

FOOD-LAB Interview with...

Gabriele Hengesbach, Hengesbach Prozessmesstechnik

Ms. Hengesbach, you are the second generation to manage Hengesbach Prozessmesstechnik. Your company has been around for more than 60 years, but it is also state-of-the-art. How did it all start?

The company, founded in 1953 by my father as a "start-up" in today's wording, focused early on the development and manufacture of high-quality measuring devices for industrial use, with a clear focus on the textile industry, and occasionally also on systems for the beverage industry. The customers were won over by the precision, reliability and robustness of the instruments in the challenging environmental conditions as well as the operating conditions in the applications, and the company has already earned a good reputation as a highly qualified and equally flexible supplier. In the 80s, my brother and I started restructuring the company with the takeover. Basically, we had to start over because the entire economic environment changed in the 80s: the textile industry broke down as a customer base, our delivery program was tailored to the former customers, industrial production processes were increasingly automated so that measuring devices with electronic features became market-conform. It was possible to develop new potential in the up-and-coming sales market of the food and beverage industry. We had the right know-how, a good reputation and our vision to successfully establish and expand the new products in the new business area despite some resistance and setbacks. It was clear to us that we could only make it if we consistently worked closely with customers. During the conversion phase from instruments for the textile industry to measuring instruments for the food and beverage industry, we were supported by a well-known brewery who worked with us to optimize the instruments. This principle of extremely intensive cooperative cooperation with customers in ongoing production as well as in the further development of our instruments has led us to the position in which we



are today: having an "ear to the market" and thus flexibly and competently on the responding to customer requests. Our unique selling proposition of actually lived customer proximity across all levels of the value chain and also some internal hurdles has been significantly shaped by these experiences and findings right up to the present day.

Your corporate culture is headed "Appreciation becomes value creation". Can you briefly describe this?

As a medium-sized family company with a long tradition, we know that success and long-term corporate security are the result of long-term and uncompromising appreciation of all those involved. We can only sustainably promote what we recog-

nize in terms of value. We have identified and described the value creation processes that are relevant for our company and are continuously working on their optimization. Those involved in these processes are the focus of our business activities. For us, your values are both an incentive and a goal of optimization. Optimal corporate results can only be achieved in the long term through an unconditional appreciation of the legitimate interests of all parties involved. Attention is paid to our customers, employees and suppliers, but we also want to create added value for our ecological and social environment.

What does this holistic corporate philosophy mean for the customer?

With regard to the customer, appreciation means first and foremost the redeemable obligation to support his value-added processes with our high-quality products and services. The best possible fulfillment of customer wishes is for us a daily challenge and a strategic guideline at the same time. Trust is the basis of any long-term successful customer relationship. That is why our actions are transparent and include the customer. For us, an open and respectful dialogue with the customer is the basis for continuous improvement. The customer-oriented business processes are carried out in all phases, from customer advice, preparation of offers, order execution, order accounting to customer service, according to defined internal and legal standards.

How does it work in practice? Do you go to the company and explain the measuring principle of certain procedures and the inline functions and the connection?

It is different and depends on various factors. Some customers have in-depth knowledge of physics and measurement technologies, so that consulting services are not in great demand; but there are also quite complex applications, where we are

of course also on site at the customer. Our understanding of a lived customer proximity includes as a prerequisite to deal intensively with what is happening in the industry and to understand the interrelationships and processes in their production. Only this knowledge enables targeted explanatory and advisory approaches as well as further engineering services for the benefit of customers in the equipment as well as for our producers. Here we can also serve as an interface for the various protagonists in projects.

We have partnered with many companies for decades. This naturally creates basic trust. Nonetheless, every collaboration is always put to the test, and the challenge is to keep proving to be competitive in terms of technology and also in economic terms. Particularly with a view to digitization and increasing automation of industrial processes, greater attention must be paid in the future to the development of tailor-made products and the connection via appropriate interfaces. Thinking out of the future and promoting cooperation with universities and partners through open exchange and the willingness to work based on the division of labor - entrepreneurial action can only succeed together.

What are your core competencies with regard to the measured quantities and signal transmission?

