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So what

does “BSmart” really mean?

In a time when digital change is bringing new and impressive changes to our lives almost on a daily basis, who can really claim to be totally “smart” and completely in control in this new era? Perhaps my children are and I often watch in amazement how they organise their education, work and private life with multiple devices at the same time.

Let’s openly admit it: smart networking is developing so fast and affects so many areas of life simultaneously that it is hard for those of us over the age of 35 to keep up.

But in areas where we are experts already, digitisation opens new doors to great opportunities. Opportunities which we at Heye have explored with excitement to make our customers’ lives ever easier and their production systems ever more efficient. However, it isn’t all about wonderful new opportunities, there are some harsh realities, too. The door might be open, but you need to go through it. Industry 4.0 is a reality and a megatrend which no manufacturing industry can deny.

That applies to the container glass industry, too. Companies in this sector are facing increasing pressures on cost and efficiency. Their ability to respond to fast-changing market conditions is increasingly the basis for entrepreneurial success. Moreover, in many places there are not enough staff with the necessary experience. It’s therefore ideal if the production machines can



Dirk Pörtner, Managing Director
Heye International

operate with maximum flexibility, and can continuously and autonomously optimise their processes and also go through the thinking procedure that would otherwise have been the operator’s responsibility.

This is a small magazine about the smart skills required to navigate safely through the digital changes taking place all over the world in the container glass industry. We call this skill “Glass Smartness”.

We are embracing Industry 4.0’s state-of-the-art developments for the world of glass today in the same way Heye did in the 1960s, when it was the first company in the world to operate mechanical engineering consistently based on the requirements of container glass production. And we will also make every effort in the future to further exploit the great potential of glass as a packaging material (see article page 15). The conditions are right: the people at Heye are passionate about glass – they live and breathe glass production. You can read a lively example of exactly that in the story about our respected colleague Knut Prasuhn (page 6), who represents the fourth generation of his family to work as a glass expert for Heye.

All good reasons why it’s smart to follow Heye’s advice and technical solutions given the great but also challenging future ahead. Because in the end your economic interest is what counts. In this sense: BSmart!

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You said it

Industry 4.0 is rapidly developing from a vision to a practical reality. We are right in the middle of the container glass industry's digitisation, but the biggest opportunities still lie ahead and they are the hot topics within the industry today.

Michael Delle Selve, Head of Communication at FEVE (European Container Glass Federation)

The European container glass industry is a role model for the Circular Economy. The industry provides its customers with a packaging solution that is good for the environment, but also the best way to preserve the quality and taste of food and beverage products. Through the Friends of Glass Programme, the industry is rallying consumer support to call for more glass on supermarket shelves whenever possible. This also means making use of state-of-the-art industrial production. The container glass industry has every reason to have a positive outlook for the future because of the opportunities that already exist and those that will arise with Industry 4.0.



Jens Langer, Director Sales & Marketing at Heye International

The 2020+ glass plant will no longer be characterised by individual machines and controlling systems which are self-contained in terms of their communication, but by smart and interlinked main and subsystems. Apart from simple optimisation of production via networking and active communication in the information triangle of "machine, controlling and human", the consideration of climate protection requirements and strategies for saving energy are also paramount. The ideas and achievements of global digitisation and Industry 4.0 are therefore influencing Heye International's Smart Plant concepts so that we can take part in designing the glass plant of the future.



Dr. Cassandra Riedl, Consultant and Researcher for Leadership and Organisational Behaviour

Digitisation reinforces the known effects that come with collaboration between people. Those with a conscious mindset actively use these new opportunities, working together over time zones and country borders and expanding their knowledge in smart networks. This promotes inspiration and results in successful concepts for the future of work. However, digitisation can also increase conflicts in communication and trigger feelings of excessive demands. The key here is for managers and staff to be conscientious. It is all about using and shaping these things constructively.



Ernst Raue, Leading IoT expert and the former Head of CeBIT

Digitisation is radically changing the face of manufacturing. New digital factories are being created in the heart of Europe to produce highly customised products. Leading manufacturing companies are deploying a number of key technologies to digitise production and their entire supply chain. These include big data analytic solutions and autonomous systems. These technologies provide significant efficiency gains, but the full effect of digitisation is only realized when companies are connected in real time to their suppliers and customers. Heye can therefore be an enabler: delivering customer innovation and creating sustainable value for business growth and development.



