



AUTONOMOUS MOBILE ROBOT - AMR

INTRODUCING NOVUS CARRY

Your Comprehensive **AMRs** Series

Revolutionizing **Manufacturing & Warehousing** Logistics

INDUSTRIES



AUTOMOBILE



PHARMA



PAINT



CHEMICAL



FMCG



RETAIL



E-COM



3PL

2023



1000+ Robotic Automation Solutions



- Smart Warehousing with Major 3PL, E-Commerce
- Intralogistics Solutions for Solar, Cell & Battery

2022



- Autonomous Intralogistics for EV Maker
- AMR with 3D Navigation Technology

2021



5 Million+ Km Mobile Robot Travel

2020



Cloud Based Analytics



2019



- Autonomous forklift for Major FMCG Mobile Robot based
- Assembly lines for Major Automotive OEM
- Intralogistics Solution for Paint & Chemical Industry

2018



Autonomous Mobile Robot

Driverless Shuttle Auto Expo

Autonomous Bus



2016



- Autonomous Tank
- Autonomous Armoured Vehicle for Indian Defence

2015



- Computer Vision
- Autonomous Navigation research for DARPA & US DOD projects
- Carnegie Mellon University Research Team

2005

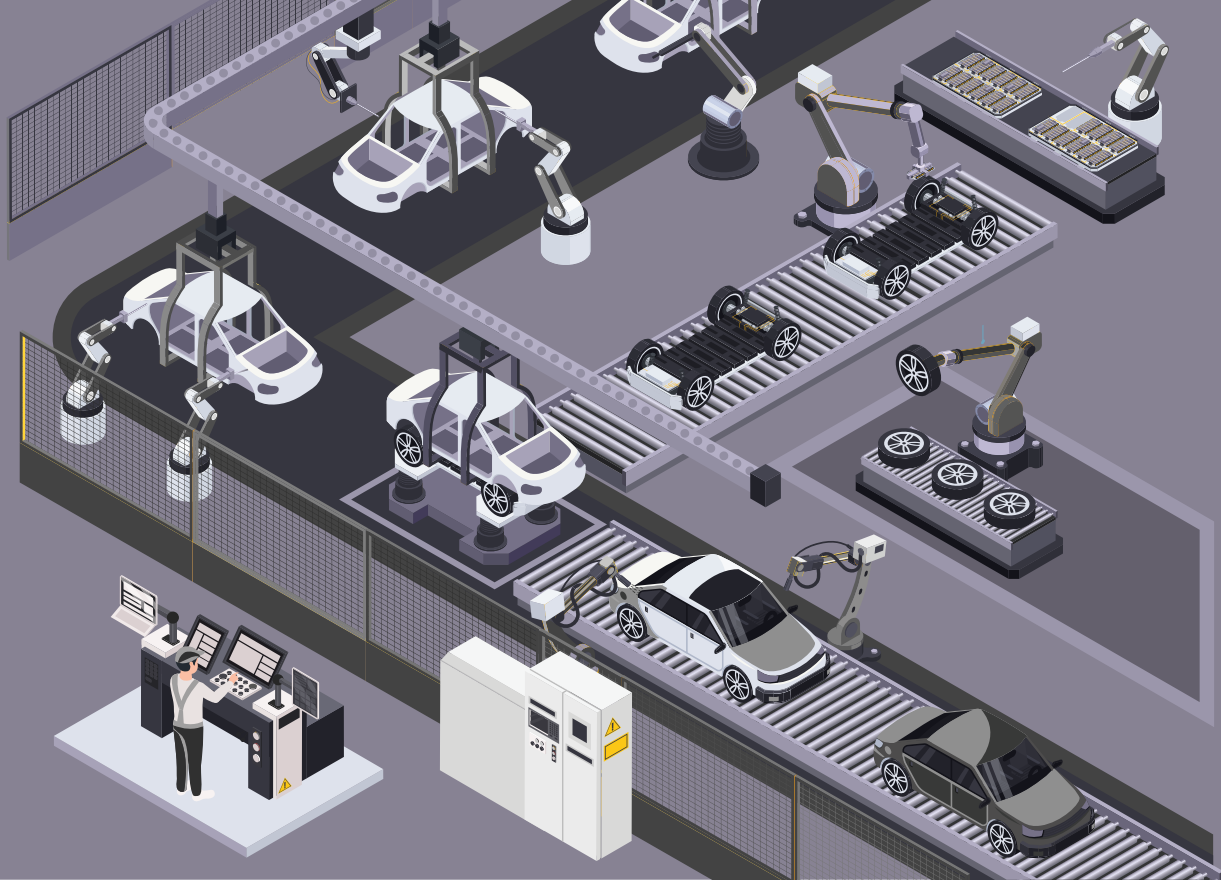




Novus Carry: Transforming Productivity, Efficiency, and Safety

Discover the future of streamlined material movement and fulfillment operations with Novus Carry - our exceptional series of Autonomous Mobile Robots (AMRs). Novus Carry is meticulously designed to redefine how industries manage strenuous and repetitive material movement tasks, ultimately optimizing efficiency and productivity within warehouses and factories

Introducing our NOVUS CARRY series of autonomous mobile robots, revolutionizing operational potential through intelligent payload transfers. Effortless to use and set up, it optimizes diverse workflows, leading to increased productivity and cost savings. Our AMR platform ensures uninterrupted workflows with automated docking for charging and customizable mapping. The modular design of Carry allows for versatile attachment deployment, accommodating a range of applications such as conveyors, lifer and tugging.

