Exclusive Interview with Guido Frohnhaus

"Gestica Will Be the Fixed Star in the Customer's Universe"

Guido Frohnhaus has been Managing Director Technology & Engineering at Arburg for a good two years now. The pandemic restrictions meant that he has made very few appearances outside the company so far, but, as he says himself, he spent the time getting to know the in-house processes at all levels and in great detail. In this interview with ***Kunststoffe***, the 52-year-old talks about the course he plans to set and how crucial the high level of in-house manufacturing and programming expertise is for the company's independence.

This interview was originally intended to be held in person in Lossburg, Germany, late last year, but was moved online at short notice due to the worsening pandemic situation. This proved to be the right decision, because Guido Frohnhaus appears on screen on time and in the best of moods. However, he has been isolating for a day and so is conducting the interview from home. Since he is in good health and his spirits are otherwise good, the interview dispenses with long preliminaries.

Kunststoffe: *Let's start by talking about the strategically significant events of the recent past. The Arburg entrepreneurial families Hehl and Keinath acquired AMKmotion, a drive specialist, last year. How does this company operate in the machine market?*
Guido Frohnhaus: AMKmotion is a small but excellent drive manufacturer that fortunately – as I see it – doesn't work exclusively for the plastics industry, but covers a whole host of industrial applications, ranging from packaging machines to drives for automation projects to high-speed applications. Of course, we at Arburg stand to benefit enormously from all their experience. We are the only injection molding machine maker that AMKmotion supplies with motors and inverters. And, because we believe so much in their quality, we intend to keep things that way. We have developed and realized many of our electric drive designs together. Today, AMKmotion products feature in a large number of our installations.

"What we develop, we also produce."

Kunststoffe: *How exactly does Arburg benefit from this arrangement?*
Frohnhaus: This is a huge opportunity for us, because it increases our depth of added value, and makes us more independent. In the area of hydraulic drives, we have – and always did have – all the expertise needed for development. Not so in the case of electric drives. We are rectifying that by bringing AMKmotion's drive technology expertise in house. This is great for us: if we have full control and influence over the key components, we can approach issues such as accuracy, energy efficiency or dynamics much more resolutely than if we use bought-in components. This was a long-term strategic acquisition for Arburg and it would have been criminal to have let the opportunity slip by us.

Kunststoffe: *What makes AMKmotion's drives different from those of other manufacturers?*
Frohnhaus: Other manufacturers can do technology too. But, for us, quality is what matters here. We have worked on many development topics with AMKmotion, for example, with regard to cooling, and have built up special expertise in this area. That makes AMKmotion particularly valuable to us. Communication between the two development departments is excellent, and it also helps that they are in close proximity to one another. And we haven't even talked about security of supply yet.

Kunststoffe: *We will come to that in a moment. But when you talk about development: what goals top your list?*
Frohnhaus: In the field of injection units, we envisage new topics based on drive technology that, for example, will boost the injection dynamics even further. That will have a positive knock-on effect on control accuracy and ultimately on part quality. Cost-optimized design is also high on the list, and is something that is certainly easier to realize with your own companies. Our focus is on electrification. And not all of our hydraulic machines are equipped with servo technology yet. But we are working on that.

Kunststoffe: *At Fakuma, you emphasized the topic of planetary roller screws. Is there an interface to AMKmotion here?*

Frohnhaus: The development and manufacture of planetary roller screws are a central topic at Arburg. But when we talk about the drive train, we are looking at everything, from the control cabinet and control system all the way to the moving platen at the front. The kinematics of the toggle levers need just as much attention as efficiency and transmission ratios. It's only a short step from there to the topic of motor inertia and inverter efficiency. All this constitutes a system that we now have complete control over. And then there is the planetary roller screw which you mentioned: it is an essential component of our drive train which nobody else has in that shape and form.

Kunststoffe: *Are there still critical components in this system that you have no control over? I'm mainly thinking here of supply bottlenecks.*
Frohnhaus: As regards mechanical parts, no. But the situation is different for electronic components – we buy these in, just like all the other machine makers. We are not going to start manufacturing relays or ICs; they will continue to be sourced from outside. But they are critical components nowadays, and that is precisely the problem that could end up hurting the industry.

Kunststoffe: *Do you have any plans to increase the amount of in-house production elsewhere in the future?*
Frohnhaus: Our in-house production depth is currently running at just over 60 per cent. We intend to keep it that way because it is a strategic unique selling point in terms of innovation, cost reduction and security of supply. This is a topic that can quickly take on an academic dimension: what do you mean when you talk about depth of added value? Do you include development services? Or just production? We take pride in the fact that we cover all of these at Arburg. Whatever we develop, we produce. And that is not going to change. This helps us with our risk management, for example. What AMKmotion brings to the table here is a very well-equipped machining department at its company headquarters in Kirchheim/Teck, Germany, along with other sites where electronic parts too are made. This gives us a fallback strategy. It also is a huge advantage for our customers – we are not doing this for our own sake. People like to poke fun at us – to them we are the "Arburgers" who make all our products at one site in the Black Forest that we then ship to all corners of the world – but when it comes to security of supply, we have fared as well as, if not better than, most other machine makers in the last two years.

