

Autonomous Last-Mile Delivery Robot

www.otsaw.com



Version: CAM 2022-09





Introducing Camello

Camello is an autonomous mobile robot (AMR) from OTSAW that enables last-mile delivery service. Last mile delivery is the final process of the whole supply chain journey – the step which the package is delivered to the buyer's doorstep.

At OTSAW, we look at reinventing last mile delivery using technology and robotics to increase customer satisfaction and market demand in the e-commerce industry.

Last-Mile Delivery



Improve Supply Chain Logistics



Improve Customer Experience



How Camello integrates into the last-mile delivery process

4. After collection, Camello returns to the base station autonomously, ready for the next order to be taken

3. Customer receives collection notification via App, and unlocks Camello compartment with QR code to collect parcel

1. At the distribution hub, the parcel is loaded on to Camello, and order information is uploaded using the Web Application

> **2.** Camello then autonomously navigates to the collection point at the stipulated time



Camello Key Features



Navigational Capabilities

- Equipped with navigation capabilities with multi-sensor fusion, intelligent path planning and dynamic obstacle avoidance
- Sensors include 3D Lidar, camera and sonar sensor, which allows the AMR to visualize the surroundings by gathering data
- Global Positioning System (GPS) and Inertial Measurement Unit (IMU) allow Camello to continuously monitor position throughout its journey



Supply Chain Efficiency

- By reducing load factor, dwell times at loading/ unloading points number of delivery requirements to individual customers, Camello aims to close the efficiency gap in the chain of last mile logistics
- With proper scheduling to charge the robot, the robot will tirelessly work round the clock
- Deliverymen can then operate these robots remotely in the dispatch hub, with his/her main role to load the parcel onto the goods

Safety Features

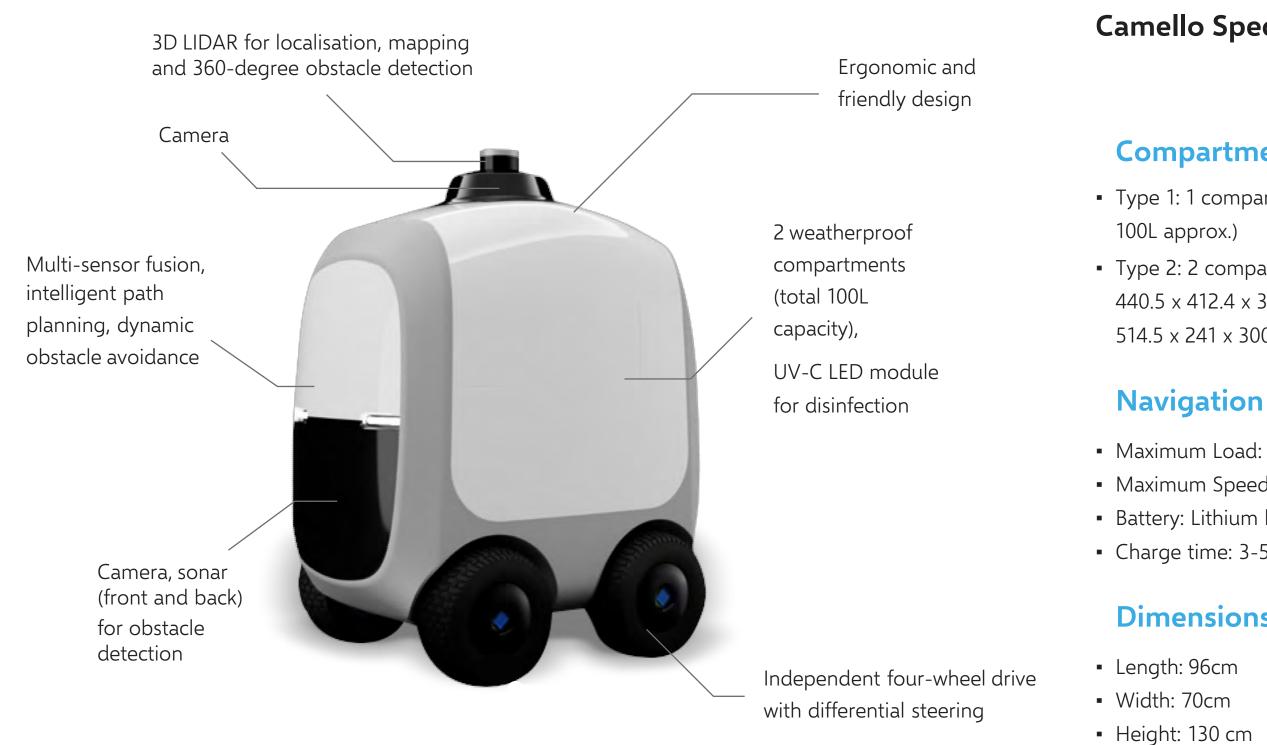
- the robot)



 Real-time obstacle detection with the 3D LIDAR sensors. With this feature, the AMR does intelligent path planning and will manoeuvre in a manner to avoid obstacles (humans/objects) • Ultrasonic sensors as a secondary obstacle detection method to stop all motor functions in the event an obstacle is detected within stipulated range (typically 0.5 – 1m in front of

 Real-time camera video feed will also be processed for obstacle detection





• Weight: 105 kg

Camello Specifications

Compartments

Type 1: 1 compartment (659.3 x 514.5 x 300.5mm = • Type 2: 2 compartments $440.5 \times 412.4 \times 300.5 \text{mm} = 54 \text{L approx}.$ $514.5 \times 241 \times 300.5 \text{mm} = 36L \text{ approx}.$

 Maximum Load: 20kg Maximum Speed: 5km/hr - Battery: Lithium battery 24V 60Ah • Charge time: 3-5 hour full charge

Dimensions





Robot as a Service (RaaS)

At OTSAW we offer our last-mile delivery services on a subscription base to help you reduce time to benefit and be more flexible. RaaS allows you to enjoy a state-of-the-art quality service and a seamless customer experience from setup to deployment and operations.



Lower upfront cost

Your contract includes setup, training, maintenance, and software updates to make sure your OTSAW Camello is always at top performance at all times.



Full support & maintenance



Free updates & upgrades

Responsible Innovations



Automated Guided Vehicle for Material Transport

T-R=x

Multi-use Portable UV-C LED Disinfection



A4 0.0 0.0 00 0

> Autonomous UV-C LED Disinfection



OTSAW

Autonomous Last-Mile Delivery







Autonomous **Outdoor Security**





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Camello