

EN

Agile1500

rel.1



Move ahead



The Culture of Automation

Designing advanced automation solutions means thinking about the industry in a new way, developing new scenarios, designing innovative products and creating ways to streamline production processes.

It requires more than technical competence; it requires a team of professionals whose vision is rooted in a culture of excellence. It also requires a combination of talent, passion and experience that unite to define new trends in automation.

Here at Comau our passion for our work reflects who we are.

Agile1500

This is the first model within the Comau automated guided vehicles platform; it is based upon Comau's open automation design approach.

Agile1500 rel.1 is now equipped with a long lasting lithium battery which makes automatic opportunity charging possible. The two laser scanners on the front and rear guarantee efficient and safe navigation.

This Comau AGV is capable of transporting up to 1.5 tons; it can be reconfigured with specific automatic and flexible equipment and is suitable for a wide range of industrial and logistical sectors.



Features

- High **performance** vehicle
- Best in class **payload to size ratio**
- **Multipurpose** applications can be implemented
- Multiple **navigation systems** are possible

Benefits

- Complete **reconfigurability** protects ROI and reduces TCO
 - Full **compatibility** with other Kollmorgen-based AGV systems
- **Intuitive** programming interface
- Full connectivity and diagnostic: **Factory 4.0 ready**
- Human-robot **collaborative** (safe)
- Improved **safety** and ergonomics compared to traditional solutions
 - **Simplified** maintenance

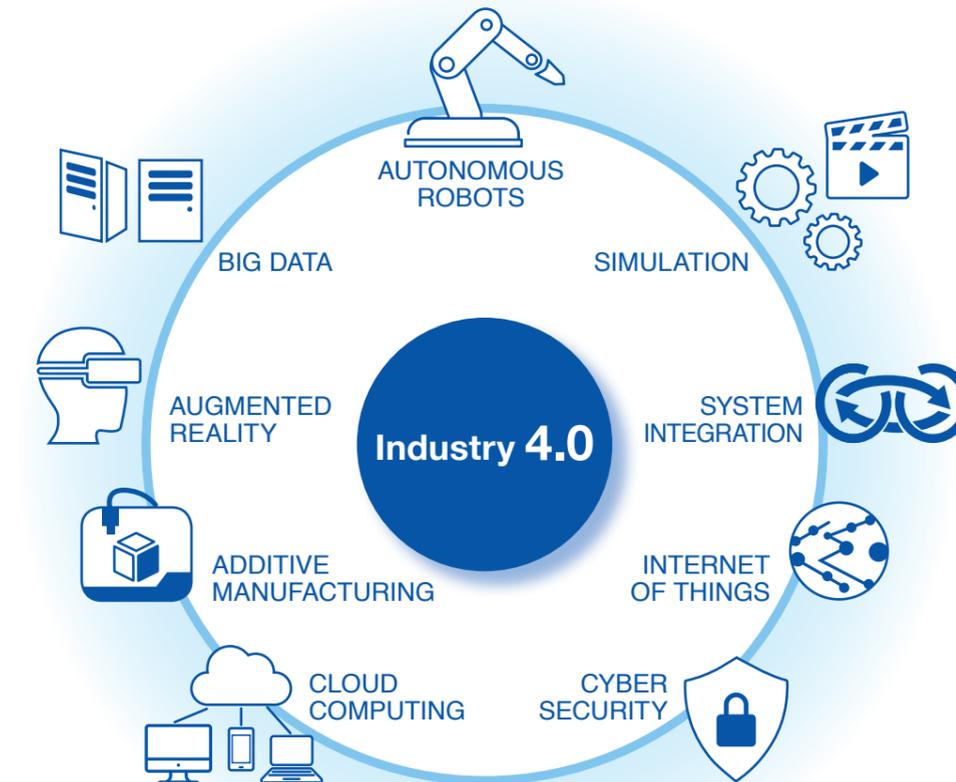
Welcome Industry 4.0

Industry 4.0 is an increasingly popular term identifying a platform that unifies information among participants in the entire value chain, from product inception to design, manufacturing, services and refurbishment. The end result is a system in which all processes are integrated and information is exchanged in real time.

AGVs form part of Comau's response to evolving market needs and are an important enablers within the Industry 4.0 paradigm. This fully **automated logistics technology** allows Comau to better support highly individualized and efficient production, while safeguarding profitability across the entire manufacturing line.

