

RTDs

(Resistance Temperature Detectors)

What Is It?

An RTD (Resistance Temperature Detector) is an electronic temperature-sensing device that can be used in conjunction with a safety thermal limit recorder or recording chart to monitor critical processing temperatures. It consists of a thin film or coil of platinum metal encased in a stainless steel protective sheath and is installed in similar locations as traditional thermometer probes.

How Does It Work?

The electrical resistance of the platinum changes as the processing temperature changes. An electronic indicator measures this resistance and the temperature is then displayed or recorded on a chart. Special sheath fillings are used when constructing these devices to ensure that they meet legal response time specifications.

Where Can It Be Used?

An RTD system can be used to replace any temperature sensing device provided that it meets the intent of the 3A Standards requirements.

Can Thermocouples Be Used Similarly?

No! Although similar to RTDs thermocouples are not as reliable. As such, thermocouples may be used in non-critical areas but **not** in conjunction with safety thermal limit recorders.

Is It Failsafe?

Similar to any electronic device, RTDs have been proven to be very reliable but are not completely failsafe. Noted sources of error include:

- poor electrical connections
- incorrect hook-up
- wire strain
- variations in internal voltage
- construction quality
- electrical surges or interruptions.

Due to the possibility of error, RTDs used to monitor pasteurization processes must be verified against an approved mercury-in-glass indicating thermometer. When used in conjunction with a safety thermal limit recorder, the RTD must be rendered failsafe through approved internal and automatic monitoring systems.

What Are It's Advantages And Disadvantages?

The RTD has several advantages over the traditional bourdon spring sensing device. These include:

- improved accuracy
- interchangeable sensors
- recorders can be placed in areas far from the sensing device.
- no drift

The disadvantages include:

- more expensive
- the response time is slower
- the ability to exchange an approved unit with a non-conforming unit. Sealing the RTD to the receiving module can minimize this concern.

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How Do You Choose The Correct RTD?

An RTD must be selected and installed with the assistance of a supplier familiar with the 3A Standards requirements for temperature sensing devices. Where the RTD is to be used in conjunction with a safety thermal limit recorder, the Dairy Plant Specialist must be contacted to ensure that the unit is designed and installed to meet required standards.

For further information contact the Dairy
Plant Specialist at Food Protection
Services

604.707.2440

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