Customer magazine from Lenord, Bauer & Co. GmbH

PowerDRIVE-Solutions
09/2015

LENORD +BAUER
... automates motion.

Well (re)equipped for the future

Full automation is ...
... the key to success

PowerDRIVE-Retrofit: Retrofitting and modernizing machines and plants made easy

Full automation is essential for modern packaging machines!

Dear readers,

For half a century we have prepared individual solutions for the automation of motion together with our customers. During this process we have kept up with the times and therefore secured relevant competitive advantages also for you, our customer.

Currently everyone is talking about the topic of Industry 4.0. The goal of smart systems and intelligent machine pools is process optimization for resource-saving production with increased efficiency. Numerous product variants and widely varying batch sizes place challenges on the packaging industry. Therefore the focus of Industry 4.0 is also on the fully automated format change.

Every manual adjustment that can be automated via recipe management saves set-up time and increases flexibility in production. Recipe management makes it possible for the machine to process an order independently without the intervention of the operator. This trend affects both new machines and also retrofit projects.

In this issue of our customer magazine you will find the latest information on the automation world of Lenord + Bauer. You will gain an insight into the wide range of possibilities that our PowerDRIVE-System offers for plant optimization. Find out from our customers how we have advanced their business with our fully automatic positioning system and read how you can save money with PowerDRIVE-Retrofit and therefore increase your profits.

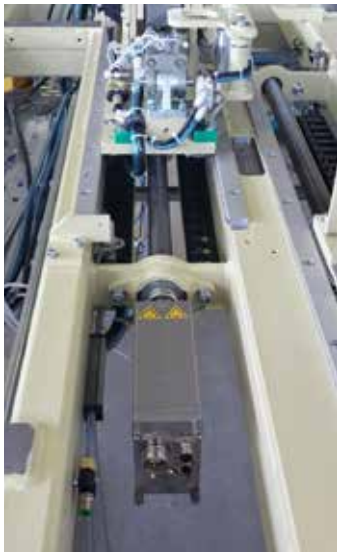
The fourth industrial revolution offers major opportunities for machine manufacturers. We would be pleased to help you automate your machine processes. You will then be well prepared for the future! I wish you every success.

Yours

Manfred Fritsch
Senior Key Account Manager
Lenord, Bauer & Co. GmbH

50 eventful years

News



Applications

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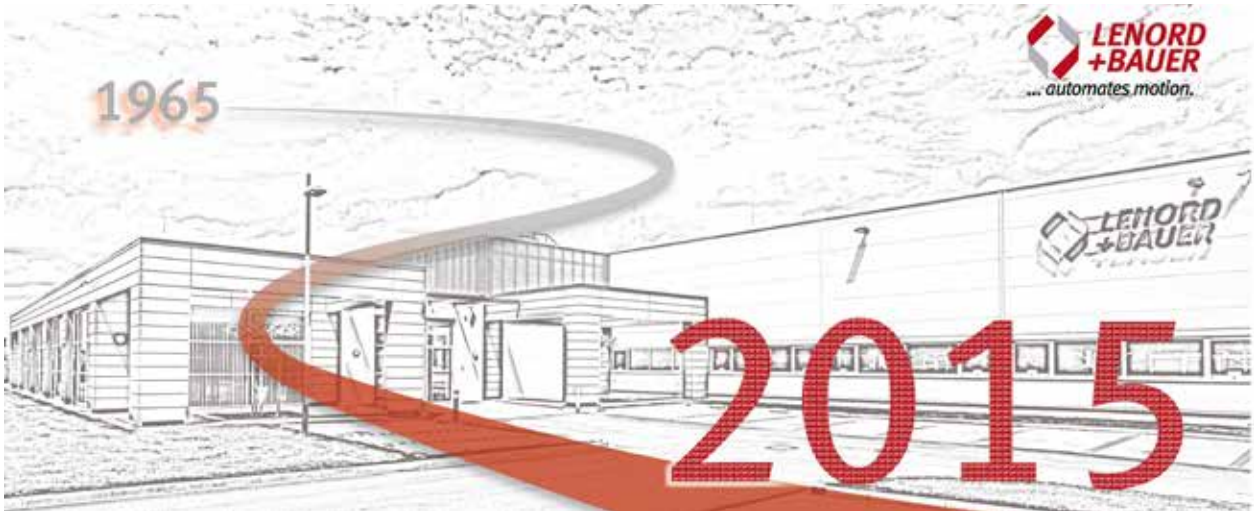


Lenord + Bauer celebrates half a century of company history

Proud look back at 50 eventful years

Family business and hidden champion

The specialist for the automation of industrial motion sequences has now been successful on the market for half a century. As a value-orientated family business with the characteristics of a hidden champion, the name Lenord + Bauer stands for high quality, technologically advanced products.

The success story of Lenord + Bauer began in 1965 in a basement room in Oberhausen. The four founders Horst Lenord, Günther Bauer, Hans Look and Dieter Westerhoff developed impedance meters and bottle testing machines. Customer wishes were already in the foreground even then.

In the meantime, Lenord + Bauer has about 250 employees worldwide. They work at the headquarters in Oberhausen, the production and logistics center in the neighboring city of Gladbeck, as well as at the subsidiaries in Ostfildern (Baden-Württemberg), and the Chinese metropolis Shanghai.

On the occasion of the 50th anniversary, we have compiled the most important milestones in the company's history for you:

1965

Company founding
Founding of Lenord, Bauer & Co. GmbH in Oberhausen, Germany. The first products were impedance meters and bottle testing machines.

1969

Powerhouse of ideas in a basement in Oberhausen (f.l.t.r.: Horst Lenord, Günther Bauer)

The first company headquarters in Oberhausen

1975

Production of rotary encoders for the first time
L+B develops the first electrical counters and magnetic incremental encoders.

1984

Market launch of the first compact control systems
The company develops compact control systems for the first time. The series production for rotary encoders is expanded.

The success of our business is not defined by the challenges that lie ahead of us, but by the employees who stand behind us.

Positive outlook

Dr. Matthias Lenord, Managing Partner, is very optimistic about the future of the organization: "We are following a clear growth strategy in which the development of international markets and the latest technologies play a central role. We see our employees as the key to our success and we are very proud of them!" »

Motivated, qualified employees are the basis for corporate success

Dr. Matthias Lenord and long-service employees at the anniversary celebration

2015

50th anniversary
Lenord + Bauer looks back at a success story covering half a century and celebrates the anniversary with business partners, employees and neighbors.

Ultra-modern production site in Gladbeck

2013

Expansion of the application business
The participation in TAR Automation GmbH in Dinslaken offers the customer additional services.

2012

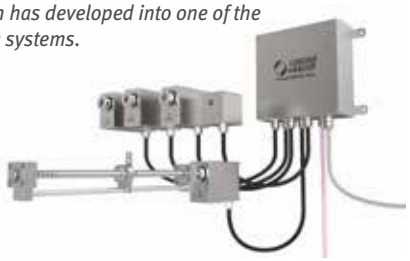
Development of the corporate holding and inauguration of the new production and logistics center in Gladbeck
Founding of the corporate holding "Gesellschaft für Elektronik Lenord GmbH & Co." For sustained growth and for process optimization, production and departments closely related to production move to the new facility in neighboring Gladbeck.

2011

First foreign subsidiary
The Representative Office in Shanghai is a local point of contact for customers in Asia.

2008

Entry into the field of mechatronics
The first generation of positioning drives is successfully placed on the market. Since then the PowerDRIVE-System has developed into one of the leading positioning systems.



2006

Development of absolute rotary encoders with vernier disk
L+B develops a high-resolution, magnetic absolute rotary encoder based on the vernier principle.

1997

The world market leaders in spindle manufacture use MiniCODERs
L+B integrates cam disk functionality into control systems. MiniCODERs are the most widely used sensors in high-speed spindles in the world.

1996

Entry into the railway rolling stock sector
A passion turns into a sales market.

1993

Development of the first MiniCODER
L+B produces the first encoder kit in compact design. The MiniCODER is born.

More flexibility due to Ethernet in the drive

New interfaces make it possible to integrate PowerDRIVEs quickly into Ethernet-based networks

Due to the advantages of standardized communication, Industrial Ethernet protocols are becoming increasingly important. Lenord + Bauer has now also addressed this trend. To be able to integrate the positioning drives into a PROFINET, Sercos or EtherNet/IP network also without a PowerDRIVE-Box, the automation specialist has given the PowerDRIVEs Ethernet support.

In 1973 the network pioneer and inventor of the Ethernet, Robert Melancton Metcalfe, definitely had no idea about the success his idea would have. Originally developed to set up local computer networks, this technology has arrived in the world of automation with Industrial Ethernet.