FUTURE CHALLENGES

- **Volatile** markets
- **Increasing customization** of production
- **Complexity** of product and **production processes**
- **Short life-cycle** of **products**

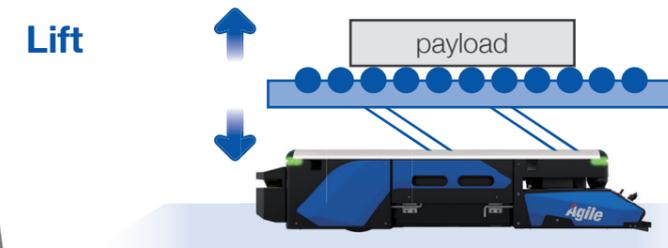
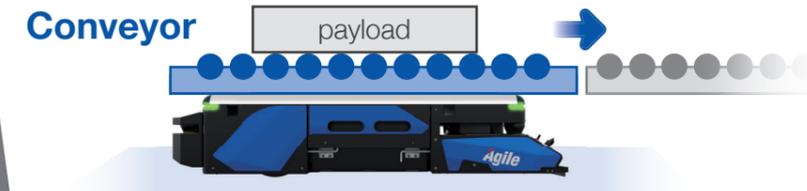
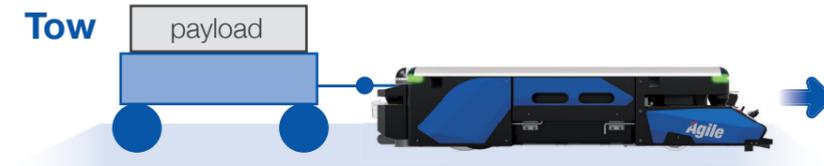


FUTURE DEMAND

- **Growing demands** for **flexibility** and **reconfigurability**
- **Increasing customization** of production
- **Minimal use of resources**
- **Adaptive production systems**

Multipurpose vehicle

Agile1500 can adapt to accommodate diverse manufacturing needs, factory layouts and multipurpose application possibilities. It is highly configurable and can be fitted with different performance accessories for each specific functionality provided by the System Integrator.



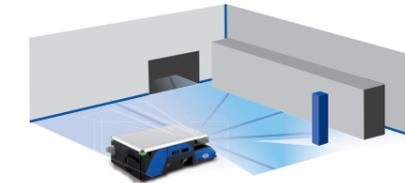
 = application functionality samples

Multi navigation technologies

Agile1500 can be equipped for multiple navigation modes, in order to fit to different environments with the most compliant technology.

Natural navigation

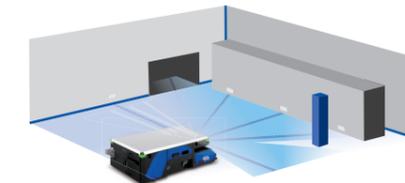
Natural navigation uses measurements from the laser range sensor to **recognize natural landmarks** such as walls and other surfaces. This makes the production facility completely free of any reference installations including mirrors, reflectors, magnetic or colored elements.



Laser Scanner

Reflector navigation

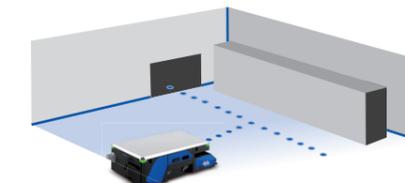
When environment is not static enough for natural navigation or there are few fixed natural landmarks, reflector navigation uses measurement from the laser range sensor to recognize reflective tapes stucked on walls and other surfaces.



Laser Scanner and Reflective Tapes

Magnetic navigation (optional)

Agile1500 can work with magnetic spot navigation by detecting floor magnets, used where natural navigation can not work.



Magnetic Sensor and Spot Magnet

Technical specifications

SIZE AND WEIGHT

External dimensions (LxWxH) [mm] 1564 x 713 x 330

Weight [Kg] 280

SPEED AND PERFORMANCE

Maximum payload [Kg] 1500

Maximum speed [m/s] 1.7 (natural/reflector) - 1.2 (magnetic) - 1.0 (backward motion)

