OPERATIONS DOCUMENT 367

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 284

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) Calibrate thermal sensors according to Specification Sheet 147

c) Install redundant emergency stop systems at prescribed intervals

d) Verify charging station thermal management systems

4. MAINTENANCE PROTOCOLS

1. Scheduled Maintenance

a) Perform weekly diagnostic scans of IceNav System

b) Conduct monthly actuator performance assessments

c) Execute quarterly thermal management system calibration

d) Document all maintenance activities in Company's secure cloud platform

2. Emergency Maintenance

a) Response time requirements:

-        Critical failures: 2 hours

-        Non-critical failures: 8 hours

-        System warnings: 24 hours

b) Follow Emergency Response Protocol 92 for thermal system failures

c) Maintain spare parts inventory per Appendix A

5. SAFETY AND COMPLIANCE

1. Safety Requirements

a) Maintain minimum clearance zones per Safety Protocol 183

b) Monitor thermal stress indicators continuously

c) Conduct monthly safety audits of all operational AMRs

d) Train facility personnel on emergency procedures

2. Regulatory Compliance

a) Maintain documentation required by 29 CFR 1910.178

b) Ensure compliance with ANSI/RIA R15.08-1-2020

c) Update safety certifications as required by local jurisdictions

6. PERFORMANCE MONITORING

1. The Company shall monitor and record:

a) AMR uptime percentage

b) Navigation accuracy metrics

c) Thermal management system efficiency

d) Battery performance in cold environments

e) Collision avoidance effectiveness

2. Performance Reports

a) Generate weekly performance summaries

b) Conduct monthly trend analysis

c) Prepare quarterly optimization recommendations

7. DECOMMISSIONING PROCEDURES

1. AMR Decommissioning Requirements

a) Follow Decommissioning Checklist 47

b) Secure all proprietary software and data

c) Remove Company-specific hardware components

d) Document final performance metrics

8. CONFIDENTIALITY

1. All information contained in this Document is confidential and proprietary to the Company.

2. Distribution of this Document is restricted to authorized personnel only.

9. AMENDMENTS

1. The Company reserves the right to modify this Document at any time.

2. All amendments must be approved by the Chief Operations Officer and Chief Robotics Officer.

EXECUTION

IN WITNESS WHEREOF, the undersigned acknowledges and agrees to comply with all procedures and requirements set forth in this Document.

POLAR DYNAMICS ROBOTICS, INC.

By:

Name: Sarah Nordstrom

Title: Chief Operations Officer

Date:

By:

Name: Dr. James Barrett

Title: Chief Robotics Officer

Date: