

UNIGRIPPER

INTELLIGENT VACUUM



INDUSTRY SOLUTIONS

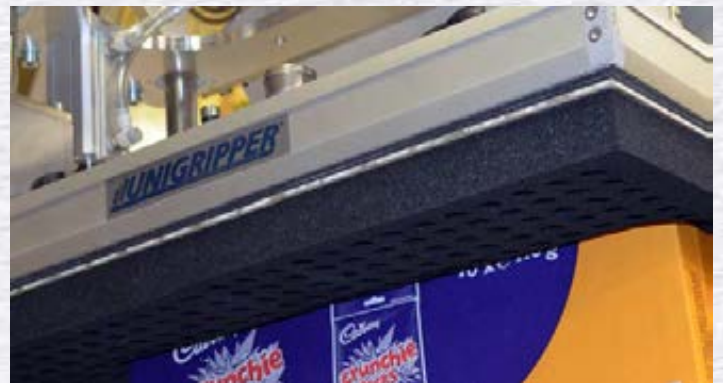
INDUSTRY SOLUTIONS



UniGrippers are used in almost all industries imaginable- from handling of sensitive medical equipment to boxes on open-sea fishing boats and packages of money at national banks. These grippers all have in common that they are based on the UniGripper Customized concept, which is further described on the next pages.

The UniGripper customized concept is easily adaptable to any kind of industry. The table of contents to the right list handling scenarios which are the most common for us at UniGripper, but every day is a variation of these scenarios and new ones.

A key for most UniGripper applications is an efficient and reliable vacuum generation. At UniGripper we use the most effective vacuum generators, from small to very large grippers as well as a large set of vacuum generation accessories to make the installation of the entire vacuum gripping system quick and easy.



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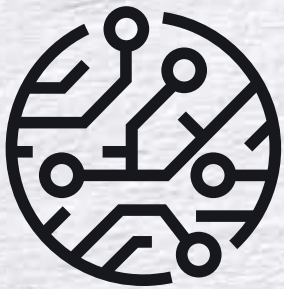
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UNIGRIPPER



UniGripper has been a success story since the first grippers based on the Intelligent Vacuum technology were launched in the mid-1990s. Through continuous innovation for more than 20 years, UniGripper continues to be the natural choice for automation projects all over the world and for all kinds of industries. Our core values are Flexibility, Experience, Quality, Maintainability, Optimization and Partnership.

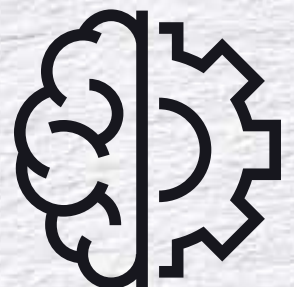


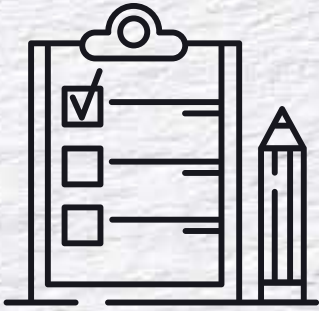
FLEXIBILITY

UniGripper has been associated with flexibility all the way since first being showcased. The UniGripper valves makes the gripper surface able to focus the vacuum flow to where objects are located, which makes the same UniGripper able to handle a larger variety of objects with the same gripper configuration and with a more energy efficient vacuum source. The UniGripper Customized concept and its efficient implementation also mean great flexibility in terms of tailoring the tool for the requirements of each specific application.

EXPERIENCE

The first UniGrippers were installed more than 20 years ago and since then, several thousand projects have given us tons of valuable experience. The experience both caters for selecting the best configuration for each specific application and is the key for efficiently design and produce the UniGripper with this configuration



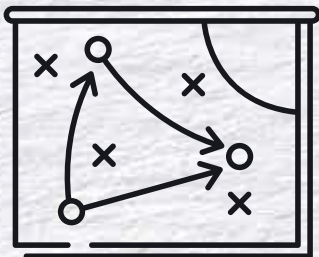
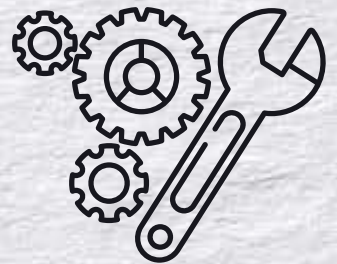


QUALITY

Core values of quality for UniGripper are high performance, fast delivery, reliability in operation and easy maintenance. UniGripper assures quality in all components such as spare parts with long life time. With tools delivered more than 20 years ago still in full use, we are confident that a customized UniGripper is a sustainable investment that will be part of your success for many years.

MAINTAINABILITY

A vital success of a tool is the runtime. When we design a UniGripper we use components of highest quality in order to reduce the level of maintenance to a minimum. Our focus is the operators' perspective to ensure a good working situation and easy maintainable components for a minimum of downtime.

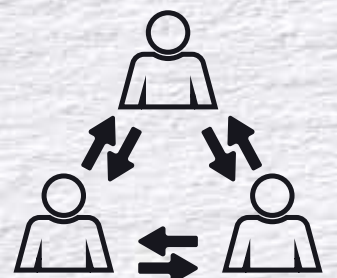


OPTIMIZATION

The UniGripper vacuum grippers are selected by configuring a multitude of parameters. From properties of the UniGripper valves and foam pad design, to selection of an energy-efficient vacuum source and accessories to make the gripper solution optimal from both functional and financial point of views. Input parameters when making the optimization include properties of current and future products to handle, size and weight constraints for the system as well as cycle times and other KPIs of the complete production system.

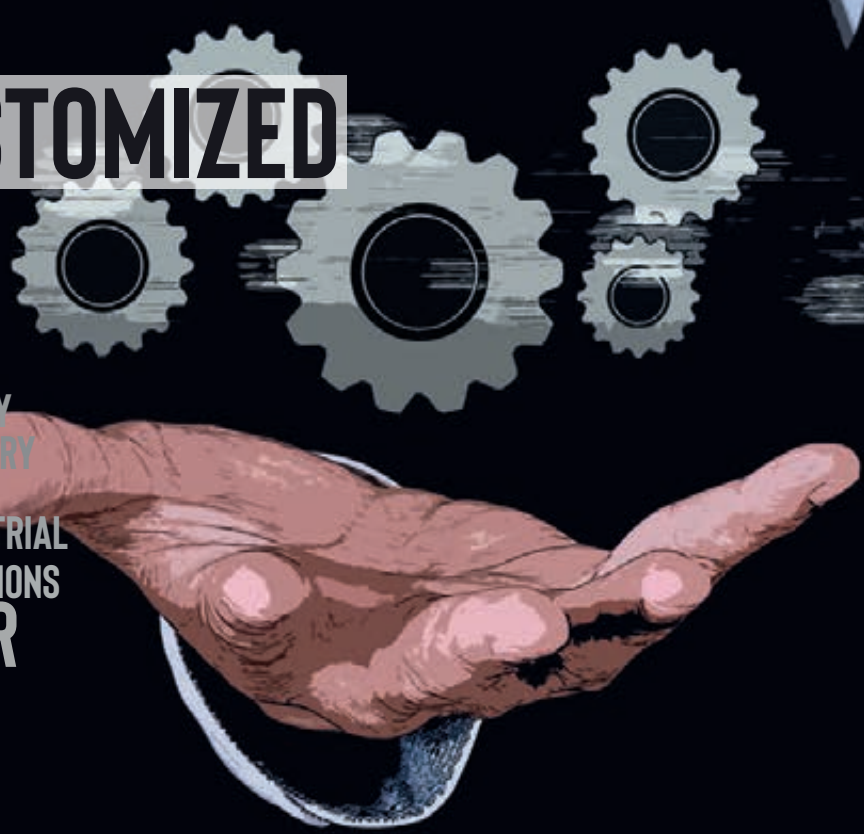
PARTNERSHIP

Automation projects often involve many considerations and challenges to manage and projects can stretch over long time periods from pre-studies to installation and maintenance. For UniGripper it is important to be a partner through all steps necessary.