Positioning repeatability [mm] +/-10

Maximum towing force [N] 2100*

Maximum grade [%] 1

Operating environment Indoor

BATTERY AND POWER SYSTEM

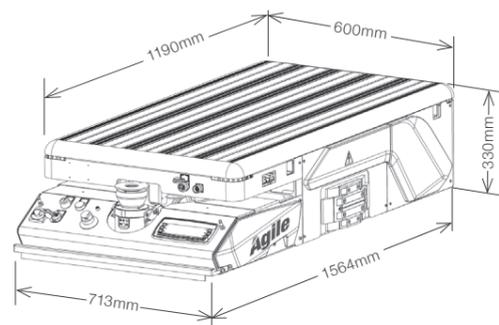
Battery type Lithium

Battery characteristics [V] - [Ah] 25.6 - 138 **

IMPLEMENTS INTERFACING AND COMMUNICATION

Power supply 24 Vdc Power, 24 Vdc Auxiliary (+/-10%)

Communication CANopen fieldbus



(*) friction 0.5 / 350 kg on vehicle plate

(**) 110 Ah available for user

Options



• **Multi navigation:** the vehicle basic configuration includes the natural navigation and reflector navigation. The multi navigation and additional options can be included on demand.

• **Lithium batteries:** are the best choice in case of big fleet (>10 vehicles) and multiple shifts applications.

- Recharging time: 4-5 times shorter than lead
- Opportunity charging allowed
- Lifecycle: up to 2000 cycles



• **Manual charging-battery charger:** the battery charger can be plugged either to the vehicle or to the additional battery pack.

• **Automatic charging + docking station:** is composed of a battery charger, a docking station and contact plates on the vehicle side. These make it possible for the vehicle to autonomously approach the docking station and go to charge when the battery level is low.



• **Additional battery pack + battery adapter:** the additional battery pack is a useful option in case the charging strategy will be the battery swap. The battery adapter is a connector to directly plug batteries and charger.

• **Battery trolley:** this makes it easier to drag the battery pack and to replace it in the vehicle - this option is highly recommended.



• **Manual control device MCD8 HS:** to make the vehicle move manually. It is similar to a robot teach pendant but one single device could be used for multiple vehicles. It also has the dead man functionality.

• **Vehicle lifting bars:** through the lifting bars it is possible to lift the vehicle from the floor to do maintenance.



• **Sick programming cable for laser scanner:** since the laser scanner on board is programmable, a programming cable may be needed.

Software

System Manager

It controls the whole AGV system, handles transport orders, allocates vehicles, and selects routes for the different transport assignments. Transport orders are generated through digital I/O or via operator interface (CWay), or are received from a host system (ERP, MES, WMS, etc).



CWay

CWay is the operating interface for the AGV system. It provides an easy way of ensuring that the system works as intended. Order parameters can be modified, and orders can be started or cancelled. CWay is available with multilanguage support and an AGV simulator interface.

Hardware

Vehicle Controller

It is the heart of the vehicle and supports reliable 24/7 operation.

It can provide a flexible communication solution through CAN/CANopen, Ethernet, RS232/422/485, WLAN and IO.

The software functions supervise everything from navigation of the vehicle to communication with the AGV system controller and interfacing sensors and actuators.



Safety

Laser Scanner

Two laser range sensors (1 front and 1 rear) are in charge of detecting any obstacles approaching the AGV. They can adjust the depth of their sight according to the vehicle speed. As a result, it can react properly by decelerating or arresting the AGV's motion before a collision can occur.



Safe PLC

The logic of all the safety features is managed by the Safe PLC, which is connected to the Laser Scanner, Safe Speed Module, safety relays and to the vehicle controller.



Safe Speed Module

This safety device is in charge of monitoring the speeds and the decelerations commanded by the vehicle controller in order to guarantee the safe behavior of the AGV.



Agile1500: product for your logistic experience



COMAU S.p.A.

Headquarters - Robotics and Automation Products
Via Rivalta, 30 - 10095 Grugliasco (TO) Italy
Tel. +39-011-0049111

Powertrain Machining - Automation System
Via Rivalta, 49 - 10095 Grugliasco (TO) Italy
Tel. +39-011-0049111

Comau France S.A.S.

Headquarters - Automation System
5-7, rue Albert Einstein - 78197 Trappes Cedex - France
Tel. +33-1-30166100

Powertrain Machining
Rue de l'Industrie - Z.I. de Mélou
81104 Castres Cedex - France
Tel. +33-5-63715050

Comau UK Ltd.

