GEROBO INTERNATIONAL

gerobo.eu

About Gerobo - ‘People First, Robots Next!’

key expertise in our team to be at the forefront of robotic-assistive technologies	**competitive prices for the Shipping, Industry, Logistics & Horeca sectors**

Gerobo International **is a Robotics, Cobotics, AMR’s - Service robots and Artificial Intelligence Drones company.**

The company provides autonomous mobile & service robots, high AI Drone Security, Patrolling and custom solutions.

Serving sectors: Shipping, Industry, Logistics and HoReCa.

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THE STORY

AI Revolution in Cleaning & Service Robots

Robotics

Drawing expertise from different fields of Computer Science & Engineering, Robotic solutions promise to assist in cumbersome or even impossible tasks, via customization of design, implementation & development based on the specs of the task at hand.

Industry & Factory 4.0 & 5.0

Following the trend of automation & data exchange in manufacturing technologies, GEROBO focuses on key technologies, such as cyber-physical systems, the Internet of things, cloud computing & cognitive computing driving the development of **automation for new generation smart factories.**

Artificial Intelligence & Machine Learning

With expertise in **Machine learning & Artificial Intelligence** , GEROBO team develops algorithms tailored to automate processes efficiently and robustly, leveraging learnings from past experiences automatically.

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AI Revolution in Cleaning & Service Robots

THE NEXT LEVEL OF AUTONOMOUS MOBILE & SERVICE ROBOTS

For businesses, increasingly sophisticated autonomous mobile robots, service robots, drones and vehicles represent a way to compensate for labour shortages in certain business fields and to keep the human workforce safe from hazards and dangerous environments.

The COVID-19 pandemic, for instance, has exacerbated the situation in the healthcare sector on a global level and AMRS and AGVs e.g. already help to transport equipment and to disinfect facilities in hospitals, without risking to spread the virus or to get infected.

Our main drivers of robotics adoption in enterprises (cross-sector)

- ✓ **ESG – Balance innovation with sustainability**
- ✓ **Zero footprint – Eco empowerment**
- ✓ Assisting, improving, next level operations
- ✓ Protecting the human life from harm
- ✓ Reducing costs
- ✓ Increasing productivity

AI-based real-time decision making and cutting-edge robotic not only help to optimise existing scenarios, they can as well transform entire business models.

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AI Revolution in Cleaning & Service Robots

THE NEXT LEVEL OF AUTONOMOUS MOBILE & SERVICE ROBOTS

Smart technologies powered by sensors, data and artificial intelligence are helping to transform the way organisations manage their **facilities**, as costs come down and the world of robotic cleaning and concierge services becomes a reality.

With terms like “deep cleaning” and “hybrid work” top of mind during the pandemic, facilities management is another key office sector undergoing accelerated change.

With the introduction of any new technology, it’s that to be effective staff must be a part of that program and have an understanding of how the technology will help and support their work.

While many of us are yet to meet a robot, but perhaps looking forward to it, a transformed facilities sector will still need the human touch in coming years.

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THE NEXT LEVEL OF AUTONOMOUS MOBILE & SERVICE ROBOTS

'The primary AI-derived skill required of cobots is machine learning: The ability to progressively improve their skills through experience gained over time. Machine learning uses AI algorithms that, through learning and data analysis, enable cobots to make predictions and, thus, make their own decisions'.

