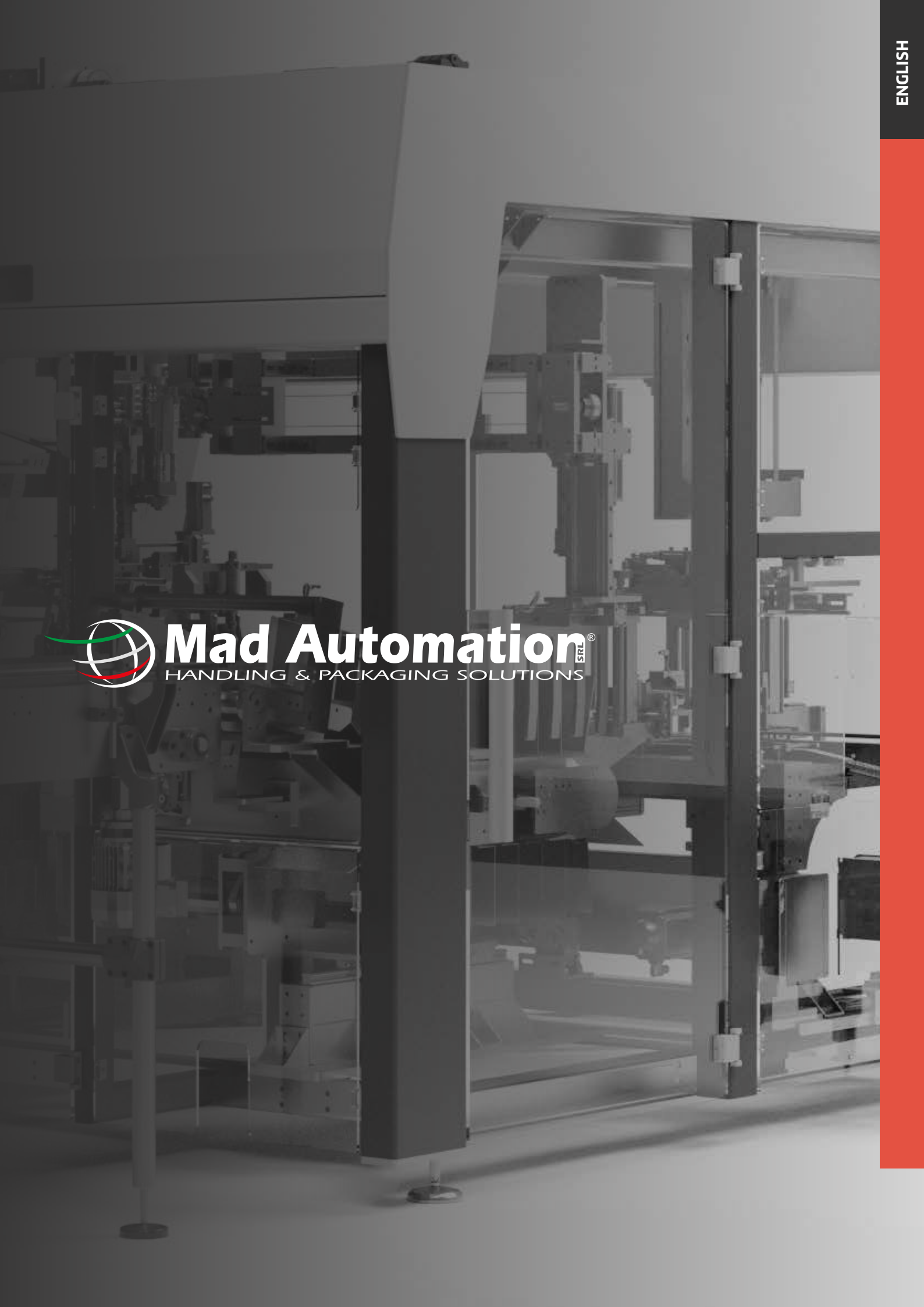




Mad Automation[®]
HANDLING & PACKAGING SOLUTIONS



A grayscale photograph of an industrial factory floor. In the foreground, a large ABB robotic arm is suspended from a ceiling structure. The arm is white and black, with 'ABB' and 'xPicker' visible on its joints. Below the arm, a complex network of pipes, cables, and mechanical components is visible. In the background, a long conveyor belt system runs across the floor, with various pieces of machinery and equipment. The overall scene is a detailed view of modern industrial automation.

 **STATE OF THE ART SOLUTIONS**
FOR INDUSTRIAL AUTOMATION
AND HANDLING.



COMPANY PROFILE.

Mad Automation has been working for more than fifteen years as a software developer and end of line solutions manufacturer, with the aim of bringing to the packaging and handling industry the maximum benefits in terms of performance and production efficiency.

Mad's continuous research for new technical solutions and improvement of existing systems results in a complete range of state of the art machinery: cartoning machines for self-protected capsules, case packers, palletisers, LGVs (Laser Guided Vehicles) and software, designed to meet every single customer's specific requirements.

The whole design and production process is done internally: research and design engineering, assembly of mechanical parts electric cabinets, custom software development, testing and after-sales support.



Mad Automation headquarter.



Our team.



Mad has been steadily growing both in terms of sales network and turnover with the aim of making the Brand Mad Automation synonymous with End-of-line Systems. Over the years Mad has been awarded numerous patents and an honorable Mention for Innovation by the Italian Chamber of Commerce.

In order to respond to the increasing Market's demand for complete End-Of-Line systems, and in spite of the 2020/2021 Covid 19 crisis, Mad recently moved into its new Headquarters, a brand new, state of the art, 3.500 m2 (37.000 ft2) facility.

Mad's development strategy for the next years is to strengthen its commercial coverage both in Europe and Overseas by implementing an international sales network. The first step towards the accomplishment of this goal is the constitution of Mad's Subsidiary in North America, Mad Automation America Inc.