UNIGRIPPER CUSTOMIZED

ROBOT
BLOWER TOOLING BOXES
ACCESSORIZE QUALITY GANTRY
CUSTOMIZED INDUSTRIAL
FOAM APPLICATIONS
VACUUM GRIPPER
STANDARD PALLETIZING STONES
GLASS SPECIALIZED



Most automation projects are unique to some degree. Anything from size constraints at the location of installation to specific properties or combination of products make one handling scenario different from another. UniGripper's answer to this variation is UniGripper Customized.

UniGripper Customized combines decades of experience of what is the optimal solution for every project with an efficient way-of-working for designing and manufacturing this solution in a fast and cost-effective way. Fact is; the time from ordering a UniGripper Customized solution until receiving it, is no longer than the delivery time of many standard components. The short delivery times coupled with the function guarantee we provide with a UniGripper Customized solution makes it the natural choice also for time-critical projects.

The flexibility of the UniGripper Customized concept combined with the know-how of the UniGripper organization make us a great partner for all steps of an automation project, from pre-studies to implementation. We take pride in delivering high-quality solutions that are easy to maintain and last for decades also in demanding production environments.



THE UNIGRIPPER-CUSTOMIZED PROCESS

Below are the main steps in the UniGripper-Customized process, ranging from a request until installation of the UniGripper at the final implementation site. The steps are carried out in cooperation with you as a customer, sorting out important aspects from a gripper perspective at an early stage, reviewing the gripper design together to make sure it is fit for the entire installation and after production, test and delivery and making sure that the installation is made in the best possible way.



CUSTOMIZING THE UNIGRIPPER BASE

Below are the main parameters that are customized in the UniGripper base plate. Selecting the right configuration for all parameters ensures a good function that lasts for many years and minimum maintenance needed.

OUTER DIMENSIONS

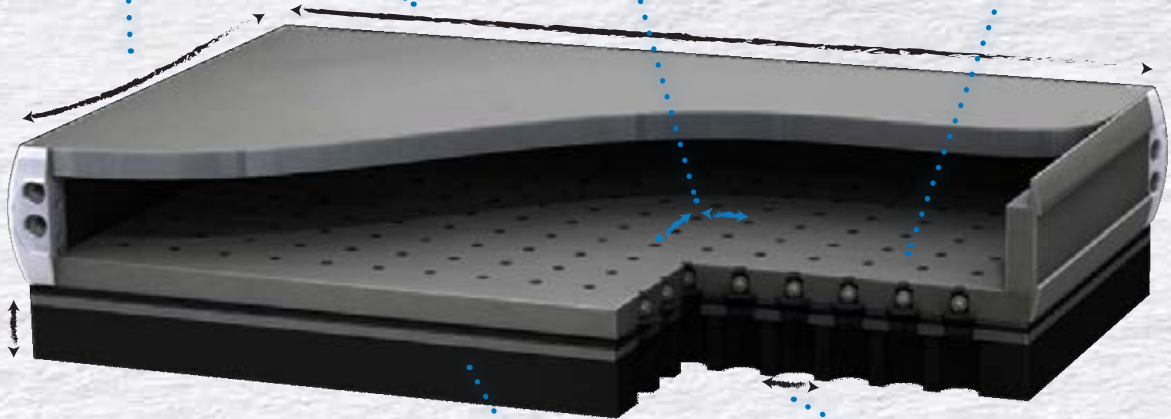
Large enough to get a secure grip of all products to be lifted. Small enough to avoid collisions with other equipment or fitting into boxes or other containers.

VALVE PITCH

Selected carefully to get a good distribution of vacuum force and securing enough active valves also on the smallest objects to be handled.

VALVE DESIGN

The function of the intelligent UniGripper valves is often the key for a successful gripper performance. The exact implementation of the valves is selected from application to application in order to use a configuration that gives solid functionality and low energy consumption. Since a few years, the UniGripper valve plate comes in a ruggedized design to function extra well also in very dusty environments.



FOAM THICKNESS

The thickness of the foam pad controls how much height variation a gripper can handle. Both height variations within single objects as well as over entire layers are considered when selecting the proper thickness for an application.

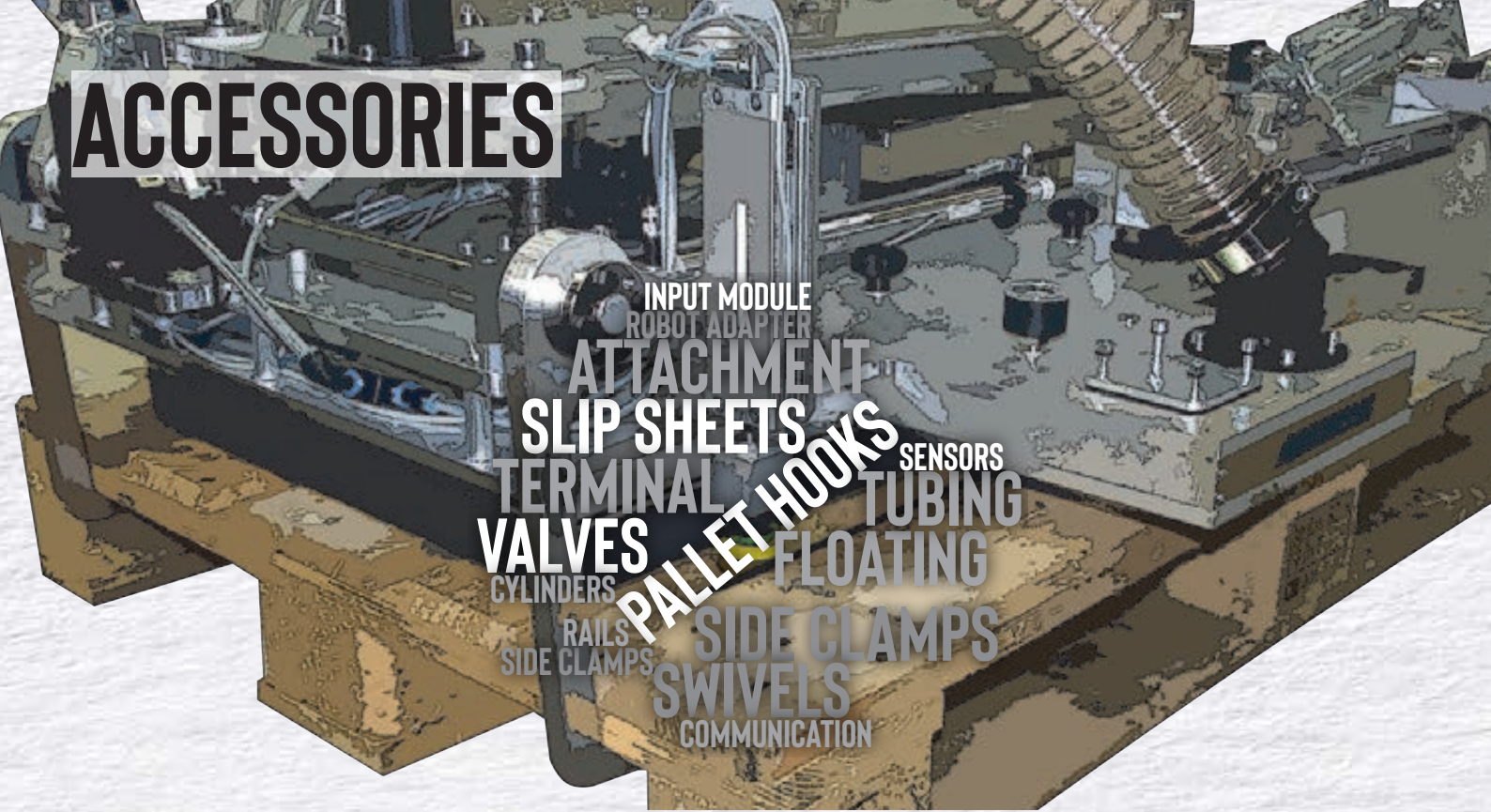
FOAM QUALITY

UniGripper offers a variety of high-quality foam materials with different properties suitable for different applications. Cycle times, roughness and unevenness of handled materials are important factors for selecting the right foam quality or combination of qualities.

