

# TECHNICAL

Smart solutions are driven by LinMot



**LinMot®**

New research centre  
More room for development

P.4

Application report  
LinMot drives new cosmetic trends

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LinMot Multi-axis-systems  
Modular solutions with functional safety

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# Success stories / Products / Facts from the world of linear motion

# what's inside

Dear Readers,

Welcome to the latest edition of LINEAR! Once again this year it is all about motion, and not just in one direction. Although this medium is called „LINEAR”, we at LinMot have long been thinking in all dimensions.

What does that mean to you? Quite simply: dynamism, competence, partnership. Specifically: high-speed rotary grippers, complete Z-axes, advanced linear rotary motors and many other innovative achievements of our development team, which stand for more efficiency, precision and dynamics in automation.

At LinMot, we want to provide you with tools that help you meet your challenges efficiently and effectively. One of these tools is LINEAR. It shows you how versatile and future-proof the world of automation can be - especially when you rely on the right drive.

Speaking of drive, our strongest drive is not in our product catalogue. Our strongest drive is our desire to support you on your path to success with the best products and technologies - as „linear” as possible.

We hope you find this issue inspiring and look forward to your feedback.

The Editorial Team

## Imprint / Disclaimer

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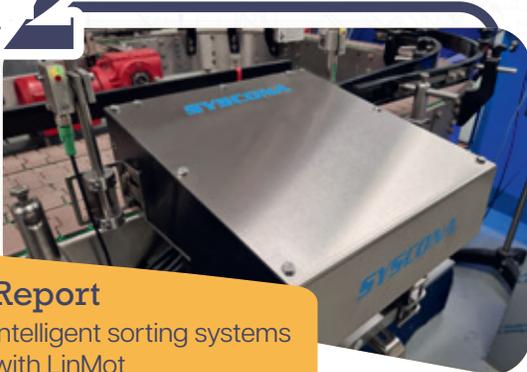
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**Hall of Fame**  
Award-winning linear technology

# Investing in your Future





# Progress

with us means progress in your systems, regardless of product, industry or application. The state-of-the-art LinMot research and development centre, which was successfully completed earlier this year, represents this joint improvement. This investment underlines our ongoing commitment to innovation and technological excellence and our ambition to exceed our customers' expectations through continuous research and development and to make a sustainable contribution to technological progress. →

The **LinMot** Research  
and Development Centre

**The** recently completed Centre is designed to develop pioneering technologies and advanced solutions in the field of linear motors. With state-of-the-art laboratory facilities and highly qualified specialists, it provides space for interdisciplinary teams to promote collaboration and the exchange of ideas. The importance of the LinMot Research and Development Centre is underlined by several key factors:



## Technological Leadership

LinMot has been a pioneer in the development and manufacture of high-precision linear motors since 1993. The Centre consolidates this position by creating space for the development of innovative technologies that meet the requirements of a constantly changing industrial landscape.

## Green Technologies

LinMot is committed to environmentally friendly technologies. The Centre will focus on the development of energy-efficient solutions to minimise the environmental footprint of manufactured products.



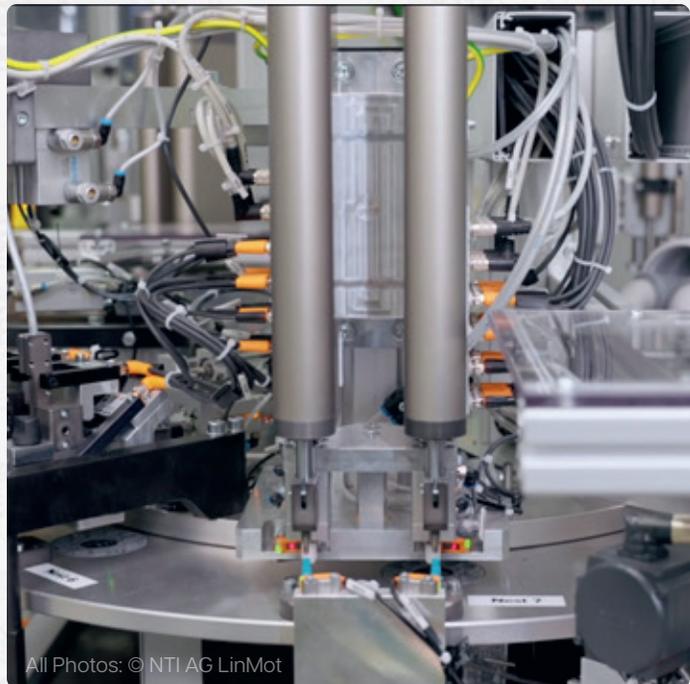


## Customised Solutions

LinMot has built a reputation for customised solutions that cover a wide range of applications. The new Centre will enable the company to further refine its capabilities and meet customer-specific requirements even more precisely.

## Talent acquisition and development

LinMot has always invested in talented people. The Centre serves as an innovation hub to attract and develop top talent. This ensures that LinMot continues to bring together the best minds in the industry and contributes to the development of technology that transcends its own industry boundaries. ■



All Photos: © NTI AG LinMot



More Photos from  
the LinMot R&D-  
Centre

# Have you seen it? Our new Design

A company's design is more than just a visual representation. It is an essential element of brand identity and the key to communicating with the most important market participants, the customers.

## Our media are...

### Informative



LinMot isn't just about creating a visually appealing and modern design. Our well thought-out media concept integrates information in a way that is also easy to understand. This means that technical specifications, application examples and product benefits are presented in a structured and clear way.

### State of the art



Linear motor technology is constantly evolving, as are customer expectations in terms of precision, efficiency and ease of use. A modern and contemporary design signals that LinMot is at the forefront of these developments and is continually developing its products to meet the highest standards.

### Innovative



In a highly competitive market where innovation and technological advances are crucial, design can make all the difference. An attractive and modern appearance helps LinMot to stand out from the competition and consolidate our position as a leading supplier of linear motors and linear modules.

**DM03**

linMot

**LINEAR**

Klein 1500 F40 auf dem Weg in den Smart State

**NEU!**

linMot

**linMot**

**GARDENA**

Bewegt durch linMot in die Zukunft des Wassers

Smart solutions are driven by linMot

**linMot**

**Edelstahl Produkte**

Hygiene auf höchstem Niveau

Smart solutions are driven by linMot

Ein Lieblingsprodukt der linMot-Kunden wurde noch schmackhafter

**MODERNER**

**GREIFER**

**INNER**

kompakter, stärker, cooler.

**LEISTUNGSFÄHIGER**

**linMot**

**LINEARMOTOREN**

**SSCP**

**SSC**

**LINEARMODULE**

**SM01**

**SM02**

**H01**

**LINEARFÜHRUNG**

**GM01**

Perfekt für Pharma-Industrie

Perfekt für Lebensmittelindustrie

Perfekt für Wasser-Dosen

Perfekt für Lebensmittelindustrie

**linMot**

Smart solutions are driven by linMot

**linMot Industrielle Linearmotoren Produktübersicht**

**linMot**

**LinMot Linearmodule DM01**

ISO 4 Reinraumklasse mit linMot Linearmodulen

Smart solutions are driven by linMot

**linMot**

**Hubrehl-Motoren Pro2**

**PR 02**

Perfekt für Verschluss und Assemblagen

# Our new Products

## GM02 Stainless steel gripper

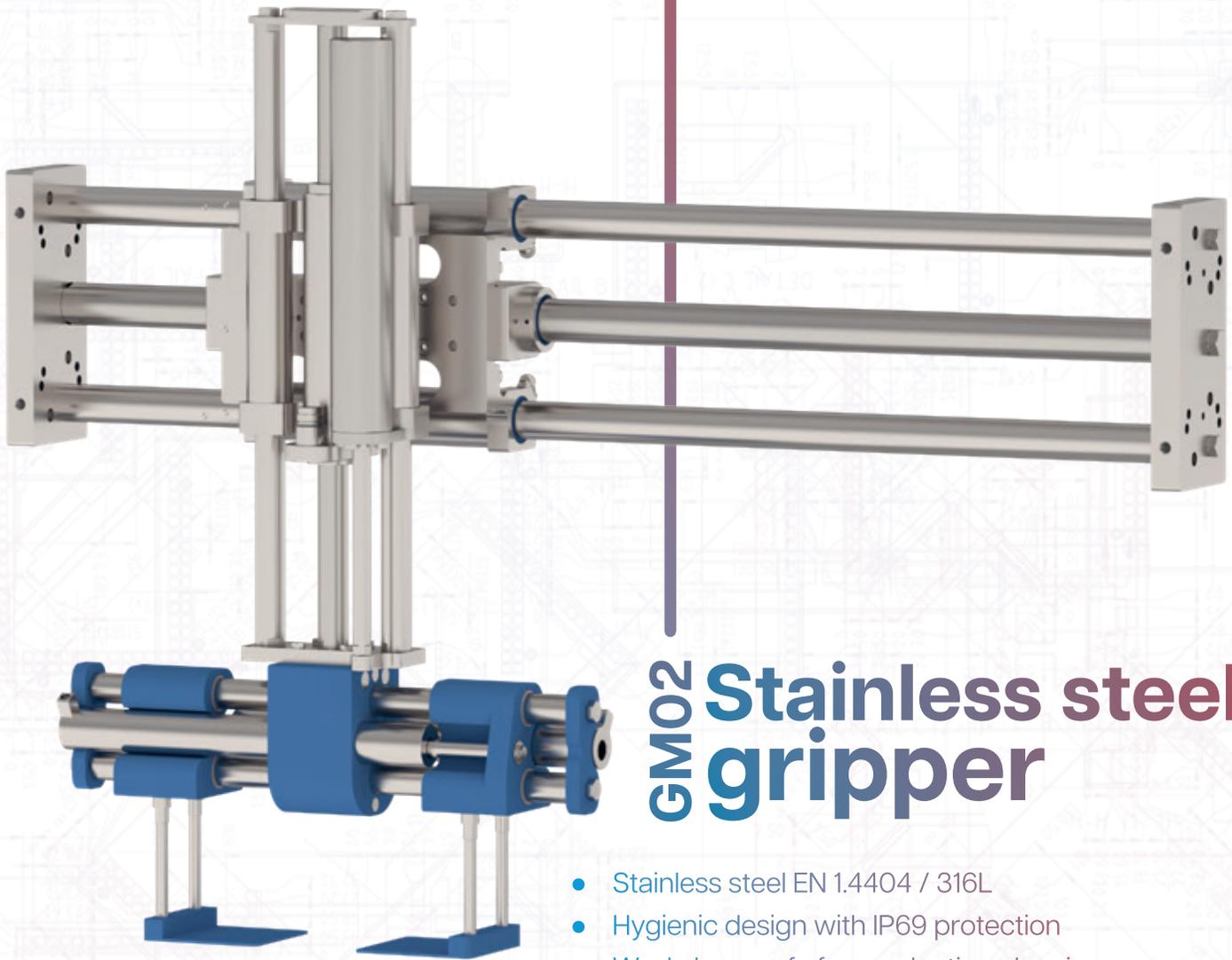
The GM02 has been developed to extend our family of grippers for handling large and irregularly shaped goods. With a wide range of monitoring options, IP69 protection and a hygienic design in 1.4404/316L stainless steel, the GM02 offers a variety of gripping movements and tactics, particularly for the food, pharmaceutical and medical industries. Combined with the SM01 guide, it provides a complete pick and place application with high chemical resistance and long life.

## DM03 Z-axis with integrated load compensation

Designed specifically for vertical applications, the DM03 series linear modules offer a large stroke range in a very slim housing. This means that DM03 linear modules can be placed close together to save space. The slim housing incorporates a new, stronger generation of MagSpring® for vertical load compensation and can be supplemented with a high-resolution position sensor in the module or a force sensor on the front.



