



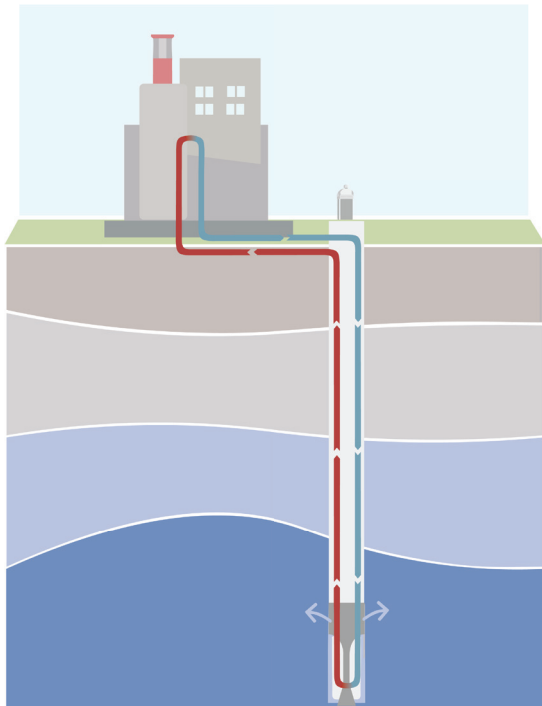
# CASE STUDY THERMISTOR: DEEP-WELL GEOTHERMAL APPLICATIONS



Industry  
GEOTHERMAL ENERGY

## CHALLENGE:

A customer developing groundwater-based geothermal systems required a highly accurate thermistor sensor capable of continuous submersion in potable water wells up to 500 feet deep. Each well would include two sensors, exposed to temperatures ranging from 40 °F to 70 °F. The sensors needed to deliver  $\pm 0.5$  °C or better accuracy, maintain long-term electrical integrity under moisture exposure, and feature robust 20 AWG leadwires with color-coded jackets for easy identification.



CUSTOMIZED THERMISTORS

## SOLUTION:

UE's engineering team recommended a 10 k $\Omega$  thermistor assembly soldered to a two-conductor extruded PVC cable jacket for durability and flexibility. To prevent moisture intrusion that could cause shorts or open circuits, a PVC heat-shrink sleeve was applied over the thermistor, creating a reliable moisture seal suitable for potable water environments.

The design was field tested and approved after successfully demonstrating performance and zero failures.

- **Reliable Long-Term Operation:** Proven moisture seal prevents failures even after prolonged submersion in groundwater environments.
- **High Accuracy and Stability:**  $\pm 0.2$  °C precision supports consistent temperature monitoring essential for geothermal system efficiency.
- **Simplified Installation:** Color-coded 20 AWG PVC cables enable quick identification and maintenance of multi-sensor well systems.



RELIABLE LONG-TERM OPERATION



SIMPLIFIED INSTALLATION



HIGH ACCURACY