FOAM HOLE SIZES

The hole-size in the foam pad is related to which lifting forces are generated on the lifted objects, but experience shows that maximizing holes size area is not always optimal. A careful selection is made from application to application.

ACCESSORIES



UniGrippers can be customized with a multitude of different accessories to increase the versatility of the tool and make the integration and implementation of a project as quick and easy as possible. The accessories range from function to improve the vacuum performance, to functions that add additional handling capabilities of for example pallets and slip-sheets, to control mechanisms like valve and input terminals that makes the installation of the UniGripper a plug-and-play operation.

SWIBOT

Swivelling vacuum connection into the center of the gripper for 360°-rotation without rotating the vacuum hose.



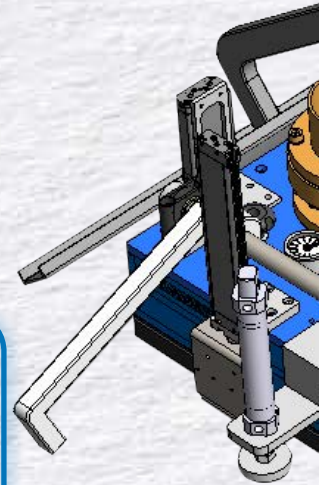
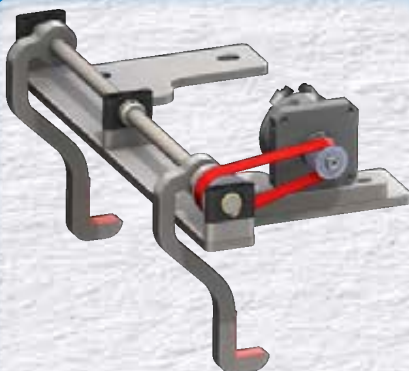
SWIVEL JOINTS

Swivelling vacuum connection helps preventing twisting of the vacuum hose when moving and rotating the gripper.



PALLET HOOKS

Pallet hooks are available in multiple variants depending on type of gripper and footprint constraints. Used in many cases also when the gripper could lift the pallet with vacuum force as nails and splinters in the pallet risk damaging the foam pad





FLOATING ATTACHMENT

Helps getting an optimal picking position and foam pad compression also when products or layers are tilted or vertical height is not exactly known.



SEARCH FOOT

Helps finding the height of a pallet in de-palletizing operations when vision systems or other methods for height detection is not available.

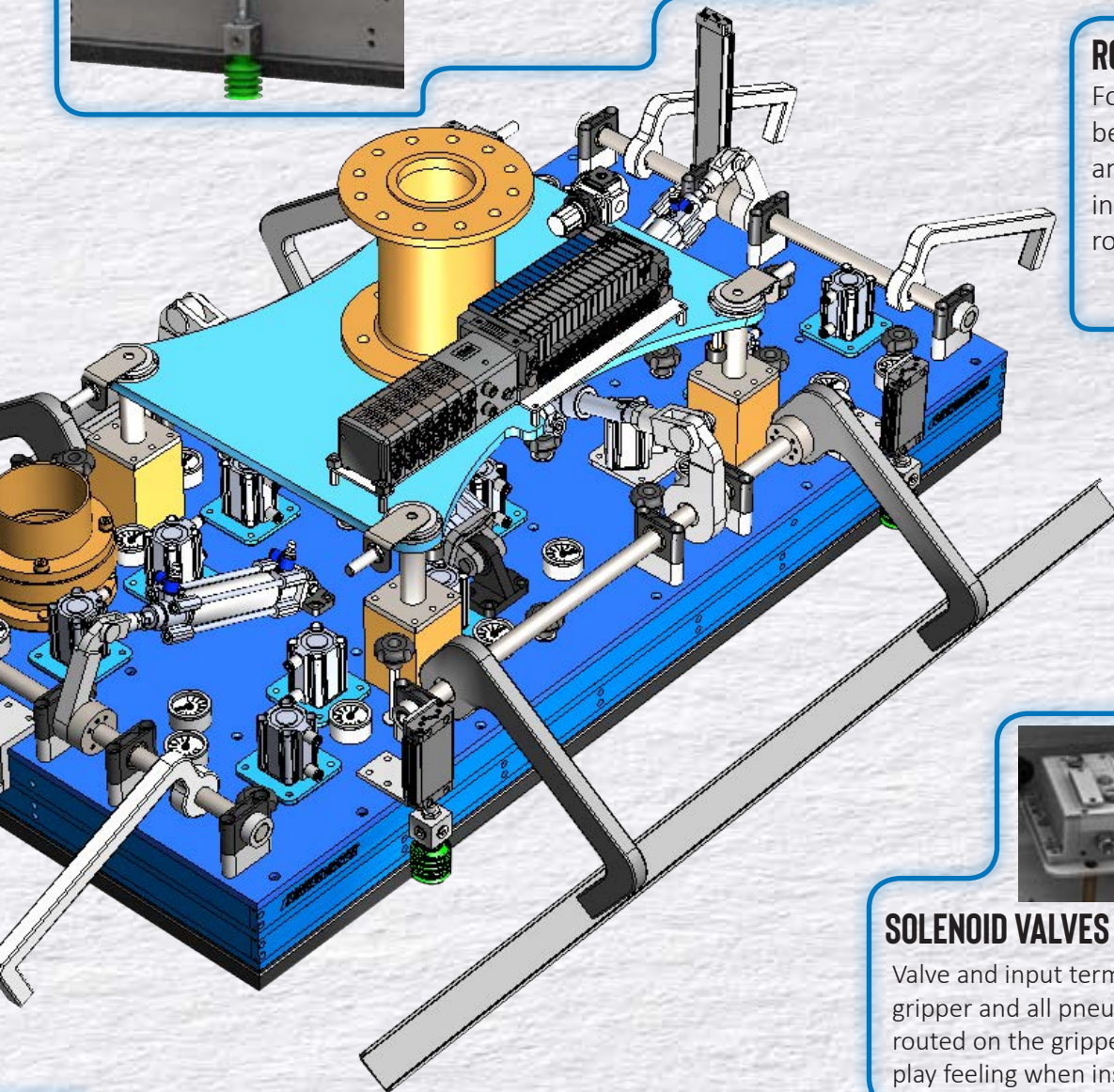


SLIP-SHEET HANDLING

Suction cups for slip-sheet handling in several variant to move the suction cups out of the way when not used.

ROBOT SPACER

For extra space between the gripper and the robot arm for increased flexibility in robot movements.



SOLENOID VALVES AND INPUT TERMINALS

Valve and input terminals assembled on the gripper and all pneumatics and wires nicely routed on the gripper gives a true plug-and-play feeling when installing the UniGripper.

SIDE CLAMPS

Side clamps and fixed side supports are available in different versions to keep products together and provide support for high lateral accelerations.

AND MORE...

These are just some of the most frequent accessories for UniGrippers. New types are continuously developed when needed.

