



EDiRO

Robotics
Technologies





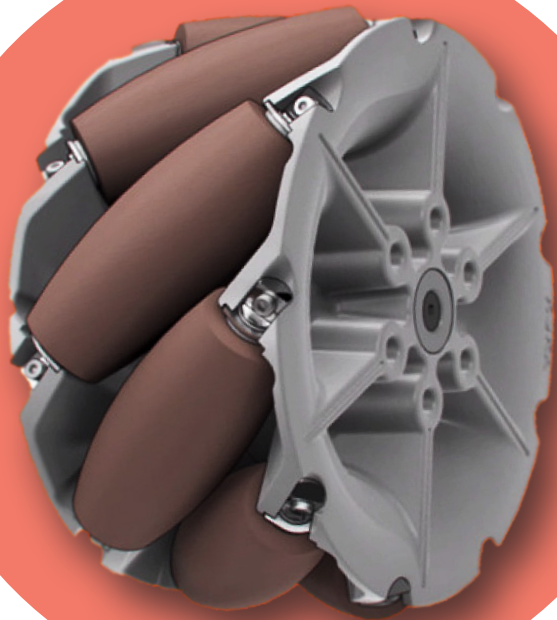
AUTONOMOUS



TRANSPORT

PLATFOM





In order to transport materials flexibly and smoothly in a tight plant environment, an omni-directional mobile robot based on four Mecanum wheels was designed.

EDiRo Autonomous Transport Platform (ATP) is an omnidirectional, mobile platform that navigates autonomously and flexibly.

Combined with our controller, it provides modular, versatile and above all mobile production concepts for the industry of the future.

SOLUTION FOR A FLEXIBLE PRODUCTION PROCESS

EDiRo ATP is our answer to the increasing demand of production departments for shorter response times and greater flexibility in their manufacturing concepts. Predefined routes and rigid processes are a thing of the past in the factory of the future. This is why EDiRo develops intelligent, autonomous vehicles that supply materials to robots and machines with perfect timing.

EDiRo ATP is an autonomously controlled platform that integrates seamlessly into the production process. The vehicle is also excellently suited to the matrix body shop. It independently and autonomously handles the transport of the products through all process steps.

This production concept enables you to optimize your logistics management. EDiRo ATP provides cost-effective support for your warehouse organization or between manufacturing processes – and is used only as needed.

ATP MAIN TECHNICAL CHARACTERISTICS:

WORKING DURATION	8 HOURS
MAX SPEED	1,38 M/SEC
MAX LOAD CAPACITY	500 KG
MASS	240 KG
CHARGING TIME	4-6 HOURS
NUMBER OF ROUTES	UNLIMITED
LOADING PLATFORM SIZE	1200 x 800 mm
DIMENSIONS (L x W x H)	1450 x 910 x 400 mm



EDiRo ATP TECHNOLOGY

The ATP drive technology is based on the Omni wheel and gives your vehicle unlimited maneuverability. EDiRo platform with omnidirectional drive can move in any direction from a standing start, achieving full freedom of movement in 360 degrees.

The omnidirectional wheel technology allows the vehicle to move in any direction. The wheel consists of two rims and nine free-running rollers, which are mounted at a 45-degree angle. The wheels move independently of each other, which means that the vehicle can move not only forwards and sideways, but also diagonally and in a circle. The entire wheel is driven by an electric motor.



