



# Flexible Foil Heating Technologies



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Group Dekko Medical specializes in innovative, **non-invasive medical devices**, serving both home and medical professional needs. We strive to partner with innovative companies looking for a **cost-effective, turn-key solution** to your manufacturing requirements. Group Dekko becomes a member of your team and assists with your product realization from **conception through regulatory needs** and commercialization.

## Features & Benefits

Flexible foil heaters are a proven technology and offer ideal solutions where large areas and low watt density are desired. The typical foil heater consists of a flexible heater wire bonded to a thin conductive substrate, usually aluminum. The substrate serves as a carrier for the wire and acts as a heat sink to maximize heat transfer.

Foil heaters offer a self-contained, one-piece assembly solution, which can be adhesively or mechanically mounted. They can be designed to match almost any surface geometry, conforming to irregular shapes and allowing for holes and cut-aways. They can be flexible to semi-rigid, and terminated to be compatible with any connection scheme.

Voltage is normally 120 or 240 volts, although lower voltages are available. Wattage per square inch of surface area is a primary construction driver. The number of constructions within the genre is truly flexible as PVC, silicone, high temperature silicone, and glass rope each offer unique core characteristics. They can be manufactured with temperature controllers built in if needed.

## Typical Applications

- Fluid Warmers
- Incubators
- Perimeter Heaters
- Stabilization Devices
- Surgical Equipment
- Medical Appliance

## Foil Heater Construction

Each foil heater is constructed to achieve optimum performance, allowing the heat to be precisely placed. Various combinations of foil (chosen from a variety of thicknesses), insulation, and specially selected adhesive layers are bonded together with custom designed leads. Geometries are created to achieve the appropriate thermal and mechanical parameters, and terminations are chosen to be consistent with the power connection scheme. Both one-and two-sided heaters can be constructed.

## Wire

Material	Wattage	Temp. Rating
PVC	Up to 2.5 W/ft. (8.2 W/m)	UL 105°C (221°F)
Silicone	Up to 10 W/ft. (33 W/m)	UL 150°C (302°F)
High-Temp Silicone	Up to 15 W/ft. (49 W/m)	UL 250°C (482°F)
Glass Rope	Up to 15 W/ft. (49 W/m)	UL 240°C (464°F)

Heating is largely dependent upon (1) proximity of the heating element to the surface being heated, (2) ambient temperature, (3) air movement, (4) heat sinking, and (5) insulation.

## Terminations

Standard leads, cold ends, epoxy splice, heat-shrink splices, heat-sealed splices and a multitude of end terminations; die cuts, punched holes and other custom terminations also are available.

## Foil Heater Adhesive/Bonding Materials

PVC, Rubber-Based, Acrylic & Silicone.

## Testing, Certification & Standards Compliance

Flexible foil heaters are tested to customer specifications for electrical resistance and dielectric strength. They comply with UL, CSA and other global compliance standards, and are manufactured in plants that are ISO 9001:2000 registered.



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