyristor)
- Compact design
- Large power range of up to 10 MW
- Operating pressure of up to 1000 bar
- Operating temperature of up to 450°C
- Heater can be customized to existing reactors and vessels
- Heater can be installed in hazardous areas (Ex zone 2)
- Low maintenance costs
- Long service life
- No local emission