



**SEEGRID**  
CORPORATION

*Robot-powered ROI*



*Robot-powered ROI for Material Handling*

## **Seegrid G Series Industrial Mobile Robots**

General Purpose Transport Robots

Seegrid ([www.seegrid.com](http://www.seegrid.com)) brings a new class of affordable industrial mobile robots to the material handling industry that operate reliably and safely in dynamic warehouse, distribution and manufacturing environments. Seegrid G Series General Purpose Transport robots allow you to move pallets and other materials without wire guides, magnets or lasers. They are designed to free up your skilled employees by taking care of such tasks as delivering palletized materials, pulling carts, and positioning supplies in tight areas. The GT3 tugs carts up to 3,000 lbs. The GP8 transports and drops pallet loads up to 8,000 lbs.

## Benefits

### Reduce labor costs

In the material handling industry, labor issues are becoming more acute. Workers are becoming highly skilled and harder to come by. Keeping these skilled workers tied down with non value added transport tasks is an expensive use of employee hours. Seegrid's G Series robots significantly reduce labor costs by automating these tasks.

### Gain flexibility

The G Series enables step-change automation alongside existing work and easily handles additions or changes to work processes. Because the G Series robots possess a simple-to-use, advanced vision-based navigation system, they require no facility modification and can be re-tasked at anytime. Move inbound goods in the morning, move parts to manufacturing or packing in the afternoon, and deliver finished products on pallets during the night shift. Seegrid's mobile robots are dual-use; they can be used for automatic transport or in manual mode as a regular-powered piece of equipment.

### Automate with low cost of ownership

Step change your automation and processes at your own pace. The affordable G Series robots offer rapid payback with one robot. Introduce additional robots to scale cost savings.

### Implement and maintain easily

Traditional automation solutions often burden facilities with new installation and operational requirements. The G Series features WalkThroughThenWork™ set-up and is ready for operation in minutes. An operator trains a machine by walking it and its load through the delivery path while the onboard Seegrid vision system records the path just traveled. It's that easy! Seegrid G Series robots use your in-place battery changing and charging infrastructure, and are field serviced and maintained by one of Seegrid's authorized distributors.

## Features

- Robust, flexible paths. Store up to 15 miles of delivery paths and unlimited unique paths. Paths can be in different areas of one facility or in different facilities. Learned paths can be backed up off-board using handheld USB devices.
- Safe. Obstruction sensors and tightly controlled speed and steering reduce potential for costly collisions. Auditory and visual cues alert workers prior to and during movement.
- Programmable behaviors. Behaviors such as pauses and horn beeps can be inserted in paths.
- Seamless switching between manual and automatic driving.
- Reliable. The G Series robots know their location within transit localization to 50mm (2 inches) or better.
- Swappable components. Defective components can be quickly swapped out by operators or service agents.



*“The GT3 is constantly traveling along its designated route, driving productivity and freeing up our employees to perform other more valuable work. After utilizing the GT3 for a number of weeks we were able to determine that the ROI on the GT3 was exceptional.”*

**Gary Siefert** Vice President Customer Service, GENCO Supply Chain Solutions

# Applications

## G Series in Distribution

### G Series GT3 Tugger

#### Transport movement of goods

Faster than forked equipment in moving and repositioning goods throughout the distribution center. Move larger volumes of goods on trains or trailers instead of one pallet/ one forklift truck/ one operator.



#### Re-warehousing of goods

Perfect for large distribution centers which require long transport runs.

### G Series GP8 Pallet Truck

#### Transport palletized goods

Vast majority of goods in distribution centers move on pallets.



#### Operator load - GP8 delivers and returns

Operator positions GP8 fork on pallets, instructs GP8 which moves to assigned location, and then automatically drops pallets and returns to the original start (or another pre-assigned location) ready for more work.

#### Re-warehousing of palletized goods

Perfect for large distribution centers which require long transport runs.

## G Series in Manufacturing

### G Series GT3 Tugger

#### JIT parts or materials to the manufacturing line

Replaces traditional AGV equipment without the need for wire guides, tape or laser-guided technology.

Significant cost reductions in eliminating this extra hardware and associated maintenance.

#### Finished goods from the line

Flexibility; adapts immediately to plant layout, work process changes, work shifts, and buildings with complete freedom to test routing alternatives.

#### Removal of waste materials from the line

Trains of trailers allow the GT3 to move greater quantities of material in one physical movement.

Reduces wear and tear on specialized and expensive forked equipment.

Increases labor productivity; eliminates non-productive transport work by allowing labor to focus on value-added activities.

### G Series GP8 Pallet Truck

#### Moving long-haul palletized material

8,000 lb. capacity motorized pallet truck comes in both single and double fork configurations.



# G Series Safety Features

## Manual Mode

G Series robots can operate in manual mode where the human operator has complete control over the robot to complete the assigned work. The robot only starts in manual mode. The operator has the choice of continuing in manual mode or switching to auto mode.

## Auto Mode

In auto mode the system takes over and controls the movement and safety functions of the robot. In this mode an operator can manually maneuver and train the robot on the desired travel path then place the robot in a location to initiate the travel task (WalkThroughThenWork™).



## Hardware

### MicroLogix PLC

Rockwell Automation's MicroLogix PLC is integrated into the robot's hardware to control and monitor power and hardware components such as the SICK proximity sensor, the contact bumper and the emergency stop function. The PLC immediately stops the robot and shuts down the motor if the SICK proximity sensor, contact bumper or emergency stop function are engaged.

### SICK Unit

The SICK unit is an industrial-strength, CE-rated, field-tested laser sensor with a customer-defined detection envelope that creates both warning and full stop zones as the robot approaches an obstacle. The robot slows down in the warning zone as it nears the obstacle. It comes to a complete halt in the stop zone if the obstacle remains in its path. The length of the zones depends on the customer's target speed and load/weight capacity. Once the obstacle is cleared, the robot automatically resumes along its designated path.

### Contact Bumper

The contact bumper and emergency stop button are hard wired to the PLC. If either comes in contact with an obstacle, the PLC will immediately shut off the motor and hard stop the robot. Human intervention is required to restart the robot.

### Emergency Stop Button

The emergency stop button is also hard wired to the PLC. If an operator presses it, the PLC immediately shuts down the robot. Human intervention is again required to restart the robot to resume its journey.

## Software

When the robot is turned on, the system performs a diagnostic test of the camera hardware, motors and odometry. If the system detects an error, a message is shown on the display unit and the robot works only under manual control. In this condition, human intervention is required. The robot provides diagnostics with instructions on how to correct the problem.

The robot has a watchdog feature that monitors its performance of its internal software. For example if the robot takes too long to perform a task, the watchdog displays the error, cuts power to the motors and restarts the main software. The robot can also determine if its hardware components (SICK unit, bumper, etc.) are improperly connected or wired. In this case, the error is displayed and the robot can only be used in manual mode until the problem is resolved. The robot monitors the accuracy of its route on a designated path using internal rules. If it strays too far off path and breaks the rule, it stops.

## Seeing is Believing!

Request a demo today to learn how you can benefit from robot-powered ROI.

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## About Seegrid Corporation

Seegrid industrial mobile robots sense, move, analyze, interact... and repeat to automate your everyday material handling tasks. Seegrid's G Series products are available for sale through authorized Seegrid distributors and resellers and through Seegrid's national account sales program.