Headquarters - Automation Systems - Robotics and Automation Products - Powertrain Machining
Unit A2 Swift Park - Old Leicester Road - Rugby CV21 1DZ
Tel. +44-1788-554 500

Automation Systems - Robotics and Automation Products
Powertrain Machining
Unit 16H Follingsby Park, Follingsby Avenue
Gateshead Tyne and Wear NE10 8YF

Comau Deutschland GmbH

Automation System - Robotics and Automation Products
Hugo-Eckener-Straße 20 - 50829 Köln - Germany
Tel. +49-221-76 0060

Automation System - Robotics and Automation Products
Graf-Zeppelin-Platz 2 - 71034 Böblingen - Germany
Tel. +49-7031-73400

Automation System - Robotics and Automation Products
Leopoldstraße 254/256 - 80807 München - Germany
Tel. +49-89-3540486-0

Comau Russia OOO

Headquarters
Leningradsky prosp., 37a, bld.14, BC "Arcus"
Moscow, 125167, Russia
Tel. +7 495 7885265

Automation System - Robotics and Automation Products
Street SH-2, 2/7, SEZ «Alabuga»
The Republic of Tatarstan, Elabuga, 423600, Russia
Tel. +7 85557 52209

Powertrain Machining
Frunze str., 14B, BC "Kvadrat", office 334
The Samara Region, Togliatti, 445037, Russia
Tel. +7 8482 270089

Comau Mexico S. de R.L. de C.V.

Automation System - Robotics and Automation Products
Autopista Chamapa - Lecheria Km 2.5 Int B017
San Martin Obispo - Cuautitlan Izcalli - C.P. 54769 - México
Tel. +11-52-55 5899 69 00

Comau LLC.

Headquarters - Automation System
Robotics and Automation Products
21000 Telegraph Road - Southfield, MI 48034 - USA
Tel. +1-248-353-8888 - Toll Free +1-888-888-8998

Powertrain Machining
2800 West 14 Mile Road - Royal Oak, MI 48073 - USA
Tel. +1-248-353-8888

Innovation Campus
21175 Telegraph Rd., Southfield, Michigan 48033 - USA
Tel. +1-248-353-8888

Novi Industries
44000 Grand River, Novi, Michigan 48375 - USA
Tel. +1-248-353-8888

Comau do Brasil Ind. e Com. Ltda.

Minas Gerais Site
Avenida do Contorno, nº 3455, Distrito Industrial Paulo
Camillo Pena Betim, MG - CEP: 32.669-900 - Brazil
Tel. + 55-31-21237203

São Paulo Site
Avenida Alexandre de Gusmão, 1395 Capuava
Santo André SP - CEP: 09.110-901 - Brazil
Tel. + 55 11 3563-1500

Comau Argentina S.A.

Córdoba Site
Service - Automation System - Powertrain Machining
Ruta 9, Km 695 - 5020 - Ferreyra, Córdoba - Argentina
Tel. +54 351 4103311

Buenos Aires Site - Service
C.M. Della Paolera 299 - Piso 27
Ciudad de Buenos Aires - C1001ADA - Argentina
Tel. +54-11-5776 5352

Comau (Shanghai) Engineering Co. Ltd.

Headquarters - Automation System - Powertrain Machining
1353 Jiu Gan Road - Sijing Town, Songjiang District
201601 Shanghai P.R.China
Tel. +86-21-37616222

Dalian Branch
Rm A1005, Hanguo Center, No. 85 Jinyu Avenue
Liangjiang New District 401120 Chongqing - P.R. China
Tel. +86-23-6746 0367

Shenzhen Branch
Rm 412, Building 2 - China Phoenix Tower - Futian
District - 518035 Shenzhen P.R. China
Tel. +86-755-8320 5737

Comau (Kunshan) Automation Co. Ltd.

Robotics and Automation Products
No.232 Yuanfeng Road, Kunshan Hi-Tech Park
215300 Jiangsu P.R. China
Tel. +86-512-3682 1000

Comau Service Systems S.L.

Avenida da Aragon, 402 - 28022 Madrid - Spain

Comau Romania S.r.l.

Automation System
Sos. Borsului, 53B - 410605 Oradea, Bihor - Romania
Tel. +40-259-414769

Comau India Pvt. Ltd.

Automation System - Robotics and Automation Products
34Km Milestone - Pune-Nagar Road
Shikrapur - Pune - 412 208 India
Tel. +91-2137-678100

Local distributor



robotics.comau.com

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