VACUUM GENERATION

FILTERS
FREQUENCY VENTURI HOSE
ENERGY BLOWERS TUBES
EFFICIENCY EJECTORS FLOW
PRESSURE BLOW RELIEF VALVES
AIR REVERSE
SIDE-CHANNEL
SWIVELS

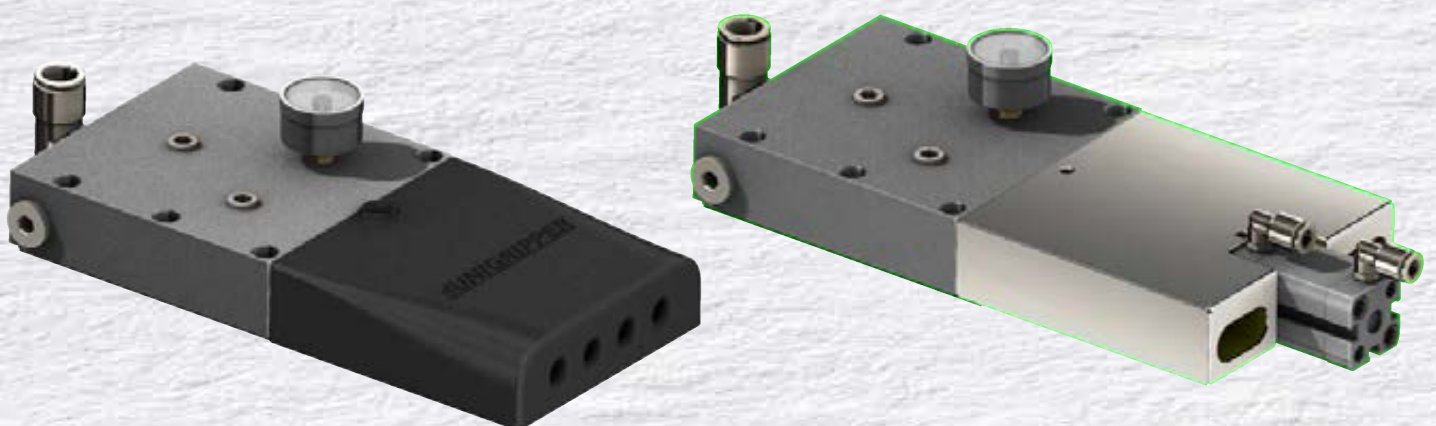
EJECTORS

Ejectors are vacuum pumps generating vacuum using compressed air and the Venturi principle. Ejectors benefit from being easy to install as well as having lower investment cost for small to mid-size gripper, provided a compressor is already available in the factory.

UniGripper ejectors are assembled into housings in three different sizes, which in turn can be configured with one or more active Venturi cartridges. When analysing a request for a UniGripper Customized solution, the UniGripper sales team configures the gripper and the vacuum source together to select the optimal number of housings and active ejector cartridges to get the best trade-off between high vacuum flow and energy consumption in the compressor.

The ejector housings can be equipped with three different exhaust variants:

- ES Exhaust with extra silencing for environments where low operating sound level is key
- ER Exhaust with integrated reverse blow function for efficient cleaning of the gripper and the ejector itself
- E Cost-effective exhaust for applications without extra silencing or cleansing needs



SIDE CHANNEL BLOWERS

Side channel blowers use a fan wheel to remove air from the inlet and push the air out at the exhaust, thus creating vacuum in a gripper connected to the inlet. Compared to other blower kinds, side channel blowers are cost-effective blowers that generate high vacuum flows from atmospheric pressure to medium-deep vacuum levels, which is the ideal depth for most gripper applications.

UniGripper works with leading manufacturers of side channel blowers to provide high quality blowers in different sizes depending on application. Side channel blowers are mainly beneficial for mid-size to large grippers where the running costs with a side channel blower can be many times lower than if vacuum is generated using ejectors.

In addition to supplying the blower, the UniGripper program also includes a variety of components that make the installation of the vacuum system smooth and easy. Several of these components are listed below, but there are also other smart accessories like relief valves included, which automatically helps protecting the blower from overheating.



HOSE CONNECTIONS AND ROUTINGS

UniGripper's own-developed swivel joints are popular accessories when routing the hose along the robot arm. Installing the swivel joints at positions where the hose otherwise would twist increase lifetime of the hose and makes the installation easy



HOSES

Most industrial vacuum hoses are not made for the dynamic installation the routing along e.g. a robot arm means. UniGrippers delivered with side channel blowers are

supplied with high-quality vacuum hose of the right dimension for each application.

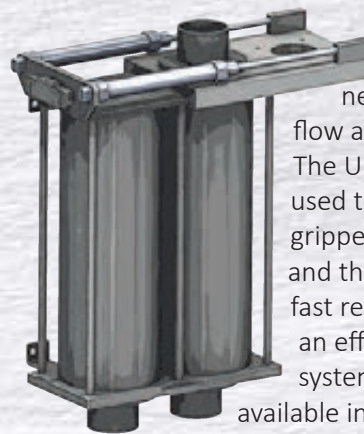


FILTRATION

Dusty environments may require filtration, both for protecting the gripper and the vacuum source. The filters in UniGripper itself can be complemented with external filter systems to provide extra protection for the side channel blower.

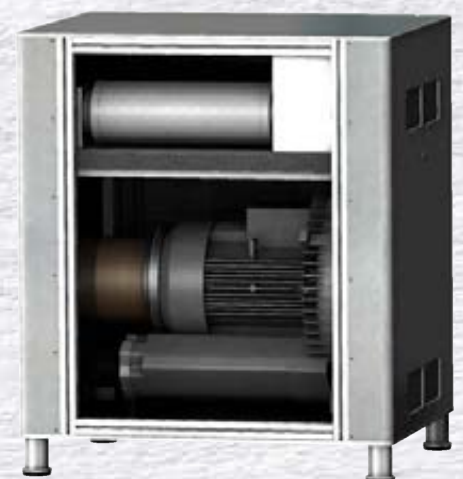
REVERSE BLOW UNITS

Side channel blowers generate a continuous vacuum flow and a continuous exhaust flow. The UniGripper reverse blow unit is used to switch the connection to the gripper between the vacuum flow and the exhaust flow. This enables a fast release of the products as well as an efficient cleaning of the filtration systems. The reverse blow units are available in several different sizes depending on what vacuum flow level is needed for a specific application.



UNIGRIPPER SILENT POWER

Silent power is UniGripper's sound enclosure for side channel blowers, providing premium noise reduction for blowers of all sizes. The Silent Power sound cabinets come in a compact design which makes them easy to ship and install. The cabinet also integrates a reverse blow unit and thus only requires a hose to be routed to the gripper.



PARTIAL LAYER HANDLING



Palletizing using vacuum grippers provides a storage- and cost-effective solution for creating pallet patterns for different products at the same time and same place as palletizing is achieved.

Grippers can be designed to handle anything from single cases to semi layers. By dividing the gripper into zones, vacuum can be applied at some areas of the gripper surface while other parts are inactive. Such solutions caters for optimized cycles as the gripper can pick a full row of cases and the release them at different positions, only making small robot movements between each release.



Palletizing of boxes, trays and shrink wraps can be enabled with the same UniGripper. Depending on product properties as well as what is most optimal for each installation, the vacuum source can either be venturi ejectors or a side channel blower.

