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SMD Operations Procedures Manual

8.1.1.33 OPERATION OF THE BEAM TUBE CURING OVEN

Text Pages 1 through 4
Attachment(s) 1, 2, 3

Hand Processed Changes

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Division Head Date

Preparer(s): A. Marone

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8.1.1.33 Operation of the Beam Tube Curing Oven

1.0 Purpose and Scope

1.1 To load a beam tube into the oven and operate the oven.

1.2 The specific technical parameters (i.e., curing temperatures) required for each different application are provided in the corresponding Magnet Assembly Procedure.

2.0 Responsibilities

2.1 A list of authorized operators shall be maintained by the cognizant technical supervisor.

3.0 Prerequisites

3.1 The exhaust hood vent system shall be in operation during the Kapton curing cycle.

3.2 Two operators are required to handle beam tube into and out of oven.

3.3 Authorized operators shall be instructed by the cognizant technical supervisor prior to operating the oven.

3.4 Air emissions for the oven have been classified as trivial under the Laboratory's site-wide air permit (Title V). It may only be uses in accordance with this procedure without additional reviews and approvals (see Attachment 2).

3.5 Ensure that the ductwork to the exhaust hood vent system is open for the oven and closed for the adjoining fume hood during the Kapton curing cycle.

4.0 Precautions

4.1 Do not touch hot parts.

4.2 Do not operate oven with access panels removed or missing.

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5.0 Procedure

WARNING

Before starting any work, verify that the Fused Power Supply Switch, Main Power Switch, Coil Motor, Blower and Heat Switches are all in the off positions (see Attachment 1).

5.1 Loading Tube into Oven

5.1.1 Position the beam tube to be cured into oven and set it on the rollers at each end of the tube.

5.1.2 Bolt the collet flange (the tube assembly) to the end plate of the coil motor shaft with a 5/16 bolt.

5.1.3 Attach the controller thermocouple wire to the driven end of the tube with Kapton tape. Be sure it is in contact with the metal surface of the tube.

5.1.4 Repeat step 5.1.3 to attach the monitor thermocouple wire to the opposite end of the tube.

5.1.5 Close lid and secure with a minimum of three (3) straps.

5.1.6 Push oven under exhaust hood.

5.2 Curing Tube

CAUTION

Ensure adjoining fume hood is not in use and dampers are properly position so that airflow is from the oven only.

5.2.1 Turn on Exhaust Hood Power Switch.

5.2.2 Turn on Fused Supply Power Switch.

5.2.3 Turn on Main Power Switch. Verify light above this switch is now on.

5.2.4 Set the Watlow Temperature Controller to the desired maximum temperature required for the given application.

5.2.5 Turn Coil Motor Switch to "ON."

5.2.6 Turn Heat Switch to "ON."

5.2.7 Push green "OVEN" Switch to activate heaters. Verify that the three (3) heater lights have gone on.

CAUTION

If any of the indicator lights fail to go on or go out during operation, do not operate or continue to operate oven. Shut off fused power supply switch and call for repair of unit. Failure to secure power could result in an electrical safety or burn hazard to personnel when the oven lid is open.

5.3 Cooling and Removal of Tube

5.3.1 After desired temperature and duration have occurred, turn Heater Switch to "OFF." Verify heater lights are unlit.

5.3.2 Turn Blower Switch to "ON."

5.3.3 After oven has cooled below 250°F, turn Coil Motor Switch to "OFF."

5.3.4 Turn Blower Switch to "OFF."

5.3.5 Turn Fused Power Switch to "OFF." Unplug electrical power to oven, place electrical extension cord and connector in plain sight of working area.

5.3.6 Remove cover straps and open oven lid.

5.3.7 Detach the thermocouple wires from both ends of the beam tube and remove the bolt that attaches the Collet flange to the coil motor shaft end plate.

5.3.8 Turn off Exhaust Hood Power Switch.

5.3.9 Remove tube from oven.

5.3.10 Complete the Polyimide Film Usage Log.

6.0 Documentation

6.1 Polyimide Film Usage Log.

6.2 Records must be maintained of the amount of Kapton film applied to beam tubes so that estimates of the annual emissions of volatile components of the film can be determined.