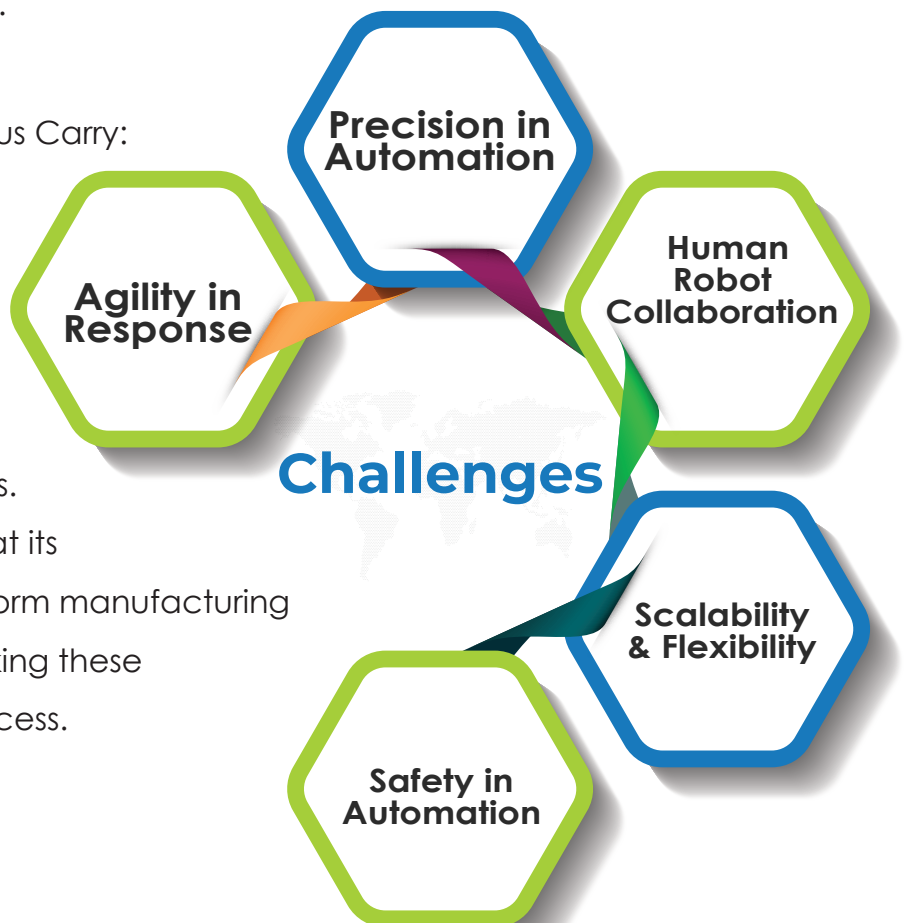


Unveiling the Hurdles of Today's Operations

The landscape of modern manufacturing and warehousing is evolving at an unprecedented pace. As the demand for efficiency and productivity escalates, so do the challenges that manufacturers and logistics experts face. In order to pave the way for the future, we must first confront these obstacles head-on.

Overcoming Challenges with Novus Carry:
Addressing Today's Hurdles with
Tomorrow's Solutions

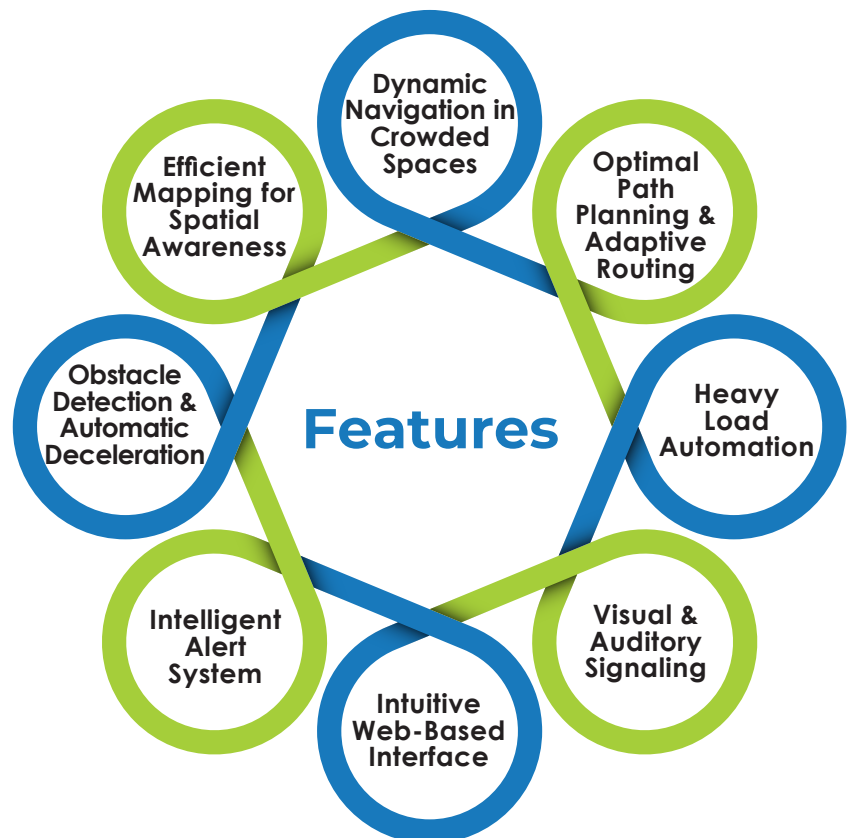
Novus Carry, our premier AMR series, is designed with a deep understanding of these challenges. With agility, precision, and safety at its core, Novus Carry is here to transform manufacturing and warehousing operations, making these challenges stepping stones to success.





Explore the NOVUS CARRY : Redefining Autonomous Mobility

Dive into the exceptional features that define Novus Carry, our flagship Autonomous Mobile Robot (AMR) series. Novus Carry is engineered to revolutionize material movement and fulfillment operations, providing unparalleled efficiency and productivity for the manufacturing and warehousing environment.





