

Agile1500



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.

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.

The **Agile1500** AGV forms part of Comau's response to evolving market needs and is an important enabler within the Industry 4.0 paradigm. This fully **automated logistics technology** enables Comau to better support highly individualized, highly efficient production while safeguarding productivity and 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**

Agile1500

Agile1500 is the first model within the Comau automated guided vehicles platform and is based upon Comau's open automation design approach. It is flexible enough to be deployed across a wide range of manufacturing and non manufacturing scenarios.

Features

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

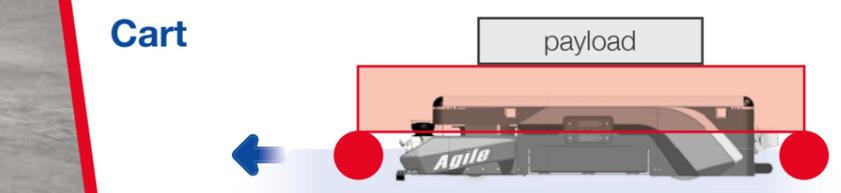
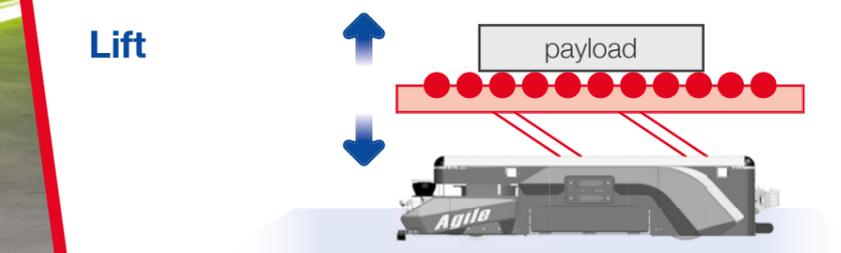
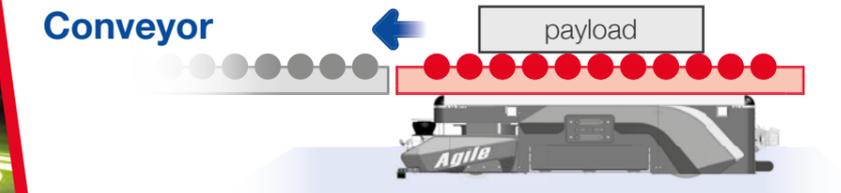
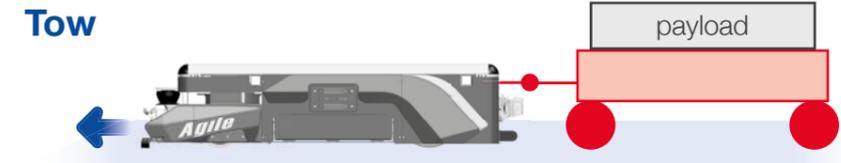
Benefits

- 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



Multipurpose vehicle

Agile1500, with its 1.5 ton maximum payload, 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 (not supplied by Comau as a standard option).

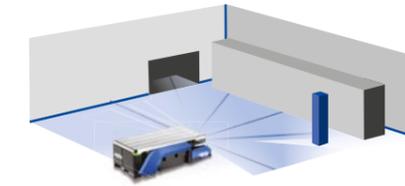


 = application functionality samples

Navigation technologies

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. This represents a highly flexible and reconfigurable choice for navigating in different environments.



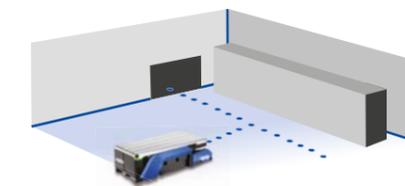
Laser Scanner



Multi Navigation (optional)

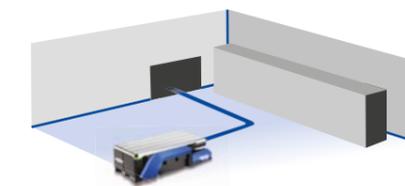
In addition, the **Agile1500** works with **multiple navigation systems** by combining natural navigation with a selected magnetic navigation option (spot or tape), and can switch from one to the other in real time: in magnetic navigation mode, the vehicle navigates by detecting magnets on the floor in areas where natural navigation can not work.