In the meantime, around 20 Ethernet-based systems have become established in the industry. These communication systems impress with higher performance, higher data volumes, better real-time characteristics and the straightforward processing of production data using high-level analysis tools.

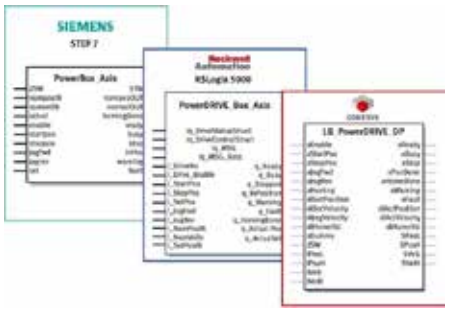
The direct exchange of data between all levels in the automation chain, from the individual device to the operator's workplace, is an important aspect here, as these days industrial devices increasingly communicate with each other. The type of network an organization requires for the components is mostly dependent on the machine control system used.

Lenord + Bauer is also noting steady demand for devices with Ethernet support. PROFINET, Sercos III and EtherNet/IP are important networks for real-time communication for the businesses' customers. Together these three have a market share of around 15 %. In the past it was possible to connect the positioning drives via the PowerDRIVE-Box if the customer used the PowerDRIVE-System in his Industrial Ethernet network. This box has been available with all common interfaces for some time. Now Lenord+Bauer is also offering some Industrial Ethernet protocols directly in the positioning drive. As a consequence, the drive can also be used as a standalone solution.

Currently the PowerDRIVEs are also available with a PROFINET, Sercos III or EtherNet/IP interface. The devices are equipped with M12 connectors and are connected to the control system using common network cables.

The integration into the machine or plant network remains as straightforward as ever due to PowerDRIVE-Lib. Using pre-defined function blocks, the drives can be integrated directly into the programmable logic control. Depending on the interface, the blocks are available for the platforms CODESYS, STEP 7 or RSLogix 5000.

For Lenord + Bauer customers, this step signifies even more flexibility during the integration of the PowerDRIVE-System. »



sercos the automation bus

EtherNet/IP

PROFINET

I/O module with system

Digital inputs and outputs expand the PowerDRIVE-System

To be able to evaluate data from components such as limit switches or sensors, Lenord + Bauer is integrating an intelligent I/O module into the PowerDRIVE-System. PowerDRIVE-IO can acquire data on up to 16 digital channels.

The PowerDRIVE-System is the right choice for quick, reproducible format changes. The PowerDRIVE-Box with five ports is the central control element for the positioning system from Lenord + Bauer. It acts as a link to the machine control system and communicates with the positioning drives which are connected in a star shape.

During this process, the integrated absolute multiturn sensor in the drive ensures exact axis feed. In many applications it is also necessary to output the status of the positioning to the machine control system. To address this requirement, Lenord + Bauer has designed a decentral I/O module with bus support. The devices are designed for the connection of eight binary switches or sensors and eight binary actuators.

With a height of only 26.5 mm, a width of only 30 mm and a length of 175 mm, the I/O module is very compact. The fully encapsulated housing achieves protection class IP 67 and can be used right in the machine. PowerDRIVE-IO is connected with the usual simplicity using pre-assembled cables.

Using PowerDRIVE-IO it is possible to monitor the position with the aid of limit switches and integrate external recipe selection via a binary code. The additional inputs and outputs also open up a variety of other possibilities for the usage of the PowerDRIVE-System. »

PowerDRIVE-Retrofit
Reducing set-up times in the production process

Modern positioning systems offer technical and commercial advantages

The level of automation plays a key role in the productivity and quality of a plant or machine. The replacement of obsolete components, the inclusion of the latest technology as well as the replacement of manual units result in a higher level of automation of the machine or plant. Using our PowerDRIVE-System you can comprehensively modernise your machines and plants.

By using fully automatic positioning units you will minimise the set-up times and reduce the costs for a format change. You will increase the productivity of your entire plant over the long-term using the positioning system.

Depending on customer requirements and technical aspects, the PowerDRIVE-System is either integrated into the existing control system architecture, or installed as a low cost system in parallel.

The Plug-and-Play solution

Parallel system alongside existing control system architecture

PowerDRIVE-Retrofit is the economical option for upgrading a plant. Up to 50 handwheels can be straightforwardly replaced with modern fully automatic PowerDRIVEs. The drives are controlled by the PowerDRIVE-TouchBox with integrated PLC and touch display. During this process the parallel system operates independently of the existing machine control system. Usage of the existing system architecture continues unchanged.

PowerDRIVE-Retrofit — simply ready-to-connect

Commissioning PowerDRIVE-Retrofit is low-cost and convenient, as the system is configured without programming. The drive parameters are set and the format settings are defined on the PowerDRIVE-TouchBox with the aid of the operating software. You can start a complete format change with the press of a button!

Ready-to-connect components and pre-assembled cables ensure the complete system is installed quickly. The effortless routing of the cables in the switch cabinet and the wiring using PowerDRIVE-Connect make this solution a real Plug-and-Play system.

In operation the integrated emergency stop concept with main switch, safety relay and emergency stop button provides comprehensive protection. The parallel system is a complete package including wiring and is 100 % complete!

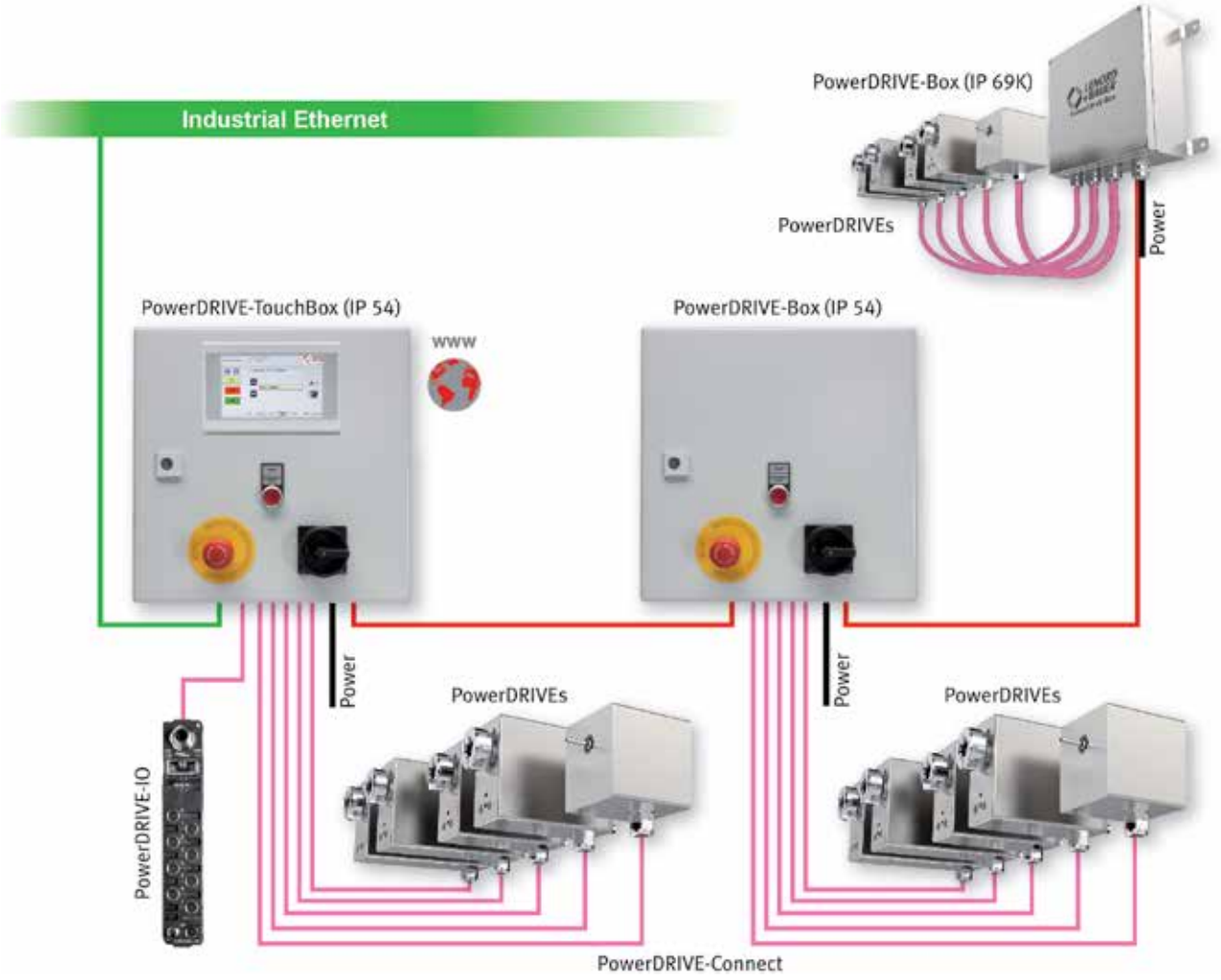
PowerDRIVE-Retrofit — complete package from a single source

