

FDU24S – New servo-drive system for IS machines

Precisely Synchronous

The FDU24S (Flexible Drive Unit) is futronic's new servo-drive system on the market. It stands out not only for its flexibility but also for the maximum level of precision it provides when synchronizing individual movement sequences in the machines. The FDU24S demonstrates its full strength in combination with the futronic machine controller FMT24S.



Servo-technology has become an integral part of the production lines in the glass production industry. Servo-drives with high precision and dynamics as well as compact motors with high power density have long been the technical standard in IS machines. One crucial point is the precise synchronization of the various rotational movements in the individual machine components—from the feeder to the gob distributor to the machine conveyor belt, ware transfer and cross band in the annealing lehr; basically, the speed and angle of rotation or even the electronic

gear ratios must all be calibrated with each other. Another requirement is to bring the servo-drives into unison with conventional drives still being used in various areas of application. This includes the pneumatic drives for the section mechanisms on the machine as well as „air events“ such as those that occur during the blow molding process.

New drive design

A modern drive system is expected to have continuous and discontinuous precision rota-

++Glassman Middle East,
++8.-9.11. 2009, Dubai, A8
++Glasspex India,
++2.-4.12. 2009, New Delhi, C40



Wolfgang Lachmann
Michael Preuß

Dear readers,

One of the driving forces behind entrepreneurial creation is the development of innovative products and services. However, what is innovation precisely? According to Wikipedia, innovation literally means „improvement“ or „renewal“; in everyday language use, also unspecific „ideas“ and „inventions“. However, if you look at it more closely, innovations do not result from ideas until they are implemented into new products, services or methods that are then introduced and become established on the market.

Innovation is good, and it's exactly what we do. In this edition of our futronic Journal, we introduce our new FDU24S servo-drive, report on case studies with our FMT24S machine controller, as well as give you a quick look at our trade fair activities on the markets of the Middle East and India. Innovation—the best protection against the crisis.

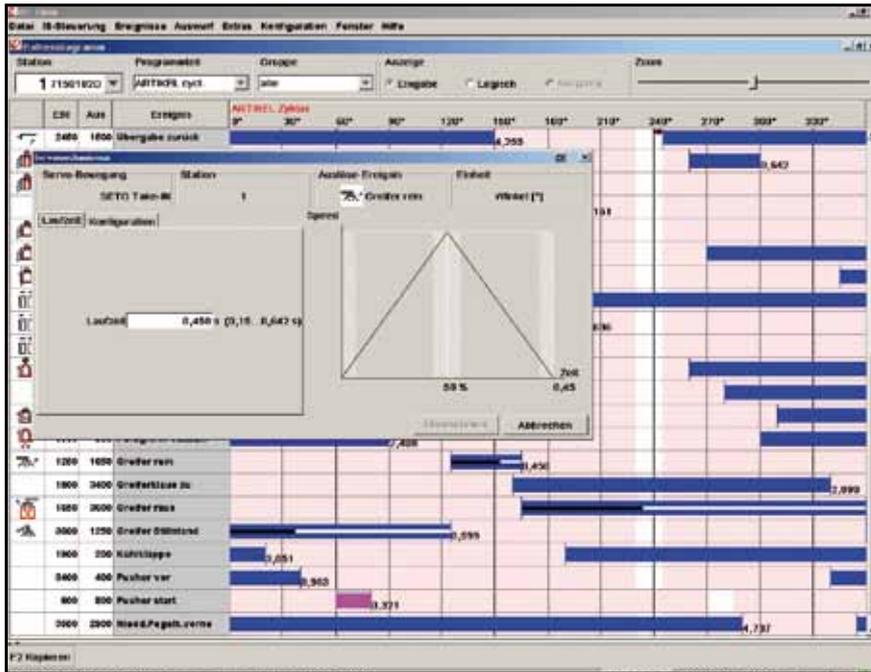
With this in mind, we hope you will learn a lot while reading this issue!