Mad's goal is to improve the performance of manufacturing companies. Our new generation machinery grant high efficiency, reduction of overall costs, ease of operation, total safety and high productivity.

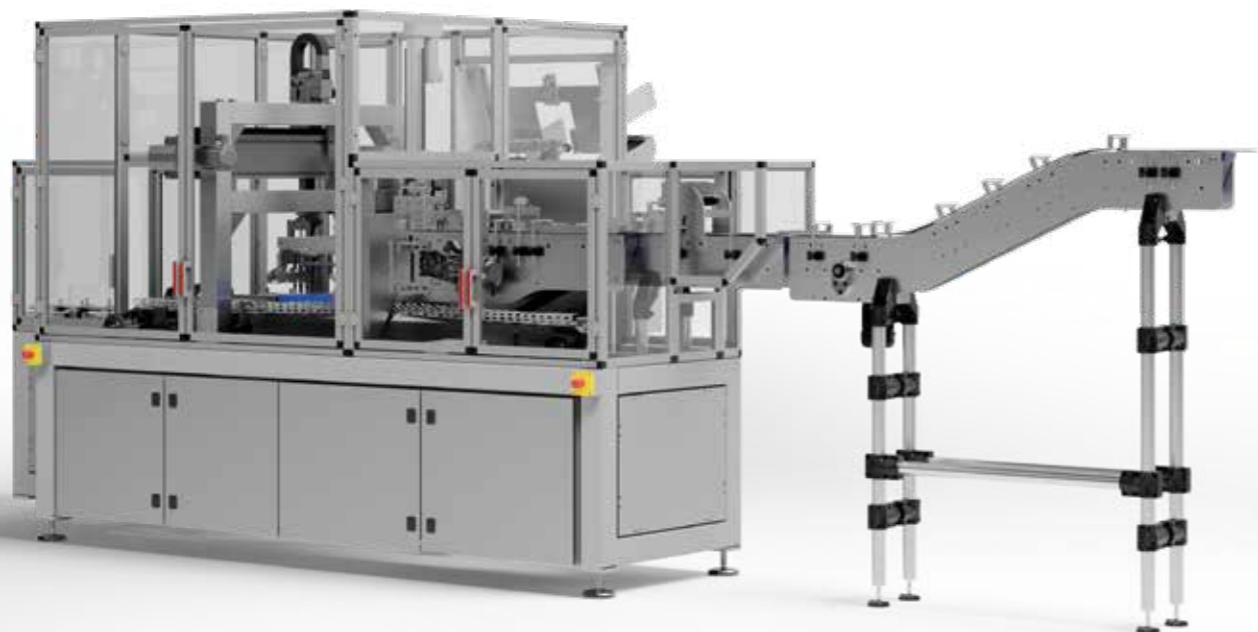




CARTONING MACHINE FOR SELF-PROTECTED CAPSULES.

Mad Automation's Cartoners' range is a versatile and innovative line of machines able to handle every kind of capsule currently used on the market such as: Nespresso, A Modo Mio, Lavazza blu, Dolce Gusto, Caffitaly, K-cup, Vertuo, ecc.

Mad's cartoners' specific capsule infeed and protection system, grant the integrity of the products and avoids any risk of damage. It is a perfect solution for all kinds of capsules especially for the aluminum ones, the most commonly used by the Coffee Roasters.



The ultimate solution for Coffee Manufacturers' specific needs.

Mad's cartoners have been designed as a scalable system, they can be combined with a case packer in one compact frame, thus handling the capsules from their infeed to the machine to the case.



SPEED

Mad's cartoners grant high filling speed, up to 600 capsules per minute. The cartons's magazine infeed speed can be adjusted to the speed of the upstream and downstream lines.



VARIETY

Mad's cartoning systems are designed to handle with ease all types of capsules (such as Nespresso, A Modo Mio, Lavazza blu, Dolce Gusto, Caffitaly, K-cup, Vertuo, ecc.) and can be adapted to any new capsule coming to the market.



INNOVATION

Mad Automation's cartoners range has been designed to meet all Coffee Manufacturers' specific requirements. This is the result of Mads investment in R&D and constant innovation. Every single project is discussed by Mad's technical team in order to define the best solution for every customers' challenge.



MATERIALS

Other than plastic capsules Mad's machines are designed for aluminum capsules, they couple a very gentle handling with high performance.



SCALABLE SYSTEM

Mad's all-in-one solution, the combination of a cartoner and a case packer in one compact machine, can cover the entire packaging process from the infeed of the capsules into the machine to the sealing of the case. It can also integrate weight control and printing devices this becoming a complete packaging solution.





CARTONING MACHINE FOR SELF-PROTECTED CAPSULES.

Thanks to the automated system of capsule feeding and with a horizontal blanks' warehouse, the system can easily handle up to 600 capsules per minute.

The cartoning process starts from the formation of a carton from a flat blank. The machine is designed to work a wide array of blanks' sizes, to arrange

the capsules in various patterns and to place an interlayer if needed.

Accessible and functional, they can be connected with Mad's Case Packers, tWrap or Superfast, or built as a single frame all-in-one solution.

MACHINE INPUT.

THE MACHINE WRAPS DIFFERENT KIND OF CAPSULES.



Nespresso



A Modo Mio



Dolce Gusto



K-Cups

MACHINE OUTPUT.

IT IS POSSIBLE TO WRAP THE CAPSULES IN VARIOUS PACKAGE TYPES.

