Although fluoropolymer materials are chemically inert to virtually all solutions, they have absorption and permeation characteristics. Highly aggressive chemistries (especially at higher temperatures and pressures) migrate through the fluoropolymer sheath of an electric heater and attack the stainless steel inner element. This permeation may dramatically shorten the heater’s operating life.

Process Technology’s purged element design releases a flow of gas to purge the environment surrounding the heating element. The gas flow sweeps away internal moisture and entrapped particles that accumulate due to permeation through the heater sheath. This patented feature resolves the permeability problem and promotes a longer heater life.

**Success Story**

A circuit board manufacturer in Hampton, IA experienced high fluoropolymer immersion heater failures in its hard chromic plating line. These failures would cost the company several thousand dollars in heater replacement costs.

The purge design not only resolved the permeability problem for our customer but created a longer-life heater. After installing the purged heaters, this customer virtually eliminated its immersion heater failure problems and saved thousands of dollars.

**Benefits**

- Easy purge hookup since nitrogen supply is already available in most fabs.
- Backpressure detection a plus if incorporating flow control with backpressure monitor.
- Cleans away harmful permeation

[Diagram of heater components: RESISTANCE WIRE, INSULATION LAYER, KNURLED 304SS SHEATH, THICK PTFE]

http://www.processtechnology.com/electric-immersion-heaters-water-chemical.html
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