



YGGY SECOND GENERATION (G2)

AUTONOMOUS MOBILE ROBOTS (AMRs)

GENERAL-PURPOSE ROBOTIC VEHICLES FOR INDOOR APPLICATIONS

YGGY is a range of 3 robotic general-purpose platforms for indoor robots (AMRs).

They get the same functionalities:

Localization, navigation, obstacles avoidance and automatic return to the charging station.

They differ only by the size, the power, the payload accepted and the battery capacity.

Brochure

Version : 2.0

Public usage

Introduction

YGGY is a range of medium-sized general-purpose robot platforms.

Developed by ip sum tek, they meet application requirements for service robots and light robots for industry.

Such as robots for reception, logistics, store guides or even robots for the home.

YGGY robots are fully autonomous AMR vehicles:

Their goal is to go from point A to point B, safely avoiding all obstacles on the calculated path.

When the battery level is low, they decide on their own to go to the docking station to recharge.

YGGY robots are equipped with a complete navigation/localization system using several sensors to safely navigate in their environment.

Highlights

The range of YGGY robots stand out with capabilities or functions not found on other platforms:

A really cost-effective product

YGGY bases are professional quality vehicles designed to be simple and efficient without unnecessary features. Just pay what you need.

Easy to maintain

Most sub-parts and robotic components can be changed in less than 2 minutes.

This maintenance carried out easily by the customer himself allows a continuity of service and a lowest cost of maintenance.

Robust localization

Equipped with our Jack Slam© indoor localization.

This technology localizes with a single camera turned toward ceiling and upper parts of walls to reliably localize even if the environment has changed.

The robot is also able to localize with its LIDAR.

This dual localization system is unique in the robotics world. It achieves a high level of robustness.

Highly customizable

A need a for vehicle larger, smaller or with different functions?

Our robotic engineers can quickly customize any platform because we get a wide range of ready-to-use robotic components (already developed and largely tested and reliable).

You can also build a robot to your requirements because we provide the robotic components alone and ready to use.

Differences between robots of the range



The 3 bases named YGGY 320, YGGY 420 and YGGY 500 get the same functionalities: Localization, navigation, obstacles avoidance and automatic return to their charging station. They differ only by the size, the power, the payload accepted and the battery capacity.

Common specifications

Drive	Differential drive (2 motorized wheels)
Height from ground	204 mm
Height from ground including	233 mm
Sensors	LIDAR, RGBD camera, ultrasonic sensors, anti-tilts, RGB cam.
Noise	Totally fanless. Silent operation
Temperature Range	0°C to +50°C
Max. Slope	Max 8%
Motors	Brushless 60W/24VDC. Max torque 6 Nm
Voltage	24V Industry standard
Maintenance	Major components can be changed in less than 2mn
Charging station	Automatic return when batteries are low
Battery type	LiFePo4 / 24VDC (not explosive technology)
Battery charge	Full charge in less than 2 hours
Interface	Ethernet. Simple commands
Emergency stop	Direct action on motors (Safe Emergency Stop)
Tele operation	Joystick. Typical range 1km.
TOP design sensors	Up to 6 ultrasonic sensors in the TOP design

YGGY 320 is a small, low cost and versatile base for light payloads.

It has large wheels of 180mm and is more destined for cramped or crowded environments.

Dedicated specifications of YGGY 320:

Width	320 mm
Length	350 mm
Propulsion wheels	2 fixed wheels
Caster wheel	1
Wheel materials	PU
Propulsion wheel diameter	180 mm
Caster wheel diameter	75 mm
Max speed	1 m/s
Batteries	180 Wh fixed
Max TOP payload weight	15 Kg
Number of ultrasonic sensors	4
Number of anti-tilt sensors	5

YGGY 420 is a “classic” round base for medium payload.
Its intermediate size will fit the vast majority of applications.

Dedicated specifications of YGGY 420:

Diameter	420 mm
Propulsion wheels	2 wheels on suspension
Caster wheel	4
Wheel materials	Propulsion wheels: rubber. Caster: PU
Propulsion wheel diameter	130 mm
Caster wheel diameter	75 mm
Max speed	0.8 m/s
Batteries	360 Wh. Removable
Max TOP payload weight	40 Kg
Number of ultrasonic sensors	4
Number of anti-tilt sensors	6

YGGY 500 is a strong base for heavy payload and with a huge autonomy.
Very stable vehicle for the most demanding applications.

Dedicated specifications of YGGY 500:

Dimensions	500 mm x 500 mm
Propulsion wheels	2 wheels on suspension
Caster wheel	4
Wheel materials	Propulsion wheels: rubber. Caster: PU
Propulsion wheel diameter	130 mm
Caster wheel diameter	75 mm
Max speed	0.8 m/s
Batteries	580 Wh. Removable
Max TOP payload weight	60 Kg
Number of ultrasonic sensors	6
Number of anti-tilt sensors	8

Features and functions

YGGY robots are totally autonomous. They integrate many functions:

