

Electrical heating system for high voltage (HV) cables and ultra-high voltage (UHV) cable manufacturing and maintenance



High voltage (HV) and ultra-high voltage UHV cables are very rigid.

The inner wires of the high voltage cables have strong mechanical tensions. It is very difficult to bend this cable.

Most of the time the cable is laid in a straight line underground. But it is sometimes necessary to bend the cable to follow a precise path, to make junctions or terminations.

The solution is to pre-heat the cables prior to bending.

The heat makes the inner wires and the complete cable more flexible. The operators can then bend the cable or start the connection.

Thermocoax, with its product range ISOPAD, provides flexible heating jackets that meet the requirements of manufacturers and installers of high voltage (HV) cables.

The challenge

The challenge is to provide flexible heating jackets based on heating cable technology with the following performance:

- An efficient safety system to prevent any risk of overheating,
- Strong, durable and easy-to-use fasteners
- Heating jacket lengths up to 2 m
- Sensors positioned so as to optimize the temperature control of the heating jacket
- An electronic control system for up to three heaters mounted in parallel

The configuration of the heating jacket for high voltage (HV) cables

One contact temperature limiter at 100 °C for PTFE cable protection.

One heating wire temperature limiter at 230 °C.

Contact temperature sensor for the controller.

Pluggable heating jacket with strain relief system at jacket outlet.

An efficient fastening system

- Belts with fasteners.
- Strong fixation to support outdoor operation with high voltage (HV) cables.
- Easy attachable and detachable belts
- Quick fasteners

ISOPAD provides jackets that fit perfectly with various diameters of high voltage (HV) cables.

The diameter is clearly marked on the jacket.

A homogeneous and efficient heating solution

The performance of the ISOPAD electrical heating jacket has been validated by laboratory tests.

The temperature required for the bending operation of high voltage (HV) cables is around 85 °C.

The graph below shows temperature over time.

Measurements were made at different points of the cable structure using temperature sensors. Sensors have been positioned on the surface of the jacket, on the surface of the cable and inside the HV high voltage cable.

Special temperature regulation controller for three heaters in parallel

- Flexible and mobile
- IP65
- SSR controlled
- Optional metal case

Specifications – heating jacket for high voltage heating cables

- **Material:** glass silk with aluminum coating on the outer surface
- **Area classification,** ordinary area , non-hazardous, IP20
- **Electrical protection class:** class I with metal sheath
- **Maximum withstand temperature** (power off): 260 °C for the inside of the jacket – 100 °C for the outside because of the PE tapes.

Heater Construction

- Type: Resistance heating cable
- Material of insulation: PTFE
- Material of outer sheath: glass silk with aluminum coating
- Thickness of thermal insulation: 10 mm glass wool

Temperature Control

- Sensor type: two-wire PT100
- Two temperature limiters: one at 100 °C for the PTFE cables and one at 230 °C for the

heating wires

Technical Data

- Frequency 50-60 Hz
- Maximum operating voltage: 240 Vac others available on request
- Maximum area load: 0.2 W/cm² - Typical: 6 W/dm²