

NOVUS CARRY SERIES

Autonomous Mobile Robots (AMRs) for
Smart Assembly Lines & Smart Intralogistics



“Built In-House – From Software to Hardware,
Driving the Future of Autonomous Workflows”

Industries



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Who We Are

A Global Deep Tech Leader

End-to-End Autonomous Solutions From Software to Hardware

Part of

\$250 M

The Hi-Tech Group

20+ years

of innovation in AI, Robotics, and ADAS

100+

global enterprise clients

1200+

autonomous solutions deployed

120,000+

ADAS Systems in use

150+

patents



Designed and built completely in-house, from autonomous software stacks to hardware platforms



Pioneer in AGV & AMR technologies, delivering flexible, scalable, and safe autonomous workflows worldwide



Served industries across Automotive, FMCG, Pharma, E-Commerce, 3PL, Paint & Chemical, Electronics, Semiconductor, Solar, and Retail



Novus Hi-Tech

Started by building autonomous solutions for various Defence projects in India, gaining expertise in high-precision robotics and complex autonomous systems. Over the years, we pivoted into industrial automation, delivering plug-and-play solutions for smart assembly lines and intralogistics operations across the globe.

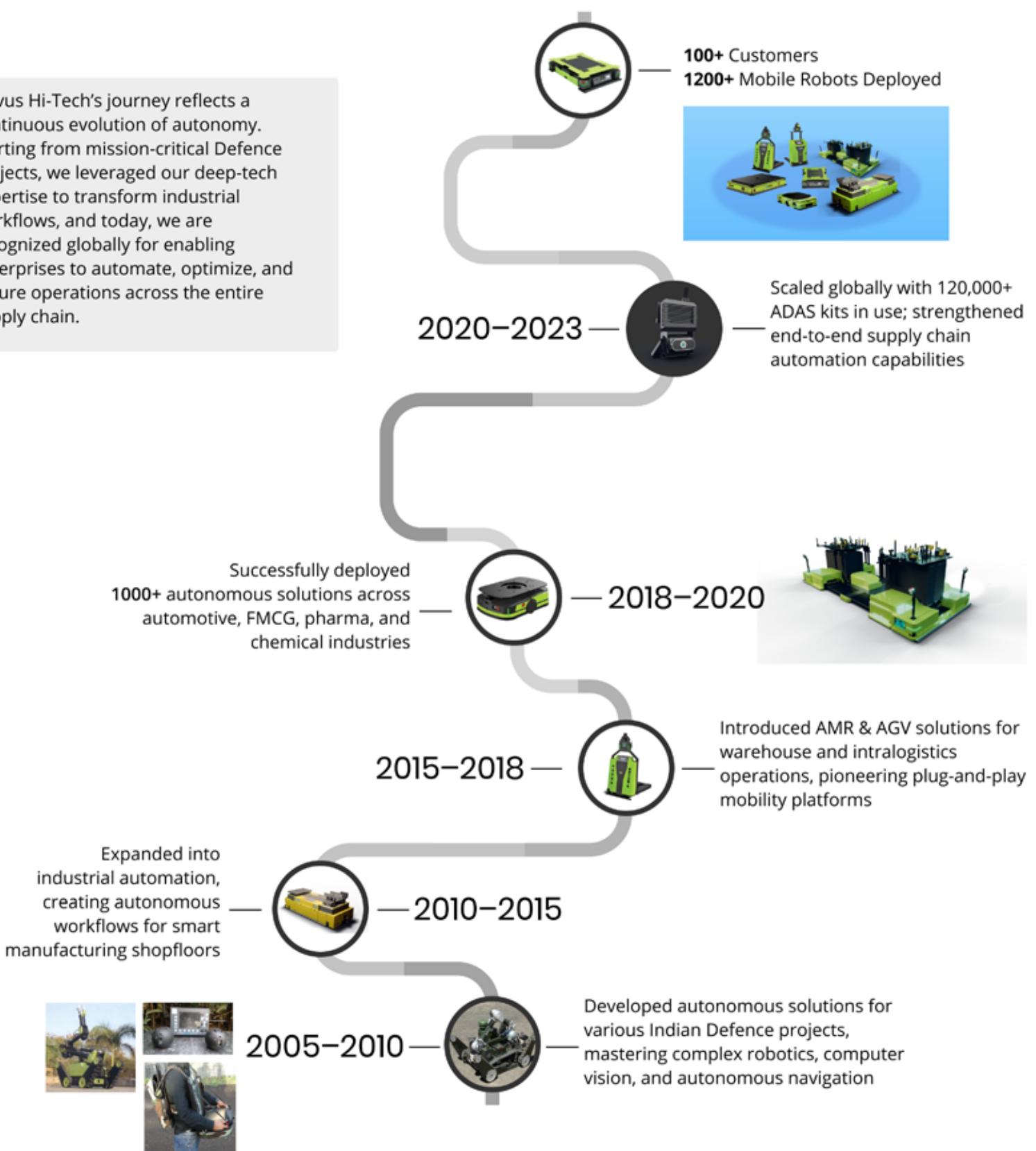
Novus Hi-Tech stands among the select global leaders delivering truly end-to-end autonomous solutions — from manufacturing shopfloors to warehouse operations and even road logistics — creating value across the entire supply chain. Our 150+ patents reflect our commitment to innovation and leadership in autonomous technologies.

Today, Novus enables enterprises to automate material movement, optimize workflows, enhance safety, and gain real-time analytics and fleet intelligence — all with products built entirely in-house.

Our Journey From Defence Autonomy to Global Industrial Leader

Milestones That Define Innovation

Novus Hi-Tech's journey reflects a continuous evolution of autonomy. Starting from mission-critical Defence projects, we leveraged our deep-tech expertise to transform industrial workflows, and today, we are recognized globally for enabling enterprises to automate, optimize, and secure operations across the entire supply chain.



NOVUS CARRY AMR – Autonomous Mobile Robots for Smart Manufacturing & Warehousing

Transforming Material Handling for Modern Factories & Warehouses

What is Novus Carry?

Novus Carry is a series of Autonomous Mobile Robots (AMRs), built to make factories and warehouses smarter, safer, and more flexible. It replaces traditional conveyor lines and manual handling with a modular, software-defined automation system. Acting as the backbone of both Smart Assembly Lines and Smart Intralogistics, Novus Carry ensures smooth and efficient material movement across the entire shopfloor and warehouse.