We measure physical parameters such as pressure / level, temperature, limit level, flow, conductivity and turbidity of liquid and pumpable media. All devices are constructed in a hygienic design as a guarantee for a maximum of reliable safety within complex manufacturing processes. This means that we are mainly represented in the food and beverage industry. The sensor is the heart in connection with the electronics. Depending on the requirements, we still use the tried and tested 4 ... 20 mA standard for the transmission of analog sensor signals. In addition, we of course support the HART protocol (Highway Addressable Remote Transducer) as a standardized, widely used communication system for setting up industrial fieldbuses. It enables the digital communication of several participants (field devices) via a common data bus and can be seamlessly integrated into the 4 ... 20 mA standard.

How do you rate the trend towards digitization in industry?

BREAKING THE PEAK

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So far, there have been different bus systems that are preferred in different industries. So far, the importance of digitization is still underrepresented, but I am convinced of the change into a new age, certainly also driven by the pandemic experiences.

Measuring devices are still used in the process industry that deliver the well-known and widely used 4-20mA or HART protocol signals. This means that simple process values are made available centrally for the control system and the data has so far only flowed between these levels. The instruments with these two-wire interfaces are robust over long distances and easy to handle in the "plug + play" connection as well as in maintenance.

Exchanging the previous measuring devices for devices with a digital interface is usually not possible 1: 1. Nevertheless, the proven and the new technology can coexist and do not constitute any exclusion criteria, even against the background of the long lifetimes of installed components and systems.

Implementation strategies in the direction of more digitality mean the use of measuring devices in the field that no longer provide just a measured value, but also other information, such as serial numbers, diagnostics or other functions, e.g. for "condition monitoring". Depending on the connection, this data can be accessed directly from the measuring devices, from the controls or the higher-level control system. However, the question arises of the usability and the effort involved in interpreting and archiving the data - there is still no direct, satisfactory answer for the operator and the majority of the device data remains unused according to the information.

In my opinion, the successful entry into digital technology in the process industry can only succeed if the customers on their way to Industry 4.0. get picked up. This includes, for example, overcoming dependencies in communication interfaces, open device integration solutions, secure networks, and the fundamental, indispensable requirement for measurement reliability in device performance and easy handling.

If you install a measuring unit, it will often last 10, 15 or even 20 years if it is used properly and handled with care. When the time has come for the exchange, you have to consider which data should be recorded and evaluated in the future. The multitude of components in production control offer tools for perfecting the control processes. But this also requires a different knowledge and a deeper understanding on the part of the staff. All the data is running. It is of crucial importance to be able to use this data.

A typical problem is the manufacturer-specific configuration of interfaces. Are there actually not too few interfaces, but too few harmonized interfaces?

Do I have the right driver for configuring the devices and does it have the right assignment in the IT world? - these are often questions from users.

In fact, there is a large number of interfaces that have arisen due to the different requirements and conditions in the process industry. In the meantime, however, the limits of such "island solutions" are becoming apparent. A frequent requirement that is made in modern systems is, for example, continuous communication from the control level, on which, for example, ERP systems are located, down to the field level to the sensors and actuators. Communication via Ethernet is widespread at the management level, so efforts are being made to also handle communication within the lower levels via Ethernet.

Large amounts of data, fast connections, reliable results: When it comes to the interaction of measurement technology, industrial automation and Industrial Ethernet, a few points must be observed. The spectrum is very extensive and ranges from simple signals that are recorded at a low frequency - for example a slowly changing temperature value - to complex measurement data that must be measured simultaneously with a high measurement frequency. The general trend can be observed here that classic measurement technology systems on the one hand and automation solutions on the other are increasingly moving towards one another.

In the meantime, various technologies are paving the way in the process industry, such as IO-Link, Profinet PA Profile 4.0 or Ethernet APL. Measuring devices with APL, for example, are based on Ethernet technology and benefit the

customer through simpler engineering and installation as well as access to the raw data. The groundbreaking decision for the operator's future is still difficult in view of this selection of interfaces! But harmonization through open and closely coordinated interaction between the providers of measuring devices has been initiated.

Measuring devices with IO-Link interface with point-to-point connection are currently on the advance due to various technical and economic advantages, according to our assessment. Our proven successful models PZM and Quicktemp from the pressure / level and temperature area are our first models of this new digital generation of devices and were developed in cooperation with our customer for the new construction of a cosmetics production facility. Decisive advantages of digital signals like IO-Link for the user are:

- Manual parameterization on the device is no longer necessary, as the parameter data come from the controller > quick commissioning
- cost-efficient and quick connection through standardized cable
- Process data are delivered in plain text > quick insight in the service case + remote maintenance
- Cost efficiency (total cost of ownership) + increase in productivity, since the parameter data are stored in the master and are transferred directly in the event of an exchange.