7.0 References

None

8.0 Attachments

1. Oven Control Panel
2. BNL Memorandum from J. Williams to A. Etkin Dated October 21, 1997
3. Polyimide Film Usage Log

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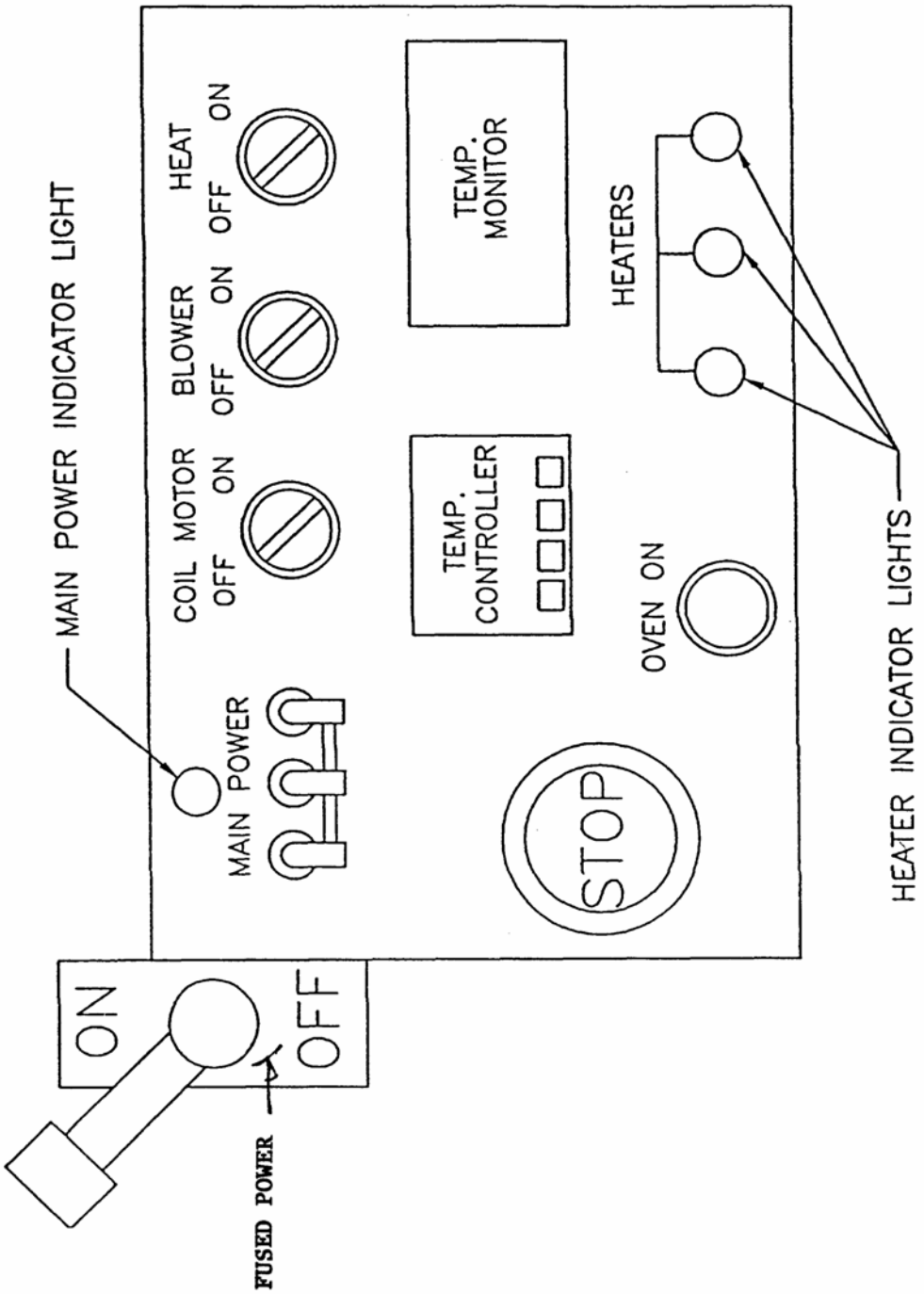
Attachment 1

Oven Control Panel



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Attachment 2

BNL Memorandum from J. Williams to A. Etkin Dated October 21, 1997

BROOKHAVEN NATIONAL LABORATORY

MEMORANDUM

DATE: October 21, 1997

TO: A. Etkin

FROM: J. Williams J. Williams

SUBJECT: **Bldg. 902 Kapton Curing Oven**

The Kapton film curing operation has been evaluated with respect to New York State Operating Permit provisions. Since the end use of the tubes that are to be wrapped with the Kapton Insulating Film are for research purposes, the film's adhesive is exempt from 6 NYCRR Part 228 provisions which restrict the volatile organic compounds content of surface coatings. Furthermore, since the application and subsequent curing of the Kapton film are exempt from Part 228, both activities are also exempt from the preconstruction permit requirements of 6 NYCRR Part 201-6. Despite the exemption, records must be maintained of the amount of Kapton film applied so that estimates of the annual emissions of volatile components of the film can be determined.

JKW/rt

cc: J. Durnan
R. Kehl
R. Lee

EC5120.97

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Attachment 3

kptnusge.wb2

POLYIMIDE FILM USAGE LOG

PART NO. 12010181-28 (KAPTON TYPE 135RCI)

thickness = .00017 width = 1.000 adhesive = XMPI, both sides

DATE	QTY (ft)	CUM TOTAL (ft)	MAGNET/PROGRAM/NOTES