Sincerely,
Michael Preuß
Wolfgang Lachmann

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tion—in both directions. At the same time, the servo-motors must always achieve the same or nearly the same continuous torque in a speed range of zero to 3000 rotations per minute in order to, for instance, keep a mechanism in a specific position. In addition to its flexibility, the new futronic FDU24S drive system is noted for the maximum level of precision it maintains when synchronizing individual movement sequences in the machine. Although the FDU24S builds on its predecessor, the APC700, it is far more than just a further development. „We have created a completely new design in the FDU24S,“ explains Wolfgang Lachmann, one of the two general managers at futronic and head of technology and development. „This now puts us in the position to directly control all of the servo-mechanisms in the sections on IS machines.“

Powerful in combination with FMT24S

The FDU24S is compatible with older futronic products such as the CIMOG and EPRO IS machine controllers as well as with the controllers of third party suppliers. However, the new drive system shines brightest in combination with the FMT24S, the latest generation of controllers from futronic. FMT24S stands for „Flexible Modular Timing System“ and is a decentralized controller for IS machines with up to 24 stations. The consistent use of modern, low maintenance bus technology ensures that the system is totally scalable and can be adapted to specific requirements in the glass manufacturing industry. This guarantees the highest level of flexibility for efficient production as well

as investment security (see futronic Journal 2/2008, page 4 ff.). The FDU24S is available in both a modular design as well as a stand-alone solution. Existing systems can be easily retrofitted.

Improved operability and error diagnosis

The FDU24S is based on the latest drive technology from the automation specialist Jetter. The components used include Jetter servo-motors and amplifiers, which can be optimally integrated into futronic drives and controllers. The integrated system provides centralized management for up to 20,000 product and setting data sets required for the manufacturing process; this data is available in real-time via the bus system. In the other direction, bi-directional communications allow the controllers to also provide information on the functional condition of the system. This ensures that all of the important information is always available at the right time. „In order to graphically display this information on a monitor and to keep it manageable but still meaningful for the operator, all of the current data must be consolidated. This requires a fine touch and much experience,“ explains Lachmann. The result is that the plant operator has all functions and processes in view at all times and perceives the machine with drive and controller as a closed system. Compared to conventional drive and control systems, this significantly improves the operability and error diagnosis of IS machines. General manager Wolfgang Lachmann is convinced that „futronic along with FMT24S and FDU24S provides a comprehensive one-stop solution that can fulfill any requirement.“

Ideal partnership: The machine controller FMT24S consolidates the data for different actors into a bar chart. This provides the plant operator a continuous overview of the entire production process.

futronic will be introducing the new FDU24S drive system and the FMT24S machine controller at this year's **Glassman Middle East in Dubai** (November 8-9) at booth A8 and at **Glasspex India in New Delhi** (December 2-4) at booth C40.



Interior views: The new FDU24S servo-drive system has a modular design. Existing systems can be easily retrofitted

»Imprint

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FMT24S in a new glassworks from Noelle + von Campe

A flawless control system

At the end of March, the long-time manufacturer Noelle + von Campe put its new glassworks into operation at the Boffzen location. futronic equipped the IS machines with cutting-edge controller technology.

Glass had been manufactured in Boffzen, Lower Saxony for more than 500 years. The roots of Noelle + von Campe Glashütte GmbH (NuvC) go back to the year 1866, when it was founded. The company set up a new glassworks on the green area in 2008, not far from the main production facilities at the center of the city. The second plant, which has been in operation since March, is equipped with cutting-edge machining equipment. The heart of production consists of three IS machines, each with twelve stations provided by GPS Glasproduktions-Service GmbH in Essen. futronic has equipped the machines with the latest FMT24S control technology.

Prototype successfully retrofitted

One special challenge in this whole process has been the integration of data from different sources into one user interface. This is due to the fact that sections of the new IS machines are equipped with servo-takeouts provided by a supplier in Italy. The NuvC technicians have been very satisfied with the mechanics of the system for the past year. However, the controller technology from the same manufacturer „no longer meets our requirements,” explains Johann-Peter Weber, department head of the electronics department at NuvC which is responsible for control and switching stations. For this reason, courageous electricians took it upon themselves to quickly retrofit the servo-mechanism on one of the IS machines in the old plant with a standard frequency converter and a programmable logic controller—with



A flawless system: The new visualization software keeps the complex movement sequences and data volumes manageable.

success. This configuration enabled optimal coordination with the various sequences of the production process. Then futronic came into the picture.

