

NIKC

PROXAUT
Handling and Transport Automations



SOLUTIONS <<<

IN MOTION





The **AGVs** are automatic vehicles designed for the movement of goods and products inside and outside of an establishment by managing the flow. This saves time, energy and space in the logistics business becoming a key factor to give (a competitive edge) competitiveness at the society, significantly reducing costs and increasing efficiency. The choice of including an automatic system of this type is proven to be the best investment over time. The **AGVs** are now integrated in the production process and take care of the transport and transfer of products as well as storage. The return on the investment, generally estimated in 2 or 3 years from the financial point of view,

is immediate in terms of efficiency, safety and integrity of the product. The interaction of the **AGV** with the production system provides a wealth of information of great value both for tracking, now an essential requirement of the market, and as a management tool to define plans and project of development. In addition to the normal functions of supervision and control, the **AGVs** do not require the presence of operators, responding to the needs of safety and reliability typical of environments where vehicles move in close contact with the staff and with the machines.

MAXIMUM RELIABILITY MINIMUM COST



PROXAUT is able to produce a wide range of vehicles capable to fulfill your needs. All vehicles are designed and built for ease of use, coupled with a flexibility unmatched by any other system of traditional transport. The **AGVs** are perfectly integrated into the customer company, with the ability to adapt to any changes to routes and functionalities of the factory layout and operating procedures. They are also an integral part

of Proxaut's management system that thanks to proprietary software, connects all productive sector with logistics. **PROXAUT** offers an open system that can evolve without impacting on the structures, systems and computer equipment of the customer; everything comes from a thirty years experience in the automation industry.

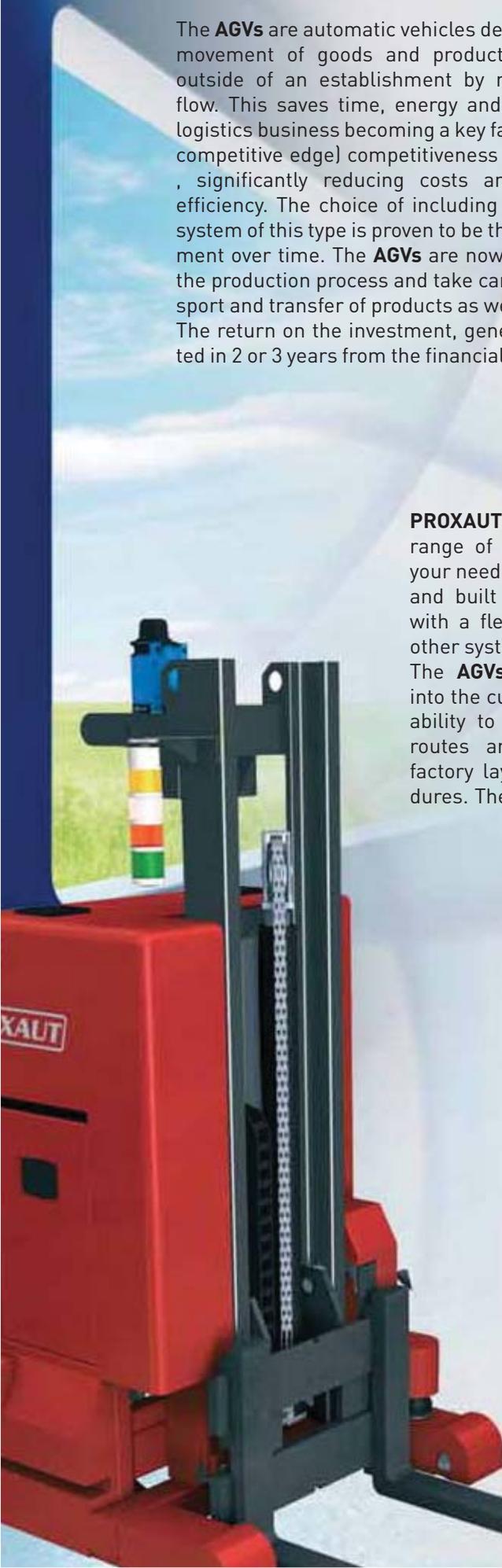
SAFETY AND COMPLETE AUTONOMY OF THE SYSTEMS



The **AGVs** do not require any attendance from operators, except for an overview of the system. They can go through variable tracks optimized by the general control and management system developed by **PROXAUT**, which collects and processes all information concerning the status of the **AGV**, load units to be handled, and requests for intervention in the production system. The **PROXAUT** system is programmable. This allows to support changes, sometimes even radical, of the missions to handle. All vehicles are controlled by **PROXAUT** software, making management, data tracking and diagnostics simple.

In addition to reducing costs, the absence of operators helps to make the working environment safer. This prevents accidents caused by fatigue, human error and reduced space for maneuver. The **AGV** systems, being completely self-sufficient, can operate 24 hours a day, regardless of shifts, stops and timetables.

No operators, no losses and no risks.