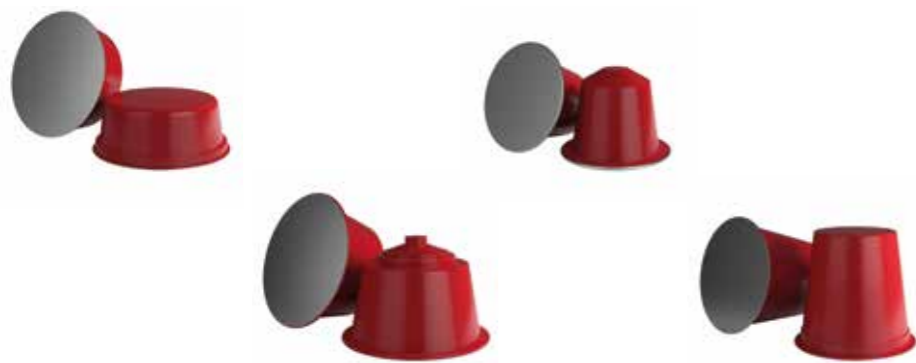
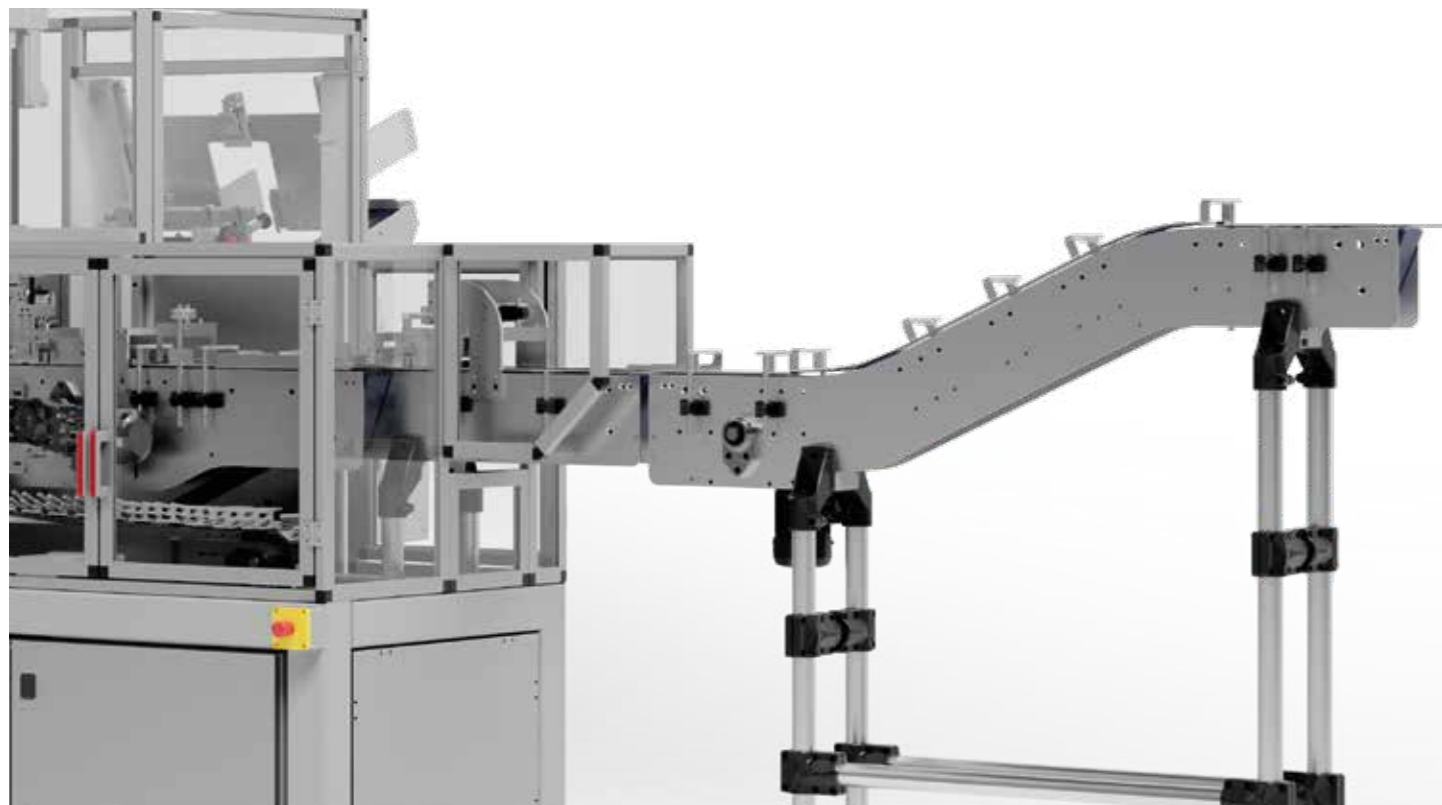


DATA SHEET	MIN	MAX	SPEED
Type Nespresso	L140 W60 H25	L160 W80 H35	600 caps/min
Type A Modo Mio	L90 W90 H60	L100 W100 H80	600 caps/min
Type Dolce Gusto	L150 W80 H100	L400 W300 H250	600 caps/min
Type K-Cup	L150 W80 H100	L400 W300 H250	600 caps/min

Mad's cartoning machines can form and fill cartons containing 10 to 55 capsules. The layers can be separated by means of layer pads. In the 10ct format a patterned layer pad can be used to hold the capsules in place.



ALL IN ONE SOLUTION.



The All in One Solutions designed by Mad Automation combine two machines into a complete packaging line “from capsule to case” in a single frame. This new type of machinery, fully scalable, can be composed of 4 main elements.



CARTONING MACHINE FOR SELF-PROTECTED CAPSULE



The Cartoning Machine for self-protected capsules is Mad’s flexible and versatile solution to pack all types of compatible capsules currently available on the market: Nespresso, A Modo Mio, Lavazza blu, Dolce Gusto, Caffitaly, K-cup, Vertuo, etc...

WEIGHT CONTROL SYSTEM



The Weight Control System is an essential tool to guarantee the quality of the final package and to ensure the respect of the correct product quantity in the case. It is a high-performance device, integrated into the system, which is suitable for a wide range of weights and sizes. It can also control the cases’ loading and the non conforming product rejection before they reach the marking and loading stations.