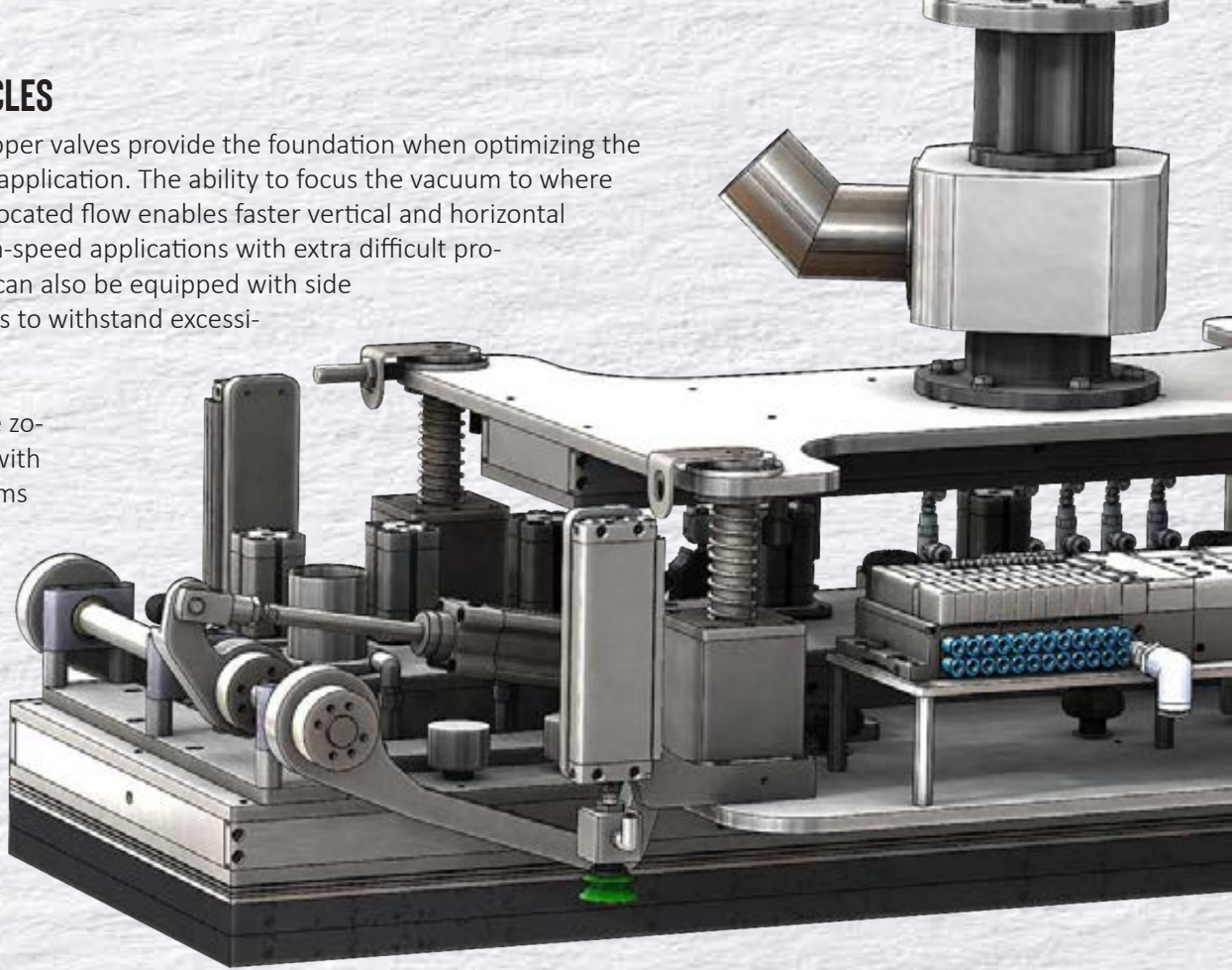
Partial layer tools often do many rotations and the UniGripper product program includes many accessories that make it easy to achieve such movement irrespective of which vacuum generation technology is used.

The UniGripper accessories program also includes all add-ons to make the palletizing tool complete for handling pallets and slip sheets, etc.

OPTIMIZING THE CYCLES

The intelligent UniGripper valves provide the foundation when optimizing the cycle times in a robot application. The ability to focus the vacuum to where the lifted objects are located flow enables faster vertical and horizontal accelerations. For high-speed applications with extra difficult products the UniGripper can also be equipped with side clamps or side grippers to withstand excessive centrifugal forces.

Grippers with multiple zones can be equipped with fast-release mechanisms to automatically blow compressed air into zones where vacuum is deactivated.



FULL LAYER HANDLING



UniGripper LayerGripper is a well-proven concept for palletizing, de-palletizing or re-palletizing products in full or semi layers. The products include all kinds of boxes and shrink wraps as well as closed and open trays and crates.

The LayerGripper has the patented UniGripper intelligent vacuum technology as a basis and combines this with supportive technologies, such as side-bar clamping, servo positioning of clamping height and vacuum sealing curtains depending on complexity of the layers being handled.



UniGripper LayerGrippers can be equipped with many accessories, such as hooks for pallet hand-ling, suction cups for lifting slip sheets and floating attachments for automatic alignment of the LayerGripper with the layer.

The UniGripper LayerGripper is offered as a complete system including selected side channel blowers for vacuum generation and smart solutions for the installation of the vacuum hose.

VACUUM GRIPPING

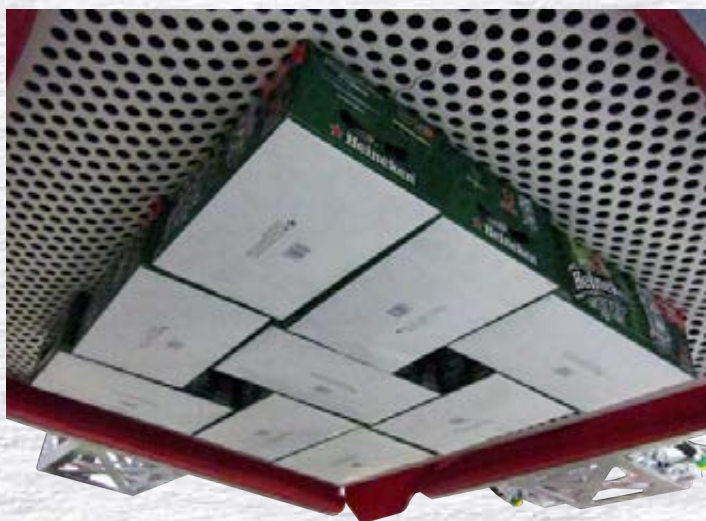
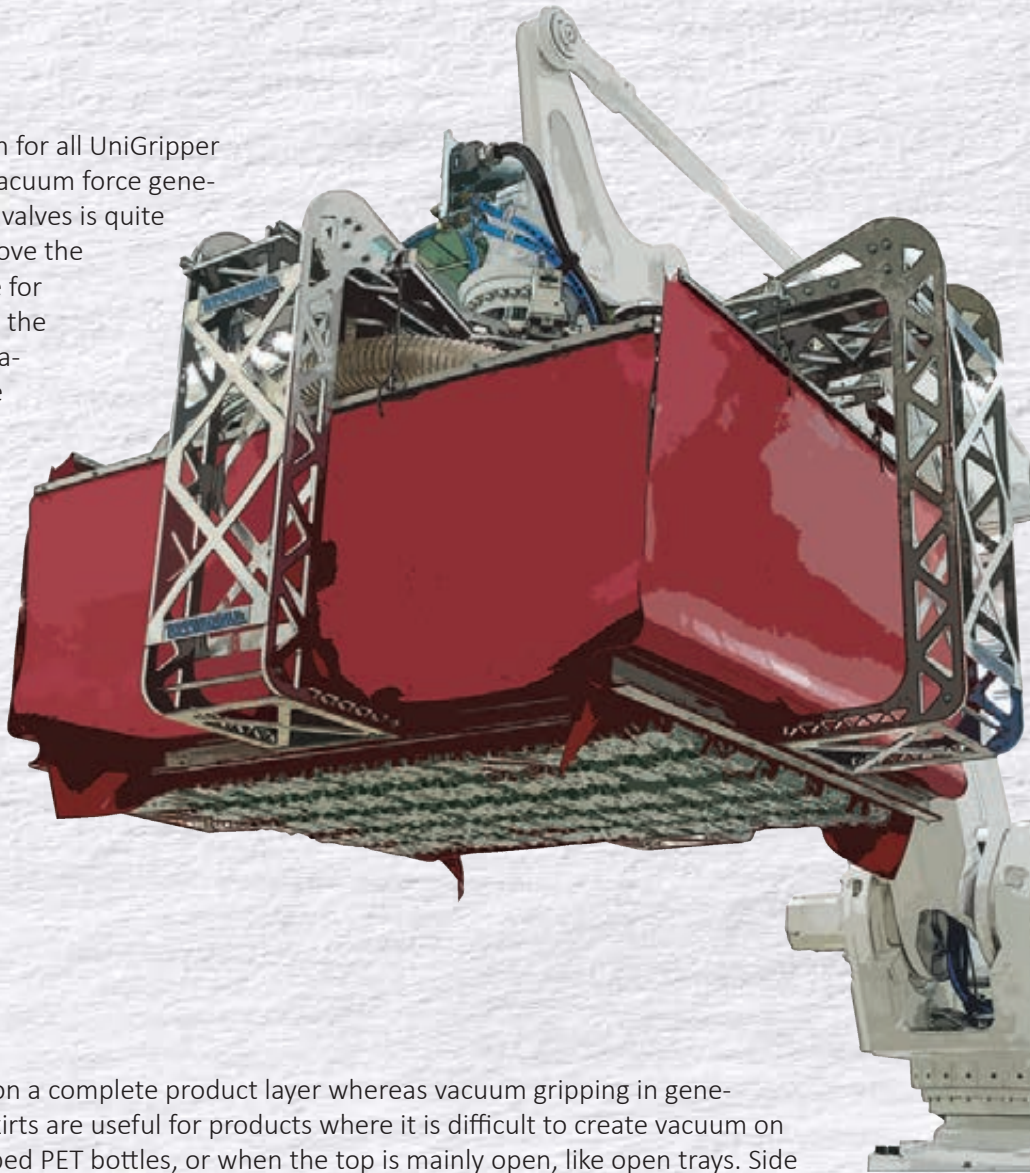
Vacuum gripping is the common function for all UniGripper LayerGrippers. For many products, the vacuum force generated through the intelligent UniGripper valves is quite sufficient to safely and quickly lift and move the layers. The vacuum technology is flexible for product variations and future changes in the products and the foam pad sealing the vacuum on the products caters for a gentle handling of also sensitive packages.