Material Handling Redefined

Moves pallets, trolleys, kits, and frames with precision

Adaptable to Any Layout

Works in dynamic, crowded environments with natural navigation

Key Capabilities

Multi-Task Functionality

Tugging, lifting, tunneling, conveyor transfers, and pick-assist

Software-Defined Control

Configure workflows, routes, and fleet operations through Novus Flow™

Plug & Play Attachments

Swap modules to match operational needs in minutes

Human-Centric Safety

360° sensors, alarms, and compliance with global safety standards

Why It Matters

Unlike rigid conveyor lines or labor-intensive handling, Novus Carry eliminates downtime, adapts to multiple product variants, and scales instantly with demand. It's not just a robot; it's a future-ready automation platform built to keep factories and warehouses agile, safe, and efficient.

The Modern Industrial Challenges

Why Automation is Critical for Efficiency, Safety, and Material Handling & Operations

Traditional assembly lines and warehouse workflows are often rigid, prone to downtime, and hard to scale. Enterprises need intelligent, flexible, and fully integrated automation solutions to improve efficiency, safety, and throughput.

Factory / Assembly Line Challenges

Traditional Conveyor-Based Lines



Rigid and sequential layouts cause downtime from line stoppages and changeovers



Limited flexibility for multiple product variants on a single line



High maintenance and operational costs due to fixed infrastructure



Scalability issues — difficult to expand or reconfigure without major investments



Complex Manual Handling Labor-intensive and error-prone tasks reduce efficiency



Workplace Safety Risks Operators face hazards while moving heavy parts or trolleys





Warehouse / Intralogistics Challenges



Inefficient Material Movement Bottlenecks in storage, retrieval, and transport



Workplace Safety Risks Human operators face hazards when interacting with forklifts, trolleys, or heavy loads



Scalability Constraints Limited capacity to ramp up operations without additional headcount



Real-Time Visibility Gaps Lack of data for workflow optimization and predictive maintenance



Integration Issues Existing systems often fail to communicate across warehouse workflows



Novus Hi-Tech Solutions

Driving Smart Assembly Lines & Smart Intralogistics

End-to-End Industrial Automation Powered by Novus Carry AMRs

Smart Assembly Line Solutions

Key Highlights

Flexible & Modular Production Lines

Replace traditional conveyor-based lines with grid-based mobile robots



Multi-Variant Handling

Supports diverse SKUs on a single production line with minimal downtime



Plug-and-Play Attachments

Lifting, tugging, conveyor interfacing, trolley unhitching powered by Novus Carry



Software-Defined Workflows

Configure production sequences, optimize material flow, & reroute dynamically via Novus Flow™



Human-Centric & Safe

Operates alongside human operators with advanced sensors and intelligent obstacle detection

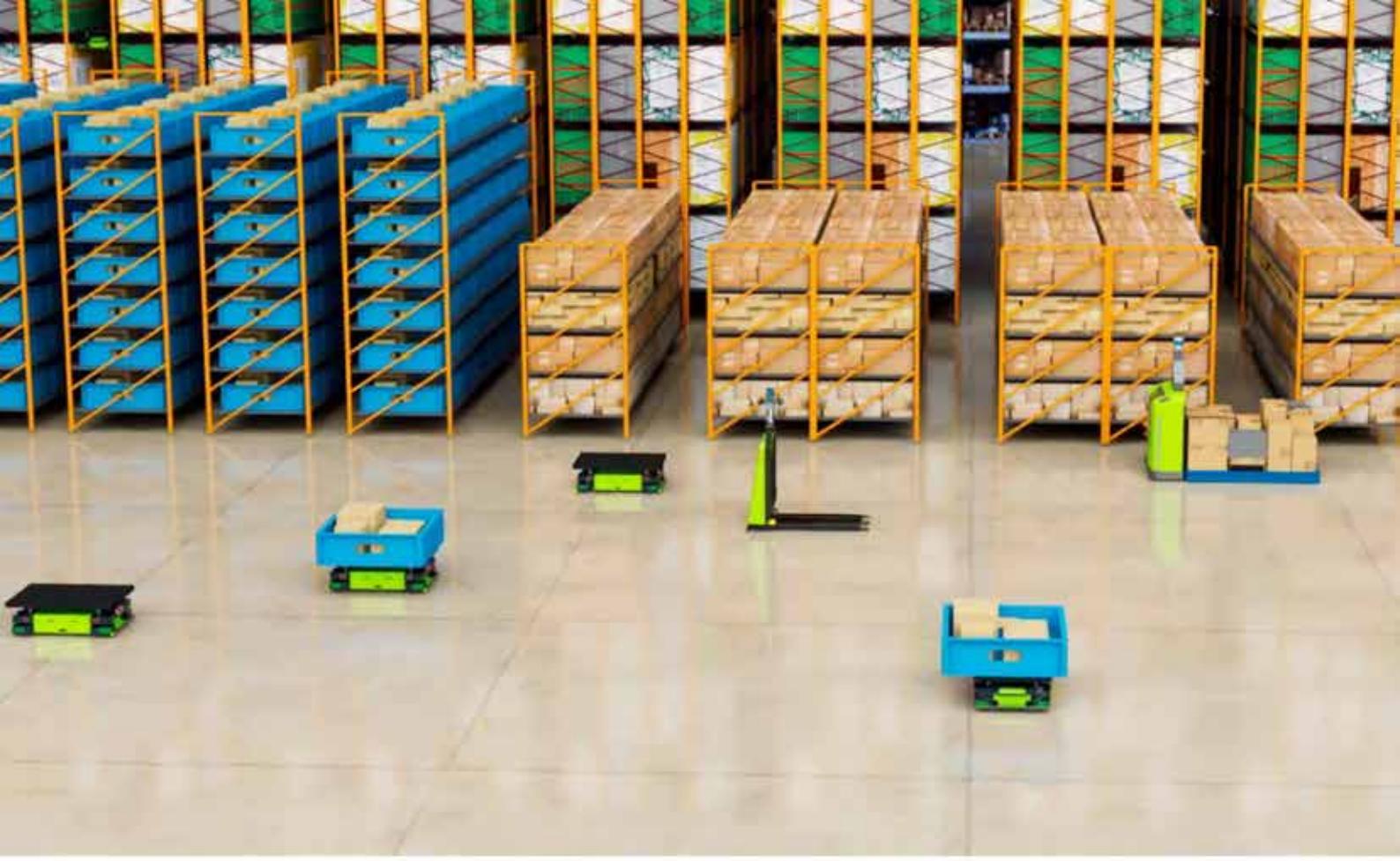


Real-Time Analytics

Performance monitoring, production efficiency, & bottleneck detection via Novus Analytics™



Novus Hi-Tech transforms traditional conveyor-based assembly lines into Smart Assembly Lines, enabling enterprises to handle multiple product variants, reduce downtime, scale rapidly, and improve overall efficiency. Novus Carry AMRs act as the backbone, providing flexible, modular, and fully software-driven automation while ensuring human-centric safety and operational intelligence.