OMNIWHEEL BASICS

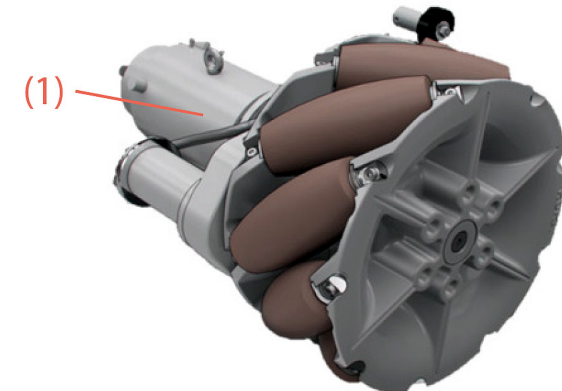
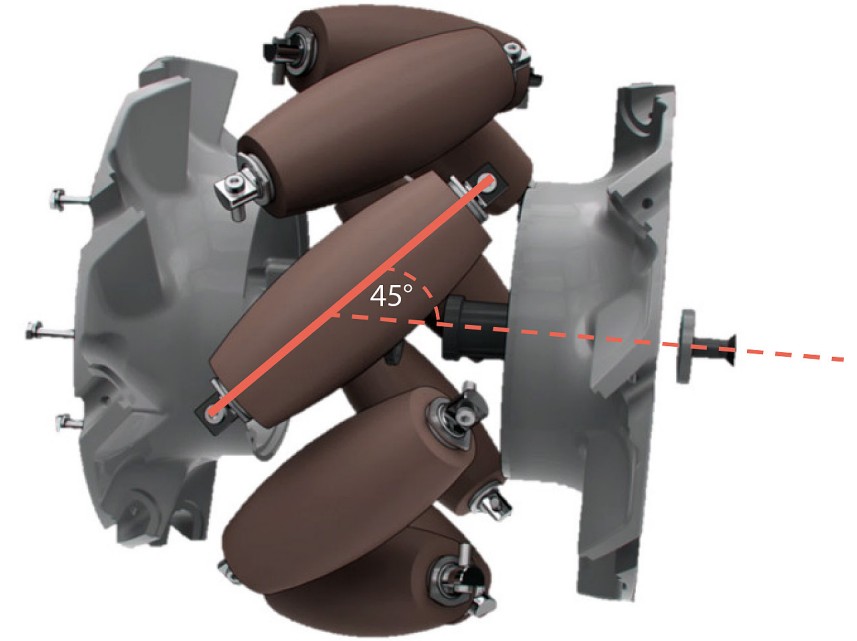
The OmniWheel consists of 2 rim disks and up to 9 rollers

Rollers are arranged at 45°

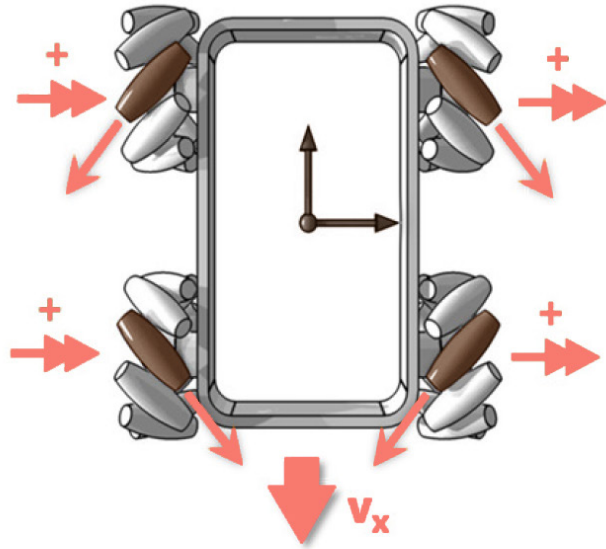
The complete wheel is propelled by an electrical motor (1)

Rollers are free-wheeling

Wheels are available in three sizes

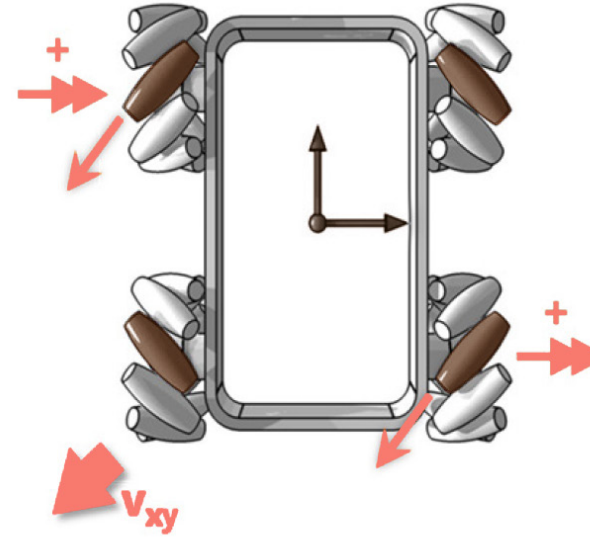


UNLIMITED MANEUVERABILITY



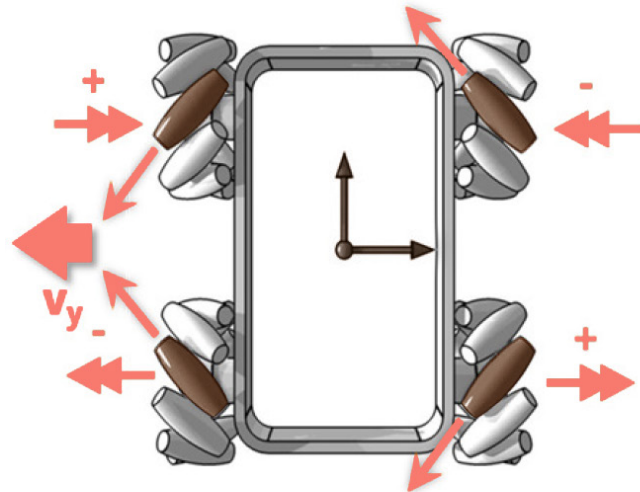
MOVING STRAIGHT AHEAD

All wheels move at the same speed and in the same direction.