Unlocking Success with Novus Carry: Your Path to Efficiency and Savings

Discover the array of benefits and advantages that Novus Carry brings to the table, empowering your business with unparalleled efficiency and cost-effectiveness.

Benefits



AMR ATTACHMENTS

Unlock multiple use cases such as Lifting, Tugging, Tunneling, Conveyor, etc. by deploying various attachments on top of our AMR platform.

LIFTER

The lifter platform allows the robot to go under a trolley, lift it and then deliver it to the end destination.

TUGGER/TUNNELING

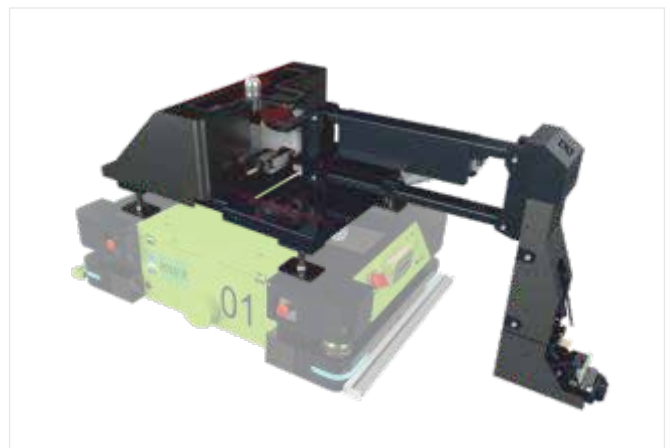
The tugging platform allows the robot to pull multiple trolleys simultaneously from origin to the end point.

CONVEYOR

The conveyor system allows the robot to transfer material from one conveyor platform to another, thus eliminating the need for extended conveyors that take up significant space.



