



Case Study: Increasing RTD Reliability in Commercial Cooking Equipment



Industry
FOOD SERVICE EQUIPMENT



CUSTOMIZED RTD



CHALLENGE:

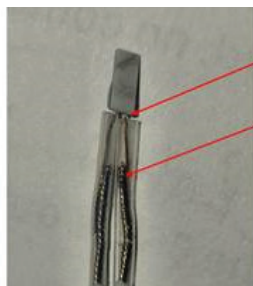
A leading food service equipment manufacturer was experiencing repeated failures with a standard thin-film RTD installed under a ceramic glass cooktop. Their existing design used:

- A 2-wire thin-film RTD with pigtails parallel to the substrate
- Soldered wire connections individually insulated with heat-shrink
- A 90° bend at the base of the RTD to mount the substrate against the ceramic glass surface

Two primary failure points emerged:

- Breaks at the base of the RTD substrate, where extremely thin pigtails were being overstressed
- Breaks at the solder joints, exacerbated by the flexible, shrink-covered wires that could bend during installation

The 90° bend required for assembly created repeated mechanical stress on the pigtails and soldered connections—making the design highly susceptible to open-circuit failures.



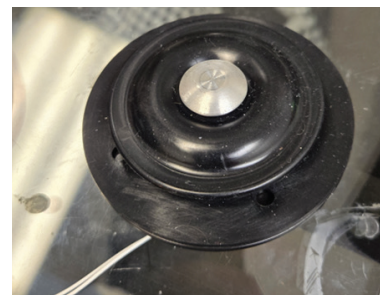
BREAK @ CERAMIC HOUSING

BREAK @ SOLDER JOINT

SOLUTION:

To eliminate bending stress and reinforce mechanical stability, we recommended a redesigned thin-film RTD assembly:

- 1. Perpendicular Pigtail Configuration**
Switching to a thin-film RTD with perpendicular pigtails removed the need for a 90° bend entirely, preventing mechanical strain at the substrate interface.
- 2. Alumina Tube Mechanical Support**
The RTD was cemented inside a ½" long alumina tube (open on both ends), allowing the substrate to bottom out securely against the tube. The customer could then adhere the alumina tube—not the fragile pigtails—to the ceramic glass cooktop.
- 3. Rigid, Installation-Friendly Design**
This configuration eliminated moving parts at the stress points, improved handling during assembly, and protected the RTD from pull, twist, and bend forces. Result: 2,000 units have been shipped with zero reported failures.



Enhanced Structural
Durability



Installation
Reliability



2,000+ units in service with
0 failures reported