Smart Intralogistics Solutions

Key Highlights

Autonomous Material Transport

AMRs handle pallets, trolleys, and kits efficiently across warehouse floors



Adaptive Navigation

Intelligent routing for dynamic warehouse environments



Safety-Centric Design

360° sensors, e-stops, and collision avoidance for human-robot collaboration



Scalable Operations

Expandable fleet to meet increasing throughput demands



Integration & Tracking

Interoperable with WMS, ERP, and factory systems; ensures inventory accuracy



Multi-Task Workflows

AMRs perform lifting, tugging, conveyor loading/unloading, and frame transport



In warehouses, Novus Hi-Tech enables Smart Intralogistics, improving throughput, accuracy, and safety. Novus Carry AMRs form the core, automating material handling tasks while providing real-time visibility and seamless human-robot collaboration

Novus Carry Across Industries

End-to-End Automation

From Assembly Lines to Intralogistics

One AMR, Multiple Applications



Automotive Industry

Smart Assembly Line Applications

Engine & Transmission Assembly

AMRs deliver sub-assemblies, fixtures, & components between stations with precise synchronization.

Battery & Axle Assembly

Safely transport heavy modules like battery packs, front/rear axles, & motor units between process zones.

Cockpit / IP Assembly

Support modular cockpit and dashboard assembly lines with just-in-sequence deliveries.

Chassis-Body Marriage

Ensure timed delivery of chassis frames and sub-assemblies for final vehicle assembly.

AMR Capabilities: Tugging • Lifting • Frame Transport • Conveyor-to-Conveyor Transfer • Tunneling

Outcome



Reduced downtime



Modular production flow



Flexible line reconfiguration

Smart Intralogistics Applications

Inbound Material Handling

Transfer of raw materials and parts from receiving dock to staging zones.

Line Feeding

Continuous supply of parts, kits, and sub-assemblies to the line-side buffer.

Kitting & Kit Delivery

AMRs transport kitted components to designated assembly workstations.

End-of-Line (EOL) Movement

Transfer of finished vehicles, frames, or pallets to warehouse or dispatch areas.

AMR Capabilities: Tugging • Automated Hitch/Unhitch • Multi-Trolley Transfer • Lifting

Outcome



Lean intralogistics

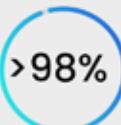


Higher throughput



Safer operations

Proof That Moves the Needle



Fleet Uptime



40-60 Pallets/hr throughput

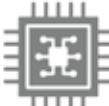


ROI 18-24 months (OEM Business Case)

Deployed across ICE/EV, greenfield & brownfield plants.



Electronics



Semiconductor



Solar

Assembly Line Applications:

- Fragile component handling
- Variant-based kitting
- Inter-process PCB/module transfer

Intralogistics Applications:

- Material flow between cleanroom/storage
- Finished panel/module dispatch

Outcome



Reduced product damage

| Workflow optimization

| Scalable automation flexibility



Pharma



FMCG

Intralogistics Applications

- Warehouse-to-line transfer
- Kitting & order fulfillment
- EOL pallet dispatch

Outcome



Enhanced safety



Faster throughput



Scalable warehouse operations



3PL



Retail

Intralogistics Applications

- Inbound/outbound logistics
- Kitting & pick-assist
- Cross-docking operations

Outcome



Faster order fulfillment



| Labor optimization



| 100% safety compliance



Faster Material Transfer



Productivity Boost



Safety Compliance

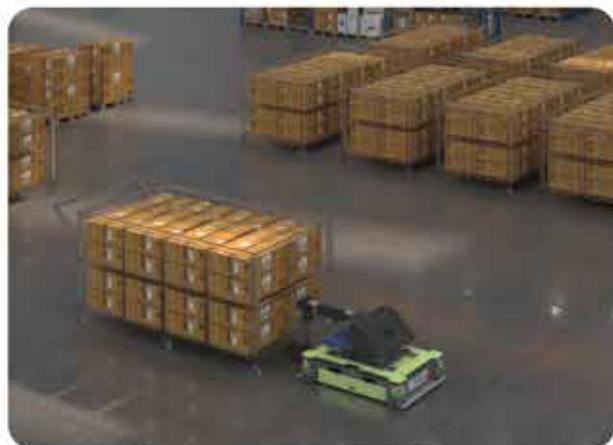
Novus Carry Features & Technology Highlights

Intelligent, Safe, and Fully In-House Developed AMRs for Smart Assembly Lines & Intralogistics



Navigation & Intelligence

- Natural Navigation Technology: Moves seamlessly in dynamic environments, no markers required
- Dynamic Path Planning: Optimizes routes in real-time based on obstacles and traffic
- 3D LiDAR-Based Localization: Accurate positioning and navigation for complex layouts
- VDA 5050 Compliant: Interoperable with other fleets and factory systems

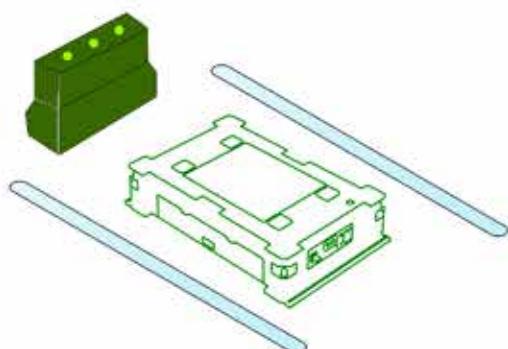


Payload & Attachments

- Multiple Payload Options: 100kg, 200kg, 500kg, 1000kg, 1500kg
- Modular Attachments: Lifter, Tugger, Conveyor, Frame Transport – all plug-and-play
- Multi-Task Capability: Single robot can perform multiple operations across workflows