CONVEYOR



TUGGER/TUNNELING



LIFTER

Novus Carry Solutions: Tailored Applications for Every Need

**Mobile Production
station Solutions**



Engine Assembly

Chassis Marriage

Battery Marriage

Engine Marriage

Vehicle Assembly

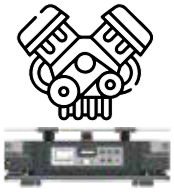
**Intralogistics
Solutions**



**Material Transfer
RM & FG**

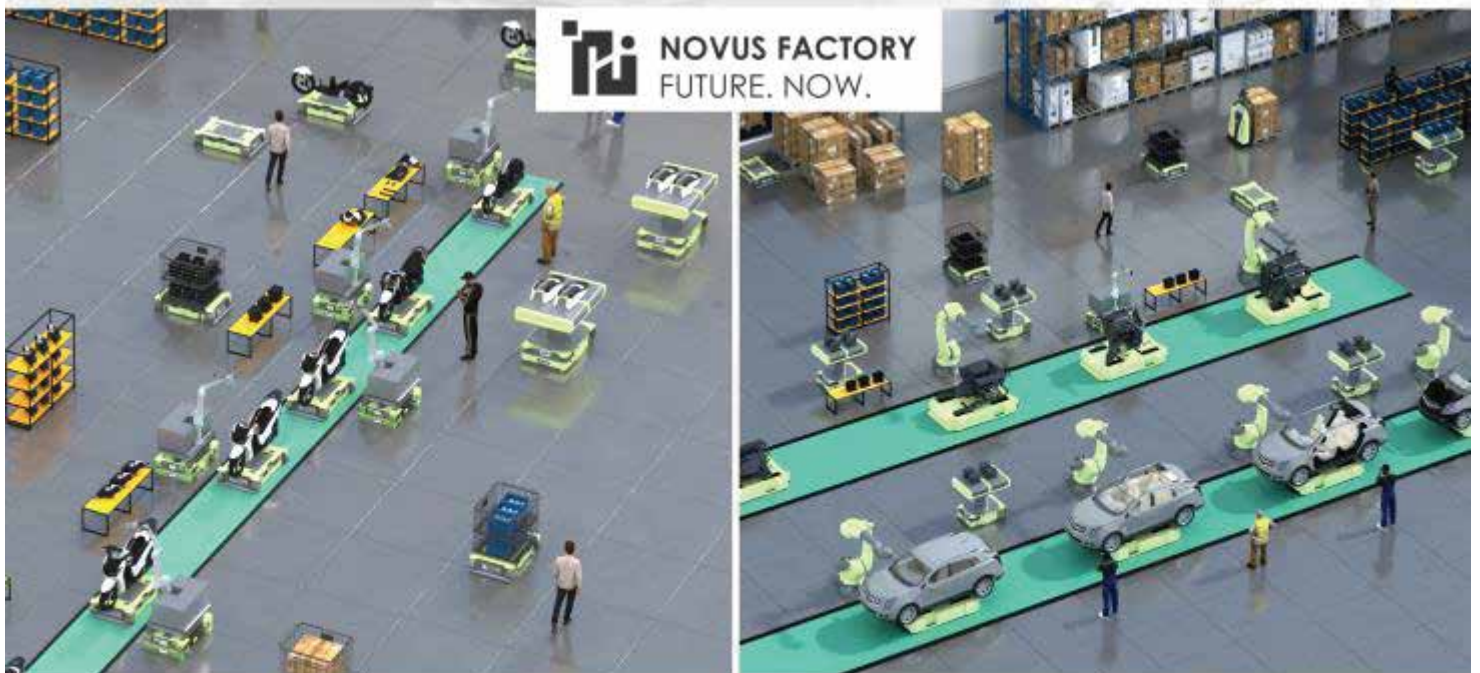
Material handling





MOBILE PRODUCTION FLOW™

Optimizing the production workflow by replacing conveyor based linear, sequential production lines to a scalable grid network of flexible, reconfigurable, and mobile workstations based programmable micro-factories.



MODULAR
FLEXIBLE
DESIGN



30%
REDUCTION
IN COST



30%
PRODUCTIVITY
IMPROVEMENT



INCREASED
TRACEABILITY

CASE STUDY

AMR FOR AUTOMATION OF ASSEMBLY LINE PROCESSES

Improve productivity and optimize manpower in factory

WORLD'S LARGEST TWO-WHEELER MANUFACTURER



RESULTS



Process aligned with Industry 4.0



No restriction on floor movement of MHE and people



Optimization of manpower



Higher safety and AMR FOR AUTOMATION elimination of accidents

CASE STUDY

AMERICAN MULTINATIONAL CONGLOMERATE

AMRs enable safety and automation as per global processes

● CHALLENGE WITH AUTOMATION OF MATERIAL MOVEMENT

- Objective was to increase plant throughput with reduced manpower
- Real time tracking required for material movement
- Existing process not compliant with Industry 4.0



● SOLUTION

- AMR for automating material movement for assembly operations
- Existing trolley used without any design modification

KEY FEATURES

- Auto-docking charging system to eliminate battery handling by operator
- AMR interface with line side machines for automatic dispatching & sequencing
- On-board safety interlocks