CASES MARKER



The all-in-one solution is equipped with a Case Marker easy to set up and operate. It is available either with laser or ink marking technology both in colors or black and white. The print position is adjustable and settable on multiple lines. The marker can print all the data relevant to the production lot, such as the production date, the expiration date, the identification number, etc... to grant total product traceability.

CASE PACKER



The Case Packer completes the all-in-one solution. It can feature either a robotic arm or a picking head according to the customer’s requirements and it is able to handle a wide array of cases: Wrap Around, Display Tray + Lid, Display Tray, Ledge Tray and American Case. The size changeover is fully automatic.

All in one solution allows to have the capsules as input, the intermediate output is the cases and the final output is the carton packs.

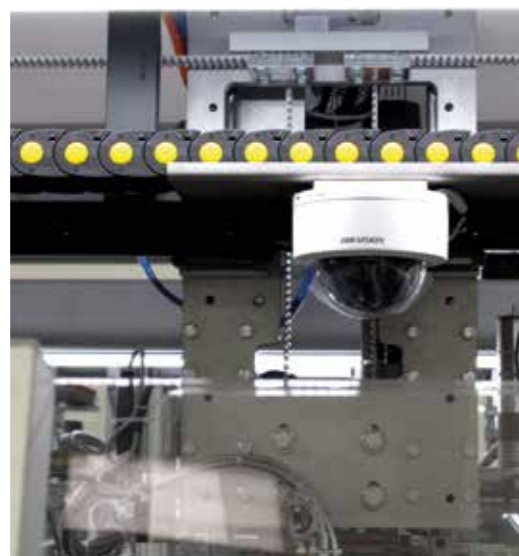
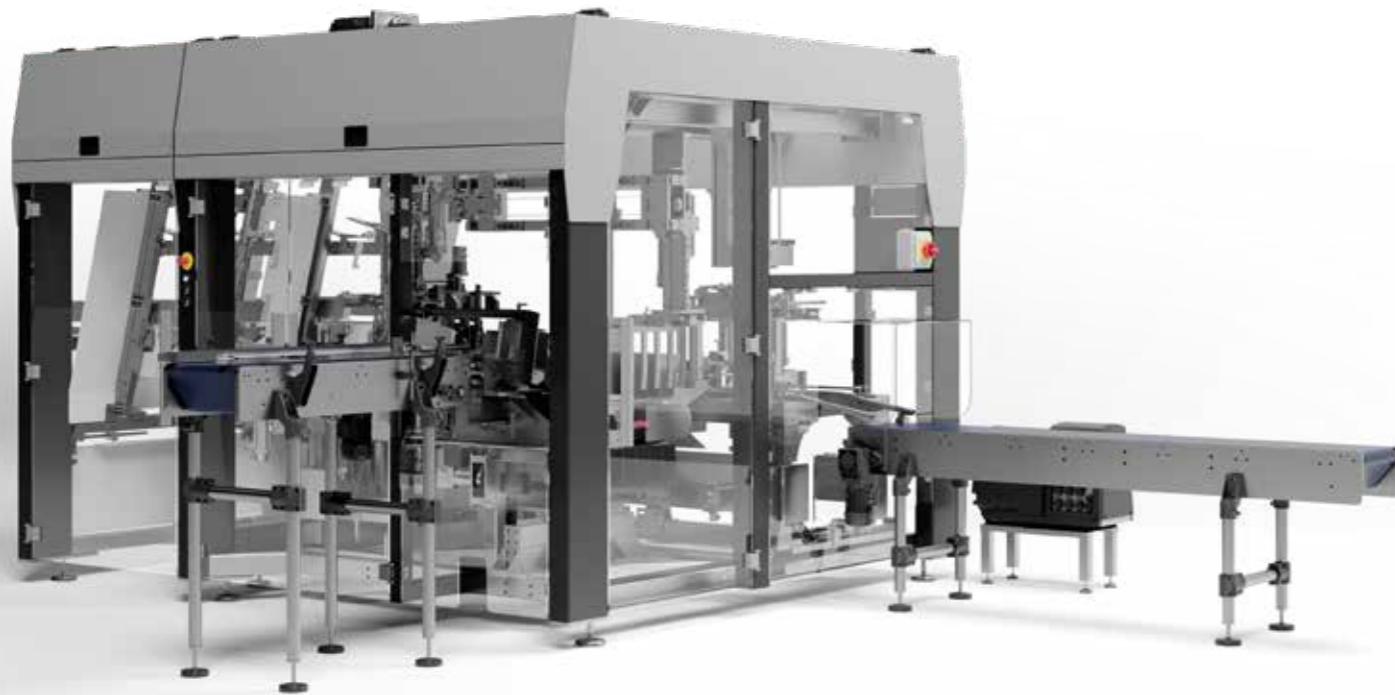




CASE PACKERS.

Mad Automation's case packers are sturdy and reliable machines designed to handle numerous types of packages.

They can feature standard or stainless steel components so to be suitable for all environmental conditions.



The solution for an accurate and versatile packaging.



AUTOMATIC SIZE CHANGEOVER

The completely automated and easy-to-operate size changeover system grants an accurate and quick adjustment of the inner parts of the machine from the current product to the next.



REDUCED DIMENSIONS

Every single machine is designed, according to the clients' specific needs, so to make the most of the space available. The integration of power switchboards into the top section of the machine optimizes the space, while facilitating the machinery positioning and accessibility from all sides.



RESPECT FOR THE PRODUCT

Throughout the case formation and packing process, the packs are always kept in correct position by rails and retractable holding flaps to prevent falls, bumps, breaks or micro damages. The sealing systems installed on the conveyors prevent product from warpage, optimizing the package size and allowing to recover up to 20% of usable space.



RELIABILITY

The machines are designed and built with sturdy materials and top quality standard electric and pneumatic components to work 24 hours a day, 7 days a week.