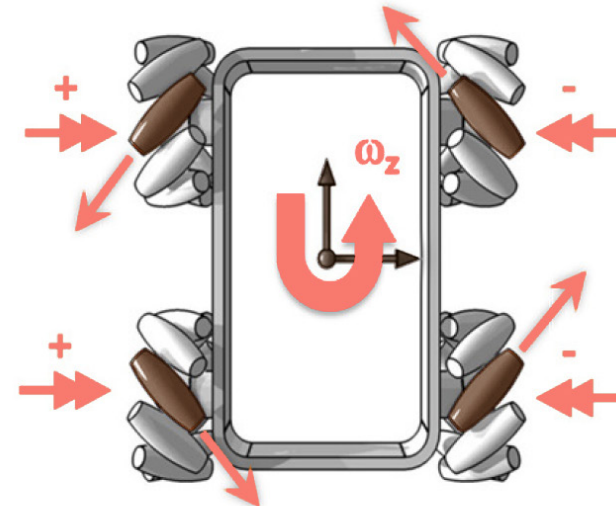
MOVING DIAGONALLY

Each pair of wheels across a diagonal moves at the same speed, while the two pairs move at different speeds; all wheels rotate in the same direction.



MOVING SIDeways

Each wheel moves in the opposite direction to the one next to it. All wheels move at the same speed.



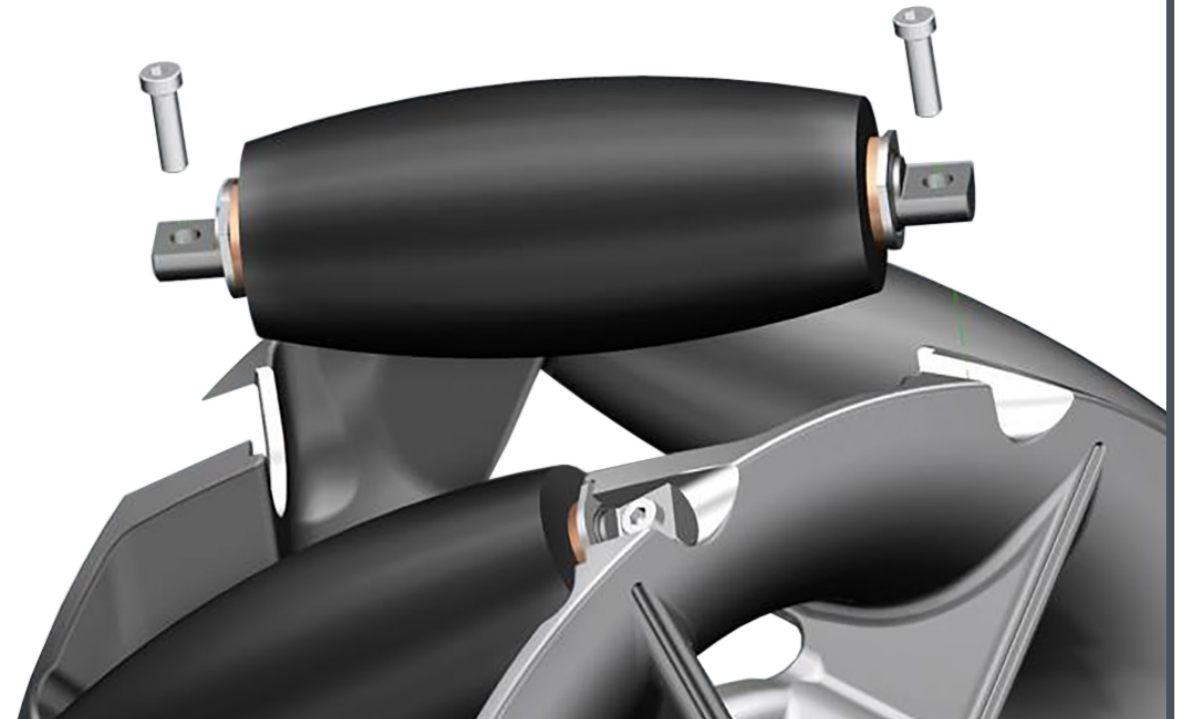
ROTATION

The two sides move at the same speed in opposite directions.

