PDR-OPS-005 THERMAL MANAGEMENT IN F

Version 2.3 | Effective Date: January 15, 2024

Document Classification: Confidential - Internal Use Only

Document Owner: Operations Department

1. PURPOSE AND SCOPE

1. This document establishes mandatory thermal management protoc

2. These requirements apply to all Company facilities, employees, cor

2. DEFINITIONS

1. "Critical Temperature Zones" means designated areas within produ

a) AMR Assembly Areas: 20 C   2 C

b) BlueCore(TM) Component Testing Areas: -30 C to +25 C

c) Thermal Stress Testing Chambers: -40 C to +40 C

d) Component Storage Areas: 18 C   3 C

2. "Temperature Excursion" means any deviation from specified temp

3. "HVAC Systems" means all heating, ventilation, and air conditioning

3. FACILITY REQUIREMENTS

1. Temperature Monitoring Systems

a) All Critical Temperature Zones must be equipped with calibrated te

monitoring systems

b) Minimum of three monitoring points per 1,000 square feet

c) Real-time data logging with 5-minute recording intervals

d) Automated alerts for temperature excursions

e) Monthly calibration verification

2. Backup Systems

a) N+1 redundancy for all critical HVAC systems

b) Emergency power generation capable of maintaining Critical Temp

for 72 hours

c) Backup monitoring systems with independent power supply

4. OPERATIONAL PROCEDURES

1. Daily Operations

a) Temperature logs reviewed at start of each shift

b) Visual inspection of HVAC equipment every 4 hours

c) Documentation of all maintenance activities

d) Verification of backup system readiness

2. Temperature Excursion Response

a) Immediate notification to Facility Manager and Quality Control

b) Implementation of contingency cooling/heating procedures

c) Documentation of incident and root cause analysis

d) Assessment of product impact

e) Corrective action implementation

5. QUALITY CONTROL

1. Temperature-Sensitive Components

a) All BlueCore(TM) components must be temperature-tracked from r

installation

b) Documentation of thermal exposure history

c) Rejection criteria for temperature-compromised components

2. Testing Requirements

a) Quarterly thermal mapping of Critical Temperature Zones

b) Annual validation of monitoring systems

c) Bi-annual review of thermal management procedures

6. DOCUMENTATION AND RECORDS

1. Required Records

a) Temperature monitoring logs (retained for 3 years)

b) Maintenance records (retained for 5 years)

c) Calibration certificates (retained for 3 years)

d) Incident reports (retained for 7 years)

e) Training records (retained for duration of employment plus 3 years)

2. Review and Auditing

a) Monthly review of temperature logs

b) Quarterly internal audits

c) Annual third-party compliance audit

7. TRAINING REQUIREMENTS

1. All personnel working in Critical Temperature Zones must complete

a) Initial thermal management training

b) Annual refresher training

c) Emergency response procedure training

d) Documentation and reporting requirements training

8. COMPLIANCE AND ENFORCEMENT

1. Compliance with this policy is mandatory for all Company facilities a

2. Violations may result in disciplinary action up to and including termi

9. REVISION HISTORY

Version 2.3 - January 15, 2024: Updated temperature ranges for Blue

testing areas

Version 2.2 - July 1, 2023: Added backup power requirements

Version 2.1 - January 10, 2023: Updated documentation retention req

Version 2.0 - June 15, 2022: Major revision to include new Critical Te

Zones

Version 1.0 - March 1, 2022: Initial release

10. APPROVAL

APPROVED BY:

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Date: January 15, 2024

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Chief Robotics Officer

Date: January 15, 2024