

DESIGN PATENT

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ARCTIC-GRADE ROBOT HOUSING (PATENT NO. D

United States Patent and Trademark Office

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CLAIM OF DESIGN

The ornamental design for an arctic-grade robot housing, as shown a

DESCRIPTION OF THE FIGURES

Figure 1 is a front perspective view of the arctic-grade robot housing;

Figure 2 is a rear perspective view thereof;

Figure 3 is a top plan view thereof;

Figure 4 is a bottom plan view thereof;

Figure 5 is a right side elevation view thereof;

Figure 6 is a left side elevation view thereof;

Figure 7 is a front elevation view thereof;

Figure 8 is a rear elevation view thereof;

Figure.9 is an exploded view showing the component assembly.

DESIGN SPECIFICATIONS

The arctic-grade robot housing comprises:

A thermally-insulated outer shell constructed of impact-resistant comp

- a) Rounded corners with radius of 75mm
- b) Integrated thermal expansion joints
- c) Double-wall construction with vacuum-sealed cavity
- d) Surface texture pattern of hexagonal micro-ridges

Access panels positioned at:

- a) Front maintenance bay (400mm x 600mm)
- b) Rear power unit housing (350mm x 450mm)

- c) Top-sensor array mount (300mm diameter)
- d) Side battery compartments (250mm x 400mm)

Environmental sealing system including:

- a) Triple-seal gaskets at all panel interfaces
- b) Pressure equalization valves
- c) Cable pass-through ports with thermal glands
- d) Moisture-resistant ventilation grilles

TECHNICAL FEATURES

The design incorporates the following functional elements:

Thermal Management:

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Operating temperature range: -40 C to +50 C

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Thermal bridge minimization at all mechanical interfaces

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Active condensation prevention system

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Integrated heating elements in critical zones

Structural Integrity:

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Impact resistance rating: IK10

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Environmental protection rating: IP67

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Load-bearing capacity: 250kg

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Torsional rigidity: 45,000 Nm/degree

Material Composition:

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Primary structure: Carbon fiber reinforced polymer

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Thermal insulation: Aerogel composite

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Sealing elements: Arctic-grade fluorosilicone

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External coating: Low-temperature resistant polyurethane

DISTINCTIVE CHARACTERISTICS

The design is characterized by:

Proprietary BlueCore(TM) integration features

Modular component mounting system

Quick-release service access points

Enhanced visibility markings

Emergency manual override access ports

Integrated lift points and tie-down anchors

ENVIRONMENTAL CONSIDERATIONS

The design accounts for:

Frost accumulation prevention

Snow and ice shedding geometry

Wind load optimization

Static discharge management

Chemical resistance to de-icing agents

UV radiation protection

LEGAL NOTICES

This design patent is protected under Title 35 of the United States Code. The design disclosed herein is the exclusive property of Polar Dynamics Research, Inc. Any unauthorized reproduction, use, or modification of this design constitutes infringement.

CERTIFICATION

I hereby certify that I am the inventor of the article shown and described in the foregoing specification.

herein. 8 -

EXECUTED this 15th day of September, 2022

/s/ Marcus Chen

Marcus Chen

Chief Technology Officer

Polar Dynamics Robotics, Inc.

/s/ James Barrett

Dr. James Barrett

Chief Robotics Officer

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Sarah Nordstrom

Chief Operating Officer

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PATENT ATTORNEY ATTESTATION

I hereby certify that this design patent application was prepared under supervision and that all statements made herein are true and correct to the best of my knowledge.

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