OPERATIONS DOCUMENT 392

STANDARD OPERATING PROCEDURES FOR AUTONOMOUS MOBILE ROBOT DEPLOYMENT AND MAINTENANCE

Effective Date: January 1, 2024

Document Version: 3.2

Last Updated: December 15, 2023

1. PURPOSE AND SCOPE

1. This Operations Document ("Document") establishes binding operational procedures and protocols for the deployment, maintenance, and decommissioning of Polar Dynamics Robotics, Inc. ("Company") Autonomous Mobile Robot ("AMR") systems in temperature-controlled environments.

2. This Document applies to all Company personnel involved in AMR operations, including but not limited to field technicians, deployment specialists, maintenance engineers, and operational supervisors.

2. DEFINITIONS

1. "IceNav System" means the Company's proprietary cold-environment navigation and operation platform.

2. "Critical Operating Temperature" means any ambient temperature below -30 C (-22 F).

3. "Deployment Zone" means any customer facility where Company AMRs are installed and operational.

4. "Thermal Management Protocol" or "TMP" means the Company's standardized procedures for maintaining optimal AMR operating temperatures.

3. DEPLOYMENT PROCEDURES

1. Pre-Deployment Assessment

a) Conduct comprehensive site survey including thermal mapping

b) Verify facility compliance with Company's Technical Specification Document 275

c) Document all thermal transition zones and temperature gradients

d) Validate IceNav System compatibility with facility layout

2. Installation Requirements

a) Follow Company's Cold Environment Installation Protocol (CEIP-2023)

b) Install thermal monitoring beacons at prescribed intervals

c) Calibrate IceNav sensors to facility-specific conditions

d) Verify redundant safety systems functionality

4. MAINTENANCE PROTOCOLS

1. Scheduled Maintenance

a) Perform weekly diagnostic scans of thermal management systems

b) Conduct monthly actuator stress tests

c) Calibrate navigation sensors quarterly

d) Replace thermal interface materials per Schedule A

2. Emergency Procedures

a) Implement rapid shutdown protocol if core temperature exceeds specifications

b) Execute emergency extraction procedures for compromised units

c) Maintain backup power systems for critical operations

d) Follow incident reporting procedures per Section 7

5. SAFETY REQUIREMENTS

1. Personnel Safety

a) Mandatory cold-environment safety training for all field personnel

b) Use of Company-approved personal protective equipment

c) Strict adherence to buddy system in sub-zero environments

d) Regular safety certification renewal

2. Equipment Safety

a) Continuous monitoring of thermal stress indicators

b) Regular validation of emergency stop systems

c) Verification of collision avoidance systems

d) Testing of backup power systems

6. QUALITY CONTROL

1. Performance Metrics

a) Monthly uptime requirements per Service Level Agreement

b) Navigation accuracy standards in varying temperatures

c) Power consumption optimization targets

d) Thermal efficiency benchmarks

2. Documentation Requirements

a) Maintenance logs with digital verification

b) Incident reports and resolution documentation

c) Performance trend analysis

d) Compliance certification records

7. INCIDENT REPORTING AND RESOLUTION

1. All operational incidents must be reported through the Company's Incident Management System within 4 hours of occurrence.

2. Critical incidents requiring immediate attention:

a) Navigation system failures

b) Thermal management system malfunctions

c) Safety system compromises

d) Collision events

8. PROPRIETARY INFORMATION

1. This Document contains confidential and proprietary information of Polar Dynamics Robotics, Inc. and may not be disclosed to third parties without written authorization.

2. All technical specifications, procedures, and protocols contained herein are protected under U.S. Patent Nos. 11,234,567 and 11,234,568.

9. AMENDMENTS AND UPDATES

1. This Document may be amended or updated by the Company at any time, with notice to relevant personnel.

2. Current version maintained in Company's document management system.

AUTHORIZATION

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Date: January 1, 2024