Bi-directional data exchange

„Our software engineers have developed visualization software for NuvC that displays the complex movement sequences of the servo-mechanisms and relates them to the settings of the traditional pneumatic valves,” describes futronic general manager Wolfgang Lachmann. futronic’s FMT24S controller provides the basis for this. To enable bi-directional data exchange with the programmable logic controller from NuvC, futronic used the open bus standard CANopen, which is supported by the FMT24S. For real-time controlling, futronic uses one of its own developments, the Binary High Speed

Bus (BHSB). The FMT24S uses this to control actors such as servo-proportional valves as well as electrical servo-drives, even those from third-party providers. This made it possible to integrate the control prototypes built by NuvC for the servo-mechanism of the Italian manufacturer into the futronic system.

A flawless system

All item-related data and settings are now stored in the SQL-compatible database of the FMT24S. This ensures that, for example, the parameters of both controls are automatically set for an item change on the machine. „futronic has successfully developed an integrated system controller which clearly displays all of the data on a single user interface,” sums up NuvC plant manager Heinz-Jürgen Wrastil. „The system now functions flawlessly and guarantees that our machine operators enjoy high operational reliability.”



Contented Customers: NuvC plant manager Heinz-Jürgen Wrastil (l.) and Johann-Peter Weber, head of the electronics department.

futronic modernizes rotary-table-type machine for Ritzenhoff

Smooth as Glass

At the beginning of the year, the renowned glass manufacturer Ritzenhoff Cristal in Marsberg put a new control system for a rotary-table-type machine with 20 sections into operation. futronic, technology partner and closely linked with the company for many years, developed the design and software as well as the system visualization.

Wood from the dense forests around Marsberg in the Sauerland has been used since the 18th century when the first glassworks used it to melt quartz sand into glass. Herein lie the roots of Ritzenhoff AG. During its now 100-year history, this family business has developed from a manufacturer into one of the most renowned high-tech glassworks in Europe. With more than 430 employees in Germany and around 30 subsidiaries and distributors worldwide, the group generated more than 70 million Euros in sales revenue during the past fiscal year.

technology partner for decades

The Ritzenhoff AG offers customers in the beverage industry and gastronomy an entire range of one-stop services from design to production and refining to storage and delivery logistics. The company produces glass in large amounts, but also for limited exclusive series or for unique hand-blown works of art. Since it is always striving for perfect product quality, the Ritzenhoff technicians have developed their own production technologies and standards over the course of the years, often standing should-to-should with

specialized partners such as futronic GmbH. Already in the 80's, futronic delivered a machine controller based on CI-500 hardware from Bosch. Since then, both companies have been nurturing a close technological partnership.

High demands of functional specifications

At the beginning of this year, technicians from Ritzenhoff and futronic put a new control system into commission; this system was for one of the rotary-table-type machines at the plant at the headquarters in Marsberg. „The old controller was getting along in years, so replacement parts were no longer available or only at high prices,“ explains Alexander Körner, futronic sales manager responsible for the project. The functional specifications for the comprehensive modernization of the system placed high demands on the futronic specialists. Over the course of many project meetings, the technicians of both companies first worked out the design of the new control system. Based on these agreed-upon requirements and specifications, the software engineers then developed application software for the machine controller on a blowing machine with 20 sections. A special challenge was to