EASY OPERATION

The machines are fully accessible from all sides: this grants ease of use, reduces size changeover downtimes and simplifies setup and maintenance. By means of the touch screen HMI all data relevant to the speed and position of the the inner devices of the machine can be set and saved. They can also be retrieved and associated to a specific recipe.





CASE PACKERS SUPERFAST.

Mad Automation's Superfast is a patented case packer. By means of a robotic arm (Flex Picker) it can create multiple patterns inside the case, the products can be arranged horizontally, vertically, sideways or overlapped.

The size changeover is completely automated and easy to set up thanks to the operator-friendly touch screen panel.

The machine is accessible from all sides as the electric cabinets are placed on the top part, thus granting an easier maintenance and cleaning.



MACHINE INPUT. THE MACHINE WRAPS DIFFERENT KIND OF PACKAGES.



Superfast is the ultima versatile solution and it can be tailored on customers' needs and requirements.



MACHINE OUTPUT. IT IS POSSIBLE TO WRAP THE PRODUCTS IN VARIOUS PACKAGE TYPES.



The Superfast is Mad's last generation of high speed, fully automatic Case Packer.

PATENTED

DATA SHEET	MIN	MAX	SPEED
Wrap Around	L250 W140 H100	L400 W300 H300	18 cases/min.
Display Tray + Lid	L250 W140 H100	L400 W400 H300	17 cases/min.
Display Tray	L250 W140 H100	L400 W300 H250	20 cases/min.
Plateau	L300 W200 H100	L600 W400 H400	20 cases/min.



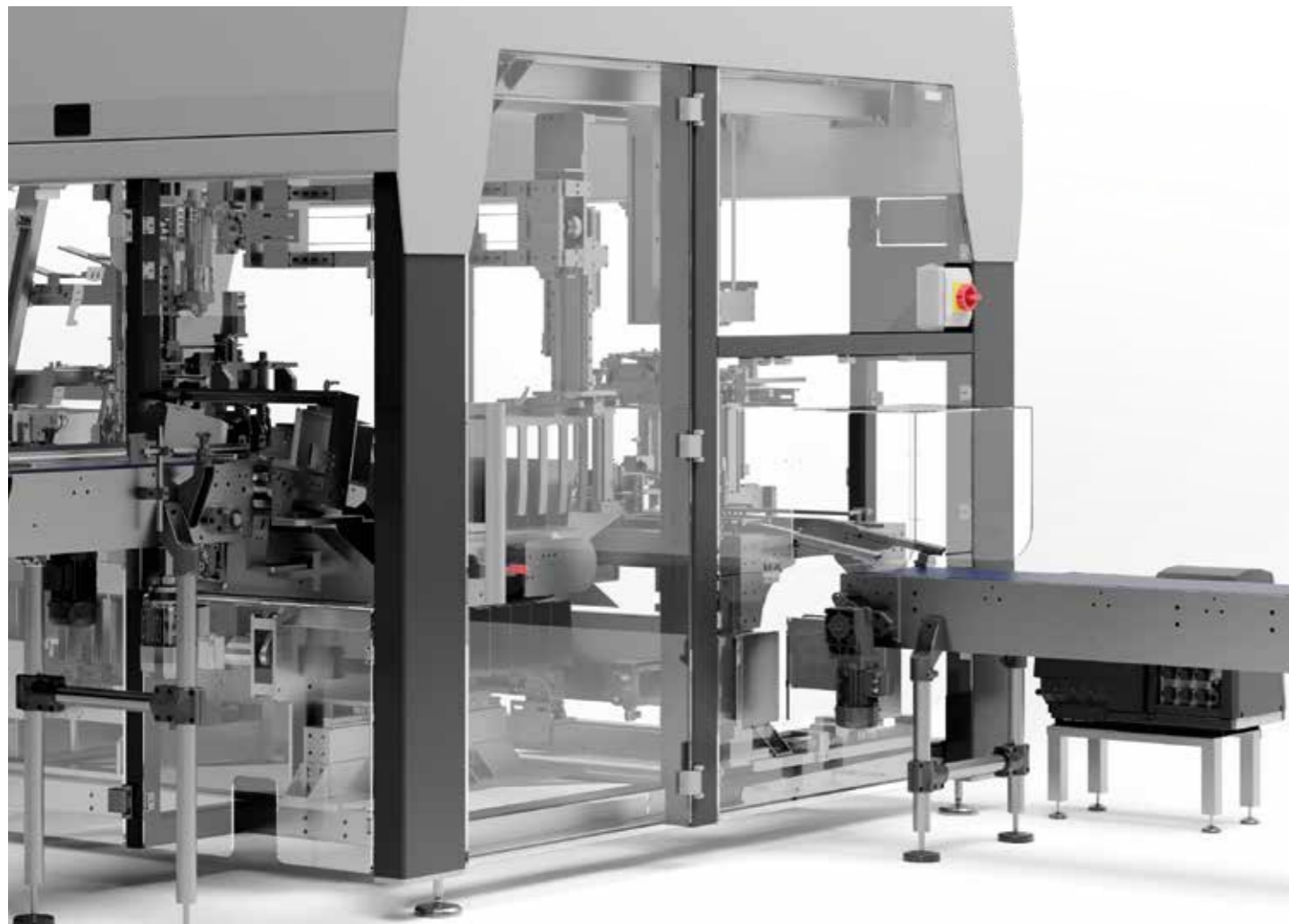
CASE PACKERS

TWRAP.

The tWrap grants a gentle handling of the product from the bundle formation to the sealing of the case thanks to its fixed and retractable guides, designed to prevent falls, bumps, breaks and micro damages.

The cases are filled by means of a picking head designed according to the products' size and specifications.

The machine handles flat blanks and products of multiple sizes and dimensions, it can automatically adjust its speed according to the product to be packed. The dimension of the cases is thus optimized so to reduce costs and improve productivity.



