

**PROCESS
TECHNOLOGY**

**...IN SAFER
HEATING**



A multinational electronics company was having problems with their electric immersion heaters (made by another company) in their electroplating processing line. Liquid loss caused by evaporation in some of their tanks exposed the hot zones of these heaters. The lack of properly functioning liquid level and high-temperature shutoffs allowed the heaters to remain energized with part of the hot zones exposed to air, resulting in an overheat condition which resulted in several fires in their plating lines.

This company considered a central boiler system, but such systems did not provide high enough temperatures for all of their processes and were impossible to retrofit in one of their facilities due to space constraints. Process Technology proposed self-limiting SmartOne™ electric immersion heaters to meet the facility's heating needs while preventing the situations that caused previous factory fires. The SmartOne™'s PTC technology inherently limits the heater output because the electrical resistance of the PTC elements exponentially increases as temperatures approach the maximum design limits. This was a perfect match for the customer, as they needed a solution that would not run the risk of fire if their other safeties failed (or were not installed).

When the first SmartOne™ arrived, the customer was taking no chances and wanted to put it through rigorous testing. With thermal imaging equipment under controlled conditions, they slowly dropped the tank level and measured the heater surface temperature. The heater only reached a maximum temperature of 225°C on the exposed portion of the hot zone because of its self-limiting design. Since polypropylene tanks ignite at around 330°C, the customer concluded that there is no fire risk. These trials gave them the confidence with actual process chemical installations, and they bought several more heaters for their cyanide zinc tanks (which suffer from significant issues with suds forming crusts on the heaters) and are planning on buying more for their other chemistries as well. After their experiences, they called the SmartOne™ heater, "Really smart!"

The SmartOne™ heater: "Really smart!"

<http://www.processtechnology.com/ptc-heaters.html>

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