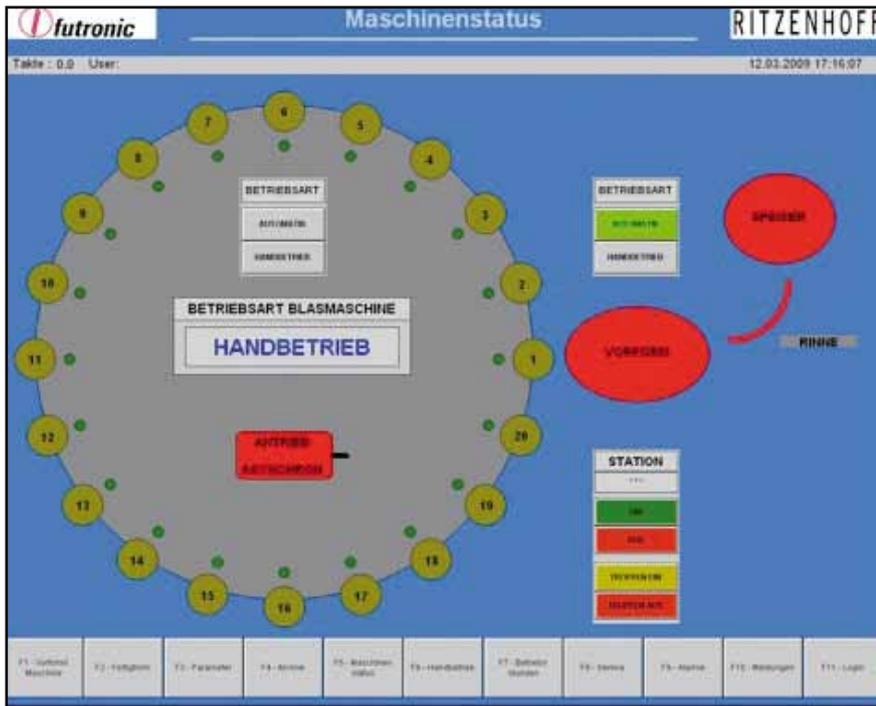
integrate the servo-feeder of the Franconian supplier Waltec Maschinen GmbH to the one which had newly been installed on the machine. Another challenge was how to visualize the entire machine on a computer-based interface.

Operating status always in view

The result was an interface that provides the machine operator a continuous view of all of the machine parameters, functional and operating states as well as electrical circuit diagrams. This allows the rapid diagnosis of errors in the system and other malfunctions. Using either a PC keyboard or a touch screen, the operator can intervene at any time during running operation to adjust individual machine parameters without interrupting the production process, for instance, to change job and item data and to resolve disruptions when necessary. Each section can also be switched off individually; this stops the glass feed. All of the parameters required for production of more than 500 different items can be stored in the SQL database. In addition, a dedicated user administration is provided – this guarantees that



Glass production at the parent plant in Marsberg: On its rotary-table-type machines Ritzenhoff Cristal produces glass in large amounts, but also for limited exclusive series for customers in the beverage industry and gastronomy.



Everything in view: In „Machine status“ mode, the graphics provide complete information on the operational and functional states of the machine.



Matthias Mönnighoff, director of electro-technology

„The new control system represents the requirements of our rotary-table-type machine perfectly,” adds Matthias Mönnighoff, director of electro-technology and responsible for the modernization of the glass production at Ritzenhoff Cristal. „The project was quite demanding. We were not sure whether we would managed to make the transition so smoothly,” describes Mönnighoff. In this

only authorized personnel may access the machine controller. Furthermore, all entries are logged.

The switching cycles of all functions and processes in the machine as well as the system operating hours are counted and the information stored in the database for the purposes of error diagnosis and system maintenance. Once a defined threshold value is reached, the machine operator receives a system status message with instructions about the specified servicing interval. This function prevents individual components from suddenly failing due to a lack of maintenance; this increases the operational safety of the machine. If malfunctions occur anyway, futronic technicians can intervene at any time via the integrated online remote maintenance system on the Internet. This saves time and especially travel expenses.

„Nevertheless at Ritzenhoff Cristal, we were dealing with a rotary-table-type machine. We were able to integrate our de-

case, it is a good thing to have experiences and reliable partners. Mönnighoff reports: „The collaboration with futronic and its new control system have completely fulfilled our expectations.” The retrofitting of additional machines at the plant in Marsberg is already in the planning process.

Sites on new markets

Rotary-table-type machines are often used in the production of commercial glass. Some glass manufacturers are still producing glass containers on this type of system. The systems are often purely mechanical and until now, have had to function without the aid of electronic control systems. Körner assumes that in the next few years, other glass manufacturers will modernize their systems; the futronic solution developed for Ritzenhoff can easily be adapted to other systems. Körner sees a new market here „that fits us and our product portfolio perfectly. We are in negotiations with several customers.”

»Info

Technical data:

- Controller VIPA Speed 7 (Step7 program)
- Industrial PC with touchscreen functionality
- WINCC V 6 as visualization tool
- Coupling of the individual devices via Ethernet or MPI/DP
- Cycle time < 5 ms
- Clock cycle min. 15 pieces/min, max. 40 pieces/min
- Start/stop over angular value of 3600°



Simple to use: All of the events occurring in the individual machine sections are displayed as a bar chart and can also be adapted via the touch screen, if necessary.