With us you will receive all components from a single source. The complete system comprises:

- PowerDRIVE-Touch
  PLC with touch display, including ready-to-use, configurable operating software and recipe management for several thousand formats
- PowerDRIVE-TouchBox
  Switch cabinet for the connection of 5 positioning drives including PowerDRIVE-Touch, emergency stop concept and power supply unit
- PowerDRIVE-Motion or Positioning
  Positioning drives with PowerDRIVE-Connect, that means hybrid cables including ready-to-use connectors
- PowerDRIVE-I/O
  Decentral I/O module with a total of 16 digital inputs and outputs for external recipe selection and for the output of the machine status
- PowerDRIVE-Box (IP 20, IP 54 or IP 69K)
  Additional junction box for expanding the system with a modular machine concept
- Optional commissioning service
  With installation, cabling and commissioning on-site. If necessary we can offer you a complete service, give us a challenge!

Parallel system with PowerDRIVE-Retrofit:

Connect – configure – start!



- Immediately ready-to-use touch PLC for the fully automatic adjustment of up to 50 axes
- Ready-to-use, configurable operating software with recipe management for several thousand formats
- Convenient routing of pre-assembled cables in PowerDRIVE-TouchBox and PowerDRIVE-Box
- PowerDRIVE-TouchBox and PowerDRIVE-Box with integrated protection concept due to safety relay and emergency stop button
- Recipe selection and monitoring of the machine position via coded inputs and outputs on the PowerDRIVE-I/O

Retrofit – Greater cost-effectiveness for your machine and plant

Together with you we calculate the payback period for your investment

In principle: The more often a format is changed, the quicker your investment in the PowerDRIVE-System will pay for itself.

In a few minutes we calculate, using our RoI calculator, how cost-effective our retrofit solution is for you and when you can expect a Return on Investment (RoI). You will be surprised how quickly the modernisation of your machine or plant using PowerDRIVE-Retrofit will pay for itself.

We go through the most suitable solution with you on site and prepare an investment plan. You can obtain the result immediately by entering the following data in the calculator:

- Number of format changes per day or week
- Number of axes to be adjusted
- Set-up times for the format change in minutes
- Downtime costs for the machine or plant
- Personnel costs for the machine or plant operators

We would be pleased to calculate the cost-effectiveness for you, talk to us!

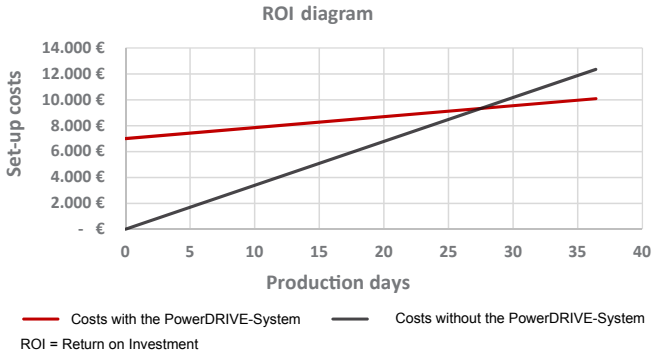
Payback period:	**28 Production days**

Entries:

Costs for the PowerDRIVE-System		Entries
Costs, PowerDRIVE (total project costs)		7.000 €

Actual set-up time parameters		Entries
Manual set-up time (total time including the running-in time)	min	8
Employees required for the change-over		1
Average costs per employee	€/h	45 €
Average loss during production stop	€/h	2.500 €
Number of production days per week		5
Average number of change-overs per production day		1

Set-up time for automatic change-over with PowerDRIVE-System	min	2



ROI = Return on Investment

Results:

Costs for manual change-over	
Costs per minute, manual change-over	42 €
Costs per manual change-over	339 €
Costs, manual change-overs per production week	1.697 €

Costs with the PowerDRIVE-System (not including investment costs)	
Costs per minute, automatic change-over	42 €
Costs per automatic change-over	85 €
Costs, automatic change-overs per production week	424 €

Cost difference (manual - automated)	
Per production day	255 €
Per production week	1.273 €
Per production month (production week x 4)	5.090 €
Per production year (saving)	**61.080 €**

The result from the RoI calculator for a practical example shows that a return-on-investment is achieved after only 28 production days!

PowerDRIVE-Retrofit — simply integrated

Expand your existing machine control system using our know-how

With the PowerDRIVE-System, Lenord + Bauer makes it possible to modernise a complex plant. If the system is to be integrated into the existing control system architecture, as a rule, the switch cabinet must also be modified or extended. In some cases the program in the plant control system will need to be modified.

If required, we will integrate the system into your control system. Irrespective of whether the issue is minor modifications or complex plant control systems, our specialists will program a suitable software solution for your application. As only with the optimal interaction of the hardware used and the specifically customised software will you obtain optimal results in the production process.

We have many years of experience in programming control systems from well-known manufacturers, such as Siemens (STEP 7 and TIA-Portal), Schneider (ELAU), Rockwell Automation, Beckhoff, Bosch Rexroth, B&R or Wago. Our PowerDRIVE-System supports almost all common bus systems.

PROFINET · EtherNet/IP · sercos the automation bus · EtherCAT · PROFIBUS · CANopen · ETHERNET POWERLINK

We prepare a proposed solution and take over the planning and project management for you. During this process we optimise your machine or plant taking into account all relevant aspects such as efficiency, availability and reliability. We are available to assist you from planning and configuration, through implementation and monitoring of the measures, to acceptance. Of course, we also accompany you at the start of production and continue to provide practical help until the machine or plant is running optimally.

Utilise our expert knowledge and profit from our extensive range of consulting and other services!

Chocolate temptations

Positioning drives increase efficiency in the production of filled chocolates

Filled chocolates are chocolate in its most attractive form. Their manufacture is as complex as the speed at which the small, sweet temptations disappear. WINKLER und DÜNNEBIER Süßwarenmaschinen GmbH uses positioning drives from Lenord + Bauer in a molding line for chocolate products. Due to the automatic format adjustment, the production of the chocolates is even more efficient.

As a world leading, global organization in the confectionery business, WINKLER und DÜNNEBIER Süßwarenmaschinen GmbH stands for the highest quality. This quality requires extremely robust, durable machines. WDS is known for the development of new machines and plants, the continuous further development of its existing machines and plants, as well as the technologies involved. The organization uses only components with the highest performance and reliability for its machines. As such, the choice was made recently for the flexible positioning system from Lenord + Bauer.

Chocolate is processed by the ton

The molding machine of type 372 manufactures a wide range of chocolate products. Up to 10 tons of chocolate are processed into chocolate bars, candy bars and filled chocolates of widely varying design per hour. Countless combinations are conceivable in relation to shape, filling and color. The production of the little treats comprises numerous process steps. At the start, the "brown gold" is poured, vibrated and tossed, then cooled and heated again – to name but the key stations. At the end of the production line is the demolding station. After the molds have been turned, they wait for a pulse to release the chocolate from the mold. The finished products end up on a belt or plate.

Fully automatic drives replace manual format adjustment

Three positioning drives from L+B in the compact stainless steel housing with a torque of 7 Nm are fitted at this point in the process chain. The chocolate molds in the machine are of varying height, depending on the product. Due to the increasing product variety, format changes are necessary with ever increasing frequency. For this reason, automatic format adjustment is now replacing manual adjustment using handwheels.

Specifically, the three PowerDRIVEs control the product-dependent height adjustment of the molds and the inclination of the table in the demolding station. The table inclination is used for the gentle, defined transport of the chocolate products to the demolding belt. The angle of inclination must therefore be adjusted exactly and at the right time.

Recipe management increases efficiency

The different mold heights are saved in a recipe management function. This function makes it possible to adjust the production line at the press of a button. "The reproducible positioning in the demolding station saves valuable time during change-over and improves the performance of the entire machine. With the increased degree of automation we are addressing our clients' wish for particularly efficient machines", says Bernd Plies, Head of Electrical and Automation Engineering at WDS.

High flexibility in the interface

Powerful bus systems are used for the rapid communication between the drive and control system components. WDS uses, depending on the control system, Ethernet-based bus systems as a matter of preference (ProfiNet,

The PowerDRIVE controls the adjustment of the height and the turning of the molds in the demolding station.