CLAMPING

Side clamps are used as the sole mechanism for lifting some kinds of products, most typically crates for soda bottles and similar. Clamps also provide stability when lifting products with vacuum and can allow higher accelerations and thus shorter cycle times. Depending on need UniGripper LayerGrippers can be designed to allow adjustment of the clamping height in cases of large variation in product height.

SIDE SKIRTS

Side skirts allows vacuum to be applied on a complete product layer whereas vacuum gripping in general focuses vacuum on each case. Side skirts are useful for products where it is difficult to create vacuum on the top of the product, e.g. shrink-wrapped PET bottles, or when the top is mainly open, like open trays. Side skirts can also enable lifting multiple layers in one lift.



LAYERGRIPPER ED. 4 - ALL PARTS COMBINED

UniGripper LayerGripper Edition 4 is our most dynamic LayerGripper, combining powerful vacuum gripping, automatically height-adjustable side clamps and flexible side skirts for a truly versatile layer handling. The most common use case for LayerGripper Edition 4 is re-palletizing in distribution centers where a single grippers have showcased handling of more than 10000 different articles.

The weight of LayerGripper Edition 4 is optimized to allow that the most common use cases can be enabled with robots of payloads around 500kg.

JAR AND BOTTLE HANDLING



UniGrippers for jars and cans provides the ability to handle large variations of open or closed containers. The intelligent vacuum technique allows a single gripper to handle various sizes without any kind of modification of the gripper head.

The jars and cans can be of almost any material, such as glass, metal, paper or thick plastic. Grippers can be configured to handle everything from rows to partial or full layers.

Each Unigripper is customized according to sizes of current and future products. All parts from valve design to source for vacuum generation are optimized to make an energy efficient and versatile solution.

UniGripper JarGrippers can be equipped with many accessories, such as hooks for pallet handling, suction cups for lifting slip sheets and floating attachments for automatic alignment of the gripper with the jars.



AUTOCLAVES

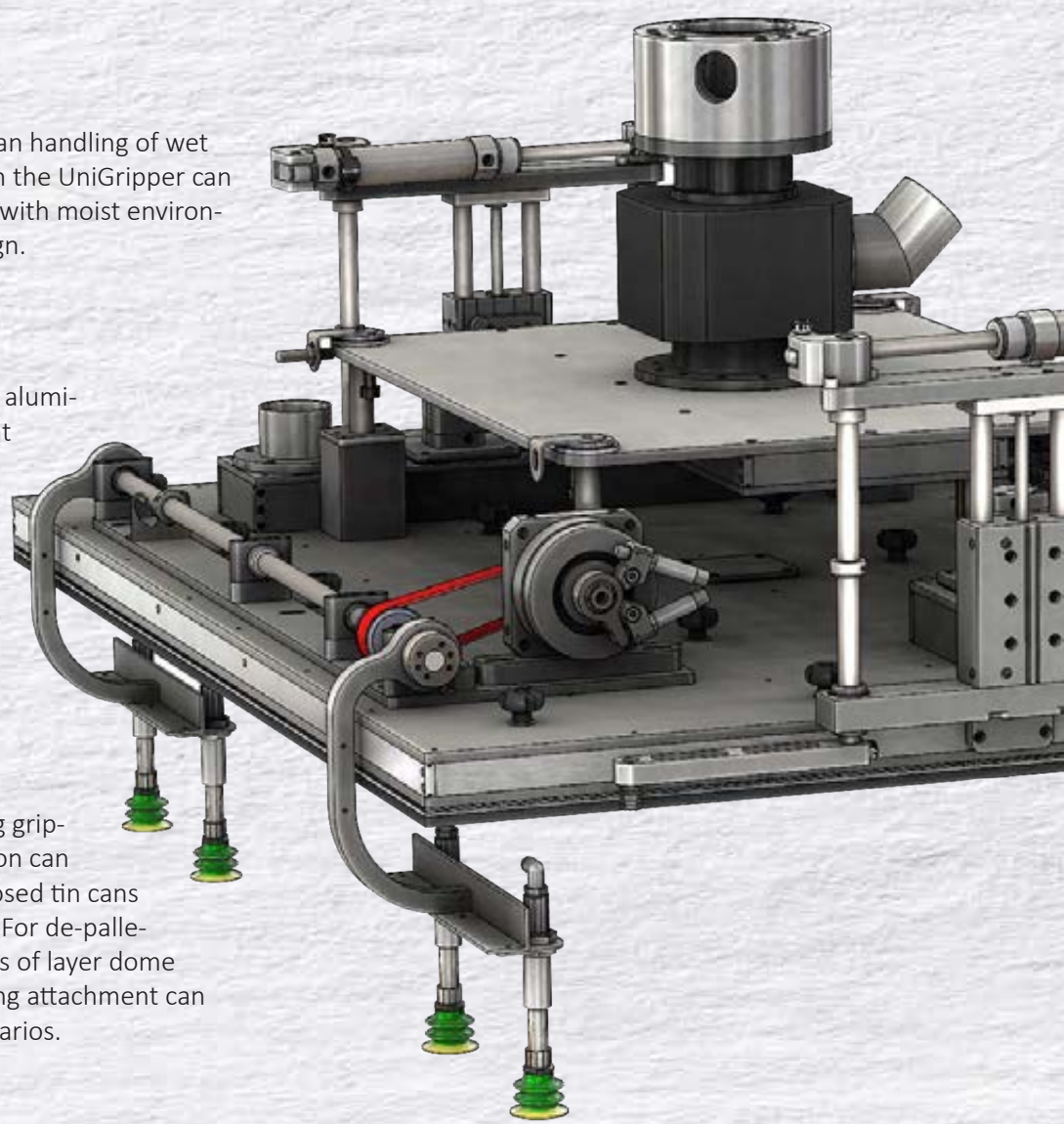
Autoclave applications typically mean handling of wet jars and cans. All aluminium parts in the UniGripper can be delivered anodized to cope well with moist environments and a special foam-pad design.