For more details,  
visit our website



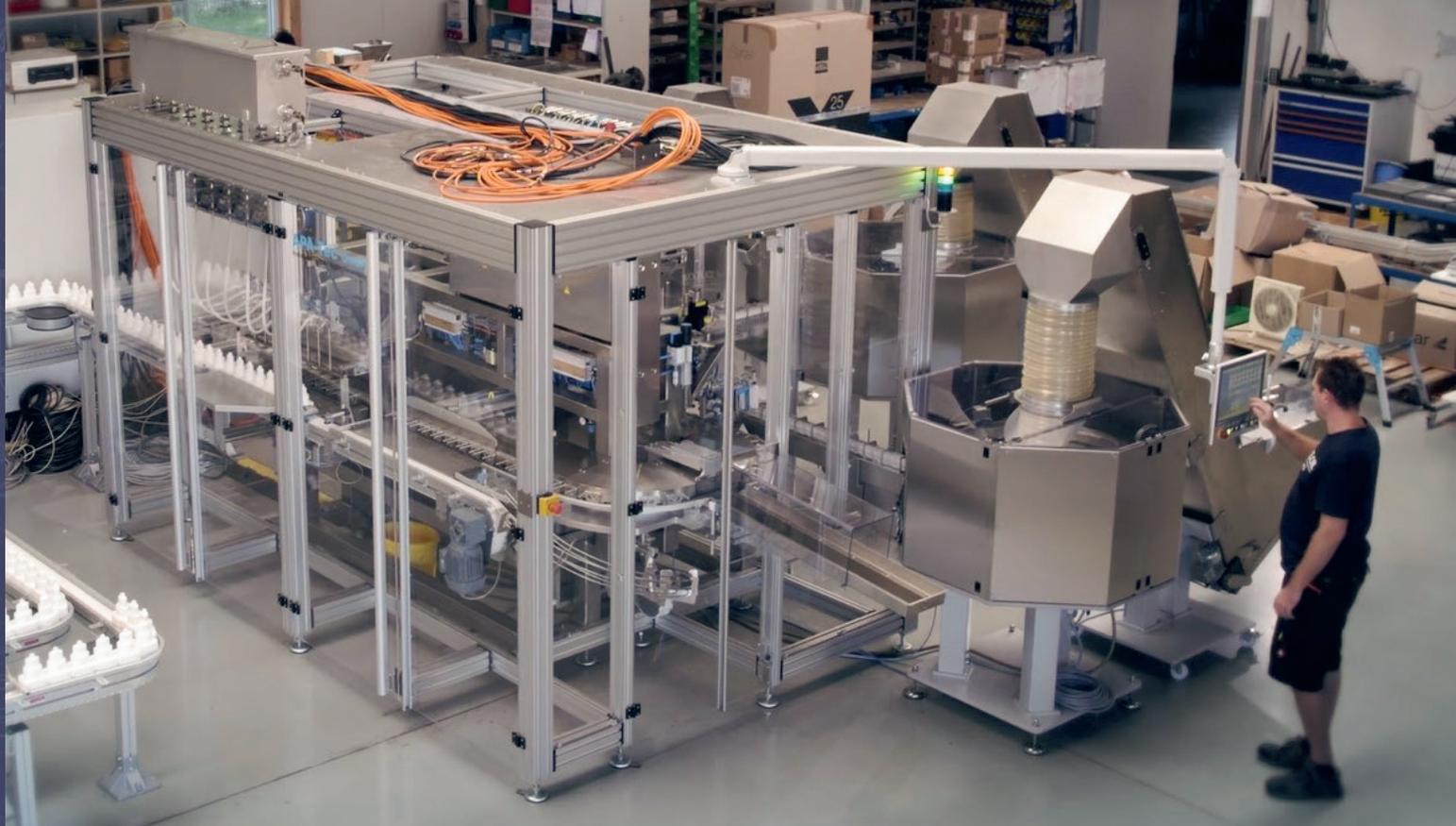
## GM02 Stainless steel gripper

- Stainless steel EN 1.4404 / 316L
- Hygienic design with IP69 protection
- Washdown safe for production cleaning
- For food, pharmaceutical and medical industries
- 100% process control and traceability



## DM03 Z-axis with integrated load compensation

- For vertical applications
- Built-in load compensation up to 170N
- Extremely slim design in 5 sizes
- High dynamics and accelerations in excess of 50 m/s<sup>2</sup>
- Optional absolute position and force sensors



# APA-Tec's new production line is **A showroom for intelligent drive solutions**

Selecting the right drives for a complete filling line is one of the most complex tasks in automation. Each individual station in the production process, from conveying and dosing to capping and packaging, places specific demands on the drive systems. In the case of special products, these not only have to be powerful and precise, but also meet strict requirements in terms of hygiene, corrosion resistance and particle emission. A challenge that LinMot was made for.

Your drives are protected even if the filling medium leaks out. LinMot stainless steel modules are optimally designed for CIP and SIP cleaning.



# IN 110 Filling

The challenge is particularly great when there are aggressive or sensitive substances to be filled, such as chemicals, food or pharmaceutical and cosmetic products. Drives made from conventional materials often do not offer the necessary resistance to chemical reactions, moisture or high temperatures that can occur in filling systems. Therefore, stainless steel products are often indispensable in lines with special substances and production conditions. LinMot's stainless steel product line meets these requirements and provides drives that function smoothly in both hygienic and highly corrosive environments. Mr Eberhard Vaas, Managing Director of APA-Tec GmbH, is particularly impressed with the stainless steel linear guides in the LinMot range: „Any manufacturer can supply the drive, both rotary and linear, but the machine builder still has to design and build the guide himself. LinMot's linear guides make this job much easier and save a lot of time,“ says the managing director.



The LinMot SM01 and SM02 guides are manufactured from 316L stainless steel, which is recognised as the standard in the food, pharmaceutical and chemical industries. This is particularly important in filling systems where strict hygiene standards are essential.

## Stainless Steel Guides

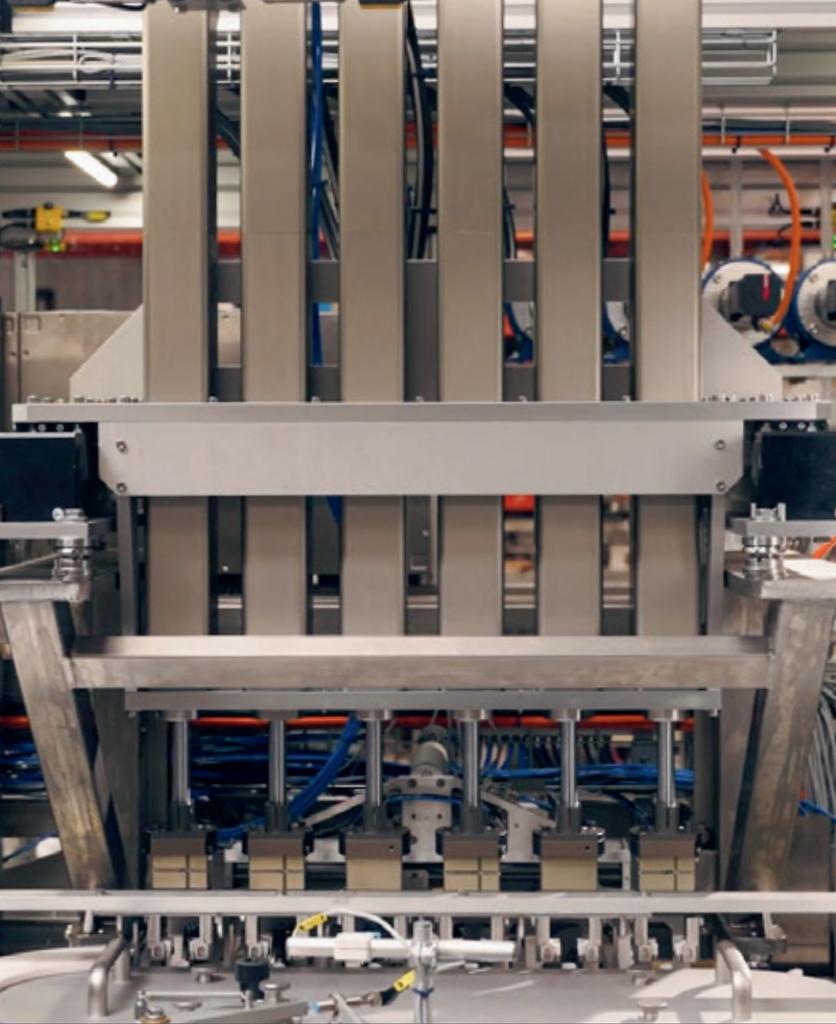


We visit the LinMot stand at every exhibition to see the latest developments in automation.

Eberhard Vaas,  
Managing Director at APA-Tec GmbH

# Closing

Creating industrial systems for precise and dynamic closing and screwing is an extremely complex challenge. The various components of such an application, such as different servomotors, grippers, hoses and sensors, must be precisely coordinated and integrated into the engineering. This makes the implementation planning, material, cost and time intensive. In addition, the requirements for dynamics, repeatability, robustness and efficiency are high, and conventional drive systems often reach their limits when it comes to implementing effective closing processes. In addition, machine builders have to consider not only technical feasibility, but also factors such as energy efficiency, space requirements and maintenance.

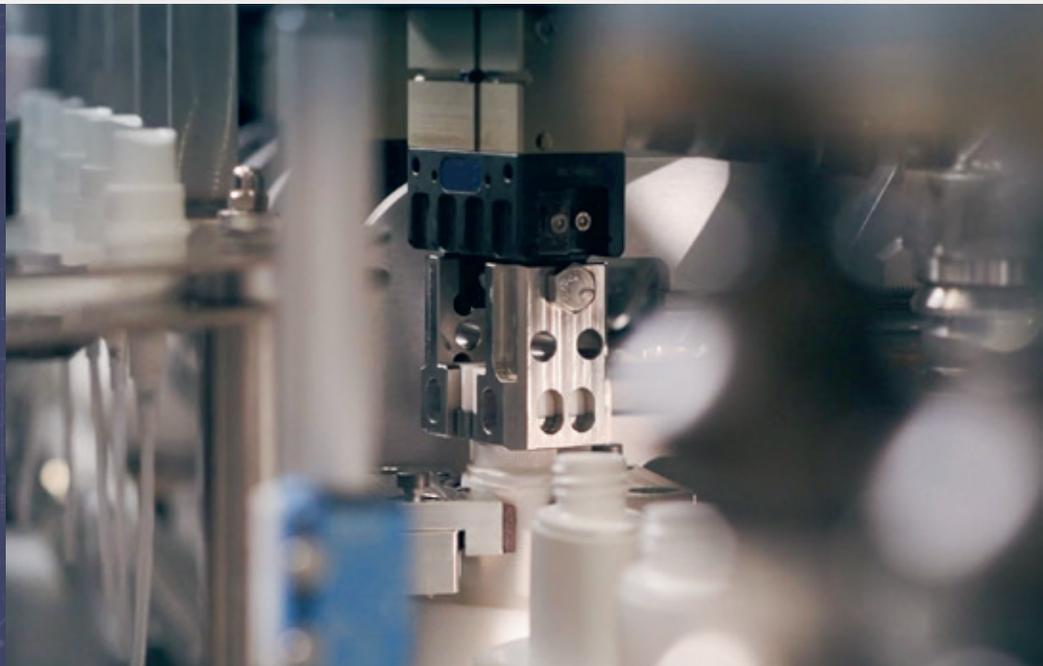


Integrable options such as hollow shaft for air feed-through, magnetic spring for passive load compensation, pusher, force and torque sensor - all in a single housing in the PR02.

Thanks to the PR02, we can implement motion sequences that are 100% different from each other - what more could you want?

Eberhard Vaas,  
Managing Director at APA-Tec GmbH

The hollow shaft of the linear motor allows air to pass through the entire module for the operation of pneumatic grippers. There is no need for additional hoses.

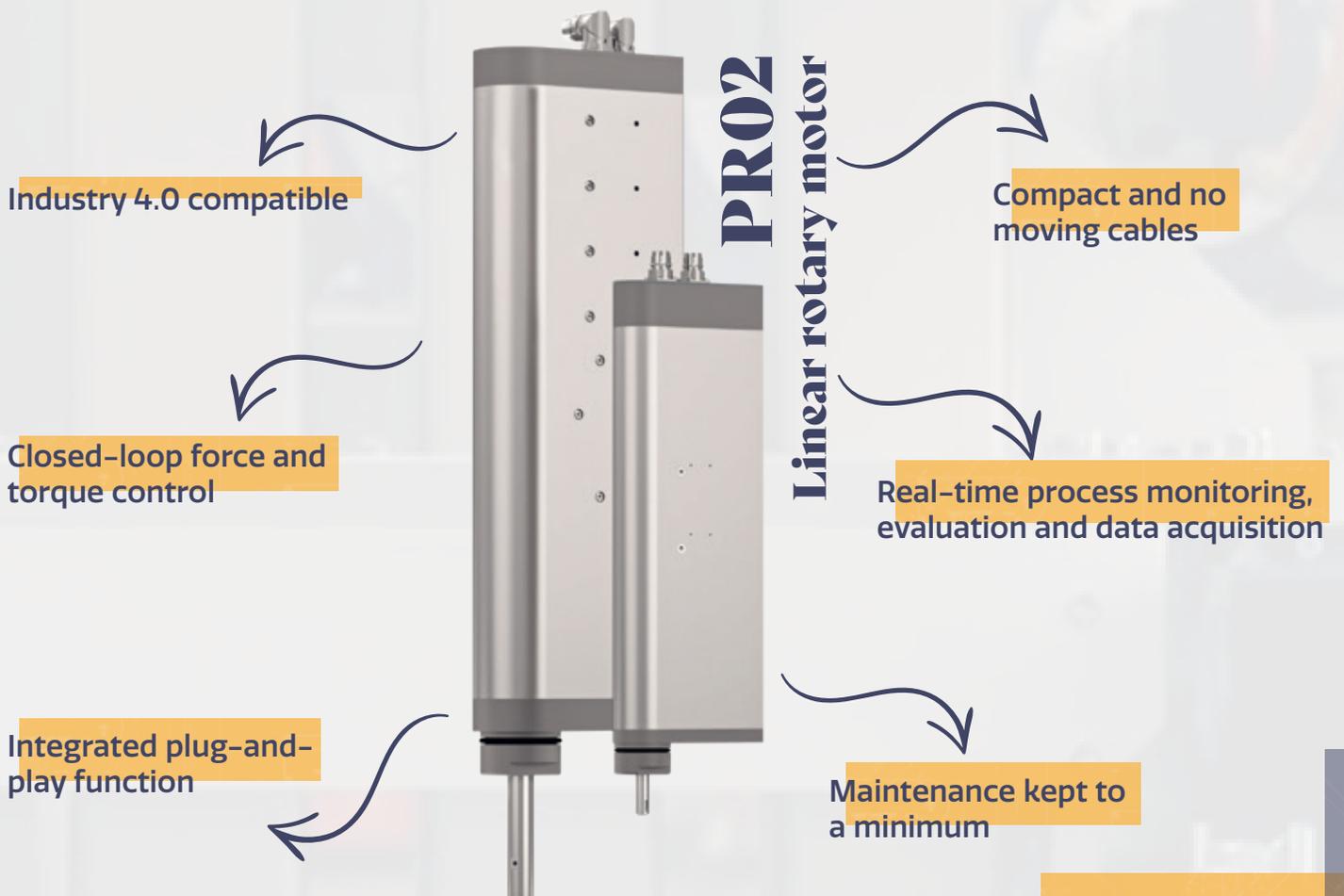


„The Z-axis must also be designed by the machine builder. This is a very complex challenge for the screwing process of our products, as they are offered in a wide variety of formats, all of which have to run on this one machine,“ says Mr Vaas, addressing a common problem for many machine builders. For this reason, LinMot offers the PR02 linear rotary motor for linear rotary motion, which, unlike competing products, is an all-in-one solution that meets the various engineering requirements.