Runtime & Power

- Battery: Lithium-Ion, 24-48V, 6-10 hours active operation
- Fast Charging: 120-150 min, 2000-3000 cycles
- Auto-Docking: Eliminates manual battery handling





Safety & Human-Centric Design

- 360° Laser Sensors & Cameras
- Audio & Visual Alarms
- E-Stops on All Sides
- ISO & EN Safety Compliance (ISO 3691-4, EN 1525, ISO 13849)



Software & Analytics

- Novus Flow™: Software-defined fleet management and workflow control
- Novus Analytics™: Real-time insights, KPIs, and optimization dashboards
- Remote Monitoring & Control: From anywhere via web interface

Variants & Specifications-Novus Carry Series

AUTONOMOUS MOBILE ROBOT - AMR

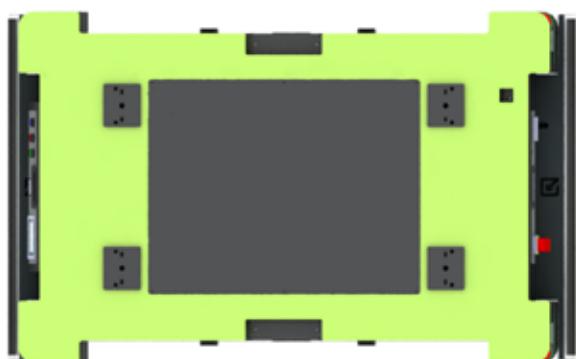
DESCRIPTIONS	AMR 100	AMR 500	AMR 1500
Payload			
Maximum payload	100kg(220lbs)	500kg(1100lbs)	1500kg(3300lbs)
Dimensions/chassis			
Length	850mm(33.4in)	1170mm(46.1in)	1740mm(68.5in)
Width	550mm(21.6in)	750mm(29.5in)	1140mm(44.9in)
Height	368mm(14.4in)	425mm(16.7in)	380mm(15.0in)
Ground clearance	35mm	35mm	35mm
Weight	240kg	260kg	420kg
Capability			
Maximum speed	1m/s(2.2mph)		.83m/s(1.8mph)
Required aisle width (one way traffic)	1050mm or as per standard	1250mm or as per standard	2150mm or as per standard
Required aisle width (two way traffic)	2100mm or as per standard	2500mm or as per standard	4300mm or as per standard
Positioning accuracy (moving to position)	±50mm		
Positioning accuracy (docking)	±10mm	±10mm	±10mm
Maximum incline/decline	2% pass over	2% pass over	2% pass over
Energy System			
Battery type	Lithium Ion		
Voltage	24V DC		48V DC
Battery capacity	54Ah	100Ah	76.5Ah
Active operation time with maximum payload	6 hours	6 hours	6 hours
Active operation time with no payload	10 hours	10 hours	10 hours
Charging current	30A CCCV	40A CCCV	40A CCCV
Charge Time	~120 minutes	~150 minutes	~120 minutes
Battery Life	2000 cycles standard	2000 cycles standard	2000 cycles standard
	3000 cycles optional	3000 cycles optional	3000 cycles optional
Charging Options	Charging Options		

Variants & Specifications-Novus Carry Series

AUTONOMOUS MOBILE ROBOT - AMR

DESCRIPTIONS	AMR 100	AMR 500	AMR 1500
Environment			
Ambient temperature range, operation	5 to 50 °C	5 to 50 °C	5 to 50 °C
Humidity	10 to 90% non-condensing	10 to 90% non-condensing	10 to 90% non-condensing
IP rating	IP-21	IP-21	IP-21
Floor conditions	1.5% evenness		
Technology			
Wi-Fi	2.4 GHz 802.11 g/n, 5 GHz 802.11 a/n/ac		
Interfaces	USB, Ethernet, WiFi, LTE		
Navigation	Natural		
Localization	3D LiDar		
Safety System			
Safety sensors	360° safety coverage with multiple laser area sensors		
E-Stops	Available, four sides		
Signal and status lights	Available, for audio & visual alarms		
Design Standards			
International standards	ISO 3691-4, EN-1525, ISO 13849	ISO 3691-4, EN-1525, ISO 13849	ISO 3691-4, EN-1525, ISO 13849

*all specifications can be customized as per use case



Variants & Specifications-Novus Carry Series

LOW HEIGHT AUTONOMOUS MOBILE ROBOT - LHT AMR

DESCRIPTIONS	LHT 250	LHT 500	LHT 1000
Payload capacity	250 Kg Max	500Kg Max	1000 Kg Max
LHT Guidance Technology	Natural Navigation (LIDAR)	Hybrid(LIDAR + QR)	Hybrid (LIDAR + QR)
Attachment	Electric Lifter	Electric Lifter	Electric Lifter
Max. Speed on Flat Surface	1 m/s	1 m/s	1 m/s
Lifting Stroke	90 mm	55 mm	55 mm
LHT Movement	Bi-directional	Bi-directional	Bi-directional
Power Source	48 V DC Supply	48 V DC Supply	48 V DC Supply
Battery Charging System	Opportunity Charging	Front Dock Charging (Online Charging)	Front Dock Charging (Online Charging)/Manual Swapping
Battery Type	Li-ion Battery	Li-ion Battery	Li-ion Battery
Traction Drive	Differential Drive System	Differential Drive System	Differential Drive System
LHT Weight	200 kg	210 kg	400 kg
Dimension (L X W X H)	880 x 620 x 300 mm	1095 X 700 X 270 mm	1260 x 825 x 300 mm
IP Rating	IP 20	IP 20	IP 20