IMPLOSIVE CANS

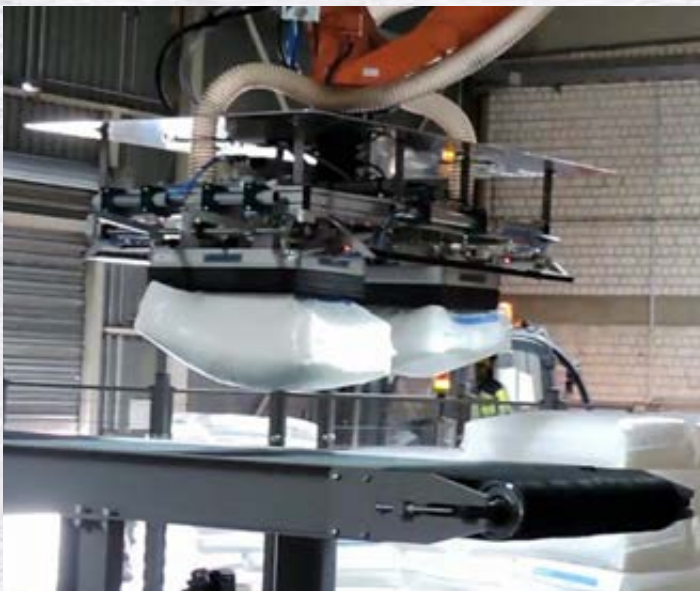
Cans and other containers of paper aluminium or plastics may implode also at relatively modest vacuum levels. UniGripper can be configured for such scenarios and restrict the vacuum level to prevent implosion. For thin-walled containers UniGripper HoverGripper is the best option.

HIGH VERSATILITY

Clever gripper designs allow making grippers that without any reconfiguration can handle closed and open jars and closed tin cans with and without lid-opening flaps. For de-palletizing applications with high degrees of layer dome shapes, extra flexibility in the floating attachment can be added to handle also these scenarios.



BAG HANDLING



The UniGripper BagGripper comprises customized grippers for bags, pouches and similar products of almost any size. Most commonly the BagGripper is delivered with a side channel blower, efficiently providing high vacuum flows and the ability to handle very loose bags where alternative solutions often fail.

UniGripper BagGripper is the ideal solution for bag depalletizing as vacuum is applied at the top of the bag and there is no need to have access to the sides or bottom of the bag. The BagGripper is as standard delivered with a floating attachment, which allows the BagGripper to automatically align with the bag even if the bag is not aligned horizontal when picking.

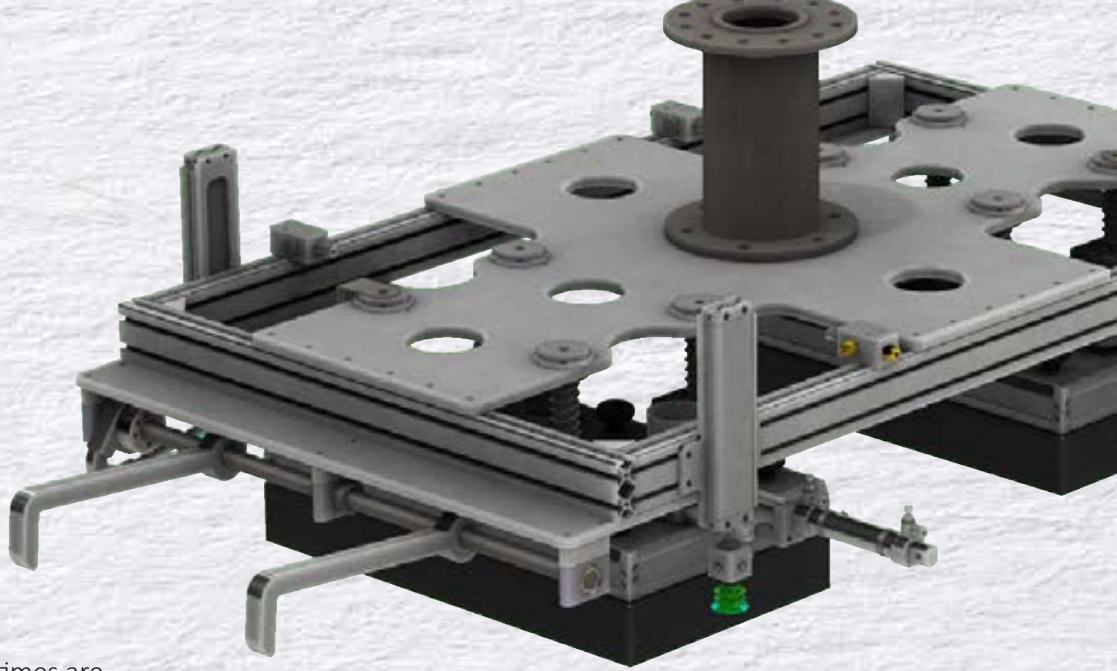
Bag Grippers for small pouches can be delivered with quick valve systems to switch vacuum on and off swiftly, allowing implementation in ultra-fast pick-and-place applications. For high-speed, low-payload robots, the Bag-Grippers can be made using additive printing techniques for lowest possible weight.

The BagGripper is flexible in handling bags in different sizes. In cases where there are very large variations in bag size, the foam carrier system enables fast switching of foams suitable for different size ranges. The foam carrier system also caters for short maintenance stops.



COMBINATION TOOLS

Applications may sometimes have the need for lifting both bags and for example boxes. UniGripper can offer combination tools comprising a BagGripper and a general tool for handling other objects. This removes the need for tool changers and allows the same vacuum source to be used for all objects.

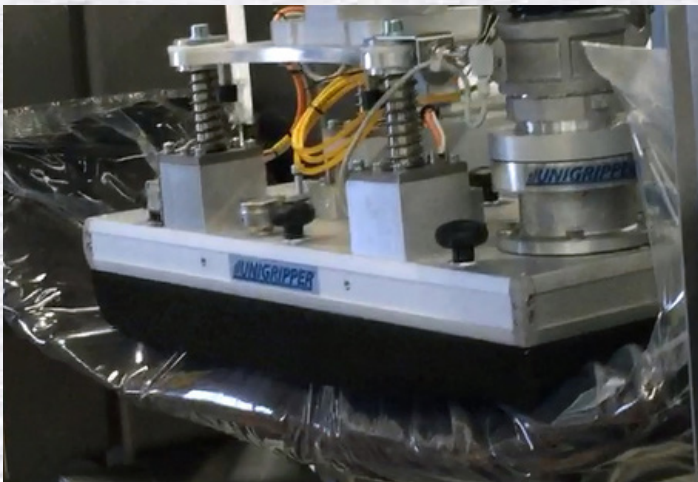


MULTIPLE BAGS IN ONE CYCLE

In cases where extra-short cycle times are needed, a UniGripper tool can be made comprising two or more parallel BagGrippers, that can pick and place bags individually and thus allow fewer movements between pick position and place positions.

SPECIAL ENVIRONMENTS

Bags with powder material can be a fire hazard and broken bags may cause powder to enter the vacuum system. UniGripper can supply both effective filtering solutions and ATEX rated blowers for such environments. The BagGripper can be made anodized or in stainless steel for applications with moist conditions.



TIMBER AND WOOD HANDLING

CONFIGURATION
APPLICATION
FOAM
OPTION
ROBUST
SYSTEM
FLOATING
TIMBER
ROBOT
GANTRY
PLANKS
VALVES
WOOD
VACUUM
PIPE
DISTRIBUTION
HANDLING
CARRIER
ATTACHMENT
PORTAL



TimberGripper is available in a number of standard variants that can be delivered with shorter lead times and at attractive prices. The concept is also customizable in size and design.