PR02 motors are also installed in APA-Tech’s ,99‘ filling line to perform all motion sequences of the capping station: The six linear rotary motors installed alone can be used to grip, move and insert the spray heads, and then tighten them with torque once the threaded neck has been found without difficulty. „Thanks to the PR02, we can perform completely different motion sequences with a single drive - what more could you want?“ says the managing director, praising the outstanding versatility of LinMot’s PR02 motors.

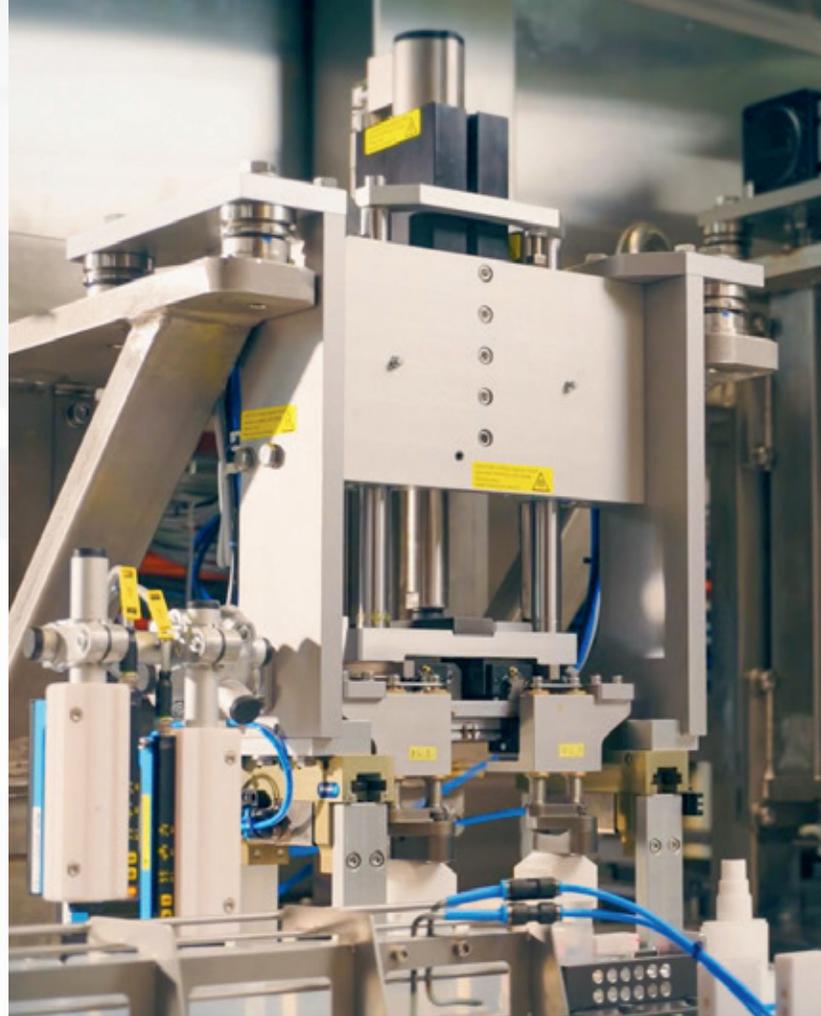
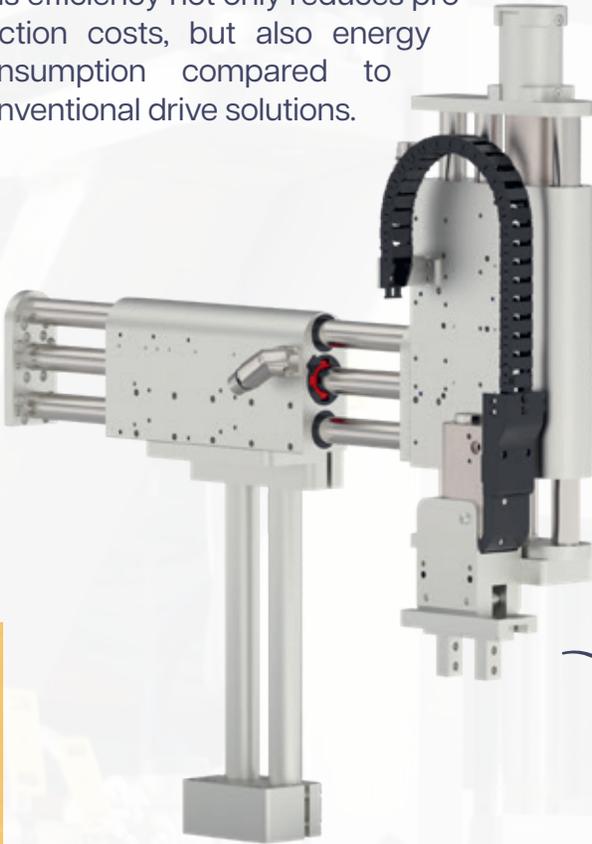


Torque and force sensors enable precise and recordable closing operations, as often required in the pharmaceutical or medical industries.



# Pick & Place

„APA-Tec has extreme speed requirements“, explains Managing Director Vaas, when asked why LinMot was also chosen for pick-and-place applications. Thanks to the small moving masses, LinMot drives can operate reliably at high cycle rates without sacrificing precision. This efficiency not only reduces production costs, but also energy consumption compared to conventional drive solutions.



LinMot actuators provide high repeatability, ensuring that each part is placed in exactly the right place, which is essential when placing the caps.

LinMot linear modules and grippers can be combined into a wide variety of pick-and-place systems.

All photos: © NTI AG LinMot

The completely maintenance-free MagSpring ensures load compensation, providing constant force over the entire stroke.

The broad product portfolio and modular system also allow flexible adaptation to a wide range of automation requirements. From complex motion sequences to simple pick-and-place applications, LinMot drives can be individually configured and seamlessly combined into a wide variety of multi-axis and handling systems. This versatility and adaptability makes LinMot products the ideal solution for modern pick-and-place processes where speed and precision are crucial competitive factors. —

# Coming Soon...

Soon you can benefit from the following developments!

## PR02 linear rotary motor with integrated servo drive

- Independent linear and rotary motion including servo drive combined in a single housing
- Reduced cabling
- Real-time Ethernet with PROFINet, EtherNet/IP, EtherCAT, Powerlink, Sercos III, CC-Link IE Field Basic, LinUDP

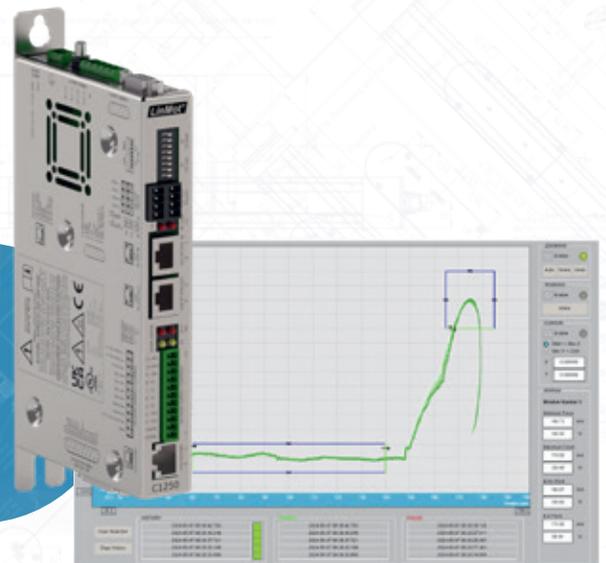


## New F1150 servo drive series

- Compact drive (HxWxD: 146x26x137 mm)
- UC power stage (72 VDC, 32 A peak)
- DS Interface (incl. EC)
- STO electronic
- 2x DIG IN, 1x DIG OUT, 1x AN IN Diff
- RT bus cycle time: 500  $\mu$ s

## Process monitoring

- Data recording integrated directly into the calibratable servo drive
- Process monitoring, evaluation and optimisation
- Easy visualisation of recorded data and curves
- Traceable data with integrated time stamp
- Easy integration into new and existing applications



## LinMot at Anuga FoodTec



All photos: © NTI AG LinMot

# Blue outside

The Anuga FoodTec, a major international trade fair for the food and beverage industry, focused on the topic of „responsibility” this year. It presented new technologies and concepts along the entire value chain that promote the sustainable use of natural resources.

The show demonstrated that key issues such as responsibility, climate neutrality and food safety are having a significant impact on the development of the food and beverage industry. The machines on display offered interesting insights into innovative strategies for minimising food loss, treating waste water and precise and clean automation using stainless steel drives - thanks to LinMot.

**LinMot stainless steel  
products for responsible  
production**

# Green inside

LinMot Stainless steel products offer the highest level of hygiene. The compact linear motors and guides, as well as the linear modules and grippers, have been developed for demanding environments and are made of stainless steel EN 1.4404/AISI 316. To prevent the accumulation of dirt, the motors are designed without unnecessary edges, corners, holes or screw connections, so they can be used in systems for processing food or pharmaceutical products. They can easily withstand extremely harsh or corrosive conditions and can be cleaned with all standard industrial cleaning agents.

## Designed for processing food and pharmaceutical processing



Fulfils the requirements of protection class IP69K in accordance with DIN EN 60529

Can be combined in the LinMot modular system and with all LinMot products

The windings of the linear motors are fully encapsulated in epoxy resin, protecting the copper filling and stator package from condensation and corrosion. They are sealed to IP69K in accordance with DIN EN 60529, while the special plastic bearings simplify cleaning and save considerable time in wash-down applications. The drives are also ideal for in-place cleaning such as CIP and SIP.