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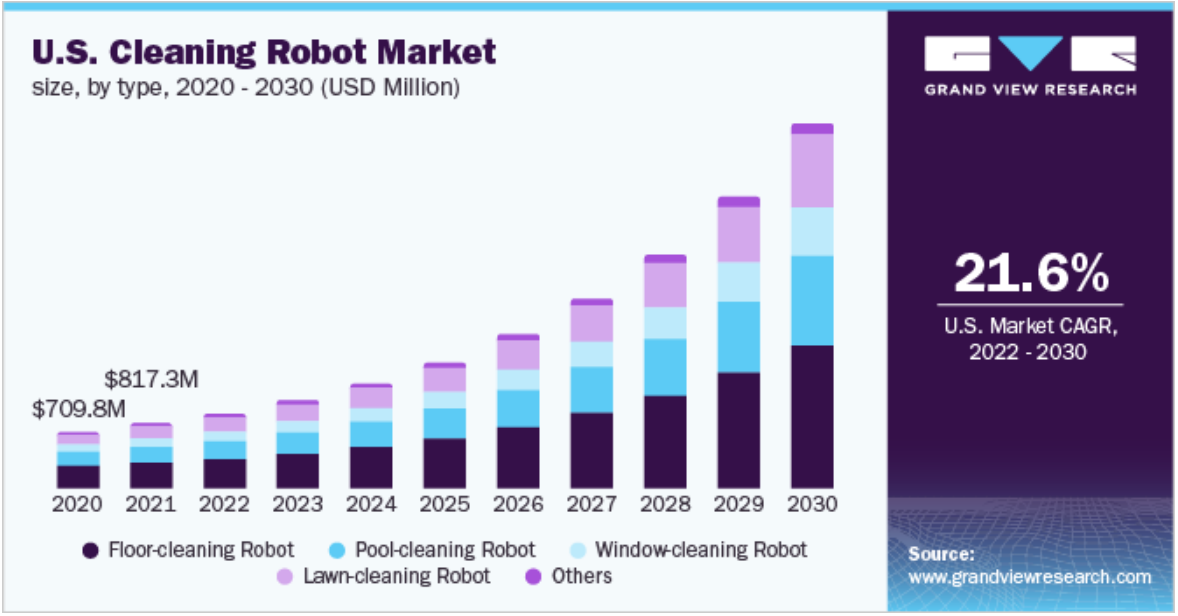
THE NEXT LEVEL OF AUTONOMOUS MOBILE & SERVICE ROBOTS

IoT delivers increased coordination and control of automation.

'The Internet of Things (IoT) has arrived, and its future is profound. Billions of devices are being connected to the Internet, allowing for the capture, manipulation, and processing of signals from a wide range of sources. Everyday objects and devices employ sensors to capture information and are then networked for greater connection and visibility. Collecting analog data from the external world, the network encodes it into digital signals and transfers it across time and space with the Internet. Information is managed at the levels of device, edge, and cloud'.

One major benefit of the IoT is the increased coordination and control of automation, which is increasingly being deployed within industry.



Industrial cleaning robots are used in many different ways.
Some current applications include:

- ✓ fully automatic glass cleaning systems for large structures (and drones);
- ✓ mopping, vacuuming and cleaning of industrial sites and for building maintenance;
- ✓ wall climbing robots for boiler wall cleaning;
- ✓ cleaning, polishing and paint removal for vessels and tanks;
- ✓ robotic hull cleaning of large ships;
- ✓ and robotic barn cleaners.