Kunststoffe: *A specific question: how badly did the supply crisis affect Arburg?*
Frohnhaus: There were perhaps a few days when we were unable to produce a module or component because of late deliveries. But at no stage did we ever come close to being unable to continue. Of course, this situation meant that we also had to accept higher component prices in some cases. But thanks to bold decisions by our Partners, we started stocking up very early on when the supply bottlenecks started becoming apparent the year before. We are still reaping the benefit today. On the other hand – when we see a shortage looming in certain areas, e.g. in electronic components – we sit down quickly with our development department to create alternatives. Thanks to our in-house production depth, we can act proactively and flexibly here by, say, redesigning a PCB layout so that other components can be used.


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About the Interviewee

Guido Frohnhaus took over as Managing Director Technology & Engineering at Arburg GmbH + Co KG in January 2020. He began his career by completing an apprenticeship as a toolmaker before studying mechanical engineering, specializing in manufacturing engineering, at Wuppertal University, Germany. After graduating, he held management roles at automotive supplier C. Rob. Hammerstein GmbH & Co. KG in the USA and Germany before joining the Turck Group. This was followed by five years as Vice President Technology at Turck's US subsidiary. During his time in the USA, he earned a part-time Master of Business Administration (MBA) at Capella University in Minneapolis, MN/USA.
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Kunststoffe: *But surely that's not something that can be done at short notice?*
Frohnhaus: The lead time is six to eight weeks. If it's really urgent, it takes maybe just four weeks for them to come up with an alternative solution. If you are active in the market and it's only a short hop from the purchasing department to the development department, you can move mountains. Competitors who use third-party controls don't have this advantage. By the way, while we are on the subject of spare parts supply and long-term requirements, the same thing applies here: if a customer wants a legacy controller from us some ten or »

15 years down the line, he will still be able to get it. Even with legacy designs, we are always in a position to redesign the PCBs and the electronic components, if need be. No one else can do that because no one else has the same depth of production that we have.

Kunststoffe: *Let's pivot now to core issues affecting your customers' very existence. The days when machine manufacturers could adopt the attitude that, once they had delivered the machine and provided good after-sales service, they had discharged their responsibility, are gone. Would you agree with that? And how can Arburg be a driver of sustainability – I'm thinking here of machine and resource efficiency.*

Frohnhaus: Yes, it's true: machine delivery and after-sales service alone are not enough; you'll soon find yourself out of the picture very quickly with that model. Sustainability has many facets. One of these is the machine longevity that we just talked about: this enables the customer to repurpose a spare part that extends the machine's lifetime from 20 to 30 years. Another is the power requirement, whereby the trend is moving away from hydraulic and toward electric machines. While we have already made great progress in drive technology, I still see potential here. Consider the manufacturing processes: we use photovoltaics, wind power and combined heat-and-power generation to cover more than 40 per cent of our own electricity needs. That helps to conserve resources. The rest we buy in as carbon-neutral green electricity. Added to which: some 80 per cent of our purchasing volume is done in Germany; we buy castings exclusively in our own country, and a high proportion of those purchases are made even from within the Black Forest region. This too is sustainable because the transport distances are short. Production efficiency is paramount – our customers' and our own. It is widely known that we have been working on this for quite some time now.

> *"In an ideal world, I would say that mandatory quotas for using recycled materials are a great idea."*

Kunststoffe: *Let's move on from the inner workings of Arburg and talk about the machine's raison d'être, namely plastics processing and parts production. These days, sooner or later, all discussions inexorably lead to the circular economy. What do you personally think, what progress are we making here – do we need mandatory quotas on the use of recycled materials, for example?*

Frohnhaus: In an ideal world, I would say that mandatory quotas are a great idea. I think that's what we should be aiming for. As a machine manufacturer, we are supporting this in various ways. We started looking at the processing of recycled materials away back in the 1980s. The "recyclate package" we presented at Fakuma is designed to simplify things for customers. It contains various control functions and features that enable the machine to process recycled materials, and our smart assistance functions are capable, for example, of compensating for batch fluctuations in real time. Great progress has been made as regards using recycled material, but are we there yet? No, definitely not. And we would be lying to ourselves if we were to say otherwise. The right fundamentals just aren't in place yet.

Kunststoffe: *In what way?*

Frohnhaus: One example is the way plastics are separated. Today's recycling systems and the labeling options for plastics are still not effective enough at properly separating the various material streams. Another is the quality of the recycled materials that are available. Many plastics processors already engage in post-industrial recycling without further ado, for example, they recycle sprues. That works. Post-consumer recycled materials, though, still pose a problem.