Variants & Specifications-Novus Carry Series

FORKLIFT AUTONOMOUS MOBILE ROBOT – AMR

DESCRIPTIONS	ABOPT	STACKER
Payload capacity	1000 Kg Max	1500 Kg Max
Navigation Technology	Natural Navigation	Natural Navigation
Localization Technology	Li Dar Based	Li Dar Based
No load maximum speed	90 m/min	60 m/min
Motor Type	BLDC	BLDC
Stacker Movement	Bi-directional	Bi-directional
Pallet Safety	Fork tip non contact bumper	Fork tip non contact bumper
Obstacle detecting	Safety Class area scanner	Safety Class area scanner
Stopping Accuracy	+/-50 mm	+/-50 mm
Power Source	48 V DC Lithium-ion	24 V DC Lithium-ion
Battery Charging System	Opportunity Charging	Offline (Battery Swapping)
Battery on Single charge	8 hours (Single Charge)	8 hours (Single Charge)
Communication	Wifi 6,5G	Wifi 6,5G
Front Castor Wheels	Swivel Castor (PU)	Swivel Castor (PU)
Lifting Type	Electric Lifting	Hydraulic (Single Acting)
Lifting Height	Ground to 80 mm	Ground to 1000 mm
Floor Gradient	0.5 Degree with derated load	1.5 Degree with derated load
Dimension	1650 (L) X 950 (W) X 1850 (H)	1750 (L) X 1000 (W) X 2100 (H)
Stacker Weight (Kg)	350 kg	850 kg



Novus Carry AGV Series



Automated Guided Vehicle (AGV)

Customized Solutions for Smart Assembly & Material Handling
Precision, Safety, and Efficiency in Every Move

What is an Automated Guided Vehicle (AGV)?

An Automated Guided Vehicle (AGV) is an advanced, driverless material-handling robot designed to transport heavy or delicate loads safely and efficiently within industrial environments. Guided by sensors, vision systems, LiDAR, or magnetic/QR navigation, AGVs automate repetitive movement tasks, reduce manual labor, and ensure consistent operational flow.

The Novus Carry AGV Series delivers high-performance intralogistics and assembly automation across multiple industries — with a strong focus on the automotive sector, where precision, payload capacity, and operational safety are critical for success.

Key Features of Novus Carry AGV Series

 Heavy-Duty Payload Handling

 Scalable & Modular

 Flexible Navigation Options

 Safety-First Design

 Precision Docking

 Low Maintenance, High Uptime

Industries We Serve

 Automotive

 Electronics & Appliances

 Heavy Engineering

 Manufacturing & FMCG

 Farm Equipment

 Aerospace



Use Cases of AGVs in the Automotive Industry

 Engine Assembly & Transfer

 Transmission Assembly

 Axle Assembly

 Instrument Panel/Digital Cluster Assembly

 Vehicle Marriage (body-to-chassis joining)

 Final Vehicle Assembly Line

 Trolley Transfer for component kits and sub-assemblies

Impact of Novus Carry AGV Series



Up to 30%
Faster Assembly
Line Efficiency



Reduced Manual
Labor & Lower
Operational Costs



Enhanced Workplace
Safety with zero-accident
movement



Industry 4.0 Integration
for smart factory
automation



Optimized Space
Utilization without
reliance on conveyors

Product Parameter

Navigation Type

Magnetic Tape/QR Code/SLAM(2D/3D)

Run direction

Uni/Bi/Omni

Load capacity

500 kg to 20 Ton (Custom Robot)

Travel speed

1 m/min to 30 m/min (Programmable as per JPH/Throughput)

Drive method.

Single Wheel / Differential / Ackermann (Steering) / Omnidirectional

Battery charging method

Manual Swapping / Opportunity Charging (Contact Type/Contactless Type)
Induction Charging

Novus Carry Attachments & Capabilities

Modular AMRs Designed for Flexible Material Handling



Attachments & Their Functions



Lifter

Safely lifts trolleys, frames, and pallets to different heights



Tugger

Auto, semi-auto, and manual hitching & unhitching for towing trolleys or carts



Tunneling

Move safely under low-clearance obstacles, optimizing space in compact factories or warehouses



Conveyor Loader / Unloader

Automates conveyor-to-conveyor material transfer, mainly pallets & frames



Frame Transport / Custom Attachments

Handles specialized industrial tasks



Pick Assist

Supports kitting & order picking, reducing manual effort and improving efficiency

Novus Analytics & Fleet Management System (FMS)

Real-Time Monitoring, Predictive Insights, and Intelligent Control for Smarter, Safer Operations

Fleet Management System (FMS)



- Real-time tracking of AMR fleet across multiple plants and warehouses
- Automatic dispatching & task allocation based on priority and availability
- Dynamic routing to avoid congestion and optimize travel time
- Remote monitoring & control for operational managers
- Enables scalable multi-AMR operations without additional manpower
- VDA 5050 compliant: seamless integration with other AMR fleets and systems