Typically used in pallet aisles, corridors and for piggy-back AGVs



Magnetic Sensor and Spot Magnet

or

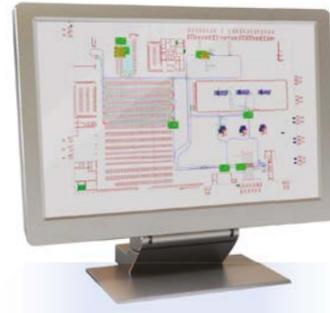


Magnetic Sensor and Tape Magnet

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

The laser range sensor is in charge of detecting any obstacles approaching the AGV. It can adjust the depth of its 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 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.



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.



Technical specifications

SIZE AND WEIGHT

External dimensions (LxWxH) [mm]	1404 x 680 x 330
Weight [Kg]	350

SPEED AND PERFORMANCE

Maximum payload [Kg]	1500
Maximum speed [m/s]	1.7 (in natural navigation)
Positioning repeatability [mm]	+/-10
Maximum towing force [N]	2400*
Maximum grade [%]	1
Operating environment	Indoor

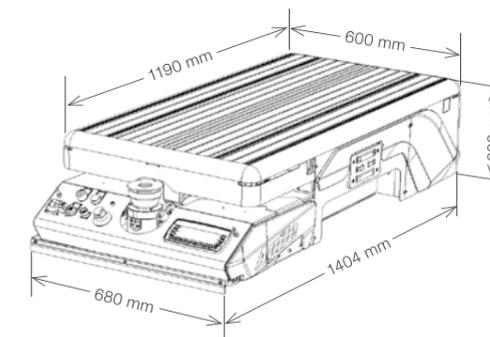
BATTERY AND POWER SYSTEM

Battery type	Maintenance-free Lead
Battery characteristics [V] - [Ah]	24 - 205

IMPLEMENTS INTERFACING AND COMMUNICATION

Power supply	24 Vdc Power, 24 Vdc Auxiliary
Communication	CANopen fieldbus

(*): friction 0.5 / 350 kg on vehicle plate



Options



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



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

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



• **Additional battery pack + battery support:** the additional battery pack is an useful option in case the charging strategy will be the battery swap. The battery support is a dropping station for the batteries that have to be left in charge.

• **Multi navigation:** natural navigation + magnetic navigation: the vehicle basic configuration includes the natural navigation, the multi navigation can be included on demand.

• **Backward motion:** to move in reverse an additional rear bumper must be added. Although a bumper is installed, the maximum speed in reverse is approximately 250 – 300 mm/s.



• **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 more vehicles. It has got also the dead man functionality.



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

• **Automatic charging station:** is composed by a battery charger, a docking station and contacts plates on the vehicle side. This make possible the vehicle to approach autonomously the docking station and go to charging when the battery level is low.

• **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

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 Service Systems S.L.

Avenida da Aragon, 402 - 28022 Madrid - Spain

Comau Poland Sp.Z.O.O.*Headquarters - Robotics and Automation Products*

Ul. Turynska 100 - 43100 Tychy - Poland

Tel. +48-32-2179404

Service

Ul. Grażyńskiego 141 - 43300 Bielsko-Biała - Poland

Tel. +48-32-2179404

Comau Romania S.r.l.*Automation System*

Sos. Borsului, 53B - 410605 Oradea, Bihor - Romania

Tel. +40-259-414769

Comau Czech s.r.o.*Robotics and Automation Products*

Hornopolní 3308/40 - Ostrava - Moravská Ostrava

702 00 Česká Republika

Tel. +420 597 570 501

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., 145, BC "Kvadrat", office 334

The Samara Region, Togliatti, 445037, Russia

Tel. +7 8482 270089

Comau Robot ve Sistemleri A.Ş.*Robotics and Automation Products*

Alaaddinbey Mh.632 SK.

Çamkoru İş Merkezi No: 4-D

Nilüfer/Bursa - Turkey

Tel. +90 (224) 443 27 43-44

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

Camilo 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-AutomationSystem-PowertrainMachining*

1353 Jiu Gan Road - Sijing Town, Songjiang Ditric

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 India Pvt. Ltd.*Automation System - Robotics and Automation Products*

34Km Milestone - Pune-Nagar Road

Shikrapur - Pune - 412 208 India

Tel. +91-2137-678100

Comau (Thailand) Co. Ltd.

No. 1-7 Zueling House Building - 9th floor

Unit 0909 - Silom Road

Kweang Silom - Khet Bangrak - Bangkok

Tel. +66-2-231 8138

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The illustration does not necessarily show the products in their standard version.

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