Thanks to the know-how matured, PROXAUT has decided to operate autonomously and develop entirely the software and technology.

DRIVING TECHNOLOGIES

PROXAUT has a long experience in logistic sector. Over time we have developed different technologies of navigation, today all extensively tested and reliable. Despite technological progress has allowed us to arrive to very sophisticated technological choices for navigating, the first technologies are still very valid alternatives which are used in specific critical condi-

tions of operation. In fact, the inductive navigation system is still in use today. The most modern technologies instead allow us to decrease the hardware components, delivering to the customer installations that are less "pushy" and more flexible. In this category fit the "laser" and the "inertial" navigation.

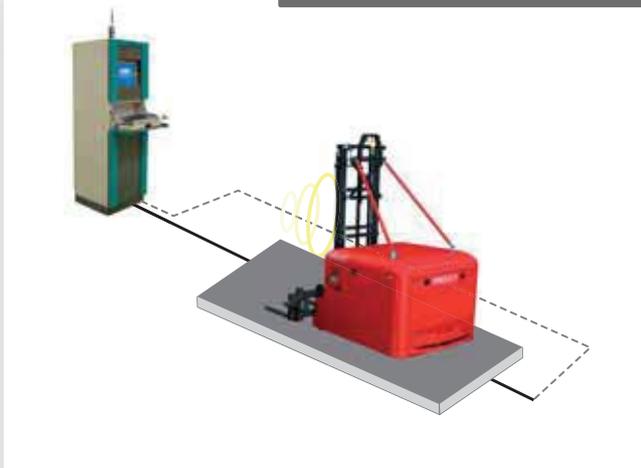
Many argue that inductive guided vehicles are by now outdated. This could only be true if we consider systems that are not evolved. **PROXAUT** uses in their AGVs a technology which delivers a performance that can be complementary to that of laser. In all those situations, for example, where the laser is unable to operate due to problems such as high humidity, low

temperature and outdoors applications, our system allows to overcome these limitations maintaining the same accuracy and speed of execution.

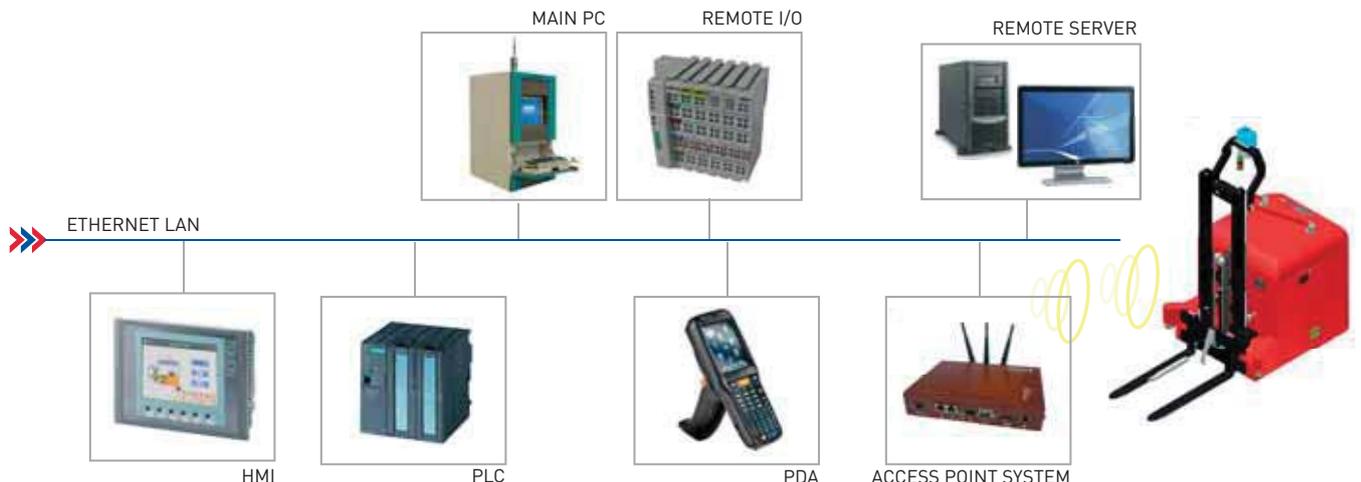
The working principle of this system is based on the principle that an electric wire through which passes a variable current creates an electromagnetic field around itself. This field is strongest in the vicinity of the wire and decreases with increasing distance from it. If you plunge into this field a coil, the two coil endings will have a voltage that is proportional to the intensity of the field. The guide sensor contains two solenoid coils. When the sensor is perfectly centered on the wire, the tension of the coils is identical and the guidance system will not operate corrections; conversely, if the sensor is moved to one side of the wire, one coil will have a voltage greater than the other. This difference in voltage generates a signal that is sent to the onboard computer that will take appropriate corrections to bring the coils back into balance.

You can insert in the floor many wires crossed by electrical signals of different frequencies thereby physically obtaining different paths. In this way, the on-board computer, by applying signal filters, can distinguish them and dynamically change the trajectories.