WDS
WINKLER und DÜNNEBIER
Süßwarenmaschinen

Highest quality by tradition

Alfred Winkler and Max Dünnebier laid the foundation stone for Winkler und Dünnebier Süßwarenmaschinen GmbH as early as 1913. Today, together with its sister company Maschinenbau Runkel GmbH, WDS is one of the world's leading manufacturers of confectionery machines. On its Rengsdorf site in Germany, the organization plans, designs and manufactures individual machines for the international confectionery industry.

EtherNet/IP, Sercos III). Here the solution from L+B is again proving its worth. The PowerDRIVE-System covers all common bus systems and therefore ensures a high degree of flexibility in the interface. The PowerDRIVE-Box is installed decentrally in the terminal box and controls the operation of the three drives. In this specific case, communication is with an S7 control system from Siemens via ProfiNet.

Positioning drives suit the concept perfectly

The basis for all WDS plants is the SMARTEFFICIENCY concept. The goal is the best possible cost-benefit ratio for the customers. This goal is achieved by means of intelligent designs and optimized processes. The positioning drives from L+B suit this concept perfectly. "The usage of the automated solution is a worthwhile investment that will also quickly pay for itself at our customers", says Bernd Plies.

"The PowerDRIVE-System is flexible and quick to integrate. This impressed us", says Bernd Plies, Head of Electrical and Automation Engineering at WDS.

L+B was also able to impress with its service. "The collaboration with technical support was good and also effective. I expect we will also consider L+B solutions for future tasks. The flexibility and the tailor-made products impressed us", Bernd Plies considers the prospects for the continuation of the collaboration. »

Molding machine type 372

Task:	*Designed for the production of filled and solid chocolate products*
Capacity:	*Processing of up to 10 tons chocolate/hour*
Speed:	*Up to 40 molds/minute*
Upgrade:	*Demolding station with three PowerDRIVEs, PowerDRIVE-Box and hybrid cables*
Control system:	*Siemens S7*
Interface:	*ProfiNet*

The harmonized combination of linear unit and positioning drive provides a straightforward, ingenious solution for end users.

Spotlight on the customer

Lenord + Bauer and RK Rose+Krieger use synergies by appropriately combining their product portfolios

The automation specialists RK Rose+Krieger GmbH from Minden and Lenord, Bauer & Co. GmbH from Oberhausen work closely together to fulfil customer wishes for fully automatic feed axes. The linear units and positioning drives complement each other perfectly.

Whether in machine or plant manufacture, in warehouse systems or in placement machines: linear systems are to be found in just about every production building. This is the field of RK Rose+Krieger GmbH in Minden. The component provider produces approx. 10,000 linear axes per year in a very wide range of sizes and designs, for a very wide range of applications, in the Move-Tec range. Whenever the issue is to guide, adjust, position or move evenly, the specialist for linear motion sequences is an important partner.

In recent years the demand for automated feed axes has increased. "Although we provide appropriate linear technology, up to now we did not have fully automatic adjustment in our portfolio", admits Jörg Töhte, Key Account Manager at RK. As customers mostly need a complete solution quickly, the organization looked for a suitable supplier of positioning systems.

A common customer brought the two organizations together

The crucial piece of information came from one of RK Rose+Krieger's customers. For some time this customer had used the positioning drives from Lenord, Bauer & Co. GmbH in his machines. On the basis of this recommendation, RK Rose+Krieger contacted the organization in Oberhausen. "It quickly became clear: our products complement each other perfectly. The customer benefit is high", says Töhte. In the first step, RK equipped three linear axis series with the positioning drives; these linear axis series are used to provide feed motion.

RK ROSE+KRIEGER
A Phoenix Mecano Company

Complete provider with application expertise

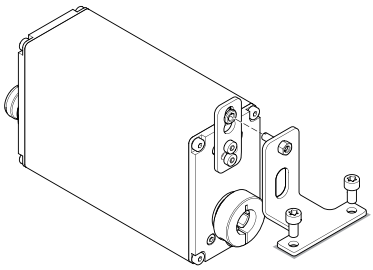
The Minden-based organization RK Rose+Krieger is a subsidiary of the global Phoenix Mecano AG. The specialist for automation offers a broad range of linear, profile, connection and module technology. The range includes both catalogue products and customized production, system solutions and special developments. The focus is on solutions to suit the application. RK Rose+Krieger employs more than 500 employees worldwide, around 210 of them in the headquarters in Minden.

In this way single tube axes (E), twin tube axes (EP-X) as well as square profile axes (quad EV) from the Move-Tec range were equipped with the PowerDRIVEs. Either a short or a long positioning drive with an aluminum or stainless steel housing is used. The devices deliver nominal torques of 3.5 Nm or 5 Nm. To mount the PowerDRIVEs on the related linear axes, Lenord + Bauer designed a suitable torque support in each case.

"With Lenord + Bauer we have found a partner who offers everything in the area of positioning drives, including networking, up to installation on-site."

Jörg Töhte, Key Account Manager, RK Rose+Krieger GmbH

The positioning drive, with the torque support fitted, is simply placed on the axis and pushed into position. A clamping ring fixes the drive firmly to the shaft journal on the linear axis. Along with force locking in the shaft joint, the necessary moving bearing is formed at the same time using a flexible drive mounting on the torque support.



The positioning drives are supplied with a matching fastening set. As such, the mounting on the linear unit is very easy.

Flexible, straightforward integration

The positioning drives can be used as standalone units or as a complete modular system. RK will equip the independent units with positioning drives that are connected directly to the machine control system via a connector using the integrated fieldbus interface. To commission the linear axes with automatic adjustment, only a 24-V power supply and the connection for the bus communication are required.

In close collaboration the two companies also equip complex machines with several linear units and a decentral communication unit. In this case positioning drives with hybrid cables and a PowerDRIVE-Box, as well as a compact PLC with control terminal are used. Lenord + Bauer supplies all these items, if necessary, as ready-to-connect modules including operating software. The integration into an existing control system environment is particularly straightforward, as the PowerDRIVE-System supports common interfaces such as PROFIBUS, PROFINET, EtherNet/IP, EtherCAT, CANopen, Sercos III and POWERLINK. This aspect ensures flexibility.

Focus on the customer

The co-operation started initially with the simplest constellation of both component groups. The harmonized combination of linear unit from RK Rose+Krieger and positioning drive from Lenord + Bauer represents a straightforward and ingenious solution for end users. The straightforward assembly, the low cabling effort as well as the operation using an optional joystick are particularly advantageous. The expansion of the co-operation to other elements of the product portfolio is planned. The usage of the complete positioning system from Lenord + Bauer including switch cabinet and control terminal is also conceivable.

The two organizations are in agreement on one issue: the customer needs specific advice and this will be provided by the respective specialist. For this reason, the manufacturer from Minden recommends Lenord + Bauer as a proven supplier for drive technology.

In return, the employees of the organization in Oberhausen get in contact if machine operators need linear technology. "It is good to have a business partner who you can recommend unreservedly. In the end, all those involved profit from a functioning solution, above all our customers", says Töhte. »

The positioning drives are available in aluminum and stainless steel in compact and short designs.

Maximum productivity during the packaging of foods

Machine adjustment at the press of a button minimizes set-up times

Due to the variety of foodstuffs, format adjustment is one of the most frequent tasks in machine set-up. With manual adjustments, e.g. using handwheels, change-over often takes unnecessarily long. There is also a risk of adjustment errors. For these reasons, Maschinenfabrik Fritz Thürlings GmbH & Co. KG from Viersen uses fully automatic format adjustment and relies on the PowerDRIVE-System from Lenord + Bauer for this task.

The bag packaging machines from Thürlings are mainly used for packing bulk goods and free-flowing products in the foodstuff sector. Due to the low fall height in the machine, the conditions for products prone to breaking or dusty commodities such as chocolate products, pastries or tea are just right. The increasing product variety and the goal of further accelerating production processes represent challenges for machine manufacturers in the dosing and packaging sector. To address these requirements, the machine manufacturer from Viersen modernized the format adjustment for bags on its "Linearpac 85M" machine.

"With Lenord + Bauer as a system supplier we see our machines well equipped also for the future", say the directors Felix and Peter Thürlings.

High productivity and machine availability

The bag opening and sealing machine Linearpac 85M initially takes the block-bottom bag from a magazine and then positions it on the intermittent, linear feed chain. The bottom of the bag is expanded using a pulse of air. At the filling station that follows, two half shells move into the top of the bag and in this way present the bag ideally for filling. The side gussets are folded into the top of the head using six fingers. After filling, the bag is closed by sealing or using a roll closure.

