

# FOD-BOT

Autonomous FOD Sweeping System

Systematically Collect FOD  
Anytime, Anywhere



## FORCE MULTIPLIER

- 24/7/365 day and night
- Unattended operation
- Multi-mission chassis

## SYSTEMATIC & SAFE

- Obstacle detect & avoid
- Preplanned routes
- NDAA compliant hardware

## ANYTIME & ANYWHERE

- All weather and waterproof
- Operable in extreme temperatures
- Can be palletized to ship

MANAGEMENT | NOTIFICATIONS | DATA ANALYTICS

## TECHNICAL INFORMATION

|                         |                                   |
|-------------------------|-----------------------------------|
| FOD Collection Size     | 0.02" to 8"                       |
| Maximum Speed           | 5.6 mph (2.5 m/s)                 |
| Maximum Incline         | Up to 26.5° (50% grade)           |
| Operating Time          | Up to 6 hrs on a single charge    |
| Charging Time           | 2.0 hours (30 min from 30-80%)    |
| Operational Temperature | -4° F To 104° F (-20° C To 40° C) |
| Collision Avoidance     | Ultrasound and LiDAR sensors      |



# Technical Specifications

## Software

### ONBOARD SYSTEMS (EDGE)

#### Essential Core

Autonomy stack running directly on the FOD-BOT, enabling full mission independence without network reliance. Fuses LiDAR, GPS, and vision data for perception, navigation, and adaptive path planning.

- Real-time perception and object classification
- GNSS/RTK and LiDAR navigation and dynamic replanning
- Full autonomy cycle: deploy → sweep → return → self-charge → self-dispose
- Redundant safety and override systems

#### Safety & Compliance

Built-in multi-layer safety architecture meeting FAA and airside standards.

Onboard systems maintain situational awareness and safe behavior.

- 360° LiDAR obstacle detection
- Dual E-Stop and remote override protocols
- Geofencing and virtual safety zones

#### Onboard Operator Interface

Touchscreen control for single-robot missions, diagnostics, and overrides.

- Local start/stop and manual control
- Live system health display

## Hardware

### Accessories and Attachments

|                  |                                      |
|------------------|--------------------------------------|
| Autonomy         | Wireless charger<br>Disposal station |
| Surface Cleaning | FOD-MAT<br>Track-Sweep               |

|                      |               |
|----------------------|---------------|
| Attachment Interface | 2" Ball hitch |
|----------------------|---------------|

### Dimensions and Weight

|                     |                              |
|---------------------|------------------------------|
| External Dimensions | 3.6 × 2 × 2.6 ft (L x W x H) |
| Wheel Diameter      | 1 ft                         |
| Weight              | 150 lbs                      |

### Speed and Performance

|                                      |                          |
|--------------------------------------|--------------------------|
| Maximum Speed                        | 5.6 mph (3.5 m/s)        |
| Maximum Incline<br>(Without Payload) | 50%                      |
| Chassis                              | 4-wheel robot frame      |
| Motor Type                           | 4 hub motors (500W each) |

### Power

|                |                              |
|----------------|------------------------------|
| Battery Type   | Lithium Iron Phosphate (LFP) |
| Operating Time | Up to 6 hours                |
| Charging Time  | 2.0 hours at 220V            |

### CLOUD & FLEET SYSTEMS

#### Essential Ops Supervisor

Fleet-management layer hosted in the Essential Aero cloud ecosystem. Provides real-time mission visibility, scheduling, and analytics for all connected robots across multiple sites.

- Live mission tracking and remote dispatch
- Multi-robot coordination and zone scheduling
- Automated uptime, mission, and FOD collection reports
- Remote alerts, overrides, and maintenance notifications
- Cloud-linked data storage for analytics and ROI evaluation

#### Essential Commander

Browser-based control hub (desktop and mobile) unifying all connected FOD-BOTs and site infrastructure. Provides intuitive mission planning, data visualization, and remote supervision.

- Point-and-click mission setup and map editing
- Real-time telemetry and system health monitoring
- Fleet dashboards for analytics and compliance review
- Intuitive user interface optimized for airside operations

### Safety Features

|                     |                                 |
|---------------------|---------------------------------|
| Collision Avoidance | Bumper Bar                      |
| E-Stop              | Immediately stop droid in place |

### Environment

|                         |                                    |
|-------------------------|------------------------------------|
| Operational Temperature | -4° F to 104° F<br>-20° C to 40° C |
|-------------------------|------------------------------------|

### Interface and Communication

|                        |                                                 |
|------------------------|-------------------------------------------------|
| External Communication | Redundant 5G router with<br>Dual-band WiFi, UHF |
| I/O                    | RJ45 Ethernet, USB-A                            |

### Sensors

|       |                           |
|-------|---------------------------|
| GPS   | Differential GPS with RTK |
| LiDAR | 360 degrees 3D LiDAR      |

