



Navigation System for AGV's

You build it. We move it.

Our system empowers AGV manufacturers to focus on designing and building their vehicles, while providing the intelligence to navigate, operate, and coordinate autonomously.

Whether managing a single vehicle or a full fleet, you get a reliable, flexible, and future ready solution that integrates smoothly into your plant.



**Positioning
accuracy**

Down to ± 1 mm, even in
demanding applications



**Modular
architecture**

Configure what you need,
expand when required



**Seamless
integration**

Easily connect with PLCs
and factory systems

ONE PLATFORM, MULTIPLE NAVIGATION TECHNOLOGIES

Design your AGV without constraints.

Inertial guidance

Precision and stability

- Odometry combined with gyroscope and magnetic references
- Position correction along the path
- Accuracy up to ± 1 mm
- Suitable for indoor and outdoor applications

GPS navigation

Reliable positioning for outdoor applications

- High-precision positioning using RTK correction
- Designed for large outdoor environments
- No physical infrastructure required
- Ideal for agriculture, logistics yards, and industrial outdoor operations

Laser navigation

Flexible and easy to adapt

- Based on reflector triangulation
- Ideal for structured indoor environments
- Easy layout modifications

Natural navigation (SLAM)

Maximum flexibility, minimal infrastructure

- No physical references required
- Adapts to dynamic environments
- Ideal when layouts frequently change

There is no one-size-fits-all solution, the right technology depends on your plant. Robox enables you to select, or combine, the most suitable technology for your application.

Hardware



RP-2 Motion Controller

The core of the system
Controls:

- Traction and steering
- Onboard devices
- Real-time navigation



RIG-8 Hand-held Device

- Manual vehicle control
- Commissioning support
- On-site diagnostics



I/O Modular system

- Scalable architecture
- Full integration with sensors and plant
- Flexible configuration



SSCU/1/AX Safety PLC

Safety is an integral part of the system.

- Management of scanners and sensors
- Dynamic control of safety areas
- Protection of operators and equipment

Designed to meet industrial safety requirements without compromising performance



Safety AGVs

AGV Handler (on-board software)

This software runs on any Robox motion controller and is divided into two parts:

Navigation control
(traction and steering axes)

Auxiliary axes (forks, conveyors, etc) and
functions control written in R3 C++/OB



AGV Manager

Control your fleet efficiently and safely, without complexity. AGV Manager is designed to let you focus on building your vehicles, while it handles the fleet control, navigation, and communication.



Route optimization

Automatically calculates the best path and orientation for each vehicle, as defined in the plant map, reducing downtime and minimizing errors.



Multi-AGV coordination

Automatically manages collision avoidance, vehicle priorities, and optimal paths based on plant layout and AGV orientation.



Seamless integration

Connect with your existing PLCs (RS232, OPC, Ethernet, Siemens S7), databases (SQL, MySQL, PostgreSQL, ODBC) basically to any L2 software. Communicate via Wi-Fi or radio modem.



Flexible and customizable

Built-in development environment allows you to define AGV movements and operations without external compilers (using just a script). Add custom panel windows to adapt the system to unique plant requirements.



Centralized control, simplified setup

Manage all vehicles from a single interface directly on your pc. Streamline commissioning and configuration, complete log of all the operations, saving time and resources.



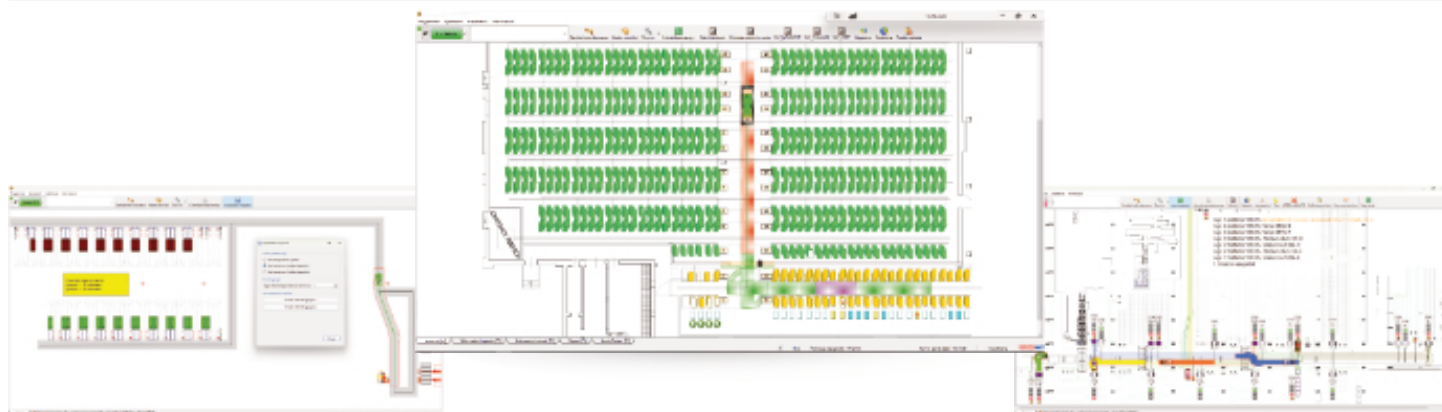
Digital twin for simulation

Plant logic simulation behavior and determine the optimal number of AGVs required before deployment.

**VDA
5050**

VDA 5050 compatibility

Enables interoperability with AGV fleets and systems based on the VDA 5050 standard.



Software



RAT | Robox AGV Tool

Design, simulate, and optimize AGV paths with ease.

RAT is a 2D CAD that helps AGV manufacturers plan and validate vehicle operations before deployment.



Complete path design

Import plant and vehicle layouts in DXF format and define:

- Paths and speeds
- Crosses and turning radii
- Load/unload station positions
- Start points and allowed directions



Realistic simulation

Test vehicle behavior in a virtual environment to check:

- Path clearance
- Mission timing
- Traffic management



Optimize plant efficiency

Evaluate routes and timings before installation to reduce errors and maximize productivity.



Cross-Platform Flexibility

Works on Windows, Mac, and Linux, making it easy to integrate into your engineering workflow.

Experience you can trust

Robox has enabled AGV manufacturers to deliver precise, reliable, and adaptable vehicles. Our modules and software are designed for builders, letting your machines perform safely and efficiently in any environment.

30+

Years of
experience in
AGV systems

Up to 10

Different
kinematics AGV

Up to 32

Axes available
on each Robox
AGV

700+

AGV running with
Robox system

Robox S.p.A - motion Control

Via Sempione 82 - 28053, Castelletto Sopra Ticino (NO) Italy.
tel. +39 0331 922086 - e-mail: info@robox.it - www.robox.it