Kunststoffe: *Initiatives like R-Cycle and HolyGrail are developing new marking and identification technologies in the form of a digital product passport and digital watermarks that are aimed at improving the separating of packaging. How hopeful are you that this will solve the problem?*

Frohnhaus: It will definitely take us a big step forward. As a member of R-Cycle, we are in contact with many participating companies, some of them plastic producers, some of them machine makers – the most pressing question is where to source the plastic that will enable development to continue. And once a source has been found, how much will there be, what will the quality be like and what about it's purity? We haven't yet reached the level of volumes in this recycling pipeline that would enable us to mandate a quota for using recycled materials. And the task of separating will take on a different dimension once these technologies are ready to come on stream. Huge investment is needed here and that is not simply going to come out of nowhere. The machinery and plant engineering industry is traditionally an enabler, but we – by that I mean everyone from programmers to mechanical engineers working on the topic – cannot solve the problem on our own.

Kunststoffe: *In that case, you have here and now the opportunity to make an impassioned appeal: where would you like to see support coming from?*
Frohnhaus: Policymakers must set down clear legal requirements here. I am not a fan of subsidies, but as long as recycled material is more expensive than virgin material, the question for every medium-sized company is: why should I use recycled material? As an entrepreneur, you can't jeopardize your own profitability. In addition to bans on individual plastic products, the EU must provide consistent support for the circular economy, such as be providing targeted funding for such programs.

Kunststoffe: *Let's take a mental leap from digital watermarking to digitalization at Arburg, namely via the customer portal. How well are user numbers growing, what tools is Arburg making available here to its customers and what are the main usage categories?*
Frohnhaus: User numbers are developing well. We currently have around 2300 customers and more than 6000 users. Tools such as the Machine Finder and the online shop for spare parts are going well and offering real added value, as all our users will confirm. Our service apps for remote assistance have to be able to access the customer's machine. We are still encountering IT security concerns here, but that is not a problem specific to Arburg. For large companies, getting access to production equipment via the company network is often an absolute no-no. And for small ones too, it can sometimes be a problem, albeit for a different reason: they often don't have the necessary infrastructure. But once we have convinced the customers of the benefits of using the portal and that the technology is secure, we find that they start making intensive use of the various possibilities and apps.

Kunststoffe: *What role does the new Gestica controller generation play in the customer's digital universe?*
Frohnhaus: Gestica is available for different series and sizes, and provides, for example, a large number of assistance systems. Those customers who are already using it can see the potential it offers. We are currently in the process of highlighting the advantages that accrue from the combination of controller and assistance systems and rolling out the Gestica further. Gestica is a control system that gives the user an enormous amount of flexibility. I can carry out extensive process analyses with it and use it to optimize processes and cycle times. If I have to make frequent mold or product changes or want to optimize my processes and keep them stable, Gestica offers substantial advantages. I think this will be a whole new experience as regards digitalization and our customers' control concepts. But to get back to your question: Gestica will be the fixed star in the customer's universe.

Kunststoffe: *If we were to compare Gestica with its predecessor, Selogica, what would you say is the most striking difference – the range of assistance systems?*
Frohnhaus: Yes, most of our assistance systems are available for Gestica and they offer genuine added value. With FillAssist, for example, we can perform filling simulations directly on the machine, even while it is operating. But the difference in computer performance is on another level: Gestica works with two separate computers, one for operation and one for process control. That provides a high level of security and opens up a great many more options, without affecting ongoing processes. It also provides us with the ideal basis for areas that will be important in the future, such as AI and machine learning.

Kunststoffe: *Gestica has been around since K 2016 and is now to be rolled out on a large scale, as you just said. What are the implications for Selogica – will it be continued and will the customer have a choice?*
Frohnhaus: The changeover is progressing step by step, because Gestica was unveiled as the control system of the future at its world premiere five years ago, and back then, of course, it had nowhere near the same capability as Selogica. Now we have reached the point where Gestica has a much greater range of functions. It is clear that we will not maintain several controller generations in the series in the future. Further development work will concentrate exclusively on Gestica, and legacy controller generations will disappear – but not the customer service and the spare parts business for them. After all, we still offer spare parts for some of the first circuits and controllers that Arburg has been developing since 1974. Customers have no need to worry on that score.

Kunststoffe: *It is said that the "aXw Control MeltAssist" is used for process evaluation. What does that mean?*
Frohnhaus: The injection unit contains a registered chip, which means that we can keep all the adjustment data in the machine. That allows us to calculate the process parameters for material processing in advance. And we can also quickly evaluate and monitor utilization of plasticizing capacity in detail. This takes us one step closer to predictive maintenance: by recording the load in the plasticizing unit – this is still something of a pipe dream at the moment – we will enable the customer to set his own individual maintenance points for the screw, for example. This will prove especially useful for the uptime and maintenance of machines used to process highly filled and high-temperature plastics.

Kunststoffe: *What else is on the development agenda – assistance systems that customers have been waiting for a long time?*
Frohnhaus: We presented two smart assistance systems at Fakuma 2021: CycleAssist and EnergyAssist. These were our response to requests for simple ways to optimize processes and energy consumption. We see AI and machine learning in particular as areas that have great potential for machine operation. Why not let us surprise you – come visit our Technology Days in June! ■

Interview: Dr. Clemens Doriat, editor

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