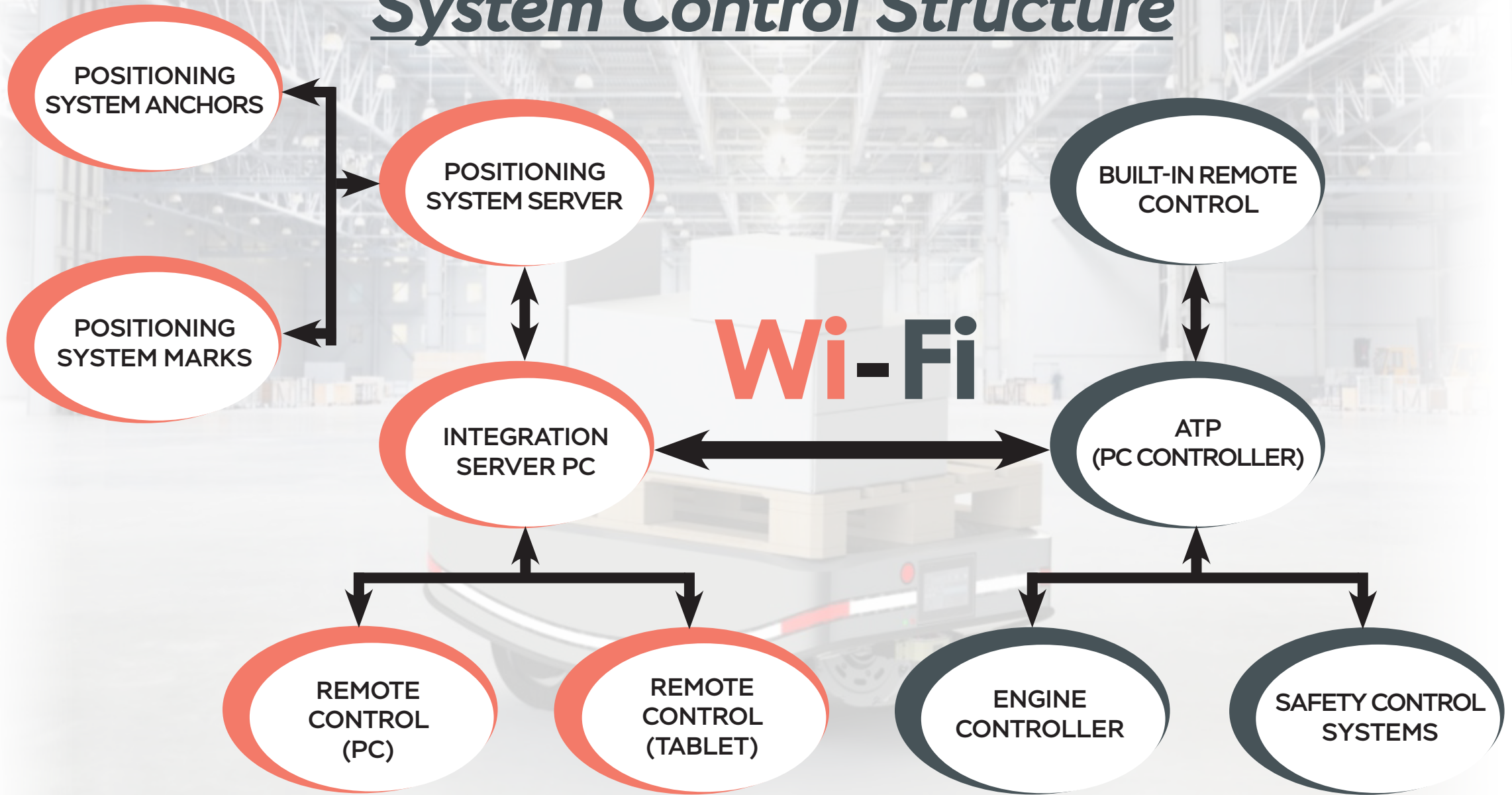
- **Space-saving technology and virtually unlimited movement possibilities.**
You save space for logistics and have more space for your production.
- **Lower construction and maintenance costs.**
APT Omni wheels do not require any floor work whatsoever, and they do not cause additional wear.
- **Highest precision.** *APT drive technology achieves an accuracy of up to +/- 5 cm.*
- **Made for quick installation and removal.**
APT design enables the individual rollers to be replaced directly on the vehicle in just a few minutes, without having to remove the entire wheel.