KTW Konstruktion-Technik K.Weißhaupt GmbH

Icy Clean

KTW constructs and manufactures full and partially-automated assembly lines. futronic was commissioned by KTW to develop a control system for automatic assembly machine with SCARA robot. Both quality and customers benefit from the partnership.

Admittedly, times are tough. But this does not shake Kurt Weißhaupt in the slightest. This 70-year old has already made it through many tough times; plus, his ideas are simply too good. In 1988, he founded KTW Konstruktion-Technik K.Weißhaupt GmbH in Friedrichshafen, Germany. Today, this company is a turnkey supplier for full and partially-automated assembly machine. The company's focus lies on automation as well as assembly and production technology. The product portfolio includes lifting gear and load-bearing equipment, automatic assembly machines, hydraulic tensioning equipment, assembly equipment, for instance, for heavy duty motors as well as test beds and robot-assisted process technology.

Weißhaupt puts his trust in innovation

In 2007, business was booming. A year later, the company dedicated a new production hall. Then there was the collapse. Orders fell off, especially those coming from the automobile industry. Nevertheless, the company is solidly positioned and has sound financial

backing, so the company has been able to keep all of its 55 employees. Weißhaupt has been able to compensate in part with projects from medium-sized customers from various sectors. In addition, this full-blooded entrepreneur puts his trust in developing innovative products in order to open up new markets.

Example: KTW's cold jet system. This process can be used to deburr plastic products and machined components as well as to clean lacquered or coated components. Dry ice particles of CO₂ are blasted under pressure onto the workpiece. When the particles impact, thermal tension is created which embrittles loose burrs and deposits and causes them to burst off. The CO₂ is acquired in an environmentally neutral manner as a waste product of technical processes or from the air. No waste water is produced. „The cold jet process is more ecological and cost-effective than conventional cleaning processes,” explains Kurt Weißhaupt.

Transparent cooperation based on trust

KTW's boss also places an increasing amount of trust on cooperation with specialists. „We



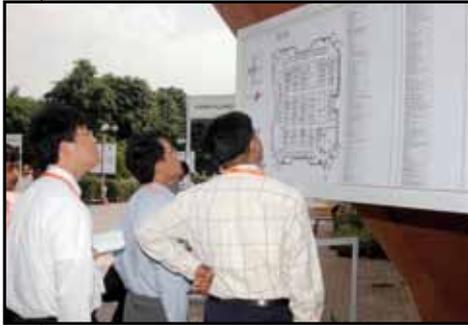
cannot cover every area. This means that we need reliable partners such as futronic,” he states. For example, the system and control software used in automatic machines at KTW was developed by futronic for a leading manufacturer in the plastics industry. For this same customer, the developers at both companies are currently working hand in hand on an assembly system for inserts for an injection molding machine. A special challenge—an industrial SCARA robot from Epson must also be integrated into the system.

The partnership has proved itself—additional orders have already arrived. „The cooperation is transparent and based on trust. The quality of our products and therefore our customers have benefit from this,” adds KTW project leader Reinhold Hess. futronic employees are fully involved in the projects, from the bidding phase to equipment commissioning at the customer location. “One thing is for sure,” says Weißhaupt. „The cooperation with futronic is something we will be developing and strengthening for the long term.”



Full-blooded entrepreneur: KTW founder and general manager Kurt Weißhaupt.

Automation at a high level: On behalf of KTW, futronic has developed control software for assembly systems for the plastics industry.



Glassman Middle East in Dubai – Glasspex India in New Delhi

Looking to the East

Trade fairs remain the most important platform for the international glass industry. This year, Glassman Middle East in Dubai and Glasspex India in New Delhi are highlights on the global trade fair calendar. futronic will be presenting its new FDU24S drive system and its FMT24S machine controller.



For more than 20 years, Glassman fairs have been among the top events around the world in the glass industry. In different locations across Europe, the USA as well as in South America and Asia, leading manufacturers of plants and machines for the glass industry as well as their suppliers gather together to talk shop. After the successful debut of Glassman Middle East 2007 in Cairo, the trade fair will take place this year in Dubai on November 8-9.

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ket for us,” sums up Michael Preuß. „This is where we meet our customers and make new contacts. futronic also wants to benefit from the positive investment climate.”