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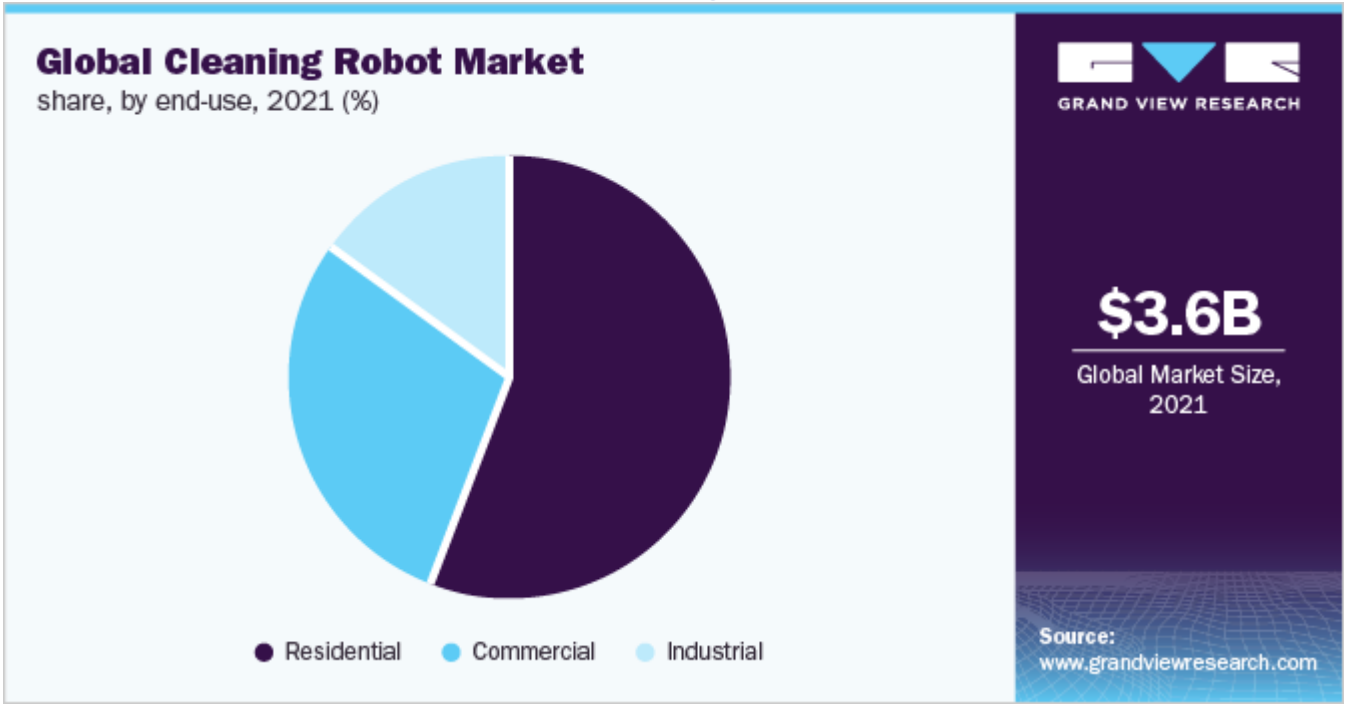
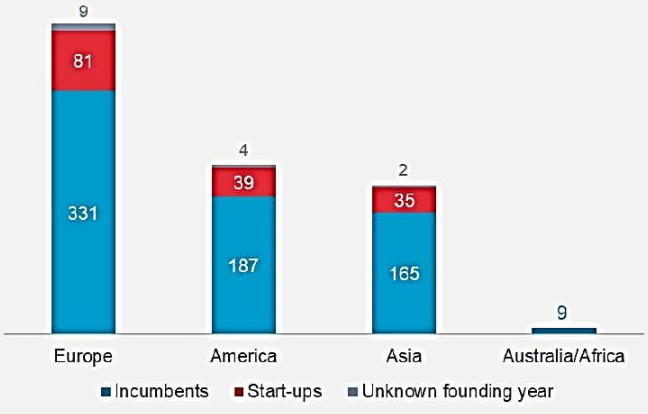


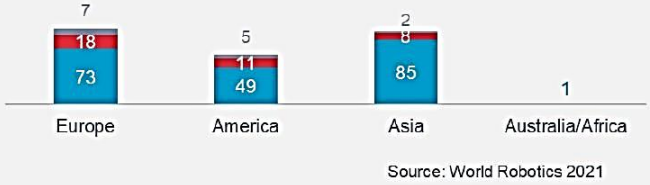
IFR International Federation of Robotics

More than 1,000 service robot suppliers worldwide

Number of service robot suppliers by region and age - professional applications



Number of service robot suppliers by region and age - consumer applications



Source: World Robotics 2021

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Collaborative Robotics: Cobots are Collaborators. A.I. Will Make Them Partners.