ADVANTAGES OF THE EDiRo

ATP TECHNOLOGY



System Control Structure

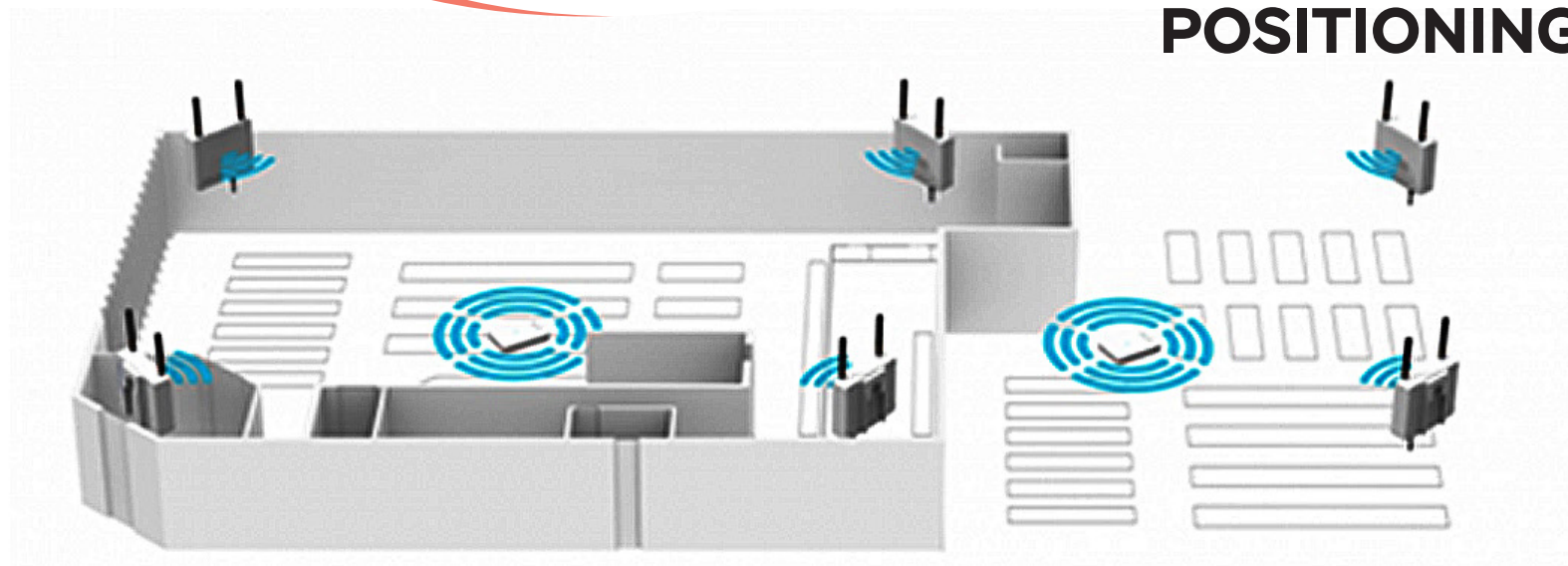




INDUSTRIAL Wi-Fi router



**POSITIONING
SYSTEM
anchor**



POSITIONING SYSTEM scheme



WORKING PRINCIPLES OF AUTONOMOUS TRANSPORT PLATFORM:

Principle №1 «Standard route»:

1

Initial state: ATP is at the parking space.

- You set ATP's motion trajectory around the workshop using Remote Control (RC), determine places and duration of the stops and parking places (charging).
- Using Remote Control, you starts the main program. ATP follows the route, making planned stops.
- In case if ATP is not on a parking space, it continues the route from a current place.

Principle №2 «Urgent task»:

2

Initial state: ATP follows the trajectory.

- You interrupt running trajectory and calls in ATP to a needed location point (using RC).
- ATP arrives at the needed location and fixes new/ additional task (using RC).
- You set up a command to continue standard route (using RC).

Principle №3. «Telecontrol»:

3

- Using RC you set ATP's motion regardless of route.
- You can set up working principle №1 or №2 starting from any place.