India is also one of the most important growth markets worldwide. The food industry is a booming industry in this region, for instance, and requires continually greater amounts of glass packaging. This makes India a particularly attractive country for the container glass industry and its suppliers. Glasspex India on December 2-4 in New Delhi is the trade fair organizer Messe Düsseldorf's first offshoot of glasstec, the most important glass industry trade fair worldwide. More than 100 companies from 16 countries will present their products and services in the Indian capital. Preuß reports: „We are very active in India. This is why Glasspex in New Delhi is mandatory for us.”



Future Markets

The growth of the glass industry in the Middle East is continuing despite the global financial crisis. Many glass manufacturers in this region have announced their plans to invest in the modernization and expansion of their product lines. „The Middle East is an important mar-



Telling others about futronic innovations at the congress accompanying the trade fair in Dubai: Marc Meersschaut.



Visit us at Glassman Middle East in Dubai (November 8-9) at booth A8 and Glasspex India in New Delhi (December 2-4) at booth C40.

We look forward to seeing you!



Glass industry shop talk: At both trade fairs, the experts from the glass manufacturers gather information on the latest developments from suppliers around the world.

»Employees in the spotlight

Heiko Pfisterer

Problem solver

Heiko Pfisterer is a problem solver who actively enjoys life. After graduating from secondary school, Heiko bit the bullet and made his way through vocational school for electronics and the career college for electro-technical assistants in the area of automation technology. Then he tackled further studies in electrical engineering and applied physics at the advanced technical college. This was a mistake, he says. He left the college and continued his education at futronic as an electrician for devices and systems. After graduating with honors, futronic hired this talented man. Since January, Heiko has been busy in the test bay. The 27-year old also likes to roll up his sleeves and volunteer for technical emergency response services. At futronic, he appreciates the different kinds of assignments he receives, the flat hierarchy and „that I am not just an employee number, but that people know me by name.“ In his free

time, Heiko plays badminton, likes to cook and fiddle around with his PC. But most important are the family plans he’s making with his new wife and for their four walls.



A valued technician: Family man Heiko Pfisterer works at the QA department.

» Education

„wissen was geht!“

futronic gives pupils insight

They are young, inquisitive and interested in technology; in August, seven young men and two young women took advantage of the vacation program „wissen was geht!“ („Know what’s up!“) to get a view behind the scenery of futronic GmbH. futronic offers apprenticeship training positions for industrial management assistants and electricians. On a tour of the company the 14-year old Alexander Ill was especially fascinated by the hardware development department. Surrounded by circuit boards and control modules, measurement devices and sensors, the developer Holger Breit was there

to answer his questions. Laura Pfeiffer also responds, „To be able to fiddle around with and try something out until the technical problem is solved; that would be a lot of fun.“ The 16-year old can very well imagine herself following the footsteps of her father and becoming an engineer. Timo Bauer is currently taking coursework at a vocational school for electro-technology. He wants to become an electrician in the area of automation or become an IT specialist, explains the 16-year old with a sparkle in his eye. Would futronic then be considered a bullseye? „Yes, you could say that. I think that I will definitely apply here.“



Object lesson: General manager Wolfgang Lachmann tells the young visitors about training and career opportunities at futronic.

»Service anniversaries

Loyalty pays off

We have numerous employees that we have been depending on for years. Those who start working for us do not leave so quickly. This very low rate of employee turnover obviously says volumes for the positive working environment at futronic and for a sustainable personnel policy that encourages and promotes, and for secure and engaging jobs. We would like to cordially thank our employees for their loyalty and congratulate them on their service anniversaries:

Johannes Dimmler, electrician

Johannes Dimmler has been a part of our company for over 25 years. He works in the electronics development department as a development technician. He specializes in data systems technology. Without him, in controllers things wouldn’t run that smoothly.

Josef Kerschgens, medical technician

For almost exactly 20 years, Josef Kerschgens has been working at futronic as a service technician. This type of guy is especially in demand when it comes to commissioning our controllers and drives in systems at customer locations all around the world—or when something isn’t working like it should.

Reinhard Schimmelfennig, development engineer

Reinhard Schimmelfennig studied Applied Sciences for Physics and IT and came directly to futronic after receiving his diploma in 1989. As a development engineer, he is responsible for the really difficult cases in the electronics development department—nothing can throw him off balance.