Hygienic design,  
developed for  
demanding  
environments



All linear motors are fitted with temperature monitoring sensors which transmit data to the servo drive. The data can be analysed in the PLC so that the motor can be kept within a constant temperature range depending on the process (e.g. food products such as fish). For some motor types, LinMot offers an optional integrated water cooling system, which leads to higher performance and lower surface temperatures. ■

Optionally with integrated  
water cooling for low surface  
temperatures



Easy and  
safe cleaning

# Our new Products

## GM50 High-speed gripper

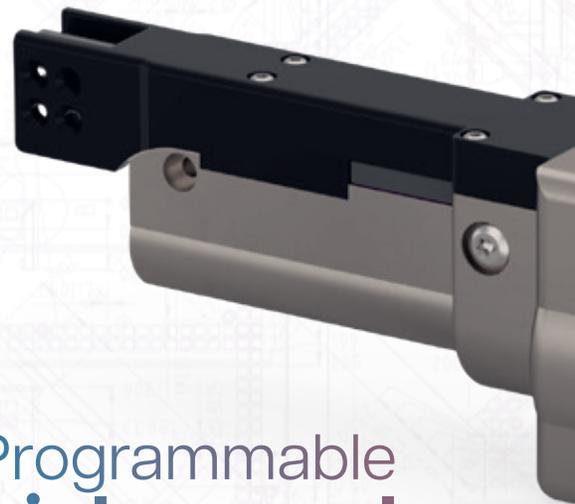
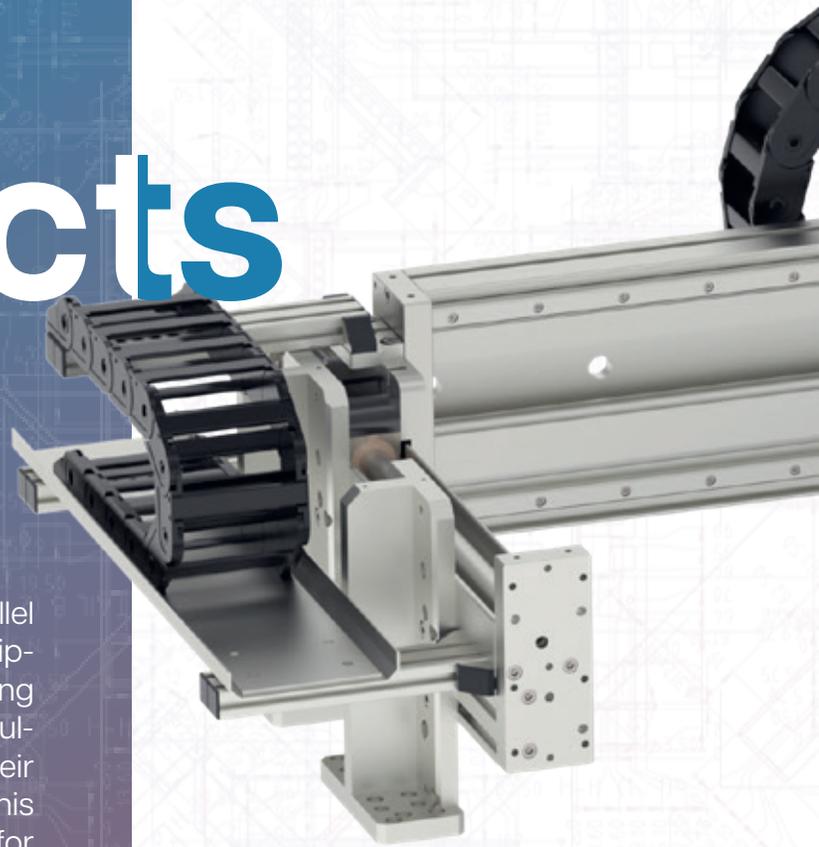
The first product in this new range of parallel grippers, the GM50, is a high-speed electric gripper designed to handle light objects at lightning speed. The gripper fingers are controlled by multi-functional LinMot servo drives, making their motion characteristics freely programmable. This means that application-specific requirements for speed, positioning and force application can be optimally met.

## GM51 High-speed rotary gripper

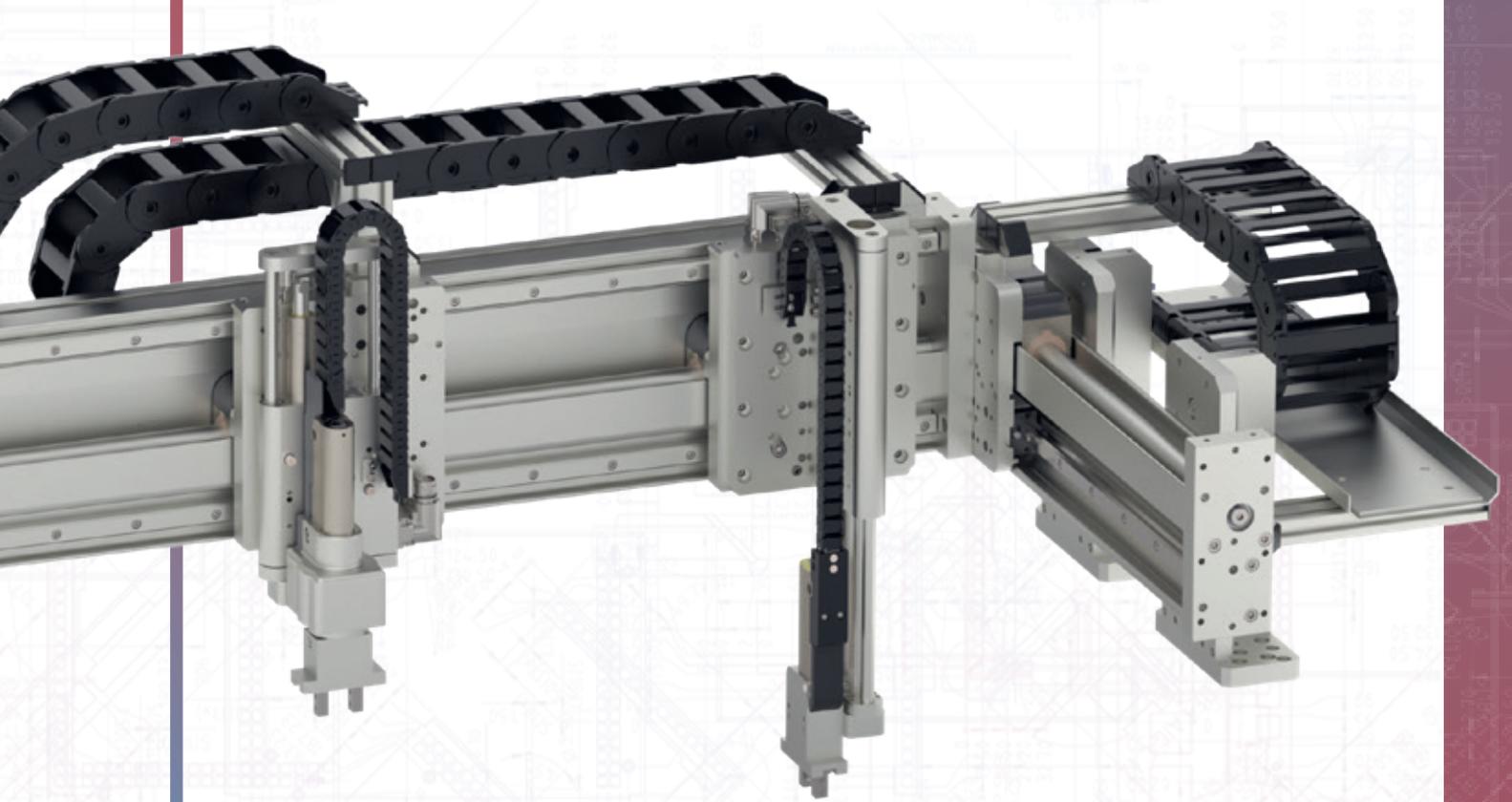
The GM51 also has an integrated rotary motor with endless rotation. This makes the parallel gripper particularly suitable for dynamic positioning as well as assembly and screwing tasks and, thanks to the accuracy of the absolute encoder, offers high precision in angular positioning. In addition, the position of the gripper fingers is monitored by the linear motor, eliminating the need for external sensors and cables.



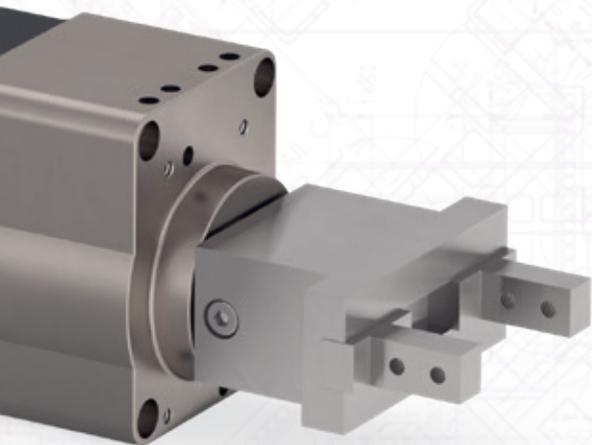
For more details,  
visit our website



GM51 Programmable  
**high-speed**  
rotary gripper



**GM50** Programmable  
**high-speed**  
gripper

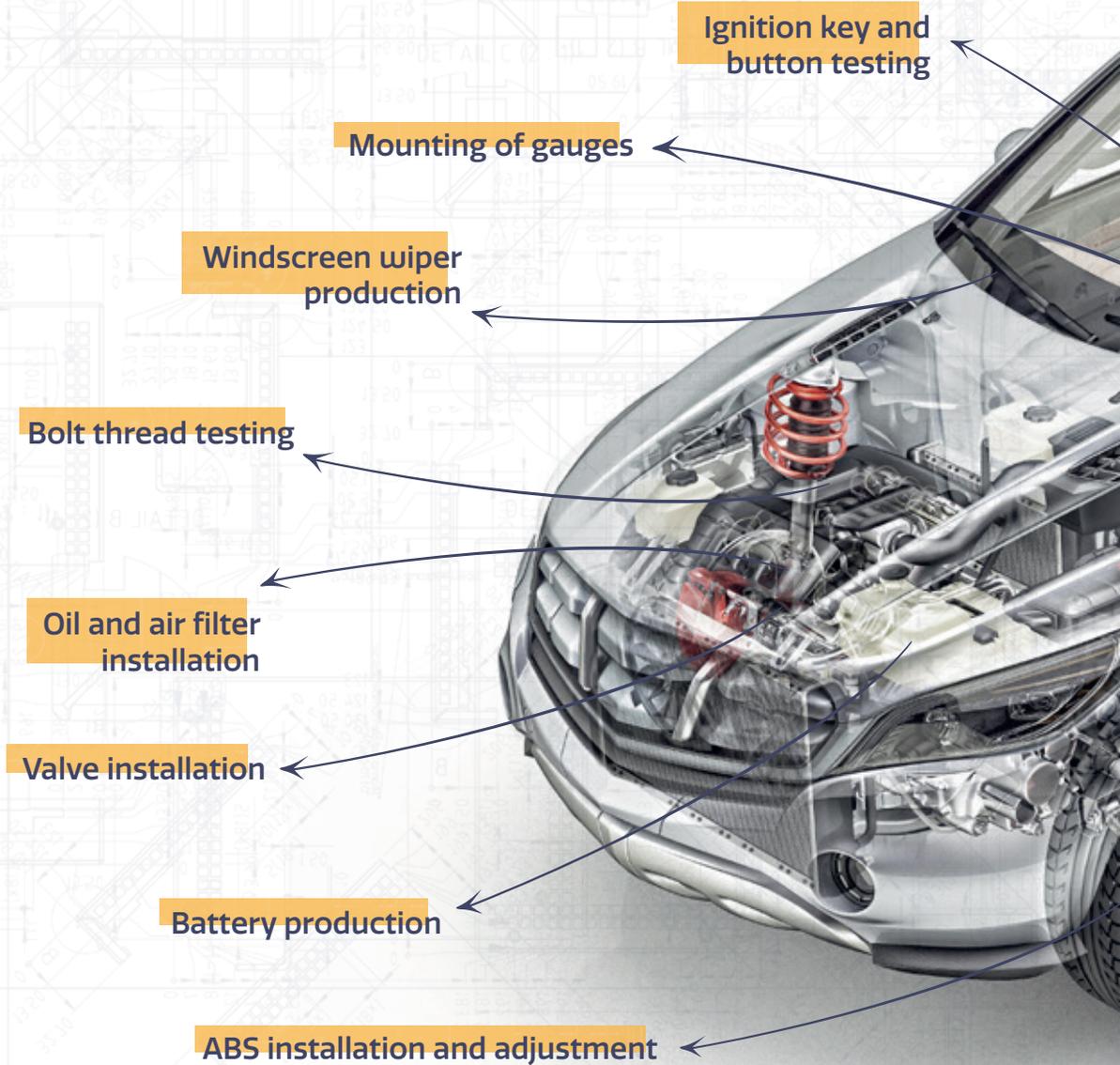


- Fast gripping with less than 20 ms closing and opening time
- Smooth gripping thanks to freely programmable motion profiles
- No energy consumption in open or closed position
- Maintains gripping force in case of power failure, easy to open by hand
- Compatible with all common Ethernet interfaces and fieldbuses
- Integrated adapter for trailing chain and cable