TimberGripper has since its introduction focused on maintenance friendliness and robust solutions. With TimberGripper you always get a solution tailored to your needs.

For handling of treated wood and boards grippers from UniGripper Standard Module System or UniGripper Basic series are good choices.

Timber and wood handling reaches from handling of raw and wet timber to smooth furniture parts and large boards.

UniGripper TimberGripper is developed for the rough environment that handling of untreated wood implies. TimberGripper is the natural choice when designing a new wood-handling vacuum system, and is also frequently used to upgrade and improve existing wood-handling systems.

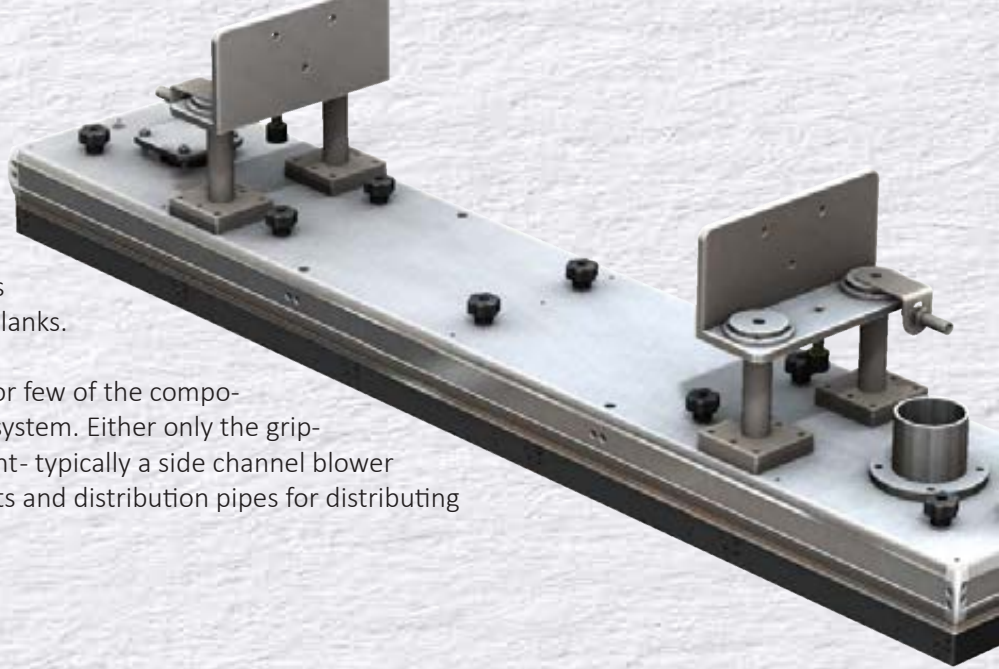
TimberGripper is equipped with UniGripper's well-known, patented valve technology, which automatically senses the position of the product and focuses the lifting force. The technique makes it possible to use the same tool for a broad range of products.



COMPLETE SYSTEMS

Wood-handling applications most often involve lifting multiple long, narrow planks or similar objects. Vacuum handling systems for such applications typically involve multiple gripper units being spread out along the lengths of the planks.

The UniGripper offering can include many or few of the components needed for such a vacuum handling system. Either only the grippers with the vacuum generation equipment- typically a side channel blower - to lifting frames two or more gripping units and distribution pipes for distributing the vacuum between the gripping units.



TYPE	TIMBERGRIPPER 1250/220			TIMBERGRIPPER 1250/300		
Length	1250 mm					
Width	220 mm			300 mm		
Weight	App. 27kg			App. 35kg		
Valve Pitch	25.25	25.20	30.17	25.25	25.20	30.17
Number of valves	340	437	446	534	666	648
Foam Carrier	Included					
Filter Cassette	Included					
Floating attachment	Standard Option					



OTHER HANDLING



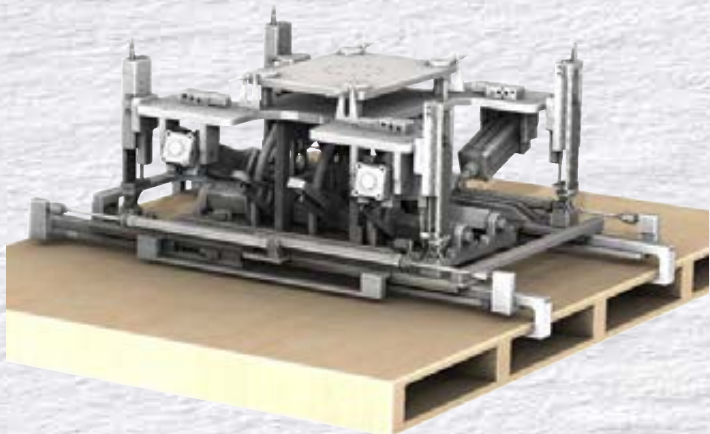
UNIGRIPPER

UniGripper is a complete supplier of customized end-of-arm tools, both in terms of applications supported and types of tools. To the right are further examples of handling areas we often supply tools for, but there is almost no limitation to which application areas are relevant for UniGripper. Our everyday business is to provide solutions for all kinds of industries and to work together with our partners and customers to ensure that these solutions are customized to become the optimal solution for each specific application.

The main range of solutions from UniGripper has vacuum technology as a basis, but we are also experienced in making tools not based on vacuum, like mechanical tool and tools that use magnets for generating the lifting force, as detailed further below.

MECHANICAL TOOLS

UniGripper is a partner for all kinds of tools. Sometimes tools only based on mechanical clamping is the preferable option and we are happy to supply such solutions.



MAGNETIC TOOLS

For handling involving only products made of steel, magnetic grippers can be an option. UniGrippers can be customized to only use magnets as gripping or combine magnetic force with vacuum and mechanical clamping.



THIN-WALLED CONTAINERS

Thin-walled containers, typically plastic bottles and jars, is a challenge to handle both with mechanical grippers and vacuum grippers as the containers are sensitive for pressure and implosion.

The UniGripper HoverGripper is the solution for these applications being able to handle sensitive thin-walled products for both palletizing and de-palletizing.

The HoverGripper combines low-force clamping and low vacuum to create a gentle handling in a tool that can handle a broad range of products, varying in diameter, height or material. Full layers can be lifted with or without an accompanying slip sheets.

The HoverGripper is delivered with vacuum sources on the tool for easy integration. The vacuum source works at low power levels and at sound levels below 70dBa.



STONES AND CONCRETE

Stone and concrete handling often means grippers working in dusty and demanding environments. The UniGripper is ideal for handling uneven stone surfaces, stones with cracks, palletizing of bricks with varying widths etc.



RAW FOOD

UniGrippers can be used for handling many kinds of raw foods. Grippers can be produced in anodized aluminium or stainless steel to facilitate regular cleaning and FDA-approved foams are available to support direct contact with raw food. Unpacked bread and crackers, cheese and frozen fish are examples of raw food that have been handled with a UniGripper.



COILS

Coils of for example metal, paper or fabrics can all be handled by the UniGripper CoilGripper. The CoilGripper effectively spreads the vacuum force over the entire coil surface and can generate impressive lifting forces, handling coils with weights of several tonnes.

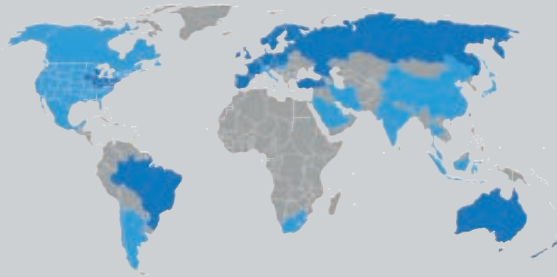
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