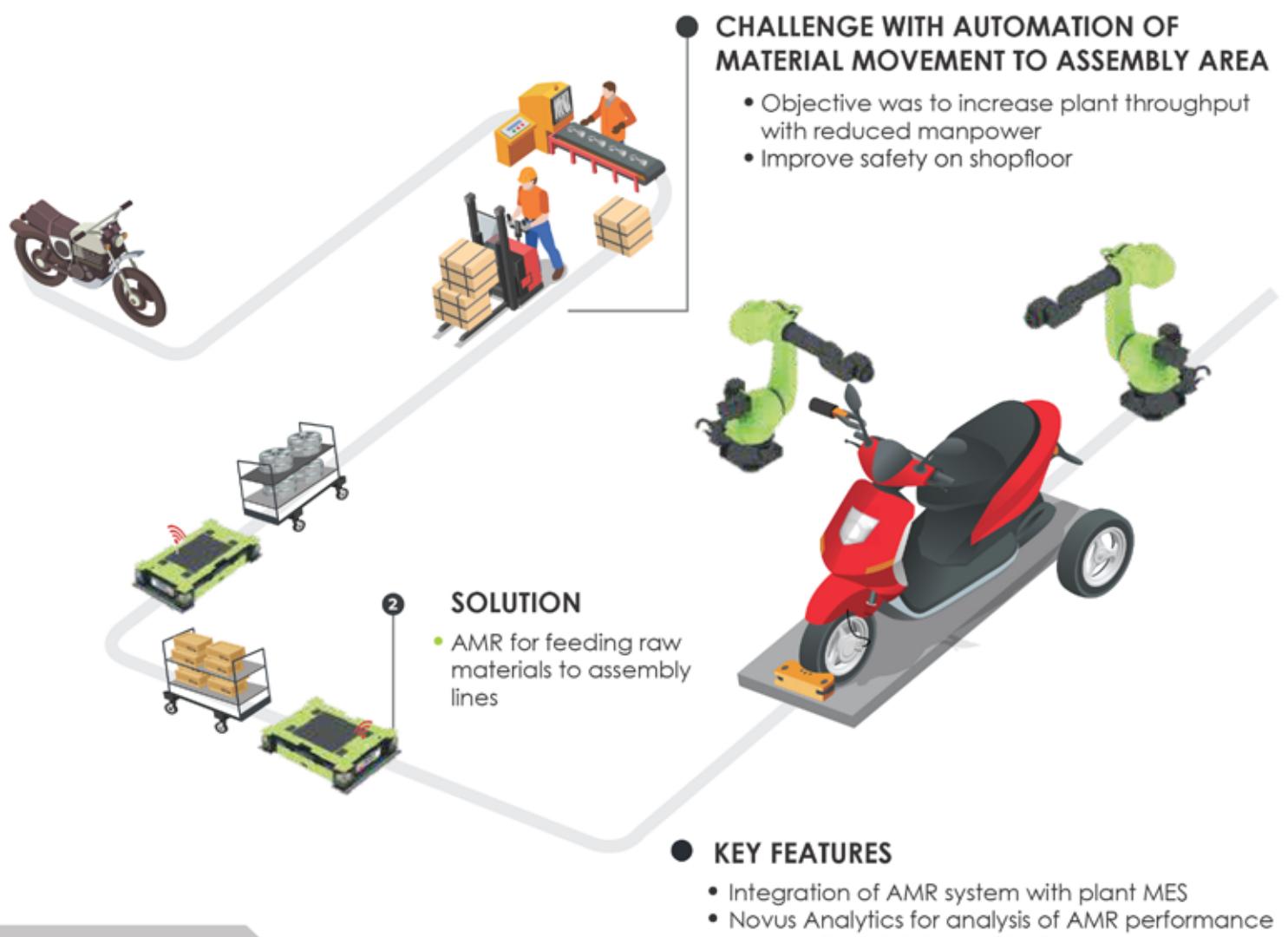
Novus Analytics Web Based Suite



- Monitors the entire Novus family of self-driving vehicles including AMR, ABOPT, & AGV in real time
- Performance tracking: uptime, efficiency, and task completion metrics
- Predictive maintenance: alerts before issues occur, reducing downtime
- Workflow optimization: identifies bottlenecks and improves throughput
- Custom dashboards: key metrics at a glance for plant managers, logistics heads, and CXOs
- Data-driven insights: empowers strategic decisions across the enterprise
- Industry X.O (Compact Mention)
- Part of Novus' software-defined ecosystem connecting AMRs, ABOPT, and AGVs for autonomous, connected, and modular operations across factories and warehouses

Case Study AMR for Automation of Assembly Line Processes

Improve productivity & 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



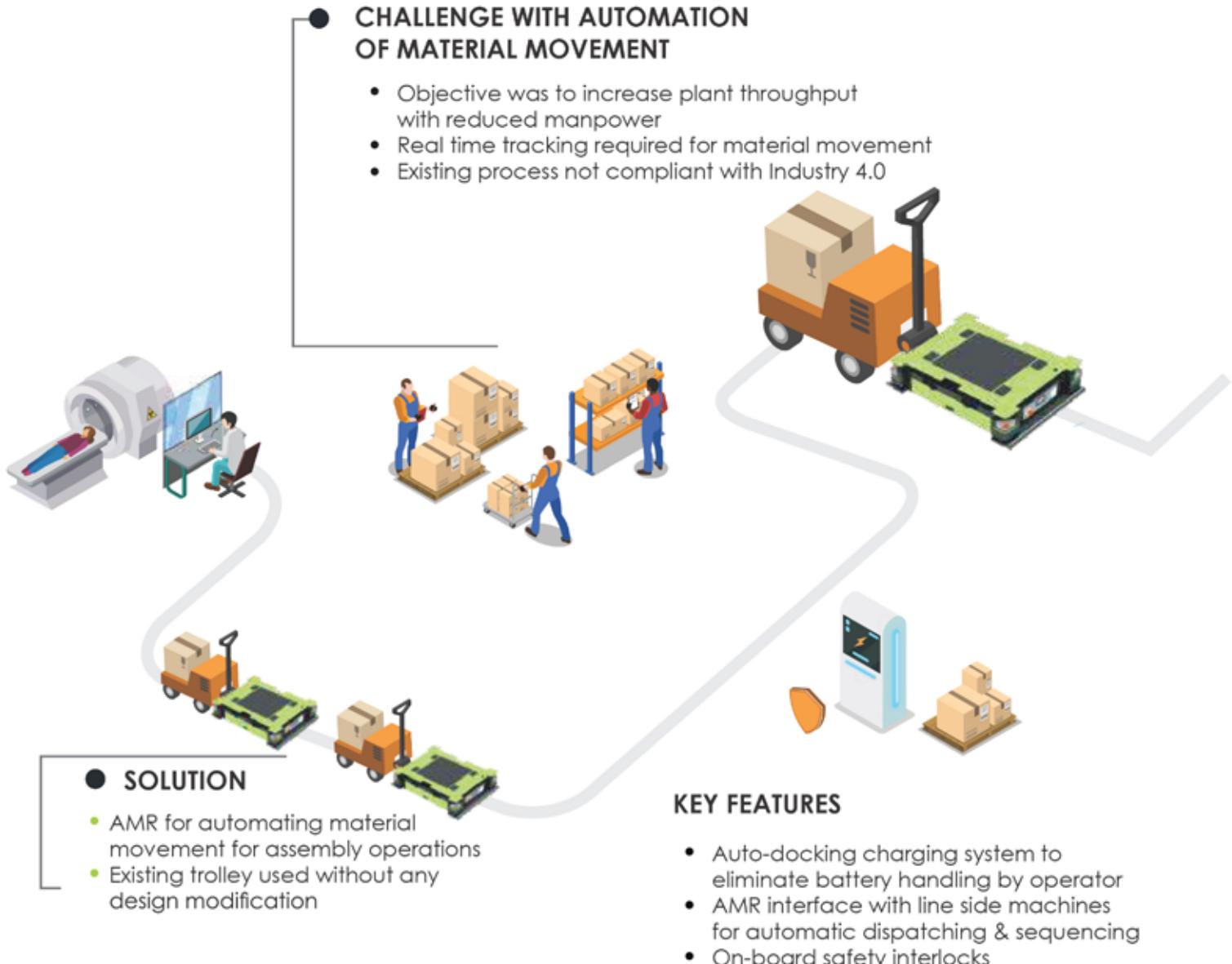
Optimization of manpower



Higher safety and AMR FOR AUTOMATION elimination of accidents

Case Study American Multinational Conglomerate

AMRs enable safety & automation as per global processes



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 & 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