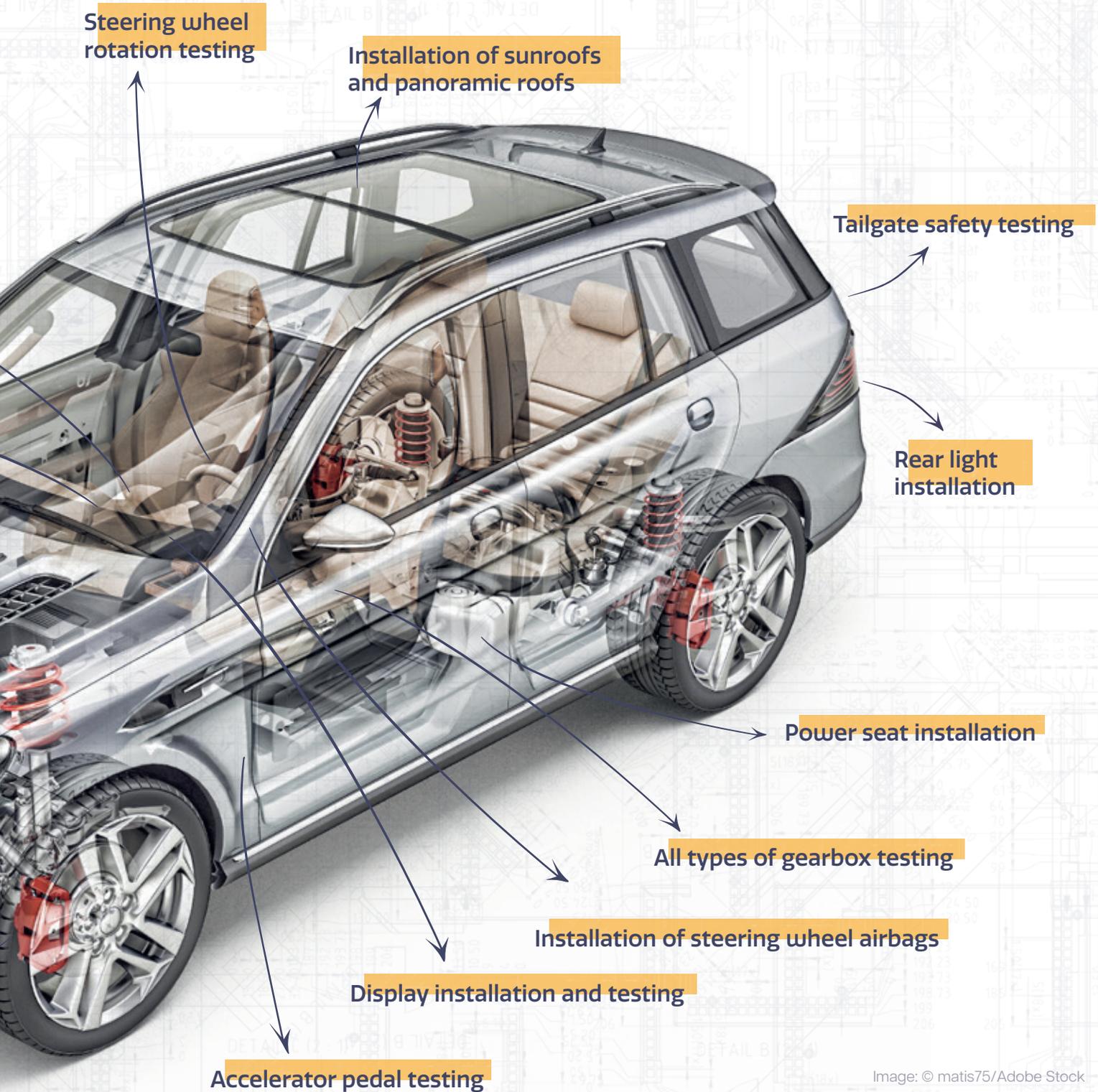
# Did you know that you already know LinMot?

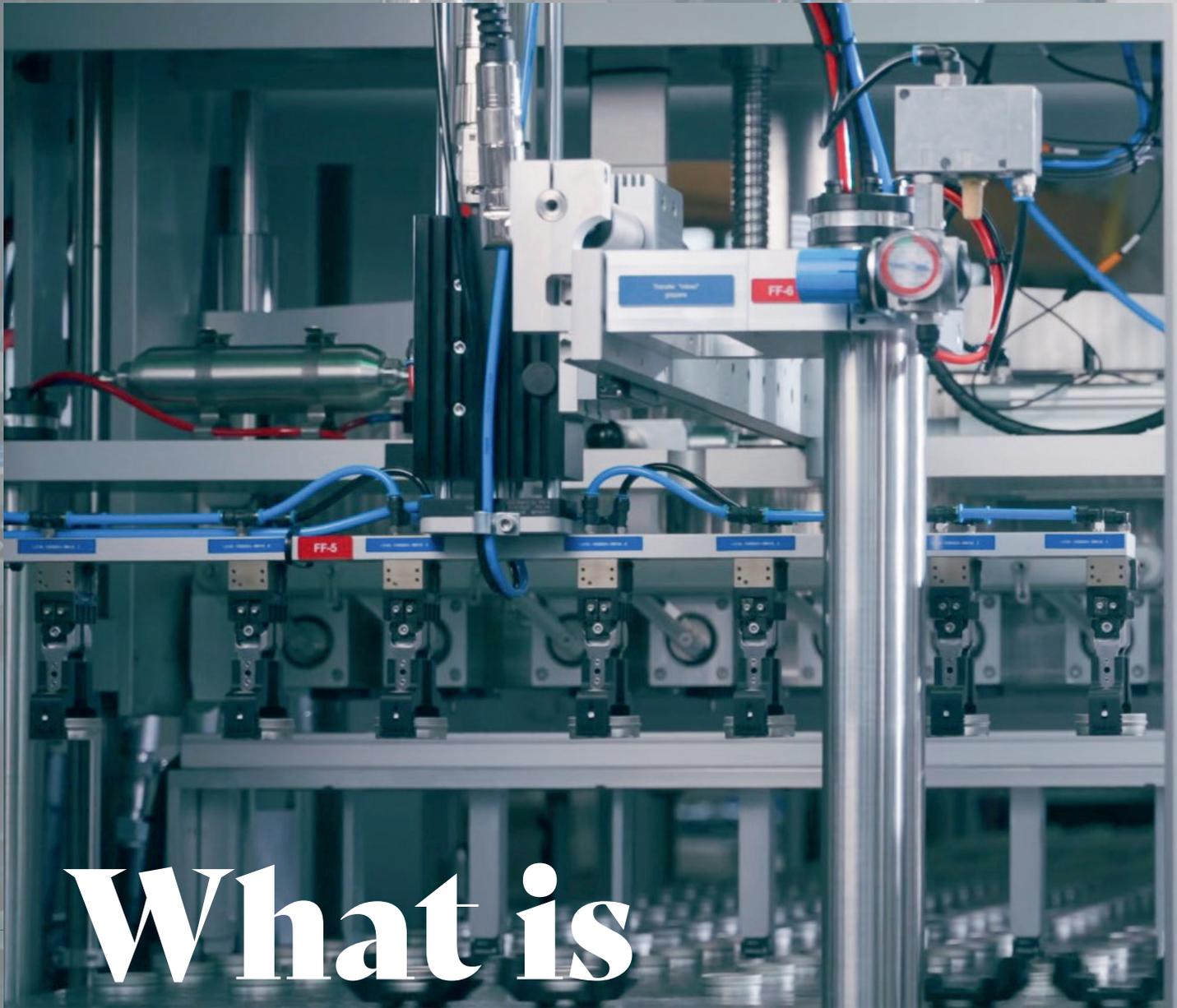
## LinMot in the automotive industry

Do you have a car? Then you already know us! To ensure that your car runs, shifts and brakes reliably, the automotive industry needs the most modern manufacturing processes - and the innovative drive technology from LinMot has long been indispensable in this respect. From battery production to gearbox testing: For more than 20 years, LinMot has played a crucial role in many phases of automotive production.



From bolt testing to headlight installation and touchscreen calibration, we ensure precision and reliability worldwide. What's more, our drives are also used in numerous safety tests to ensure that every vehicle meets the highest quality and safety standards. In short, wherever dynamic, precise motion and safety are required in automotive manufacturing, LinMot is there! —





# What is Skinification?

## *LinMot* drives new cosmetic trends

The COVID-19 pandemic has changed our lives in many ways, and months of isolation have had a profound effect on our daily routines and self-image. During this time of self-reflection and limited social interaction, many people have begun to rethink and refine their grooming rituals. One notable trend that has emerged during this time is the „skinification” of hair care.



During the lockdown, many people used hair dyes themselves, often causing hair damage. This experience has increased the desire for intensive care and repair and led to a boom in new products focusing on „skinification”. Skinification describes the approach of combining hair care with the principles of skin care, using high quality, nourishing ingredients commonly found in skin care products. Thanks to this new consumer interest, the beauty and home care industry in Germany

was largely able to buck the difficult economic conditions in 2023, despite the ongoing slump in consumer spending and a high propensity to save. Domestic sales of toiletries and cosmetics rose by 10.6% to 15.8 billion euros. The strongest growth was recorded by deodorants with an increase of 21.2 percent, followed by colour cosmetics such as lipsticks, make-up and nail polish with an increase of 17.7 percent. Perfume sales rose by 15.0 percent.<sup>1</sup>

**An application report with Weckerle Machines →**

<sup>1</sup>IKW projection based on GfK and Federal Statistical Office (Jan-Sept 2023).

## Huge product demand

But can production technology keep pace with the enormous product demand created by new care trends? For decades, a well-known manufacturer of special machinery from Weilheim in Oberbayern, Germany, has been working to ensure that this question can be answered with a resounding yes. Whether it's structured and filigree bullet artworks, organic formulations, extremely soft or matte lipsticks and care sticks, or mascaras, serums, creams and deodorants, the filling and production systems from Weckerle Machines are up to the extraordinary product variety of the cosmetics industry. The machine manufacturer, which is particularly focused on sustainability and climate neutrality, offers numerous innovative features, including the option of integrating different filling technologies and processing complex cosmetic products with a wide range of rheological properties.



„It is very important to be able to dispense different media because the product portfolio of the industry and our customers is very diverse”, says Florian Gander, Manager of Mechanical Design at Weckerle, explaining one of the reasons that led to the development of a new linear filling and processing machine. The newly developed and unique MultiStick MS3 filling system focuses on the essential key parameters of the process, such as precise dosing, heating and cooling of high-quality lipsticks and other cosmetic and care products. In addition, this unique process incorporates all filling technologies (top & backfill, silicone and metal moulds), offering customers maximum flexibility and process reliability in their production.

In general, LinMot linear and linear rotary motors impress with their intelligent design and size, as well as their ease of operation and maintenance. Not to mention the performance that these drives have to offer.

Florian Gander,  
Manager Mechanical Design at Weckerle Machines

## Keyword processing flexibility

But it is not just product variety that is important to customers. In addition to the ever-increasing trend towards smaller batch sizes and the desire to bring previously outsourced production in-house, the processing flexibility of new machines is a high priority. „A very clear customer requirement for the MS3 was fast format changeover, as they produce 12 different products on the machine”, says Gander. The fact that this format change can be carried out in less than 25 minutes is also thanks to the LinMot components, which have been used as standardised solutions for handling systems at Weckerle for more than 20 years.



LinMot linear modules offer high guiding accuracy, precise load positioning and reliable operation, even with heavy loads and over long distances.

The modular design of the guides makes it easy to add accessories such as a mechanical brake or a MagSpring (magnetic spring) for load compensation.



## 20 years of LinMot

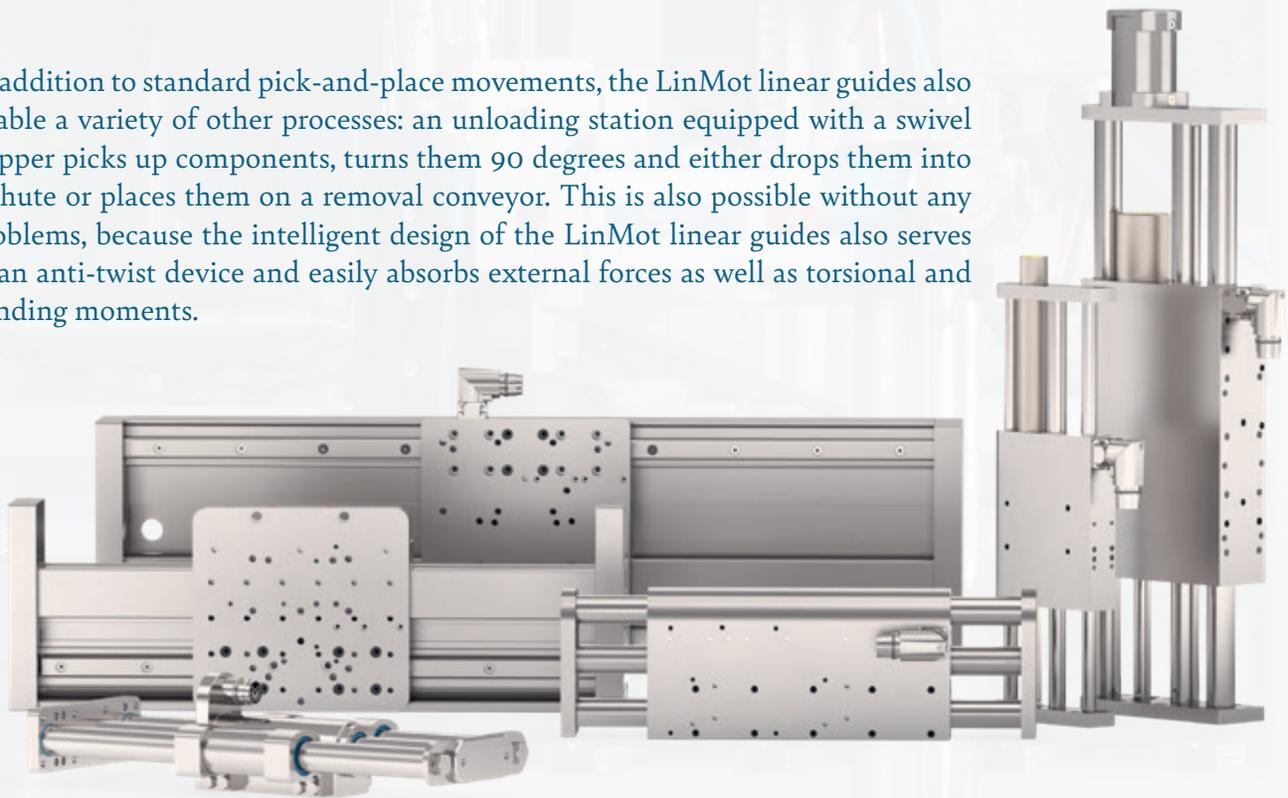
The infeed system in the MultiStick machine was implemented using LinMot: In combination with the attached parallel grippers, the containers are picked up, aligned and set down by the LinMot H-guides. Thanks to the specific properties of these guides, the Z-stroke could be modified in

such a way that the Weckerle engineers remain more independent of the load hanging underneath.