LAUNCHING PREREQUISITES:

- **Installation of industrial Wi-Fi routers under the roof and above the entrance.**
Local network installation and its power supply.
- **Installation of positioning system's anchors on the walls and under the workshop roof; *its power supply.***
- **Installation of charging station, *its connection to a local network and power.***
- **Installation of integration server, positioning system server, *its connection to a local network and power.***

SPECIFICATIONS & QUANTITY

Hardware:

• <i>Charging station</i>	<i>1</i>
• <i>Control center</i>	<i>3</i>
• <i>Industrial wireless router</i>	<i>4</i>
• <i>Positioning system equipment set</i>	<i>1</i>
• <i>Integration server</i>	<i>1</i>

Autonomous Transport Platform composites:

• <i>Loading platform</i>	<i>1</i>
• <i>The DC engine</i>	<i>4</i>
• <i>Reduction gear</i>	<i>4</i>
• <i>Omni wheel</i>	<i>4</i>
• <i>Suspension elements</i>	<i>4</i>
• <i>Industrial computer plug-in</i>	<i>1</i>
• <i>Engine controller</i>	<i>4</i>
• <i>Safety system components</i>	<i>1</i>
• <i>HMI control panel</i>	<i>1</i>
• <i>Lithium-iron phosphate battery</i>	<i>4</i>

BUSINESS STRATEGY:

in Russia and CIS

2019 500
ATPs

entering growing markets

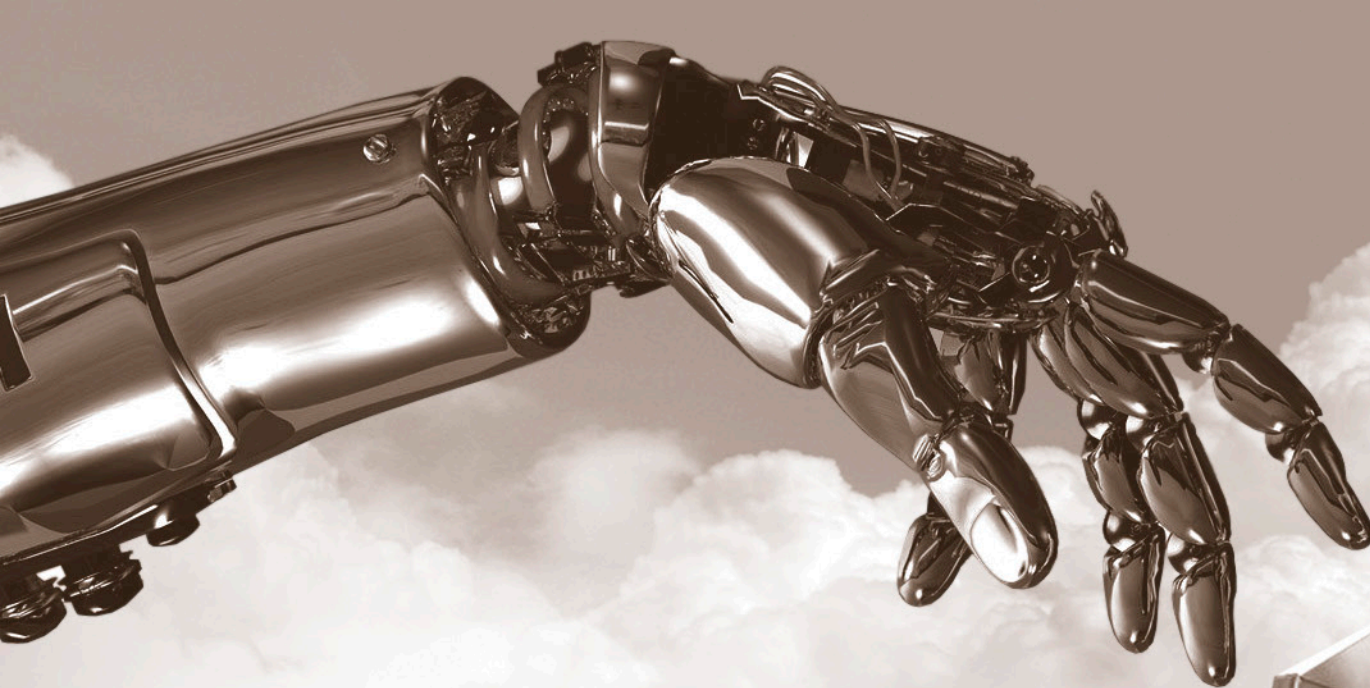
2020 1000
ATPs

entering growing markets

2021 2000
ATPs


entering global market


2023 2-3%
of robotics market



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