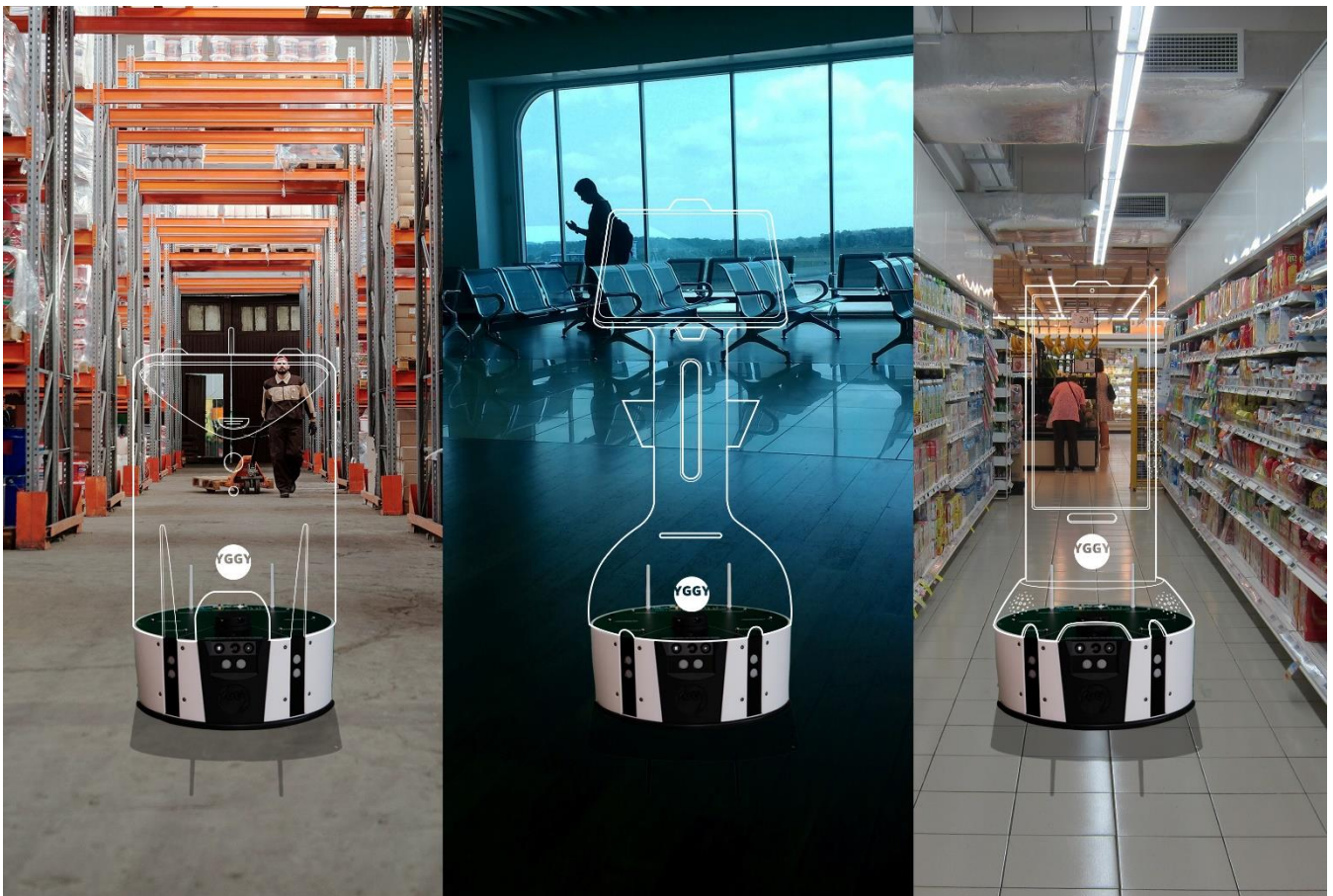
- *Built-in indoor localization*
- *Robust double localization system: LIDAR SLAM and Visual SLAM*
- *Localization with centimeters accuracy*
- *Embedded full navigation system with obstacles avoidance*
- *The map of the environment is generated automatically or manually (via tele operation)*
- *Map shared among a fleet of robots*
- *Independent suspension wheel system (except YGGY 320 which is 3 wheels robot)*
- *Works in no Wi-Fi zone without loss of functionalities*
- *Multi sensors to detect accurately and reliably all obstacles*
- *Anti-tilt sensors to prevent falling in stairs*
- *Accept any kind of TOP-client computer / OS*
- *3D camera and LIDAR for obstacles detection and map construction*
- *Performant and highly sensitive ultrasonic sensors*
- *Tunable sensitivity of ultrasonic sensors according to security wished*
- *Up to 6 extra ultrasonic sensors can be mounted in the TOP-client design*
- *Automatic return to charging station when battery is low*
- *Removable batteries permit to run the vehicle 24H a day (except YGGY 320)*
- *24VDC Industry standard*
- *Easy to interface. Simple commands. ROS2 interface*
- *Rich connector for TOP-client usage: Power, Wi-Fi and ethernet*
- *Fast emergency stop with a direct action on motors.*
- *Forbidden and low speed zones can be defined*
- *Tele operation*
- *Tag detector*
- *Follow a person (optional)*
- *Person skeleton detection (optional)*

Application sectors

YGGY platforms can be used in many cases and many sectors:

- *General industry. Logistics and assembly plants (for light loads).*
- *Public places (hospitals, museums, airports, ...).*
- *Supermarkets and Retail stores.*
- *Offices.*
- *Security.*
- *Private houses.*
- *Research Labs.*
- *Retirement homes.*
- *Exhibitions and shows.*
- *Hotels and Restaurants.*
- *Farms and greenhouses*
- *Medical*

TOP part design



YGGY are reliable and perfectly operational vehicles to go, safely, from point A to point B. But it remains to build the application part that goes above this vehicle: The TOP.

The TOP is the physical payload, fixed above the YGGY base.

It expresses your know-how and your business knowledge.

The TOP is dedicated to your specific application and is equipped with its own computer running your application program.

Once you have connected the different interfaces to communicate with the vehicle, you can tell the robot to go to a destination point of the map...

Your robot will go this point avoiding safely all obstacles.

The YGGY range can acts as an OEM: The brand will not appear and you have a complete robot with your own trade-mark.

Throughout the integration step, ip sum tek engineers provide you with the support you need.

Video

Here is a video demonstrating the YGGY range capabilities:

<https://www.youtube.com/watch?v=MpNYOvll61Q>