See for yourself,  
how it works!

In addition to standard pick-and-place movements, the LinMot linear guides also enable a variety of other processes: an unloading station equipped with a swivel gripper picks up components, turns them 90 degrees and either drops them into a chute or places them on a removal conveyor. This is also possible without any problems, because the intelligent design of the LinMot linear guides also serves as an anti-twist device and easily absorbs external forces as well as torsional and bending moments.



## Linear modules

The highly dynamic LinMot linear modules and linear guides are ready-to-install, pre-assembled systems based on the B and H guides that have proven their worth for over two decades. These advanced drive solutions offer all the design advantages of the latest drive technology and are able to precisely and reliably implement a wide range of complex motion sequences for a variety of customer applications.

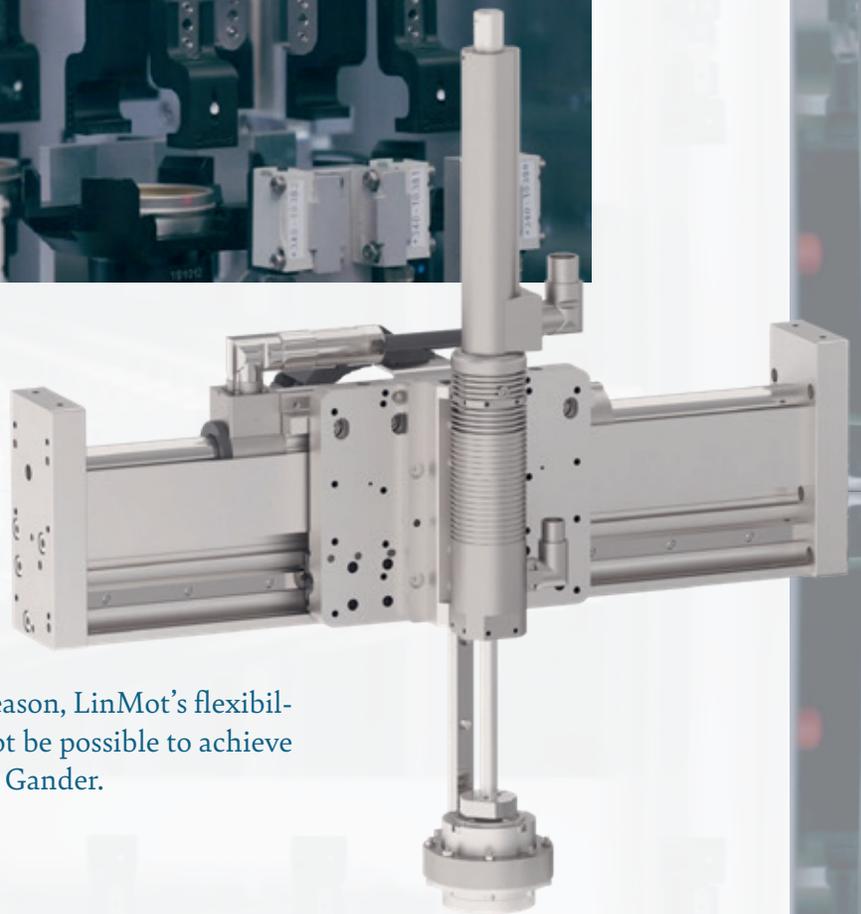
Thanks to a wide range of strength classes, sizes, stroke lengths and a comprehensive range of accessories, as well as stainless steel versions and stroke lengths of up to 2 metres, LinMot linear guides and modules offer exceptional performance in any production environment and machine integration.





## Linear rotary motors

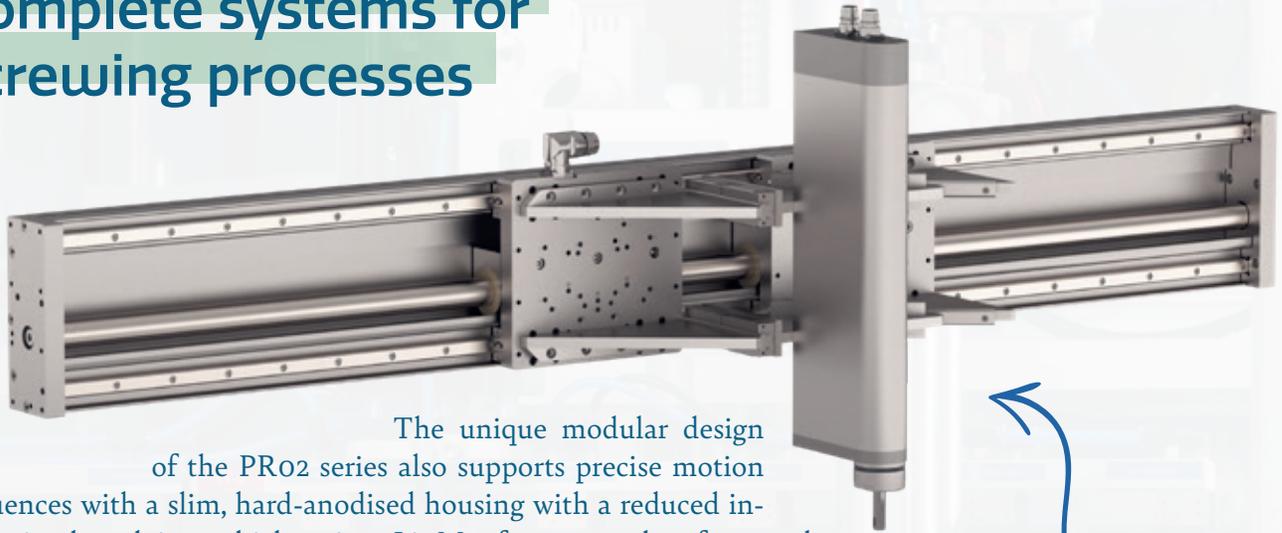
Particularly noteworthy is the precision of the PRO1 and PRO2 motors, which is essential in the cosmetics industry and would be difficult to achieve with pneumatic systems due to their limited controllability and lower repeatability. „The industry is so diverse that it is impossible to predict what geometries and structures, for example, lipsticks will have in the future. For this reason, LinMot’s flexibility is essential for Weckerle, as it would simply not be possible to achieve with pneumatic end position solutions”, explains Gander.



One of the biggest advantages of LinMot linear rotary motors is their ability to significantly simplify screwing processes.

Florian Gander,  
Manager Mechanical Design at Weckerle Machines

# Complete systems for screwing processes



The unique modular design of the PR02 series also supports precise motion sequences with a slim, hard-anodised housing with a reduced installation length into which various LinMot features such as force and torque sensors can be integrated. These enable high-precision, closed-loop force and torque control, as well as precisely reproducible and recordable screwing processes. Florian Gander emphasises: „New requirements for the screwing processes in our systems, which have to handle a wide range of different products, arise very quickly. The superior quality of the LinMot linear rotary motors is also demonstrated by the fact that we have no problems finding the start of the thread, even with a wide range of product variants.”



In addition to maximum precision and speed, the innovative PR02 provides all the data packages required for networked production in line with Industry 4.0.

On the basis of our very good experience, when precision and dynamics are important, our choice is LinMot.

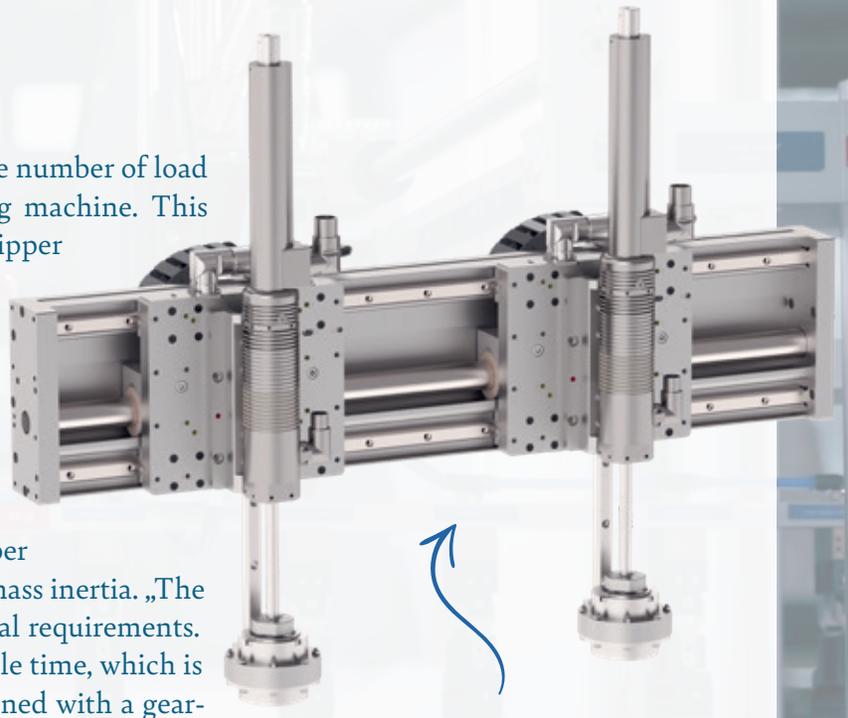
Florian Gander,  
Manager Mechanical Design at Weckerle Machines

Thanks to the PR02's decoupled rotary servo motor, only the motor shaft needs to be accelerated, so even vertical processes can be controlled with great precision.



## Small footprint high torque

The configuration of the workpiece carrier and the number of load cells to be used varies depending on the casting machine. This makes fast format changeover, also at another gripper station, extremely important. A LinMot linear rotary motor is used here, which moves with the gripper, grips the workpiece, turns 180 degrees and places part of the product on the load cell and the other part back on the workpiece carrier - a classic loading and unloading movement. Weckerle does not have to replace the entire gripper, only the gripper jaws. However, since a gripper plate can hold up to ten jaws, the unit has a high mass inertia. „The PR01 was used precisely because of these technical requirements. The movement has to be completed in a short cycle time, which is why this linear rotary motor from LinMot, combined with a gearbox, is perfect for this task”, explains Gander. With selectable gear ratios and guide rails to absorb lateral forces, the LinMot PR01 with gearbox also acts as the heart of the machine in many other closing, screwing and assembly applications, providing high torque even with large inertial loads. —



The PR01 is also available with a gearbox for higher torques, a stainless steel front and an integral bore for vacuum and compressed air feed-through.

Our experts are always on hand to help you find your customised drive solution.

**LinMot®**



All photos: © NTH AG LinMot

# Il futuro è arrivato

The future has come



**Located** in the heart of Milan, Pamoco S.p.a. has long been one of the leading companies in the industrial automation sector. Founded in 2009 by a group of visionary engineers, Pamoco has always been at the forefront of innovation in the industry, offering cutting-edge solutions for the most complex automation needs. Over the past four years, the company has undergone a period of significant evolution, culminating in the arrival of the new CEO, Giuseppe Poletto, in January 2022.



**LinMot®** | **PAMOCO** s.p.a.

**Our italian subsidiary introduces itself →**

**Pamoco**, a subsidiary of LinMot since 2021, has accelerated the commercial expansion of LinMot products, introducing a new sales representative, an applications engineer, and implementing a new customer-focused sales strategy. This expansion has allowed the company to meet a wider range of industrial automation needs and reach new markets.

