CONFIDENTIAL PATENT DISCLOSURE

Monitored curing-frame thermal probe

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Abstract

The disclosed frame has a workpiece support, a thermocouple sensor positioned beside the workpiece, a controller, and an operator indicator. A spring clip holds the probe at a defined offset without embedding it in the coating. A short-range radio coupled to the controller transmits an observation packet, and the controller records an acknowledgement associated with the packet sequence. Lack of acknowledgement leaves the local observation open for later retry. The controller copies the accepted observation and apparatus identifier to a removable record token on request. The local indicator confirms completion of the copy and retains the source record.

Problem and thermal-probe arrangement

A demonstration coating can be moved from a curing frame before its local temperature history has been reviewed. The heater setting does not prove the temperature beside the coated workpiece.

The disclosed frame has a workpiece support, a thermocouple sensor positioned beside the workpiece, a controller, and an operator indicator. A spring clip holds the probe at a defined offset without embedding it in the coating.

Operation and boundary

The controller associates the thermocouple reading with the frame position and presents an observation state while the workpiece remains supported. The record retains the sensing offset and sampling interval used for the session.

The embodiment observes temperature at the disclosed probe location. It does not establish the temperature inside the coating or certify a cure state for every coating formulation.

Acknowledged observation packet

In a monitored curing-frame thermal probe, a receiving station may need a copy of an observation while the apparatus remains responsible for the source record. A transmission without a sequence or acknowledgement could be mistaken for a completed handoff.

A short-range radio coupled to the controller transmits an observation packet, and the controller records an acknowledgement associated with the packet sequence. Lack of acknowledgement leaves the local observation open for later retry.

The test interrupts the radio path, restores it, and checks that a retransmitted packet retains its original sequence and that an unacknowledged attempt is not duplicated as a new physical event.

Removable observation token

A receiving operator may need the observation record from a monitored curing-frame thermal probe after the apparatus is moved. A record retained only on a distant workstation would be difficult to associate with that handover.

The controller copies the accepted observation and apparatus identifier to a removable record token on request. The local indicator confirms completion of the copy and retains the source record.

The token records a snapshot. Later observations remain separate until another copy operation is deliberately initiated.

Claims

1. An apparatus comprising a workpiece support in a curing frame; a thermocouple sensor positioned beside a workpiece on the support; a controller coupled to the thermocouple sensor; and an operator indicator coupled to the controller, the controller being configured to receive a reading representing a condition at a sensing position associated with the sensor, establish an observed state from the reading, and present that state through the operator indicator.

2. The apparatus of claim 1, wherein a short-range radio coupled to the controller transmits an observation packet and the controller records an acknowledgement associated with a packet sequence.

3. The apparatus of claim 2, wherein the controller copies a stored observation and an apparatus identifier to a removable record token on request while retaining the stored observation as a source record.