RESULTS



Head count optimized by 75%



ROI of 26 months



Higher safety at work area



Real time tracking of material movement

CASE STUDY

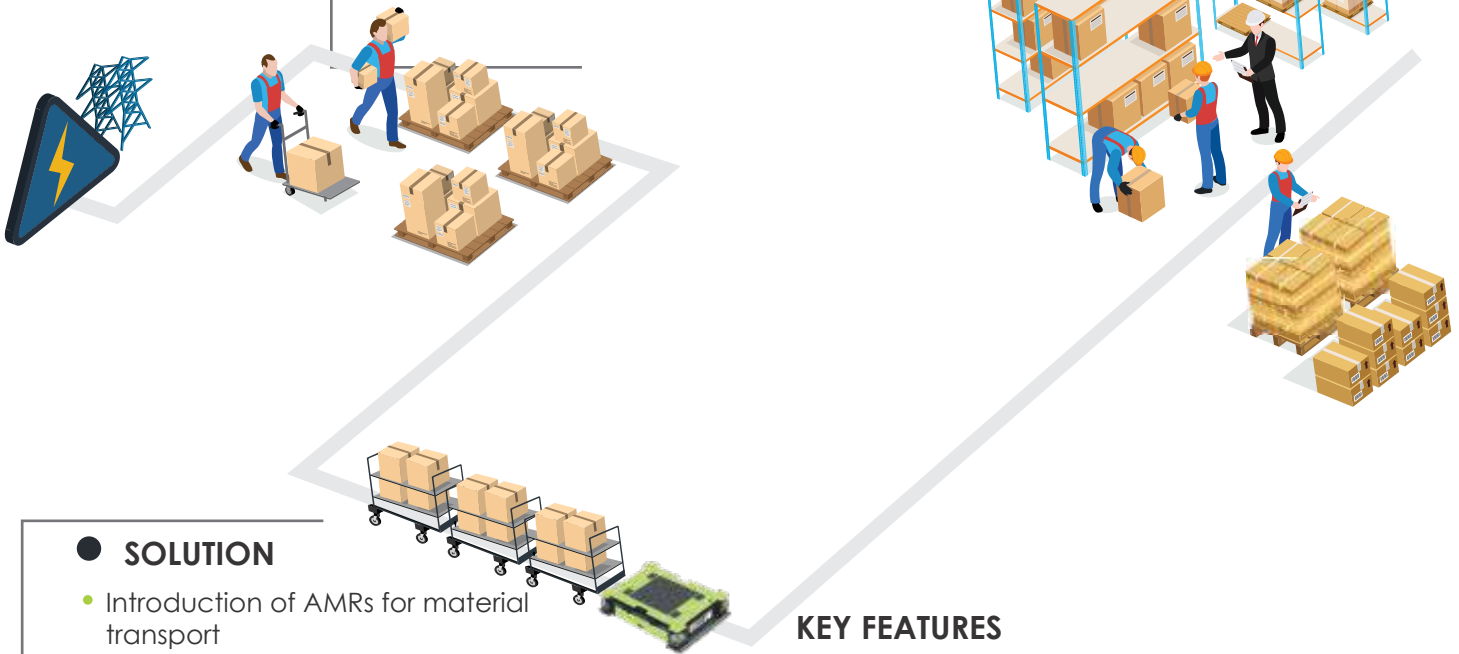
GLOBAL SPECIALIST IN ENERGY MANAGEMENT AND AUTOMATION

AUTOMATED MATERIAL TRANSFER

AMRs enable workforce optimization and increase shop-floor safety

● CHALLENGE WITH IMPLEMENTATION OF GLOBAL SAFETY DRIVE

- Client needed to reduce operators required for material transportation without impacting productivity
- Crowding of aisle spaces caused accidents and damage to material



● SOLUTION

- Introduction of AMRs for material transport
- AMRs used for moving raw material from warehouse to assembly area
- Same AMR used for transportation of finished goods to warehouse

KEY FEATURES

- AMR carrying upto 10 trolleys in single trip
- Automatic unhitching of trolley

RESULTS



More floor space available for man movement



Elimination of accidents arising from transportation



Manpower optimization



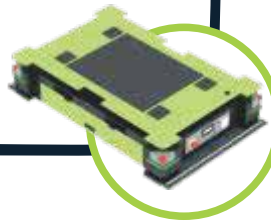
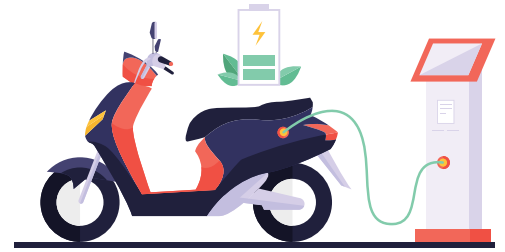
ROI of under 18 months

CASE STUDY

INTRALOGISTICS MATERIAL MOVEMENT

CHALLENGE

Industry 4.0
build future ready, smart factory
Powerup intralogistic movement
across production



From the store, kits once prepared are **transported as unit load** by mobile robots to respective sub-assembly stations



FRAME WELDING LINE

ILR moves parts from welding stations to assembly line in a tug trolley setup. Worker calls the robot once parts are ready to be moved.