INDUCTIVE GUIDE SYSTEM



SYSTEM ARCHITECTURE



LASER GUIDE SYSTEM



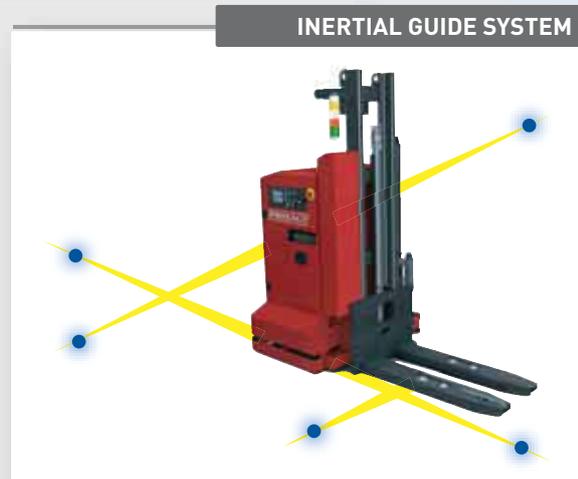
The laser guide system reduces start-up time of an installation compared to the other types of guides as being an absolute system, the drafting of the paths is done in our engineering departments directly on the final layout. The heart of the system is based on the on-board computer of the vehicle and its control software expressly developed by us, which are able to handle various instruments including the laser scanner. The laser scanner provides the X and Y coordinates and the direction in which you are moving the vehicle, constantly sending the coordinates to the onboard computer. During handling operations of AGV, the scanner detects the fixed reflectors and provides the system its position. This guide system allows for changes and extensions of the paths, with extreme simplicity.

INERTIAL GUIDE SYSTEM



The inertial guide system works on the odometer principle with correction of trajectories; passive markers are installed in the floor at a defined distance on the path of the vehicle, validating the positioning of the vehicle on its route, and they permit for the corrections of trajectory. With this system you can define complex and intersected paths. In general the cost of the installation of a system with this type of guide is lower than that of inductive or laser, but despite of being equally reliable, it hardly reaches the performance in terms of precision and speed of the other two systems. To overcome this intrinsic limit on our vehicles, we install other last generation devices, such as those used to measure the distance traveled and the ones to set the angle of rotation of the steering to make the curves. All this constitutes an

efficient system that allows to drive an AGV only with the help of small magnets inserted in the floor and whose impact on the installation is minimized.



All these guide systems can be integrated with each other. The vehicle will use the most appropriate system, according to the position in which it is located on its path.



SOFTWARE DI SUPERVISIONE

The supervision program is created specifically for the customer.

The task of the supervision program is to detect all the significant events (presences of pallets on conveyors, palletizers, requests for empty pallets from production machines) and thereby generate the individual orders of handling.

This program communicates with the AgvX to know the status of the AGVs inside the installation.

From the graphical interface, you can get all the information relating to pallets present on the machines, on AGVs and in the warehouse that allows to:

- Easy research for material and its location
- Reduction of errors
- Management of loading/unloading activities



SOFTWARE FOR TRAFFIC MANAGEMENT (AgvX)



AgvX assigns missions to the AGVs, depending on their location and status, it manages the choice of route, traffic, priorities, execution of commands for loading/unloading and activation/-deactivation of safeties in the various phases of work .

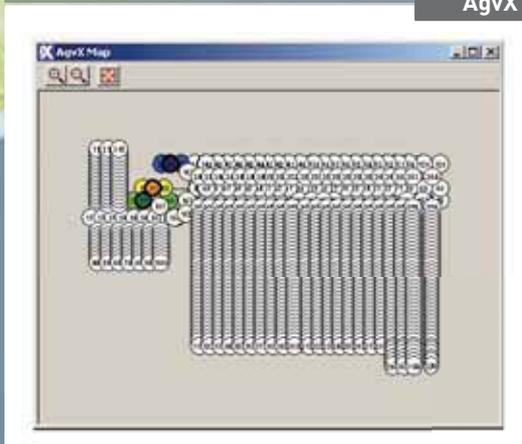
It has a console to which it sends a lot of information that permits an accurate diagnosis of any problems present in the system, the user can issue commands through the console to query the system about all the inside information.

AgvX uses a series of algorithms operating on a generic data structure that stores the nodes and branches of the installation.

AgvX



AgvX



With AgvX you can also check in real-time all movements of the AGV and see their status (loaded or unloaded).

AgvX



AgvX is able to handle any type of system, regardless of the quantity of nodes, their arrangement and the amount of AGVs. The software does not require any ad-hoc modification, but only by changing its configuration files, easily done by a specific graphics editor (Paths Editor).

The number of AGVs is a simple parameter of the software and this allows to manage an unlimited number without any change of code.

VARIOUS INSTALLATIONS



HOW TO REACH US



Our GPS coordinates:
44° 32' 47" N
11° 03' 34" E

NKCC

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