Cleaning & Service cobots: 80/20 Collaboration

Improving Efficiency
Improving Effect
Brand Promotion

People are more flexible to clean 20% area of corners and ceilings, to improve customer satisfaction

Cobots can clean 80% area repetitively, which can be programmed any time of the day, autonomously.

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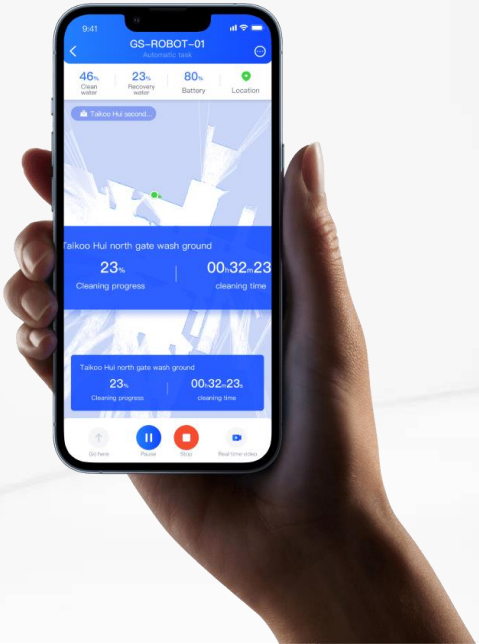

Cleaning Cobots

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Cobots can be mainly used in the scenarios like, **Industries, Logistics, banks, hospitals, supermarkets, shopping malls, office buildings, hotels, factories, logistics parks, schools etc.**

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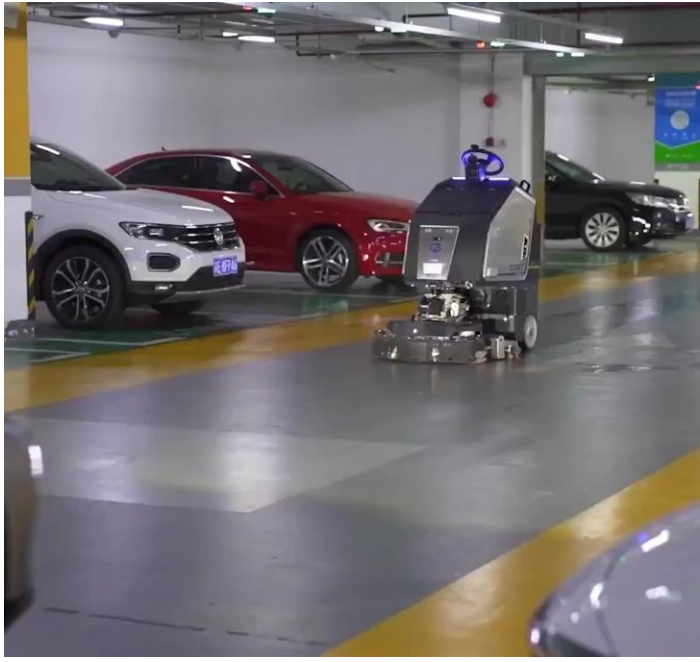

Cleaning Cobots Features & Functions

600-3000 SQM

Maximum cleaning productivity is 3000 sqm/h

Workstation

Optional workstation for recharge, refill and discharge

20 CM EDGE

Able to reach edges or corner with 20cm from the wall

Queue encryption Default
Wi-Fi and 4G
- Storing logs options enable or disable
- Database encryption AES 128
- ECYBERSECURITY CVE-1228

And under the European robotics GDPR regulation policy.

Multiple Sensors

Long-range lidar, depth camera, anti-collision sensor, etc.