BATTERY FACILITY

Fully charged batteries are trolley tugged to assembly line for installation in the vehicle



KITTING, SUPER STORE AREA

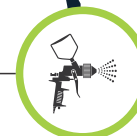
WIP MATERIAL MOVEMENT

WIP material transfer across the warehouse through either unit load or trolley tugging is carried out on demand by the robots



PAINT SHOP

Trolley tugging of paint finished parts from subassembly to main assembly for final commissioning



RESULTS



WIP MATERIAL MOVEMENT
efficiency increased. Post deployment the customer achieved higher speed and flexibility



SCALABILITY
Ability to ramp up production volume on demand by adding more AMR



MAN-MATERIAL-ENVIRONMENT SAFETY
Deployed solution provides ANSI standards of safe to work humanmachine environment

Prioritizing Safety: Our Commitment to a Secure Work Environment with NOVUS CARRY

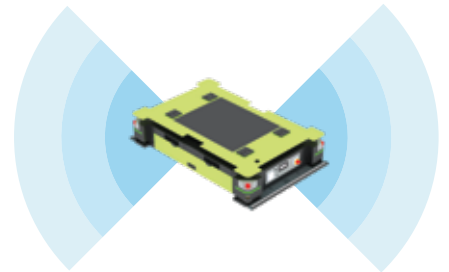
Safety is at the core of Novus Carry's design. Equipped with advanced sensors and intelligent obstacle detection, it navigates through dynamic environments with precision and caution. Novus Carry prioritizes the safety of both its surroundings and the people it works alongside, ensuring a secure and reliable automation solution for your operations

Fully automated yet prioritizing safety



AMR

Safety despite speed



Safety despite driving direction



Innovations at a Glance

Novus Carry's Pioneering Features

3D Li Dar Based
Localization
Technology

Payload (kg)*
100, 200, 300,
500, 1000, 1500

Interoperability
VDA 5050
Compliant

Natural Navigation
Technology

Run time
Up to 8 hours



Specifications of Novus Carry Series

AUTONOMOUS MOBILE ROBOT - AMR

Description	AMR 100	AMR 500	AMR 1500
Payload capacity	100 Kg Max	500 Kg Max	1500 Kg Max
Navigation Technology	Natural Navigation		
Localization Technology	3D Lidar Based		
No load maximum speed	75 m/min		
AMR Movement	Bi-directional		
Navigation Accuracy	+/-50 mm		
Docking Accuracy	+/-10 mm		
Power Source	24 V DC Lithium-ion, 54 Ah	24 V DC Lithium-ion, 80 Ah	48 V DC Lithium-ion, 76.5 Ah
Battery Charging System	Offline (Battery Swapping) / Opportunity Charging		
Battery on Single charge	8 hours (Single Charge)		
Drive Configuration	Differential Drive		
Castor Wheels	Swivel Castor (PU) - 4Nos.		
Floor Gradient	1.5 Degree with derated load		
Dimension	850 (L) X 550 (W) X 368 (H)	1170 (L) X 750 (W) X 425 (H)	1740 (L) X 1140 (W) X 380 (H)
Attachments	Lifter / Tugger (Manual / Semi Auto / Auto) / Tunnelling / Unit load (Tray, Bin Rack, Fixture) / Conveyor (Chain / Roller / Inline / Perpendicular)		
Height With Lifter Attachment	Ground to 500 mm*		

*all specifications can be customized as per use case





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