DATA SHEET	MIN	MAX	SPEED
Wrap Around	L250 W140 H100	L600 W300 H300	25 cases/min.
Display Tray + Lid	L195 W80 H100	L400 W400 H300	18 cases/min.
Display Tray	L250 W140 H100	L600 W300 H250	25 cases/min.
Plateau	L300 W200 H100	L600 W400 H400	20 cases/min.
American Case	L200 W100 H150	L600 W500 H500	20 cases/min.

MACHINE INPUT.

THE MACHINE WRAPS DIFFERENT KIND OF PACKAGES.



The tWrap features a toll-less size changeov system.



MACHINE OUTPUT.

IT IS POSSIBLE TO WRAP THE PRODUCTS IN VARIOUS PACKAGE TYPES.



An all round packaging solution suitable for multiple packages in a small footprint.



CASE PACKERS

EASY WRAP.

The Easy Wrap combines high technology and convenience: with an extremely reduced footprint it ensures top notch performance and total reliability. It is available both with a flex picker or with a mechanic picking head and it can easily handle standing or lying flat products.

The automatic size changeover system is easily controlled by the operator.

The Easy Wrap is suitable for all kinds of products and it can work with numerous kinds of cases: Wrap Around, Display Tray, Ledge Tray, American Case.



MACHINE INPUT.

THE MACHINE WRAPS DIFFERENT KIND OF PACKAGES.



The EasyWrap is an extremely compact Case Packer, easy to use and easy to place.



MACHINE OUTPUT.

IT IS POSSIBLE TO WRAP THE PRODUCTS IN VARIOUS PACKAGE TYPES.



DATA SHEET	MIN	MAX	SPEED
Wrap Around	L250 W140 H100	L600 W300 H300	12 cases/min.
Display Tray	L140 W100 H250	L600 W400 H250	12 cases/min.
American Case	L200 W100 H150	L600 W500 H500	15 cases/min.
Plateau	L140 W100 H250	L600 W400 H250	12 cases/min.



PALLETIZING STATIONS.

Mad Automation palletizing stations are designed to handle a wide range of products including: wrap around cases, display trays with lid, display trays, Ledge Trays, American cases, packs, bags, etc...

Mad Automation offers two palletizing solutions according to the customers' specific needs: robotic and gantry. In both cases the picking heads are designed and built in-house in order to maximize the performance of the system.



Mad Automation palletizing stations can handle wrap around cases, display trays, Ledge Trays, American cases, packs, bags



The gantry palletizer.

Robotic palletizer features a gripper head.



The **robotic palletizer features a gripper head** with carbon fiber "fingers" featuring a rubber inner liner to grant a perfect grip on all sorts of products. The head's flaps are as long as the pallet's longer side so to load one complete row of products a time. The head can be opened wider than the length of the pallet's longer side to compact the layers once they are completed. The palletizers' layout are widely customizable as for their dimensions, layer pads use, double stacked pallets, products' pattern, multiple reference handling.

The production line can be completed by existing or supplied by Mad Automation equipment.



The **gantry palletizer** is a simple and compact system. It can be provided as a stand-alone machine or as an integration to Mad's case packer all in one frame. Like our every other machine it can be interfaced with the Brain 4.0 software by means of a user friendly HMI.

Mad Automation palletizing stations are designed to be directly connected both to upstream and downstream existing machinery as well as to Mad's packaging lines. The packaging line can be integrated with ink jet printers, labelers, automated or semi-automated stretch wrappers, LGVs.



LGV SHUTTLES.

Mad Automation has developed a new generation of Laser Guided Vehicles for transporting materials such as pallets, containers, coils, etc. These vehicles can operate in any industrial sectors, and are particularly suitable for situations where the environmental conditions are not safe for operators.

An automatic handling of internal logistics is also required when the goods are tracked by a software. The system allows to optimize loading and unloading operations to and from the warehouse and facilitates point-to-point transportation, even in chainmode operations.



The supervision of LGV systems is ensured by intuitive synoptics panels that describe moment by moment the stock and the production department status.

Mad's WMS supervision software, developed internally, has a simple and intuitive interface and provides full integration with other devices such as palletisers, automated stations, wrappers, handling lines, stacker cranes, warehouses, and any other software WMS and ERP systems already used by the client.



HIGH-TECH INNOVATION

The material transport system with Laser Guided Vehicles by Mad Automation, is designed to meet the technological and the productivity needs of the customer, especially for 24h work shifts, and can also be seamlessly integrated with existing systems.



VERSATILITY AND STURDINESS

The vehicles are designed to work 24 hours a day, ensuring extreme reliability over the years. Mad'S LGV Shuttles can be completely reprogrammed in case of even radical modifications in the tasks to be performed thus resulting in a great investment.



LASER GUIDED NAVIGATION

The total absence of ground infrastructure ensures maximum flexibility and freedom of movement, it also allows to modify or add routes at any time, just with the help of Mad's PC software (CAD for routes creation).



EASY TO FIND SPARE PARTS

Mad'S vehicles and the entire system are made with electronic and mechanical components available on the market. This is a great advantage for end customers who can have their LGVs serviced by their personnel.



IN HOUSE SOFTWARE DEVELOPMENT

The management and navigation software is developed entirely by Mad's engineers in order to keep the know-how and to be able to adapt it to the needs of the most demanding customers.





OUR RANGE.

MAD-3000S



Lifting type: Oil - Hydraulic.
Maximum height: 3000 mm.
Maximum speed: 1,5 m/s.
Fork lifting speed: 0,2 m/s.
N° of pallets transported:
 1 single, 2 overlapped.
Pallet type: any kind.
Maximum capacity: 1200 kg.
Positioning precision:
 up to 5 mm.

MAD-5000



Lifting type: Oil - Hydraulic.
Maximum height: 5000 mm.
Maximum speed: 1,5 m/s.
Fork lifting speed: 0,3 m/s.
N° of pallets transported: 1.
Pallet type: special SKU.
Fork type: customized for special SKU.
Maximum capacity: 4000 kg.
Positioning precision:
 up to 5 mm.