The machine fills and seals up to 60 bags per minute and features a robust, closed design and a large bag format range. Due to this versatility it can be used universally for almost all product areas. A further advantage is the straightforward, quick format change that ensures high productivity and machine availability.

Compact positioning drives replace hand cranks

To change to a new bag format, the height and width of the bag as well as the depth of the side gussets are adjusted. This task is undertaken by a total of five positioning drives from Lenord + Bauer. For height adjustment, Thürlings uses a positioning drive GEL 6110 with 10 Nm torque, as here high power is required. The width and depth adjustment are performed by a total of four positioning drives GEL 6109 with 2.5 Nm in an extremely compact design.

The compact positioning drive GEL 6109 with a width of 50 mm and a depth of 76 mm is very suitable for installation in the machine from Thürlings.

In the past the machine was changed over using hand cranks. According to the owners of the business, Felix and Peter Thürlings, this solution was no longer in keeping with the times: "With the fully automatic change-over to a new bag format, our customers profit from maximum repeat accuracy and reproducible formats without adjustment errors. The modernization of our machine, away from handwheels to the automated solution, was a logical step to keep up with the technologies of the times", explains Peter Thürlings.

Optimized component management

For the straightforward integration of the positioning drives in the overall machine, Thürlings uses the PowerDRIVE-Box as a decentral control unit. The five positioning drives are connected there. Their motor power is monitored and switched by the integrated power management in the PowerDRIVE-Box. The communication with the plant control system is via variable, plug-in interface modules. All common interfaces are available via these plug-in modules.

This flexibility eases component management and reduces the inventory costs. In the Linearpac 85M, the positioning system from L+B is coupled to a Siemens S7 via a ProfiNet interface. "The integration of the PowerDRIVE-System in our machine was child's play due to the straightforward installation using connectors. The system is also very user-friendly", says Peter Thürlings.

THÜRLINGS

Customized efficiency

Users who want to pack their products in bags are in the right place at Maschinenfabrik Fritz Thürlings GmbH & Co. KG. The Viersen-based organization has developed and produced packaging and counting machines since the 50s. Irrespective of whether the issue is filling and sealing pre-fabricated bags or the bags are to be manufactured from a reel of plastic sheet: Thürlings provides efficient machines to suit customer wishes. Special, individually developed custom units offer the right conditions even for products prone to breaking.

Equipped for the future

Thürlings Maschinenfabrik GmbH is unique with its machine in this compact size. The set-up times are reduced significantly due to the automatic format adjustment. This aspect means longer machine running times and therefore an increase in productivity. Thanks to the modernization, Thürlings is able to offer its customers machines with even higher performance. For this reason, further projects are already in planning. "There are specific projects for the USA. As the next step we want to use another positioning drive for the automatic adjustment of the filling flap. The filling of the bag will then be significantly quicker and more precise using the PowerDRIVE. With Lenord + Bauer as a system supplier we see our machines well equipped also for the future", the Thürlings brothers say with satisfaction. »

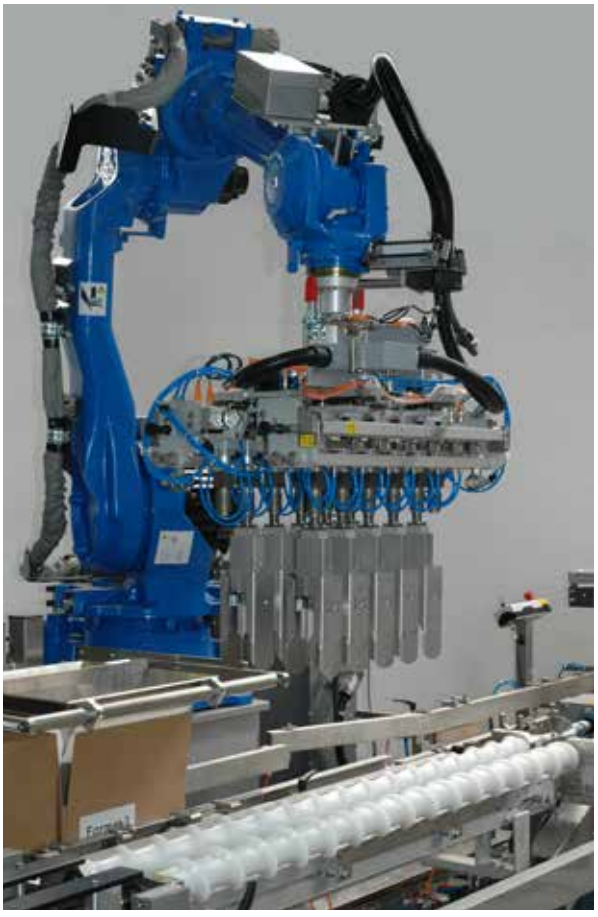
Five handwheels in the opening and sealing machine for block-bottom bags have been replaced by the PowerDRIVEs.

GAINING TIME DURING PACKING

Wrap-around machine with dynamic format adjustment optimizes packaging process

Automated production has been the norm in the majority of manufacturing organizations for many years. This is a result of the increased variety of products and batch sizes. Even if production is high-tech, packing the products interrupts the automatic process chain several times. A new wrap-around machine from ETT Verpackungstechnik with the positioning system from Lenord + Bauer is now helping businesses to react even more flexibly to market requirements.

These days no product reaches the retail trade without cardboard packaging or a shipping tray. Product changes with varying batch sizes are the order of the day for many businesses. This variety requires increasing flexibility in the packaging process. The format change-over must be quick and reproducible. With manual adjustment, frequent format changes are inefficient, for this reason the degree of automation in packaging machines is increasing continuously. However, the majority of compact machines only offer little space for the usage of fully automatic positioning drives.



ETT Verpackungstechnik from Moringen also faced this challenge. For a global player in the cosmetics industry, the engineers at ETT developed a dynamic packaging machine for body care products. This machine packs bottles of varying size and shape in promotional units ready for placing on the shelf, in a cost-optimized manner and without loss of time.

Continuous process chain saves time

Optimized processes in the continuously operating wrap-around machine prevent any loss of time: First the bottles pass via a so-called grouping unit. For this purpose, a robot picks up the bottles using the pick-and-place principle and places them together in a set of six bottles. At the next station the six bottles are packed in plastic sheet. Finally the packaging line packs this set in a cardboard box using a wrap-around process to form a package ready for shipping. The complete process chain is continuous and in synchronism with individual assemblies.

Flexible format change

To address the wish for more flexibility and automation during packaging, the business from Moringen was looking for a drive solution for the many feed axes. The compact machine requires drives with maximum power in a very compact space. Here the positioning system from Lenord + Bauer came into play. The PowerDRIVE-System comprises compact positioning drives from 1.4 to 15 Nm and a decentral control unit for up to five drives. The so-called PowerDRIVEs are connected to the PowerDRIVE-Box via a hybrid cable that, along with the supply of

power, also takes care of the bus communication. 17 positioning drives now adjust the height and width of the cardboard boxes in the entire machine as a function of the format.

The Oberhausen-based business developed a variant with a stepped housing for the compact machine. This housing makes optimal use of the little space available in the wrap-around machine. The top deck is adjusted using four drives with spindles without mechanical coupling. The tray feed and packaging are synchronized via actual value comparisons in the PLC control system as well as the parallel operation of the drives by the PowerDRIVE-Box.

No compromises

"As we develop tailor-made machines, we need a partner who provides solutions that meet our wishes exactly. We have very specific requirements", says Oliver Bergmann, Head of Electrical Engineering at ETT. "For this reason, the positioning drives from Lenord + Bauer are an integral component of our machines."

"For the automated format adjustment we make no compromises. For this reason, the PowerDRIVE-System is an integral component of our machines", says Oliver Bergmann, Head of Electrical Engineering at ETT.

To make the machine as compact as possible, a new variant of the PowerDRIVE was used for the first time. The positioning drive GEL 6109 is particularly suitable for installation situations with little space due to its low mounting depth of 51 mm. Four PowerDRIVE-Boxes are mounted in the switch cabinet in a space saving way as the decentral control units for the positioning drives. They take care of the entire power management for the positioning drives and simplify the connection work.

Straightforward integration

The PowerDRIVE-Box communicates with the plant control system SIMOTION from Siemens via the PROFINET interface. Due to the pre-defined function blocks it was possible to integrate the positioning drives in the overall control system straightforwardly. Wiring using the hybrid cable reduces the time required for installation and therefore helps to save costs. "For us, the only option is the straightforward plug-and-play solution for automatic adjustment", says Bergmann. "The PowerDRIVE-System also makes the machine extremely easy to maintain."

The positioning drives from Lenord + Bauer control, among other aspects, the adjustment of the width of the material feed.