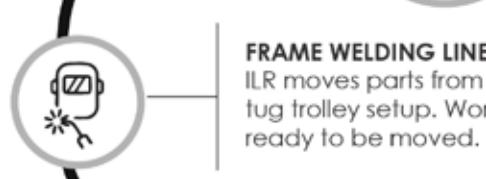
CHALLENGE

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



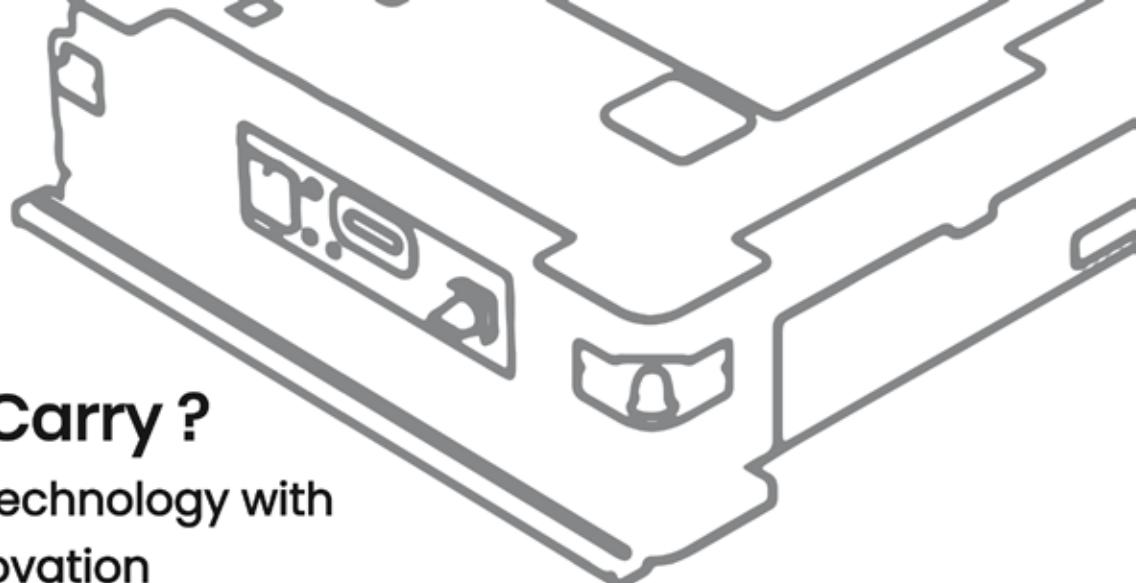
WIP MATERIAL MOVEMENT
efficiency increased. Post deployment the customer achieved higher speed and flexibility