MAD-3000



Lifting type: Oil - Hydraulic.
Maximum height: 3600 mm.
Maximum speed: 1,5 m/s.
Fork lifting speed: 0,2 m/s.
N° of pallets transported:
 1 single, 2 overlapped or side by side, 4 overlapped or side by side.
Pallet type: any kind.
Maximum capacity: 1700 kg.
Positioning precision:
 up to 5 mm.

MAD-7500



Lifting type: Oil - Hydraulic.
Maximum height: 7500 mm.
Maximum speed: 1,5 m/s.
Fork lifting speed: 0,3 m/s.
N° of pallets transported: 1.
Pallet type: any kind.
Fork type: telescopic forks for shelf service.
Maximum capacity: 1200 kg.
Positioning precision:
 up to 5 mm.

MAD-ROLLER



Maximum speed: 1,5 m/s.
N° of pallets transported:
 1 single, 2 overlapped or side by side, 4 overlapped or side by side.
Pallet type: any kind.
Maximum capacity: 1700 kg.
Positioning precision:
 up to 5 mm.

BATTERIES AND CHARGING STATIONS.

Our range of batteries includes: **lithium batteries** (top performance and total absence of exhalations), **pure lead sealed acid batteries** (high performance with very low percentages of exhalations), **lead-acid traditional batteries** (traditional batteries line).



Battery Charging and Swapping Systems.



Fully automatic Change and Charge System. Each LGV has at least two batteries that are automatically alternated; the LGV moves to the area adjacent to the battery swap and charge station. It automatically delivers the empty battery to the charging station and takes the full battery on board, than it proceeds to complete its tasks. This system can be combined with any type of battery.

Opportunity battery charging system. Each LGV has only one battery on board, in case of a battery failure, the LGV moves to the area next to the opportunity battery charging system to make a partial recharge for a few minutes. This system is particularly suitable for lithium or pure lead batteries



SOFTWARE BRAIN 4.0.

The Brain 4.0 machine supervision software, is a scalable software package. By means of a centralized production process and logistics control it optimizes the Companies' efficiency. Entirely developed in-house, its main feature is the possibility to be adapted to the customers' machines and to be tailored to the customers' production goals.



By using Brain 4.0 the customer will:

- fully control of the whole production process and avoid the lack of flexibility normally caused by software supplied by general software houses;
- make sure that machines, devices, databases and software all communicate in the same language thanks to a common "Brain".

Mad Automation not only takes care of the installation and start-up of the system, but also provides periodic upgrades.

The Brain 4.0 modules currently proposed by Mad Automation are the following:

The Script Manager (SM) is Brain's core. By means of powerful fully customizable functions it allows the creation and management of decisional logics to supervise all operations of a modern production plant. The Module can communicate with any system connected with the Plant Manager and to control it, such as the LGV fleet, the warehouse, the palletizers etc... The Script Manager also allows to create bespoke production planning rules.

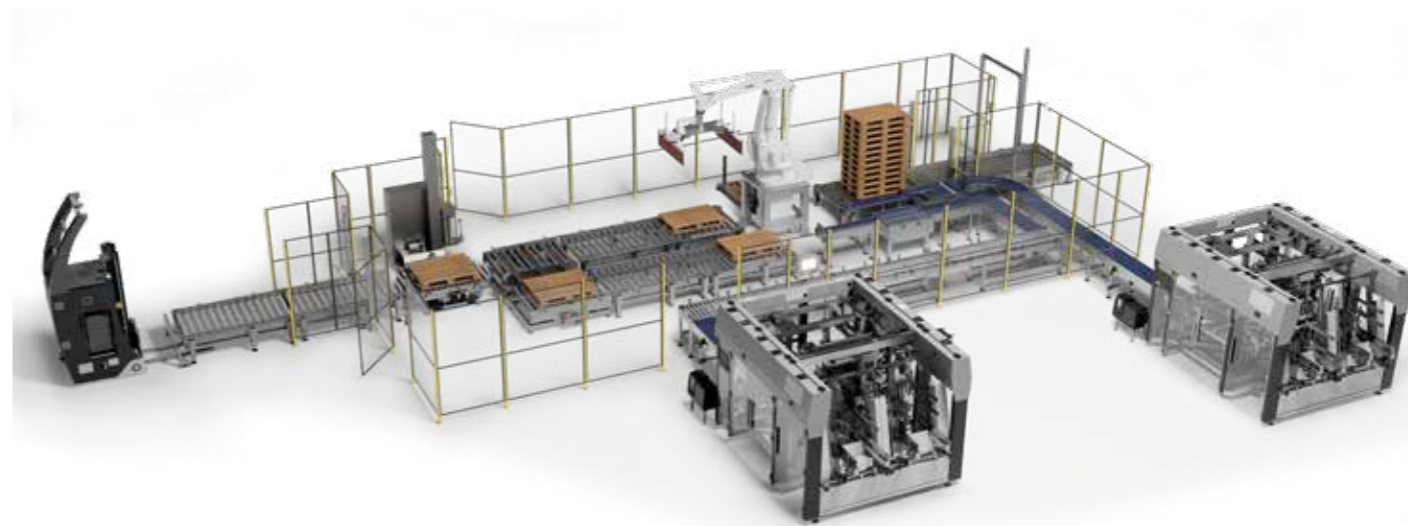
The Client Manager (CM) allows to create customized HMI interfaces. The Designer can create and modify OTA (over the air) all the plant's interfaces be it control panels or statistics and administrative reports HMIs. All the HMIs can be defined in their operational functions and customized to every single operator.

The Warehouse Management System (WMS) is specifically conceived to control the production facilities' internal logistic processes. It is an integrated solution that allows to manage all automated and manual operations. The WMS controls multiple warehouses, it optimizes the products' location and their transfer to a new spot to fine tune the LGVs' flux.