Increased productivity

As a result, the new wrap-around machine has significantly higher productivity due to the dynamic material feed. This increase has been achieved above all by the faster format changes and the automated process steps. The short design of the positioning drives also ensured a space saving design for the overall machine. Oliver Bergmann emphasizes: "The customer saves massively on set-up time. The usage of the positioning drives therefore pays for itself from the first time the machine is used." »

ETT Verpackungstechnik

Individual packaging solutions with a system

For more than 30 years ETT Verpackungstechnik GmbH has supplied modern, high quality, cost-optimized machines and system modules. Over 150 employees develop and produce, on the original site in Moringen, modular packaging machines, robot concepts and palletizing modules that can be combined flexibly. Here everything is provided from a single source. Tailor-made complete solutions are possible for just about every sector.

Advancing into new dimensions

Fully automatic centering unit ensures metal sheet components are processed efficiently in automotive production

Ford in Saarlouis is a major trendsetter and driving force in the Saarland. Here more than 13.5 million vehicles have already been manufactured – also with the aid of NEUHÄUSER Magnet- und Fördertechnik GmbH. This supplier tasked Lenord + Bauer with the implementation of a central drive system. The project was implemented in a short time.

In Saarlouis, along with the Ford Focus saloon, the station wagon variant Turnier and the sporting Ford Focus ST, the purely battery-powered Ford Focus Electric and the Ford models C-MAX and Grand C-MAX are built in numerous trim variants on one production line.

The production technology is correspondingly complex. Here the sheet metal feed from NEUHÄUSER has been in use successfully for some time. The requirements from the automotive industry have, however, increased over time. Thus, like many other businesses, the global player in Saarlouis required a broader parts spectrum with increased productivity.

Centering unit is important part of car production

Centering tables play an important role in the manufacturing process for a car. They are installed ahead of a line of presses to position exactly the pieces of sheet metal to be processed so that they can be fed to the press in the correct position. The centering tables are equipped to some extent with roller conveyors and/or narrow plain belt or toothed belt conveyors. Between these conveyors, automatically adjustable side, front and rear stops are installed that ensure the exact positioning of the piece of sheet metal. These stops are designed such that a corresponding loading robot or feeder can feed the piece of sheet metal to the press with exact positioning.

No limits on shape or size

With its systems NEUHÄUSER makes it possible to process ferrous and non-ferrous sheet metal parts in special sizes. Both large surface area parts for the outer bodywork of the cars and also smaller shaped structural sheet metal components, e.g. for the stability of the bodywork, are manufactured on the press line. Here there are hardly any limits on shape or size. Any type of contour parts can be processed. The dimensions of the pieces of sheet metal range from 900 mm to 4000 mm transverse to the direction of travel and from 200 mm to 2000 mm in the direction of travel. This flexibility is the special feature of the press line.

Efficient production process

The automation of the system was a request from the global player Ford for more efficient working. NEUHÄUSER was pleased to take on this requirement and for this purpose tasked the automation specialist Lenord + Bauer with

the preparation of a central drive concept. A total of eight positioning drives now move the stops into position pre-

cisely and fully automatically. The pieces of sheet metal hit the front stops at approx. 1.5 m/s. However, this high mechanical load is not an issue due to the robust design of the positioning drives.

The centering process starts at the front stops. Four positioning drives are fitted here. Two further drives position the so-called pushers at the sides as well as the rear stops that exactly position the piece of sheet metal by applying pressure. In this way an efficient centering process is ensured.

Handwheels replaced with positioning drives

During the conversion the positioning drives from Lenord + Bauer replaced the handwheels. An advantage of the automatic adjustment is, among other aspects, the decentral installation of the drives. Adjustment using handwheels was mechanically very complex, as they had to be positioned centrally. The installation location for the positioning drives is flexible. They can be fitted directly to the spindles without additional mechanical elements. Function blocks also permit straightforward integration into the system. A further advantage of the solution from Lenord + Bauer is the recipe management. As soon as different shaped parts are to be processed, the positioning drives automatically move the units in the centering station into position under program control. This feature significantly reduces the set-up costs.

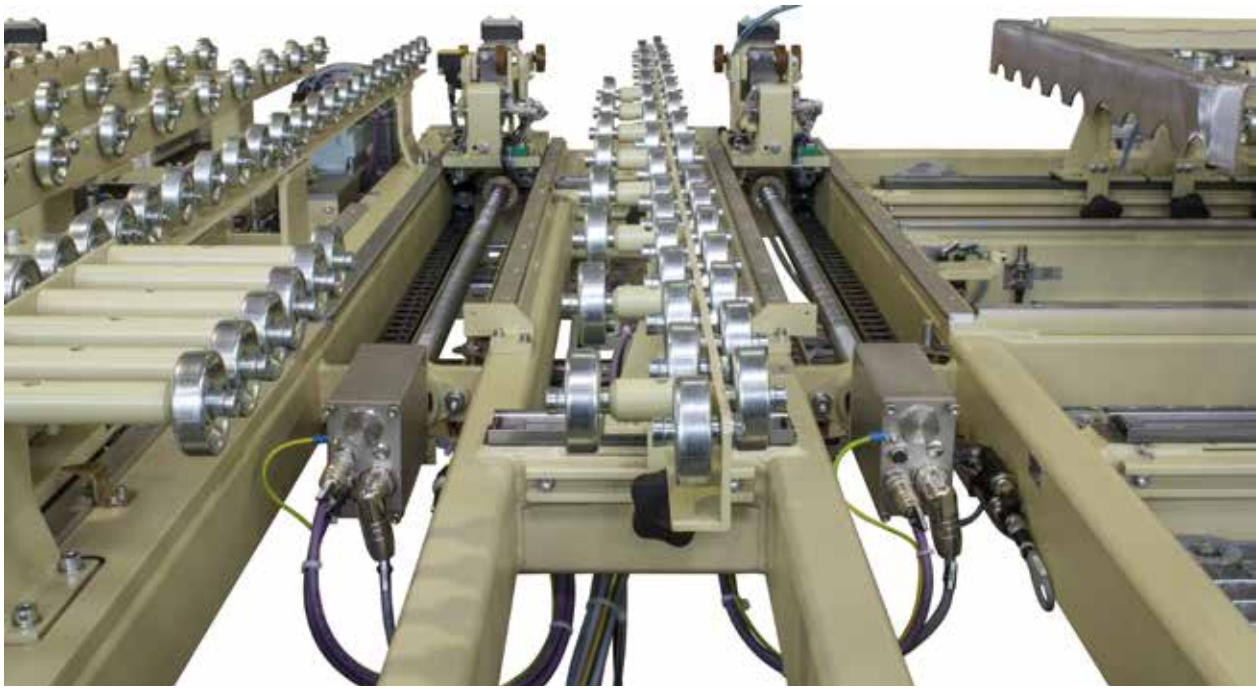
Successful retrofit

The solution from Lenord + Bauer for automatic format adjustment meets the customer's expectations in full. "Our experience during product introduction was very positive. The smooth implementation and the comprehensive support from Lenord + Bauer impressed us. The PowerDRIVE-System is an optimal solution for us, also for future requirements", Heinz Krutwage, Technical Director at NEUHÄUSER says with satisfaction. »

NEUHÄUSER
MAGNET- UND FÖRDERTECHNIK

Partner in demand in industry

Whether automation, transport or separation – the systems from NEUHÄUSER Magnet- und Fördertechnik GmbH have been meeting customer requirements for more than 30 years. The independent business, which belongs to the NEUHÄUSER Group, develops and produces complete harmonized solutions on its Lünen site with 80 employees. Here durability is in the foreground. This aspect is demonstrated by products that are still operating with maximum precision even after many years.



Eight positioning drives automatically and precisely place the stop systems in position.

Woodworking to perfection

Reduced set-up times during the manufacture of staircases, windows and furniture due to fully automatic format change

Modern woodworking is characterized by the highest machining performance, paired with absolute dimensional accuracy and excellent surface quality. MAKA Systems GmbH meets these requirements with its CNC machining centers in conjunction with the latest drive technology and control system technology. To make the machines even more efficient, MAKA relies on the fully automatic positioning system from Lenord + Bauer.

Whether craftsman or large industrial organization: customers who manufacture doors, staircases, furniture or other products from the natural, high quality material wood, are impressed by the flexibility, precision and reliability of MAKA machines. The 5-axis CNC technology from the machine-tool manufacturer has become indispensable in the world of machining. To keep the quality high, MAKA relies on the latest solutions with a high technical standard. For this reason, the format adjustment for cross-members and supports in a moving portal machine will be controlled automatically in future.