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

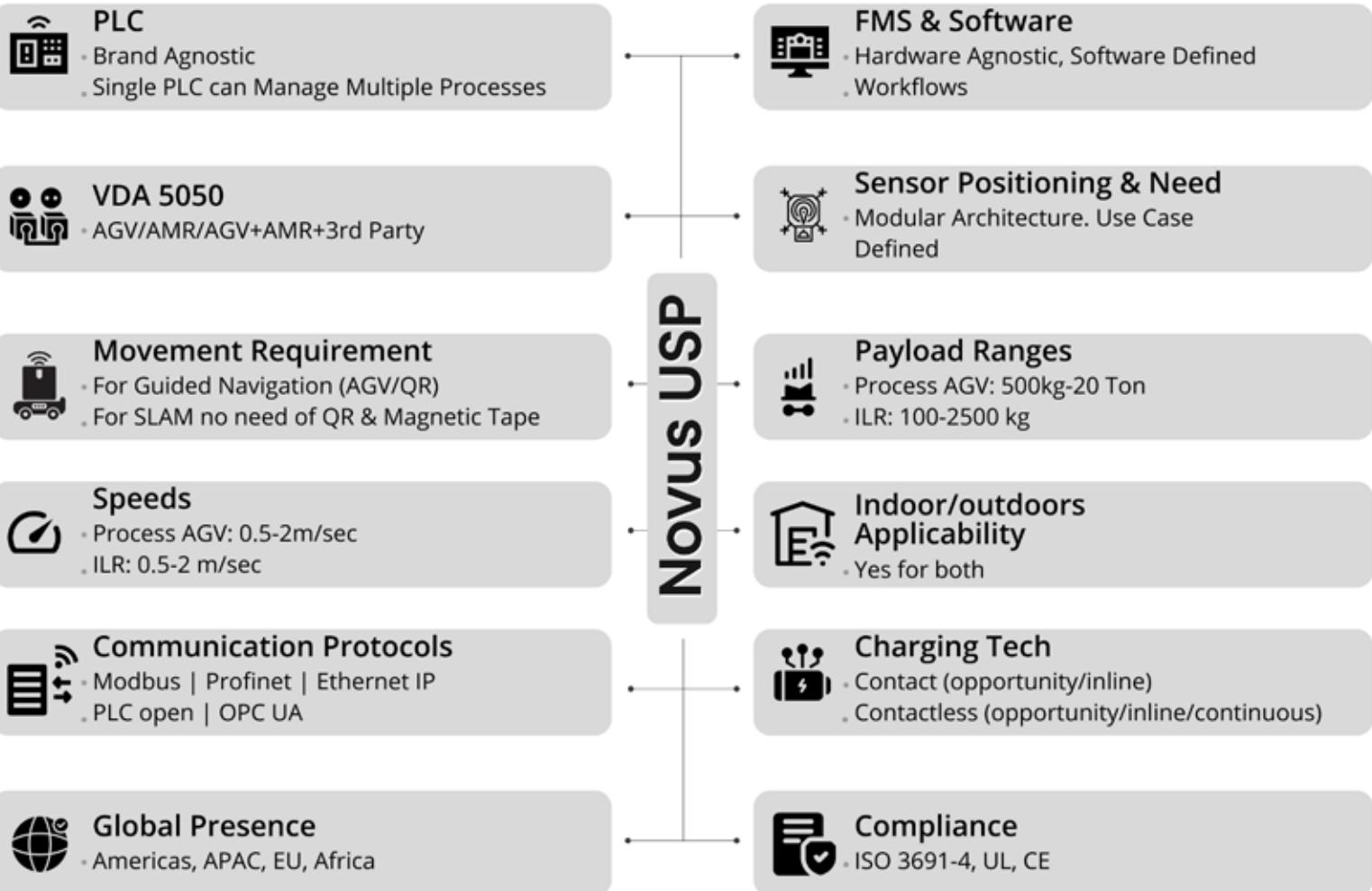


Why Novus Carry ?

Pioneering AMR Technology with
Full In-House Innovation

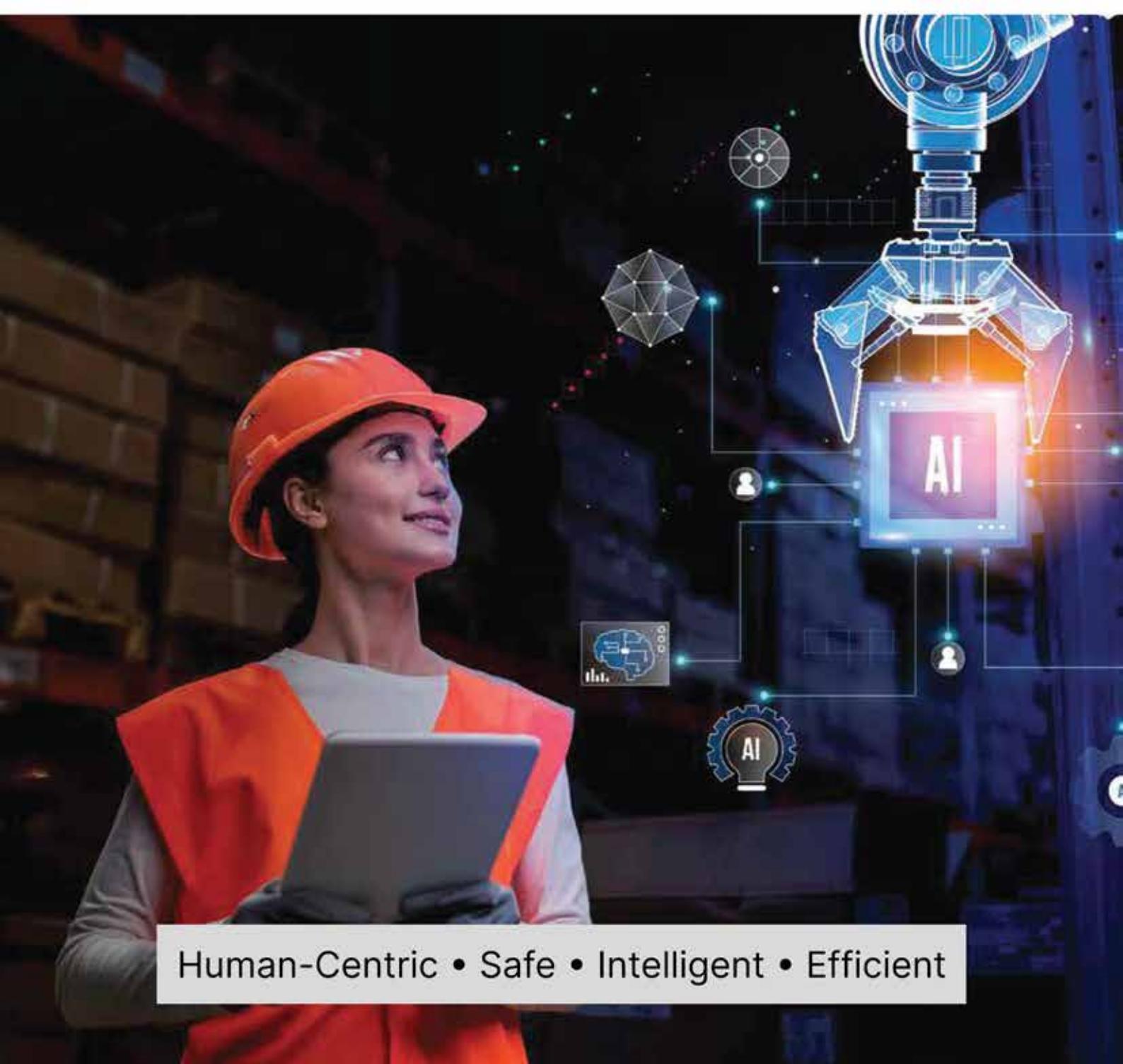
Novus Carry Advantage – Why We Outperform Other AMRs

Feature	Novus Carry	Other AMRs
 *End-to-End In-House Development*	Software, hardware, AI, fleet management fully designed & built by Novus	Mostly hardware focused or software licensed from third parties
 *Multi-Industry Deployment*	Automotive, FMCG, Pharma, Electronics, Semiconductor, Solar, 3PL, Retail	Limited industry focus
 *Flexible Modular Platform*	Supports Lifter, Tugger, Tunneling, Conveyor, Frame Transport, Pick Assist	Limited modularity, few attachments
 *Human-Centric Design*	Safety-first, seamless human-robot collaboration	Basic safety sensors
 *Advanced Navigation*	Dynamic path planning, obstacle detection, adaptive routing	Fixed-path or less intelligent navigation
 *Scalable & Customizable	Easily expands fleet and adapts to new workflows	Limited scalability
 *Proven Global Deployment*	100+ enterprise clients, 1200+ AMRs , 120k+ ADAS kits in use	Smaller footprint, mostly regional
 *Patents & Innovation*	150+ patents filed across robotics, AI, and autonomous systems	Few patents, limited proprietary tech



Over 100+ Customers





Human-Centric • Safe • Intelligent • Efficient



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