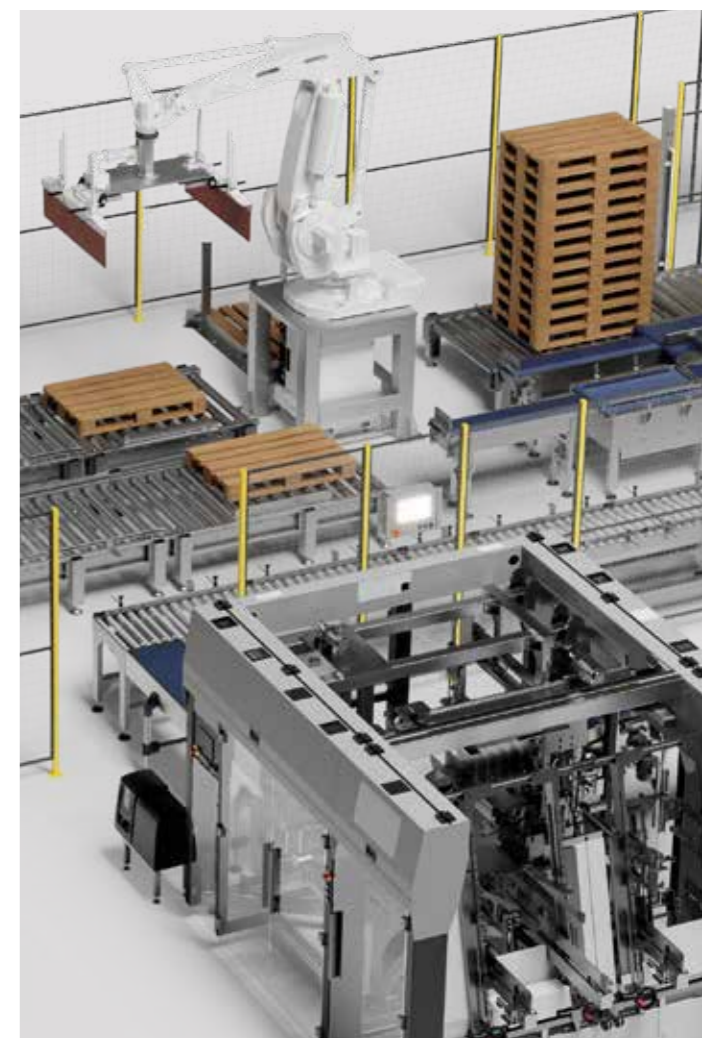
The Plant Manager (PM) is the integration, communication and control module for all the automatis systems composing the line. The module can communicate with both Mad Automation's machinery and all other machines and devices. PM can also provide to the ERP or to third party software all the variables and the statuses of every single section of the line.

INTEGRATED SOLUTIONS.

Mad's software grants complete control on all the machines the line consists of: case packers, printers, labelers, conveyors, palletizers, stretch wrappers and LGV shuttles.



Mad Automation designs integrated solutions to handle the entire end of line cycle.





TSTACKER PALLET STACKER.

The tStacker pallet stacker is a standalone modular unit, which enhances efficiency of pallet handling systems and prevents operators from lifting heavy loads.

The empty pallet is fed, by means of a motorized roller conveyor, to the lifting station, where specific

hooks clamp the pallet and lift it. Once the tStacker reaches the given number of pallets, it automatically proceeds with their ejection from the lifting point and then it drives them to the picking point.

Optional: request for rejection from 1 to 3 stacked pallets (tOP001), automatic recognition of the incoming pallet height for stacking 1, 2, or 3 pallets (tOP002).



tStacker is designed to handle empty pallet stacks. It is an easy-to-use system; thanks to the touch screen panel, the operator can independently configure the number of pallets to be stacked/unstacked.

MODELS	DIMENSION (MM)	PALLET TYPE (MM)	LIFTING	PALLETS N°
tSTK001	L1600 x P3200 x H2500	1200x800	500Kg	15
tSTK002	L1800 x P3200 x H2500	1200x1000	500Kg	15
tSTK101	L1600 x P3200 x H3800	1200x800	800Kg	25
tSTK102	L1800 x P3200 x H3800	1200x100	800Kg	25

BELT CONVEYORS.

Belt Conveyors are specifically designed and manufactured to speed up the production cycle and integrate vision camera systems, as well as with bar code readers. The grip type is designed according to the product to be transported; Mad Automation's conveyor systems can be equipped with belt conveyors, slat band conveyor chains, or they can be customized for any special requirement.

Our belt conveyors are suited to feed products to case packers; they are the perfect solution to pace the production flow whilst protecting products from damage and keeping them in the right position. Once the cases reach the case packer exit point, the belt conveyors take them to the palletising station; then, thanks to inkjet printers and bar code readers, the cases are conveyed to the right palletizing island.

Mad Automation's Belt Conveyors can transport every kind of goods, individual packs, cases.



ROLLER CONVEYORS.

Mad Automation's roller conveyors are sturdy industrial transport solutions, available either in idler or motorized version. They are suitable for cases, pallets, or any other kind of material.

Mad's roller conveyors can be completely automated thus avoiding any human intervention.

They can move loads independently and ensure a quick, smart and economic service. Mad's roller conveyors can be completely customized according to customers' needs, they can lift, transport, flip products in total safety.

Smooth operations and efficient performance, respecting safety standards.



SERVICE.



**TELEPHONE
AND REMOTE
ASSISTANCE**



ON SITE SERVICE



SPARE PARTS



**PERSONNEL
TRAINING**



**MACHINERY UPGRADE AND
REVAMPING**

Mad Automation's after sales service grants quick feedback to customers' needs, providing all-round support.


Our **Standard package** includes:

- On-request customer support;
- Supply of spare parts;

- Specific training programs for maintenance technicians and operators;
- Constant system monitoring;
- Remote technical support (Help Desk).

THE LOCATIONS OF MAD AUTOMATION.





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