High quality routing for large workpieces

The PowerDRIVE-System from the automation specialist Lenord + Bauer is used for the first time in the moving portal machine PE 90. This CNC machining center was designed for universal applications in woodworking and guarantees high quality routing even during heavy duty solid wood machining. In addition, the tool changing times are minimal due to the tool magazine that moves in parallel. The routing spindle operates at a continuously adjustable rotational speed of up to 24,000 min^{-1}. In this part of the machine, compact encoder kits from L+B are already used successfully. The MiniCODER acquires the operating speed and position of the high-speed spindle and has proven itself due to its robust, magnetic measuring system.

The machine table with a length of up to 8,000 millimeters is equipped with 12 adjustable cross-members for alternate loading. The positioning drives from L+B are used here.

Significant reduction in the bus users

The workpieces are fixed on up to 12 cross-members using vacuum suction cups, so-called supports. Per cross-member and support, one positioning drive controls the automatic adjustment to the correct format to ensure the smooth machining of the workpieces. Power management is performed by one PowerDRIVE-Box per cross-member. The box is used as a decentral communication unit for up to five positioning drives and was designed as a particularly space-saving unit for the installation conditions in the PE 90.

The bus communication and the supply of power are provided via the hybrid cable PowerDRIVE-Connect. This hybrid cable replaces the fieldbus cables and separate power supply. In this way, the connection work is significantly simplified and the number of bus users considerably reduced. In the specific case of six cross-members, this aspect signifies the minimization of the bus users from thirty to six. The cabling effort is reduced with the significant reduction of the supply and fieldbus cables from ninety to thirty. The single-cable solution is also particularly attractive due to the limited space in the machine.

MAKA
CNC-Spezialmaschinen

CNC solutions at the highest technical level

With more than 170 employees, MAKA Systems GmbH in Nersingen near Ulm develops and produces special CNC machines for machining wood, aluminum and plastics as well as for model-making. In almost 60 years of company history MAKA Systems has developed from a family business into a technology leader in the area of 5-axis milling/routing technology. Its customers worldwide profit from its high level of development expertise.

Reliable operation due to absolute rotary encoder

The PowerDRIVEs combine various function units such as gears, BLDC motors, electronic commutation, brake operation and multiturn sensors in one housing. The integrated absolute rotary encoder is particularly advantageous as it saves the need for reference search routines in the machining center. The optional holding brake ensures the positions of the supports remain defined, despite the harsh operating conditions.

The PowerDRIVE-System reduces the set-up times and increases the productivity.

Flexibility in the interface

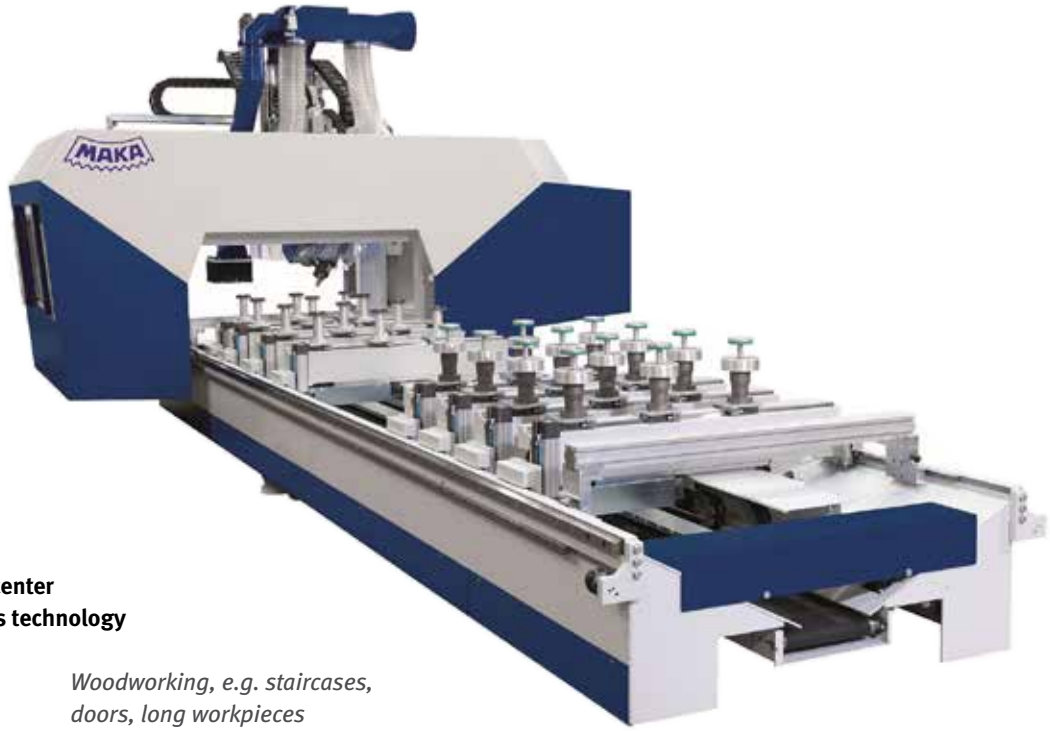
As standard, the machine is operated using a Siemens SINUMERIK 840 D SL control system.

Optionally, customers can also use a control system from BWO. The different control systems and bus interfaces are no problem for the PowerDRIVE-System. Due to the plug-in modules used in the PowerDRIVE-Box, there is a suitable solution for just about every fieldbus. This feature simplifies worldwide spare parts management and also, in end effect, relieves the load on the inventory management.

Fully automatic positioning systems increase productivity

The usage of the fully automatic positioning system guarantees exact repeat accuracy and precise settings during the format change. As the format adjustment of the crossmembers and supports is automated, a very wide range of workpieces can be transported to the portal routing machine with optimized timing.

Along with these advantages, Björn Drück, Head of Design and Mechanics at MAKA, sees other synergies. "Our experience with speed sensors from L+B over a number of years has been positive. As a consequence we have now been able to draw with confidence on L+B products also for the automation of our moving portal machine. With the new technology we are very well equipped for the requirements of our customers." »



CNC machining center
PE 90 with 5-axis technology

Application:	*Woodworking, e.g. staircases, doors, long workpieces*
Features:	*Straightforward format change, high quality routing even during heavy duty solid wood machining*
Control system:	*Siemens SINUMERIK 840 D SL*
Interface:	*Profibus*
Movement speed:	*X and Y = 60 m/min, Z = 45 m/min, C/A = 10,000 °/min*

Gouda & Co. cut hygienically and cost-effectively

Expert for cheese processing relies on compact positioning drives

Groba B.V. is a global machine manufacturer in the cheese processing industry. Its portfolio includes machines for cutting, dicing, separating, grating, unwrapping and removing the rind from cheese at the highest technical level. For some time positioning drives from Lenord + Bauer have controlled the automated feed and positioning of the blocks of cheese in relation to the slicer. As such, the processing of the cheese is even more efficient. Lenord + Bauer talked to Technical Director Hub Peskens about the background.

L+B: Mr. Peskens, last year you presented for the first time a machine that is equipped with automated feed and positioning of the blocks of cheese in relation to the slicer. What was the reason for this development?

Peskens: Our customers expect the cut cheese to always lie in the packaging with the same orientation. Above all, with large cheeses the cut block of cheese must be rotated for the subsequent cutting process. The previous solutions for the slicer feed were not quick or accurate enough for the requirements in modern cheese processing. For this reason we developed a fully automated concept in response to multiple customer wishes.

L+B: What exactly does this concept comprise?

Peskens: The cheeses are divided into different size blocks for automatic slicer loading. Then they are rotated to the correct position and fed with high capacity to the slicer. The new feature of this machine is that the rotation of the three blocks of cheese is performed by a fully automatic positioning drive in each case; this drive positions the blocks exactly.

The blocks of cheese on the way to the slicer.

L+B: Here the PowerDRIVE-System comprising two PowerDRIVEs with 10 Nm and one PowerDRIVE-Box is used. Why did you opt for the positioning system from L + B?

Peskens: The processing of perishable foodstuffs places special requirements on the material and performance of the components due to the environment. Our machines generally operate in cooled buildings in temperatures around 10 °C. The cooling chain must be maintained under all circumstances. We were looking for a positioning

system with a hygienic design that can also be operated at temperatures below 10 °C. The PowerDRIVE meets our requirements. The housing and the cable gland are made of stainless steel and the positioning drive has protection class IP 67. With the expanded temperature range from -10 °C to +60 °C it is ideal for our application.

L+B interview partner:

Hub Peskens

Technical Director
Groba B.V.

L+B: The installation location in your machine also produced special requirements. How was our PowerDRIVE able to impress here?