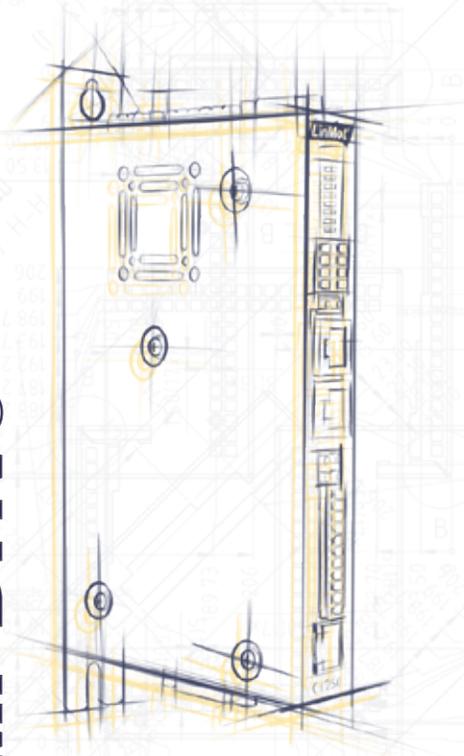
**Marco Bottini**  
Sales Manager

We have invested in state-of-the-art technology and optimised our organisational processes to ensure high quality products and services, as well as short delivery times. This has enabled us to increase efficiency and reduce costs.

**Manuela Melileo**  
Sales and Marketing

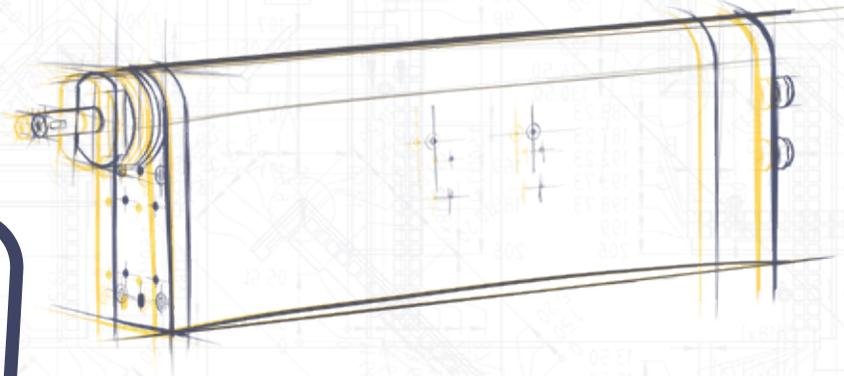
As well as expanding our team of experts, we have invested in the training and development of our people. This commitment has helped to create a collaborative working environment that fosters creativity and innovation within the company.

**C1250**  
**MI-Drive**



**The** presence in the very important Italian industrial fabric has been achieved thanks to the collaboration with the parent company LinMot, which has allowed the Pamoco sales force to propose innovative solutions, especially with the new C1250MI drives and PR02 motors. —

# PR02 Linear Rotary Motor



## Giuseppe Poletto CEO

Pamoco's development over the past three years demonstrates the company's determination and commitment to play a leading role in industrial automation. With a solid foundation of state-of-the-art products and services, a team of highly skilled experts and a visionary management team, Pamoco is well positioned to meet the challenges of the future and continue to set the standard in the industry.

## Umberto Rocca COO

The entire team has increased its commitment to innovation and research to develop new technologies and breakthrough solutions. Above all, the focus on innovation has helped us to anticipate market trends and maintain our position as an industry leader.



We open up

# New fields of application

## PR02

### Lever arm application for pick-and-place

We are extending our PR02 product family with a mechanism optimised for pick-and-place applications and a high-resolution single-turn absolute encoder. This complete system enables precise sorting, separation and handling of products with an accuracy of less than  $0.05^\circ$ . This solution is ideal for use in the pharmaceutical industry thanks to the easy sealing of the lever arm, the precise absolute encoder and the efficient use of space, which facilitates installation under the work surface.

## PR04

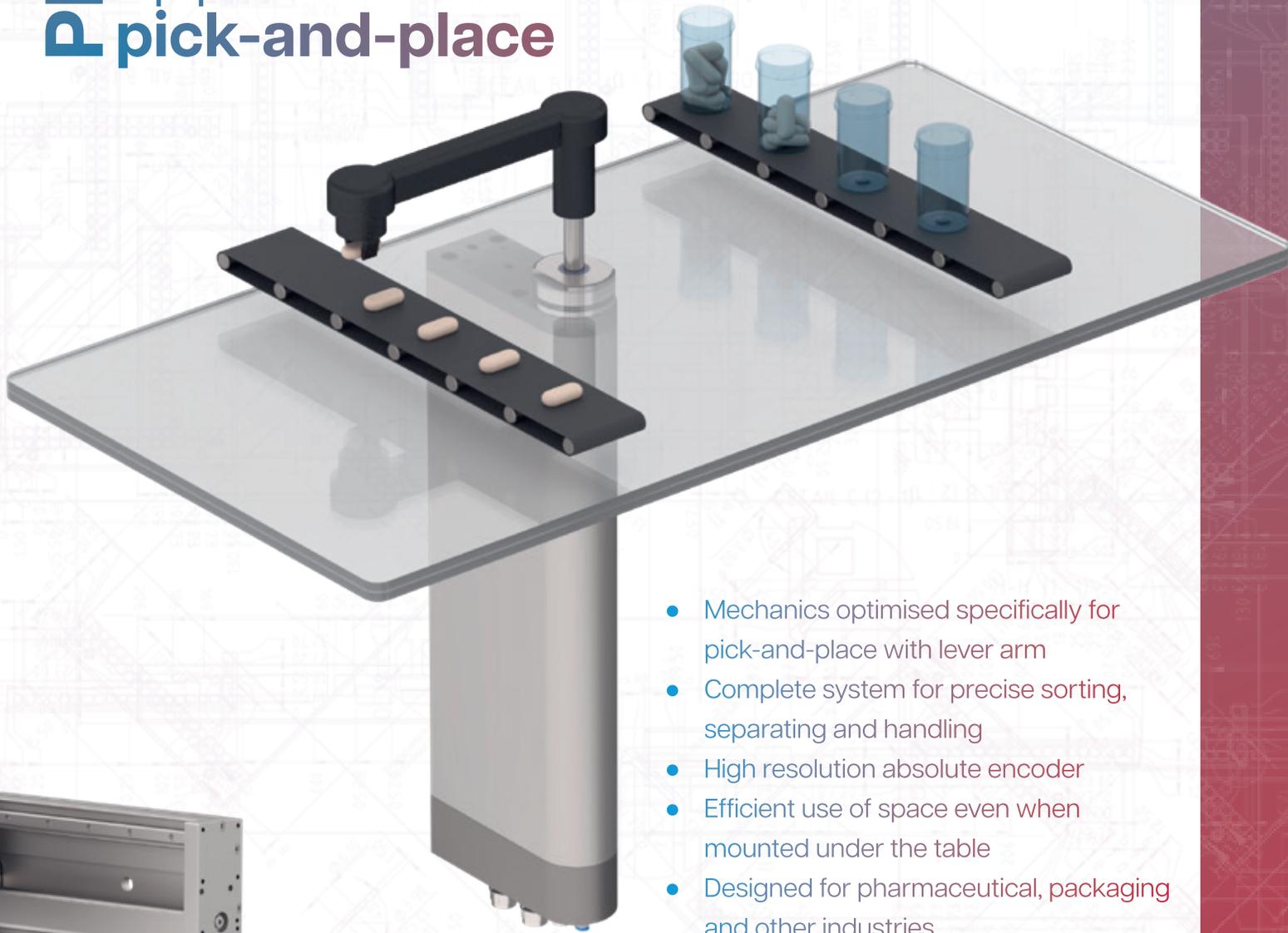
### Long stroke and low mass for perfect sorting

The PR04 linear rotary motors feature a minimalist design that ensures high efficiency and a small footprint. Their optimised weight makes them suitable for use in applications where weight and mobility are critical. Particularly noteworthy is the smallest possible installation space with the largest possible stroke. This makes them the ideal choice for dynamic applications where the module itself needs to be moved, such as in robotic systems.



For more details,  
visit our website

# PRO2 Level arm application for pick-and-place



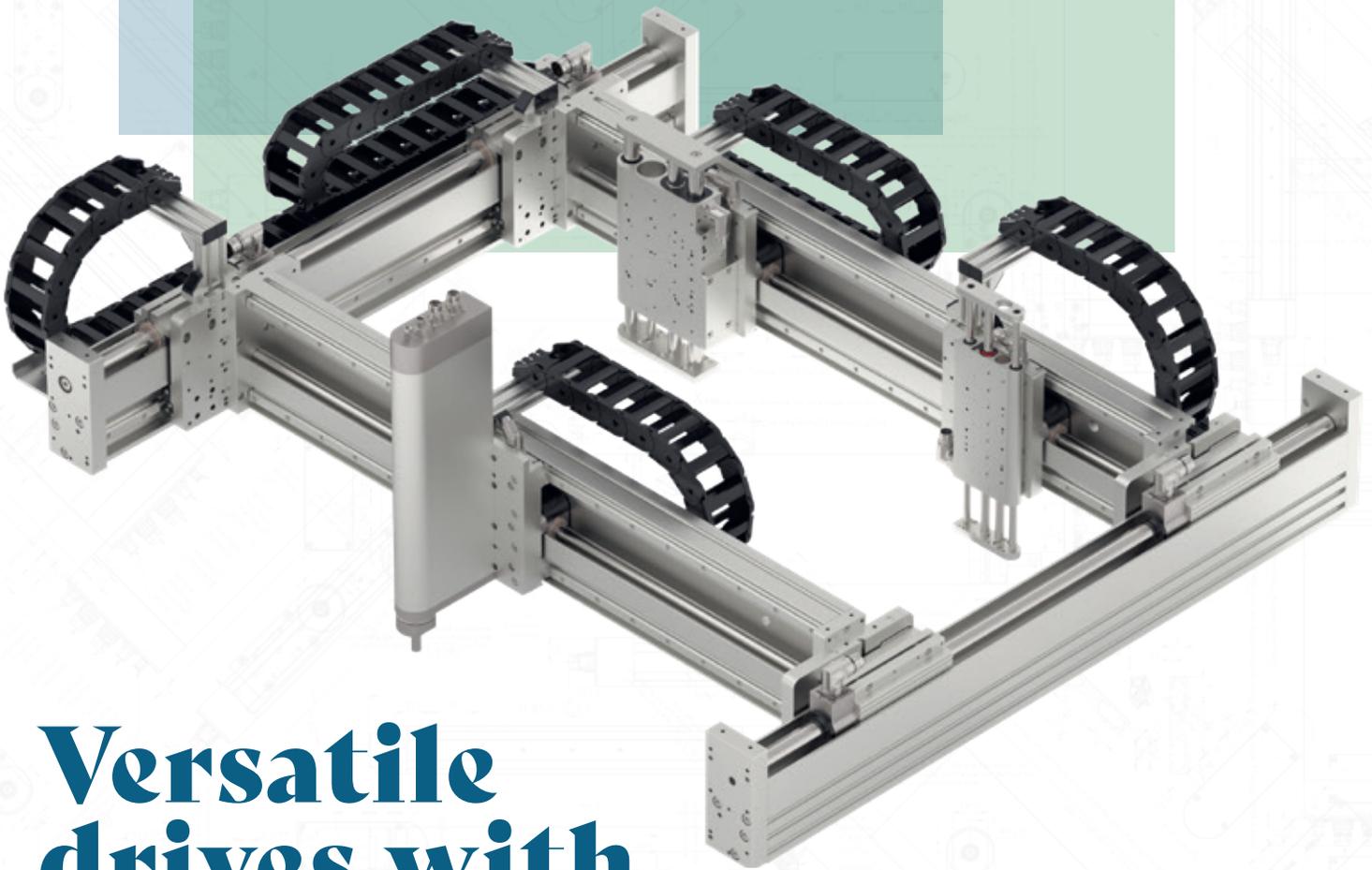
- Mechanics optimised specifically for pick-and-place with lever arm
- Complete system for precise sorting, separating and handling
- High resolution absolute encoder
- Efficient use of space even when mounted under the table
- Designed for pharmaceutical, packaging and other industries



# PRO4 Long stroke and low mass for perfect sorting

- Extension of the PRO2 with optimised housing
- Very large stroke range of 200 mm
- Smallest possible footprint and weight
- Perfect for use in robotic systems
- Ideal for pick-rotate-place applications

**B**alancing the shortage of skilled labour, increasing production demands, safety requirements and the need for sustainable processes is an enormous challenge for many machine builders. To meet these complex requirements, LinMot offers an innovative and easily configurable modular system for highly dynamic handling and assembly systems with integrated functional safety.



# Versatile drives with functional safety

LinMot offers a modular system with functional safety for handling and assembly systems

The flexible modular system allows users to combine the space-optimised LinMot linear motors, modules and guides with proven cartesian structures such as semi-gantry, gantry or other multi-axis systems. In this way, even very complex industry-specific requirements can be implemented quickly and precisely, while maintaining high dynamics. Despite the integration of multiple carriages and Z-axes, LinMot systems remain extremely space-saving, have few disturbing contours and are easy to maintain and expand.

Due to their motion structure, LinMot linear motors, modules and guides are not only more energy and cost efficient than other kinematics, but also more flexible in workspace design and offer high speed, precise and repeatable motion control. This makes them ideal for applications that require precise movements and repeated positioning, such as highly dynamic sorting, pick-and-place and assembly applications, as well as capping, screwing and handling processes.