Dual Purpose

Auto and manual mode

Front brush head

Able to rotate 270° with 270 rpm and 45kg down pressure

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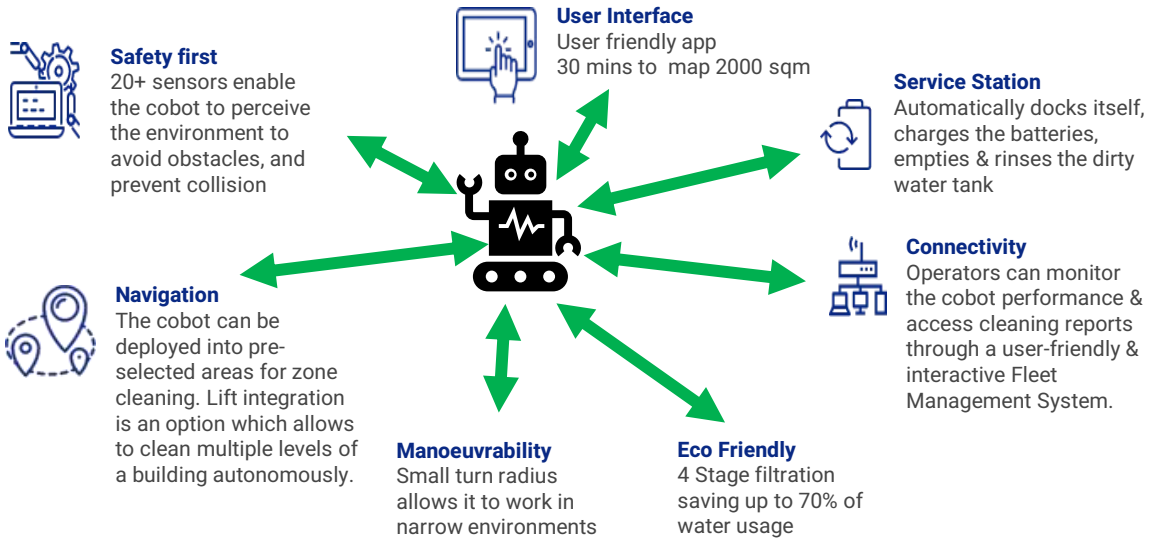
Indoor Cleaning AI and Tech



Safety first
20+ sensors enable the cobot to perceive the environment to avoid obstacles, and prevent collision

User Interface
User friendly app
30 mins to map 2000 sqm

Service Station
Automatically docks itself, charges the batteries, empties & rinses the dirty water tank

Connectivity
Operators can monitor the cobot performance & access cleaning reports through a user-friendly & interactive Fleet Management System.

Navigation
The cobot can be deployed into pre-selected areas for zone cleaning. Lift integration is an option which allows to clean multiple levels of a building autonomously.

Manoeuvrability
Small turn radius allows it to work in narrow environments

Eco Friendly
4 Stage filtration saving up to 70% of water usage

Technology

Algorithm

- Visual-LiDAR SLAM
- Environmental Perception Flexible Path Planning
- Smart Avoidance

Cloud Platform

- Statistics OTA Upgrade
- Remote Control Task Scheduling

Application

- All-embracing Cleaning
- Operations IoT Integration
- Docking Stations

Data

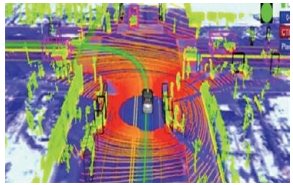
- Digital Management
- Predictive Maintenance
- Simulation

Easy to Use

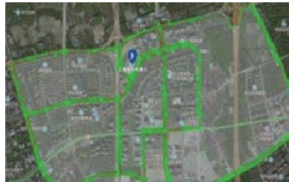
The technology allows the operator to operate the robot with minimal training. As a reliable co-worker, robots have all the features you would expect from an autonomous robot.

Visual-LiDAR SLAM

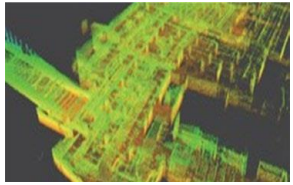
ENVIRONMENTAL PERCEPTION



DYNAMIC MAPPING



UNLIMITED MAPPING



3D MAPPING

SLAM and Perception

SLAM in the past mainly worked on mapping and positioning but now cobots utilize Machine Vision to extract semantic information, **upgrading data association from traditional pixel-level to object-character level**. Semantic SLAM advances the applicability of SLAM technology in environment perception, navigation and path planning enables the robot to **perceive the surroundings with significantly higher precision, smarter obstacle detection and avoidance capability in complex or dynamic environment**.