Peskens: That is correct. The positioning drive is installed in a moving unit. For this reason we were looking for a compact drive with soft starting. Furthermore, the connecting cables are subjected to extremely high dynamic loads. The highly flexible, drag chain-compatible, hybrid cable "PowerDRIVE-Connect" proved to be the best solution here.

L+B: Why is soft starting so important?

Peskens: Cheese is delicate. Abrupt starting could cause unsightly indentations or fissures. The consumer does not want that. For this reason it is important that the drive lifts, turns and also sets down the block of cheese softly. Your colleagues in development have implemented this requirement by programming a ramp in the positioning drive.

L+B: According to my colleagues there were other technical challenges. What were these?

Peskens: Due to the technical situation in the machine, end position monitoring is important for us. However, limit switches were not an option for us. L + B implemented this aspect by using an absolute rotary encoder integrated into the drive and a software limit switch.

L+B: Why were limit switches not an option?

Peskens: The software limit switches define the end position on the driven axes. The firmware in the PowerDRIVE monitors them. If one of the standard limits is exceeded, the positioning drive brakes automatically. Commands from the machine control system that would result in an infringement of the programmed limits are not executed and the positioning drive outputs an error message. This means software limit switches are forward looking. That is not possible with hardware limit switches. They only react on actuation, i.e. once the end position is reached. The avoidance of end position impacts due to commands from the control systems was particularly important for us.

The PowerDRIVEs allow the precise automatic feed of the blocks of cheese to the slicer with optimized timing.

L+B: As you just mentioned the topic of the machine control system: you use PowerDRIVEs with a PROFIBUS interface. How did you integrate the positioning drives into the machine control system?

Peskens: We use a control system manufactured by SIEMENS that communicates with the components via PROFIBUS. We used the pre-defined function blocks from L+B for the integration by instancing these blocks. In this way the integration of the positioning drives was quick and straightforward.

L+B: How would you rate the collaboration with L+B and our Dutch sales partner tsb -bescom b.v.?

Peskens: The collaboration is very good. tsb made the initial contact. As we got down to the technical details the experts from L+B became involved. Our application is after all anything but standard. We received good all-round support. We see here a dependable partnership for the challenges of the future.

L+B: Mr. Peskens, we are pleased to hear that. We thank you for the pleasant interview and wish Groba every further success.

GROBA

CHEESE PROCESSING EQUIPMENT

Specialist in cheese processing

For more than 38 years, Groba B.V. has developed and produced machines for the mechanized and automated processing of cheese. Around the world, cheese producers, pizza, ready-meal and snack producers as well as shopping malls and specialist shops value the high quality machines from Groba for portioning, cutting, dicing, unpacking and removing rind. The modules can be combined into complete systems. The business from Ittervoort in the Netherlands therefore makes it possible for its customers to process cheese precisely, hygienically and cost-effectively.

Components for the lucrative US market

The PowerDRIVE-System is optimized for usage in America

To make it easier for its customers to export machines to the USA, Lenord + Bauer is having the PowerDRIVE-System certified by Underwriter Laboratories Inc., or UL for short. The certified components will be available at the start of 2016.

The United States of America are an attractive sales market for many machine manufacturers. However, the product liability laws there are significantly stricter than in Europe. The approval of machines in America therefore represents a challenge for German and European businesses. Special safety requirements apply to electrical components in the machine due to possible fire risks.

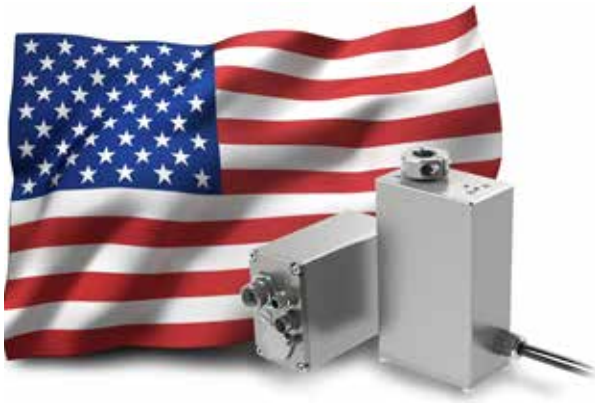
However, the American authorities do not accept self-declarations from manufacturers on conformity with North American standards or regulations. All electrically controlled devices and systems must therefore be certified. UL certification is recognized in the US and therefore simplifies the importation of machines.

High effort for the approval of individual machines

Machines for the foodstuff and packaging industry are often not standard series production products, but instead are customized to an application. The regulations on approval also apply to specials and customized machines. In the so-called field labelling process, an approved examiner inspects the machine in the location where it is installed in the US. If the outcome is positive, the examiner issues a field label confirmation and a short report.

Information box UL certification

UL (Underwriters Laboratories Inc. ®) is one of the world leading organizations for testing and certification in the area of product safety. It was founded in 1894 as a non-profit, independent organization to investigate fire risks in electrical equipment. Today, UL evaluates the potential for fires and injuries caused by components and end products. Crucial here is the application for the products to be tested.



Due to the limited possibilities for testing on-site, the emphasis of the examiner is on components; these must be UL-certified or recognized. If one of the components fails the check, the machine is not allowed to be placed in operation and the machine manufacturer must improve the machine in the US. Depending on the state, American experts must be employed to make the changes. As a consequence, significant costs can be incurred in addition to the time required.

Certified components offer more certainty

To make it easier for its customers to import into the US, Lenord + Bauer is currently having the PowerDRIVE-System certified by Underwriter Laboratories Inc. "For many of our customers who use our positioning system and market their machines in the US, UL approval is an important aspect. Experience shows that certified or listed components offer greater certainty of planning", says Dr. Peter Velling, Product Manager for Mechatronics and Control Systems at Lenord + Bauer. "For usage in machines for the American market we have provided a corresponding hybrid cable since 2014. The certification of the complete system is therefore only the next logical step!"

Specifically the pending UL certification means that every individual component of the positioning system from Lenord + Bauer will be checked in relation to its UL suitability. Overall, the complete system is already a long way forward. In one or other area minor electrical and design modifications have already been made, changes that L+B is pleased to address. In this process the core competence of the automation specialist in certification is again apparent. The US-compliant components of the PowerDRIVE-System will be available already at the start of 2016. In view of the potential in America, the effort is worthwhile. In addition, L+B customers will be assured a smooth, standardized process for introducing new products »

Automation with function guarantee

Profit from our comprehensive range of services!

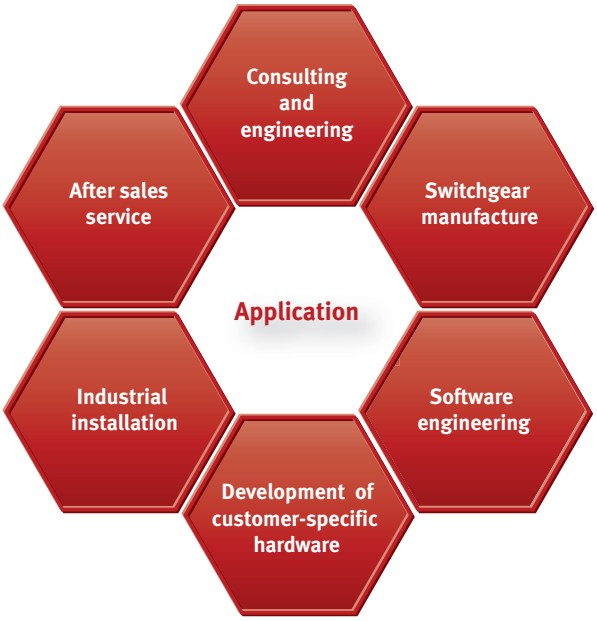
Lenord + Bauer is your partner for the automation of your machines and plants and offers a complete range of services. Our all-round trouble-free package leaves nothing to be desired.

The aim of automation is to improve the productivity and product quality. These goals relate both to plant manufacturers and plant operating companies. The replacement of obsolete components and the usage of the latest technologies must be undertaken with the lowest possible effort in existing or new applications. Together with our partner TAR Automation GmbH we optimize plants taking into account all relevant aspects such as efficiency, availability and reliability.

We are available to assist from the planning, engineering and commissioning to the acceptance of your plant. Of course, we also continue to accompany your project and will provide practical help at the start of production until the plant is running optimally.

We would be pleased to accompany you during your next automation project. Utilize our expert knowledge and profit from our extensive range of services! »

You will find additional information at www.tar-automation.de



The all-round trouble-free package offers comprehensive services.

Your contacts at Lenord + Bauer

Lenord + Bauer is the right place for you for new developments and/or further developments! We look forward to hearing from you.

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Find out more about the applications our customers have implemented using the PowerDRIVE-System.

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