# Multi-axis systems with functional safety

With the introduction of a comprehensive package, LinMot now offers an innovative solution: Functional safety is integrated directly into the motor and drive, without having to change the proven design. As a result, both new and existing machine concepts benefit from the many advantages of LinMot's integrated safety technology.

## Your solution

A major advantage is that all safety monitoring is integrated in the -2S servo drive, so no additional hardware is required. In addition to Safe Stop (STO) and Safe Shutdown (SS1), LinMot drives offer advanced safety functions such as Safe Stop 2 (SS2), Safe Operation Stop (SOS), Safe Limited Speed (SLS) and Safe Brake Control (SBC/SBT). Safe Brake Control (SBC) has also been extended to include Brake Test (SBT), which allows cyclical checking of the braking effect.

## Your benefit

The new LinMot -2S servo drives communicate with the higher-level control system via various safety bus systems as required: users can use PROFIsafe via PROFINET and PROFIdrive or transfer protocols via EtherCAT (FSoE), Ethernet/IP, POWERLINK and SERCOS. Alternatively, safety functions can be activated via the integrated digital inputs. —

## Your Language



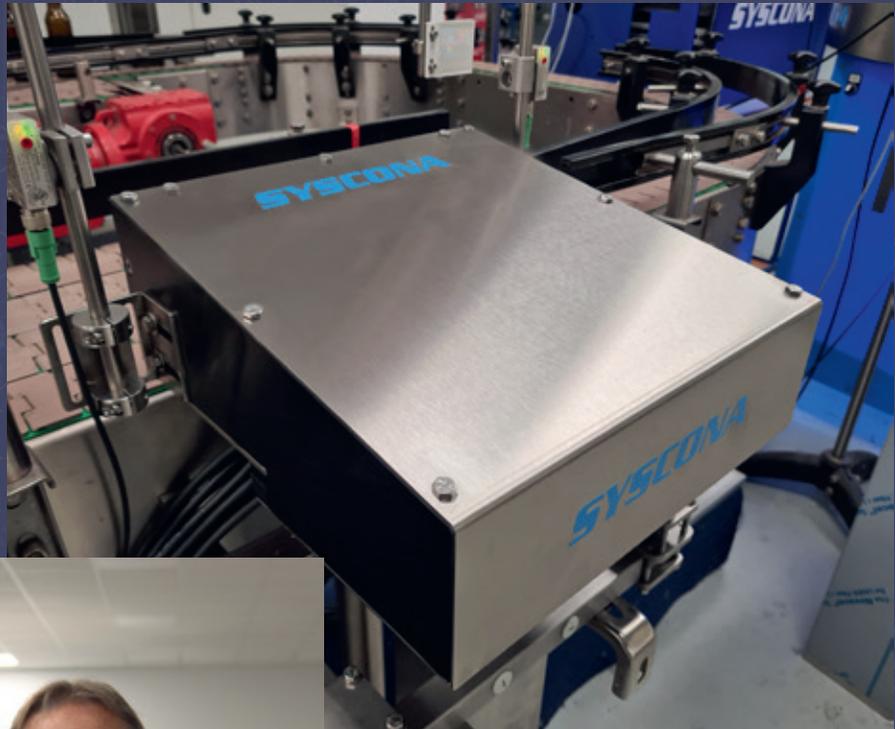


# Intelligent rejection systems with LinMot make many things better

An interview with Professor Kurt Spiegelmacher

# This is what science says about us

SYSCONA, a well-known company in the beverage industry, has developed a new rejection system. Aren't rejection systems for containers such as bottles or cans, or those for cartons or crates, already „exhausted“?



**Prof. Dr. Kurt Spiegelmacher** is a professor at Kaiserslautern University of Applied Sciences. His area of research is production automation with handling, transport and assembly systems and robots.

**Prof. Spiegelmacher:** Rejection systems completely exhausted? Not at all. Active rejection systems have been available for many years for containers that are particularly prone to falling or toppling over, such as empty returnable bottles, in which the containers to be rejected are gently pushed to the side in synchronisation with the transport speed. Thanks to the special design of the pushers, even very small distances between containers can be handled without any problems. However, the disadvantages are the relatively large space requirement and the heavy-duty mechanics with the associated maintenance requirements.

**More about the compact ProfiCurve rejection system →**

The collaboration between LinMot and Syscona is constantly creating new systems. Take a look at our application film.



VIDEO

## LinMot: So the need was for a compact, low maintenance rejection system?

**Prof. Spiegelmacher:** That is correct. Today, systems are known that use mostly pneumatic „fingers” to form a railing at which the objects are deflected sideways. However, such deflectors are passive, i.e. the sideways movement is caused solely by the forward movement of the objects. In addition, braking friction forces act on the railing, which can also lead to falls at higher speeds. This can be countered by active guidance systems: For the first time, a segment deflector has been invented with a variable deflection angle, which is adjusted using LinMot’s linear drive technology. The unique, patent-pending ProfiCurve solution from SYSCONA, which automatically adapts to the transport speed, container characteristics and deflection tasks, overcomes the disadvantages of conventional segment deflectors and enables long-term savings in operating costs.



The capabilities of SYSCONA’s brand-new ProfiCurve deflector open up a whole new world of possibilities in the construction of conveyor systems. SYSCONA uses 25 mm wide high performance linear drives from LinMot’s P01 series with a stroke of 100 mm.

## LinMot: So that's how LinMot came into the game?

**Prof. Spiegelmacher:** Yes, SYSCONA is pleased to use the state-of-the-art linear motor technology from LinMot as the basis for the new ProfiCurve rejection system. Thanks to the free programmability of the stroke movement of each rejection element (linear motor with finger), the individual stroke movements can be triggered and parameterised depending on the belt speed. The speed data can influence both the stroke kinematics and the positioning angle of the finger cascade. The movement of the objects and the deflection width can therefore be set very precisely and kept constant from a control point of view.

# What's inside?



## LinMot P01 series linear motors



The P01 series linear motors are extremely versatile. Discover the full product range here.

### **LinMot: So the ProfiCurve is not only compact and low maintenance, it is also intelligent?**

**Prof. Spiegelmacher:** And much more. Thanks to the modular design, the number of active LinMot linear actuators can be adapted to suit the object, transport capacity and intralogistics function. The associated LinMot servo drives also offer a wide range of programming and control options, so that container guidance is extremely gentle. In addition to the small space requirement, the comparatively low and cost-saving energy consumption (electricity instead of compressed air) and the very low noise emission should be emphasised.

Thanks in part to LinMot's linear technology, the ProfiCurve rejection system can be easily integrated into fully networked production and packaging lines - an important contribution to Industry 4.0. ■



All photos: © SYSCONA

For the first time, a combination of passive and active deflection has been achieved using the potential of LinMot linear motor technology in conjunction with a segmented deflection curve.

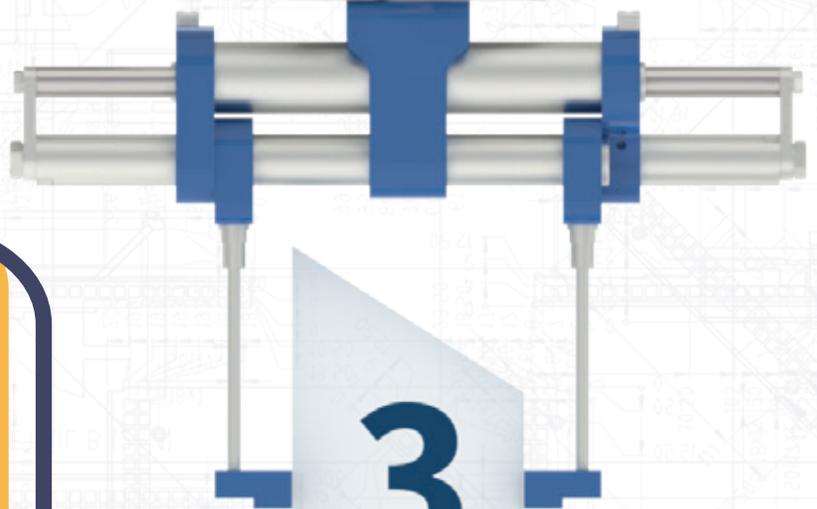
LinMot®

# HALL



## Product of the year

The PR02 linear rotary motor was voted „Product of the Year” by the prestigious Industrial Production magazine. The award recognises the outstanding performance and innovation of the PR02, which impresses with its precise force and torque control and its versatility in a wide range of applications. With this award, the industry confirms LinMot’s leading position in drive technology.



# 3

Antriebstechnik und  
Automatisierung

NTI, LinMot &  
MagSpring

**INDUSTRIAL**  
Production

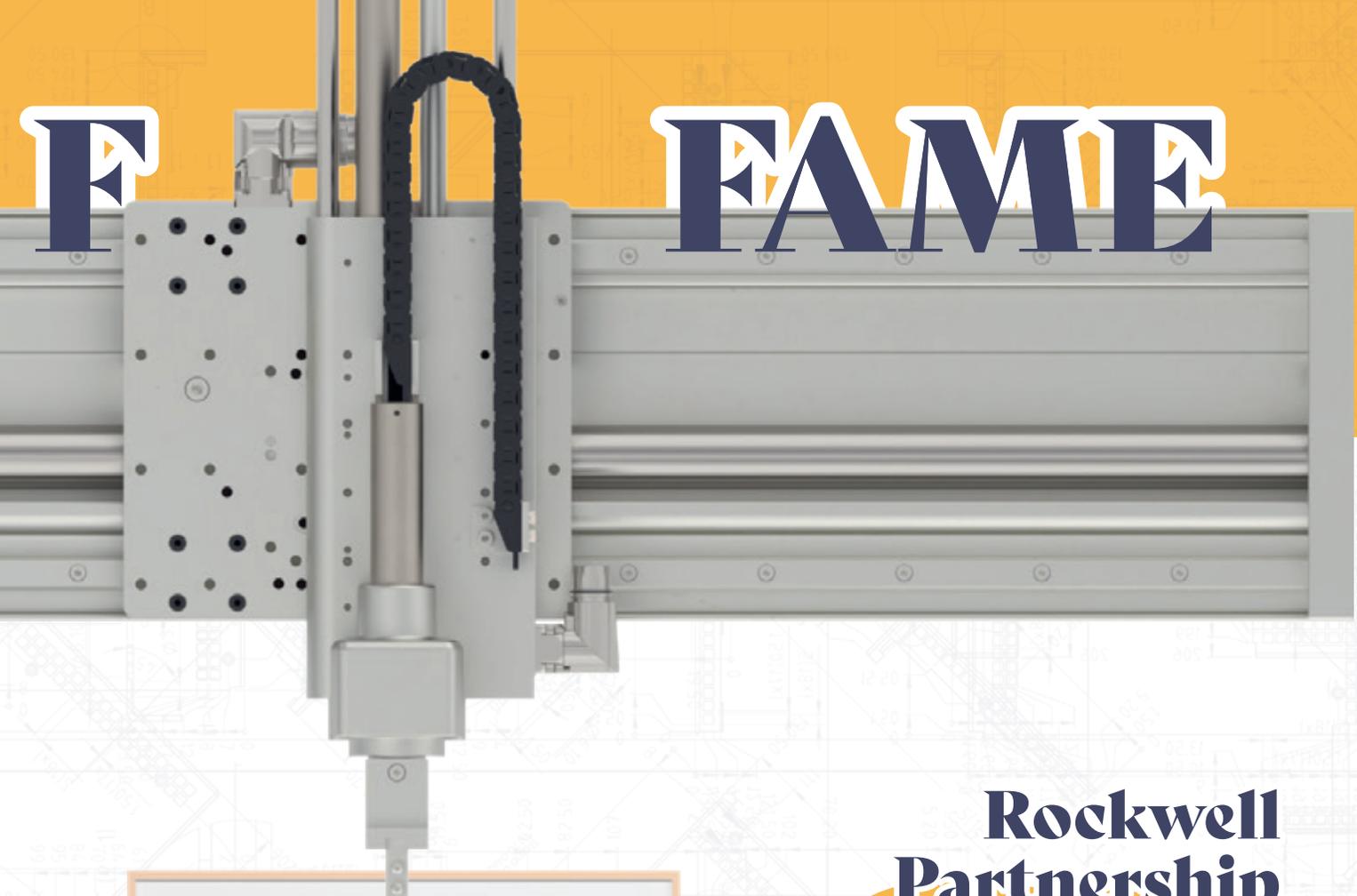
Produkt des  
Jahres

More about our  
product of the year



# F

# FAMME



## Rockwell Partnership

LinMot is an important part of the PartnerNetwork programme. This programme connects companies with Rockwell Automation to develop innovative and integrated solutions through technology collaboration. LinMot now also contributes specialised products and technologies that can be integrated with Rockwell Automation systems to extend the capabilities of automation solutions.



More about our Rockwell components

# ALL LINEAR MOTION FROM A SINGLE SOURCE

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