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Productivity

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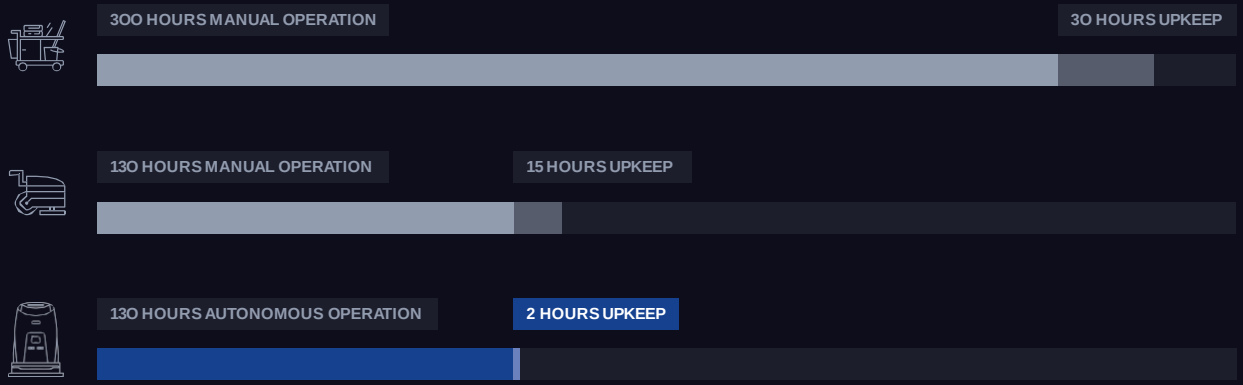
Cobots vs Manual Cleaning

Cobots Compared to Manual Cleaning



Autonomous operation(no man-hours required)

Manual operation(man-hours required)operation(no man-hours required)

Upkeep (man-hours required)

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Service Robots

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Service robots dedicated to food delivery. Powered by SLAM (Simultaneous Localization and Mapping) technology and a cutting-edge sensor system, can perform flexibly in complex, dynamic environments.

Service Robots

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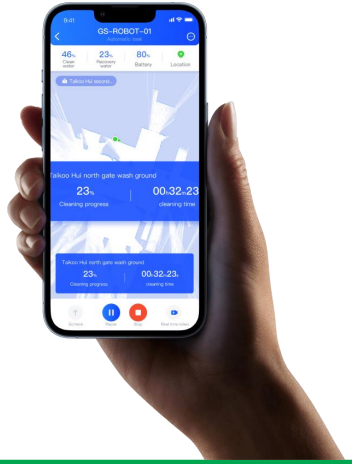
Service Robots



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Service cobots AI and Tech

TOF Camera

TOF IR depth camera, with accurate 3D sensibility and excellent algorithm to ensure sticker-free navigation.

Adjustable Tray

462*392mm large tray, 10KG payload for each tray, 8-level adjustable

Lidar

Built with a customized DTOF lidar, first-class filter technology, excellent sensibility.

Obstacle Avoidance Sensor

2 sets structured-light 3D camera, able to navigate space and avoid obstacles intelligently, safely and with ease.

SIZE

520(L) * 484 (W) * 1250(H) mm

WEIGHT

55kg

PAYLOAD

10kg * 3

BATTERY LIFE

≥8-hour, can be fully charged in 4 hours.

NETWORK

4G & WIFI

SPEED

0.5~1.2m/s (Adjustable)

MATERIAL

ABS Engineering Plastics / Aircraft-grade Aluminum Alloy

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What's Next?

Thank You!