Doesn't the use of digital technologies such as cloud solutions also create security problems? How do you rate that?

That's true. In addition to communication between devices and controls, Industry 4.0 often also means remote access via the Internet. And this access can always be misused if the security against so-called cyber attacks is insufficient. Ultimately, overestimating concerns about possible attacks would mean that we only rely on proven technologies or radically separate the Internet and intranet. The next generation, however, has a different affinity for the Internet, is growing up differently with the new digital technologies and is also dealing with them differently. In this respect, there will have to be solutions that are future-proof and at the same time relatively safe. Industry is already working on these and standards. In this context, the development of wireless connectivity in the field of measurement technology must also be

kept in mind, which is becoming more and more present in private spaces, such as in the automotive sector, mobile work, etc.

How do you rate the requirements of the EHEDG? The food industry is under considerable pressure from retailers but also under constant supervision by the supervisory authorities, etc.

From my point of view, the EHEDG requirements make a lot of sense, as the principles of hygienic design serve to avoid product contamination and therefore human health.

An important aspect in answering your question is that in the EHEDG experts from different areas and in some cases beyond the borders of Europe have discussed the subject of hygienic design with one another. Together with the basic idea of the EHEDG of preparing ordinances and guidelines in a practical manner, as well as intensive scientific research, knowledge has been gathered that is firmly based on a practice-related foundation.

This practical relevance is also reflected in the considerable consequences if hygienic design is not taken into account and implemented in the plants of the food industry: Unwanted microbiological entries in dead spaces or crevices can spread very quickly and lead to serious problems. Expensive and image-damaging product recalls are usually the result of disregarding the requirements of hygienic design.

The requirements of the EHEDG take this aspect into account. In the practical implementation of hygienic design, it is of immense importance to consider the production process with all its requirements in its entirety: From planning to completion, all areas of production must be illuminated; i.e. from the individual components to the machines and the entire system to the building in which the production system is located. Every apparently insignificant position must be subjected to a risk analysis in the context of hygienic design management. Against this background, the often-encountered view of "hygienic design is expensive" must be viewed critically and cannot be maintained. It is conceivable what costs can arise for the elimination of the consequences of hygiene problems, e.g. also for subsequent structural retrofits, both on the system and, if necessary, on the building, in addition to production downtimes and disruptions. In addition,

hygienic design ensures more efficient cleaning processes with corresponding quantitative and qualitative benefits for operators as well as ecology. After clarifying the exact application and the resulting requirements, a risk analysis decides on the degree of implementation of the hygienic design. The hygienic design management is an important instrument here in order to be able to find an appropriate balance between practical implementation and investment costs. Admittedly, the certification costs are quite high. But it is of course important to define or control gap widths or freedom from dead space, for example, with regard to sealing materials, their abrasion and freedom from residues. But there is also homework for the EHEDG, because the machine and plant construction as well as the component manufacturers must of course also calculate. Certification is a complex process that increases costs, especially since the certificates have previously expired after a certain period of time and a new (re) certification is required.

In which direction will you develop Hengesbach Prozessmesstechnik?

We have to master existing work processes perfectly and continue to design them efficiently. On the other hand, companies are faced with the great challenges of correctly assessing actions for development and progress, i.e. what will be important for all customers tomorrow. "Keep it up" cannot work, especially if you look to China. There will be no successful business model without digitization.

As a highly product and industry-oriented company, we continue to focus on our professional and entrepreneurial core competencies and want to expand these further in the direction of corresponding sales areas such as life sciences while maintaining our medium-sized values and agility. We want to convince new customers in Germany and in defined foreign markets of our innovative and durable products and measurement technology advantages in their production processes. Of course, we will press ahead with our developments in the direction of new, value-optimizing technologies, also in the context of digitization, while at the same time maintaining proven technologies. However, this targeted growth is always based on the maxim of accountability towards the values of all stakeholders involved. We are aware that long-term positive corporate development and

responsible action can only be achieved under stable social and economic conditions. For me as an entrepreneur, this requires a conscious attitude towards nature, progress and innovation and acting for one another, across company boundaries.

Thank you very much!