Achim Prange, Production Director at Heye International

The digitisation of industrial production offers the container glass industry enormous potential to increase production and capital efficiency. Each product will be traceable in the individual value-added processes down to the raw materials; each step can be monitored and recorded. This enables us to systematically learn from mistakes and to reduce waste. The aim is an overall process that checks and improves itself – and which can be reproduced at any time. However, to be able to use the large data volumes meaningfully, they have to be filtered and edited. Highly qualified experts who can master this technology and draw the right conclusions are needed to do exactly that.



Sebastian Purps-Pardigol, Organisation Consultant and author of the business bestseller "Leading with the Brain"

What lies before and behind us is tiny compared to what we can achieve – the latest brain research shows that the human brain can change throughout one's entire life. We can surpass ourselves every day and become an even better version of ourselves.



Karine Dussimon, Senior Research Analyst for the global packaging industry at Euromonitor International

In 2017, global volume sales of glass packaging for retail consumer goods is set to grow by CAGR 2 percent. Future demand for glass up to 2021 will largely be shaped by a desire for an enhanced consumer experience. Innovation in smart packaging and digital connectivity will be a key area for glass to explore as alcoholic drink brands seek to engage even more with consumers. In soft drinks, brand owners will want to address rising health concerns using the glass bottle to convey purity and a natural positioning.

When man and machine almost become one: Knut Prasuhn's passion for glass production



Clear, transparent experience

Those who live for making glass and have years of experience are the ones who are going to shape the vision for the Smart Plant. These experts are exactly what is needed in the future to fully exploit the “smart” potential.

Let's start with an important insight. Men seem to hold beer bottles in a very particular way. Men perhaps who are generally more interested in the bottle's contents than the bottle itself. That becomes apparent when you watch Knut Prasuhn at work – particularly when he is fully immersed in his job. When Prasuhn assumes the “man-holding-a-beer-bottle-in-his-hand” position, it looks completely different. The 56-year-old turns the glass container from his left to his right hand like a precious stone, he looks at it from all sides, holds it against the light and runs his fingertips over the surface from the bottleneck down to the bottom. Then he says: “You have to realise that glass is a living material.” According to him, it is possible, for example, to determine exactly whether this living material is healthy or not by looking at its shadings and surface structure.

This is part of Knut Prasuhn's daily routine and working life and today, as the Manager for technical assistance in production and process technology, he is presenting the Smart Plant technology's latest achievements to a group of clients at a demonstration plant. This kind of devoted assessment of the end product contains, in a nutshell, the entire Heye philosophy. In the following interview, Prasuhn gets to the heart of it – that the „living” quality applies not just to the material but to the entire pro-

duction process. “You have to live glass manufacturing,” he says, because experience grows from life and judgement grows from experience.

We could also call it knowledge. And this absolute knowledge in glass container production and enthusiasm for it is something the entire production and technical assistance staff have because they have all grown up at Heye. After all, there aren't many companies that can provide you with all the training and knowledge necessary for industrial glass production. “What we do here is really very special,” says Prasuhn. “You can't simply learn it somewhere at some random machine manufacturer.”

For that reason, almost any member of the staff could be featured here on these pages and all of them could demonstrate what experience and knowledge about glass means – and how customers can profit from it. But Knut Prasuhn really is a special case – a particularly strong example of how this knowledge has grown over many decades. He represents the fourth generation from the same family to have worked in glass production for Heye. Prasuhn's father was a master craftsman in the mould workshop, his grandfather was a production manager and was later responsible for the entire Cold End in a new production site. For as long as Prasuhn



Knut Prasuhn really is a special case – a particularly strong example of how this knowledge spans generations



Customer information: how a feeder, plunger, double motor shears and gob distributor work

can remember, Heye and glass production were always present in the family home. "You could say I was fed it with my mother's milk," he says and then adds dryly: "Or perhaps more aptly with my first bottle."

So it was clear that Prasuhn would start an apprenticeship as an industrial glass manufacturer after he had finished school and later completed his train-

ing as a master craftsman. He learned most of his profession from Gerhard Gallmeier who played a significant role in the development of the NNPB light-weight standard (see page 12, "Best in glass") which Heye has since licensed to numerous companies all over the world – together with the matching machines and required knowledge. "When it comes to this technology, I have practically carried on where Gallmeier left off," he says.

When technological knowledge isn't just imparted but passed down from generation to generation, then apprentices become "glass people". And they have to be experts to be able to come up with the next practical innovation.

It's obvious that Prasuhn likes to remember the old times. But it also seems that looking towards the future is even more in his nature than indulging in the past. The conversation quickly turns to the things that need to be dealt with next – such as a journey to Brazil in the coming week where a comprehensive technical assistance contract has to be

"So that the machine can perform quickly and the client is satisfied"

negotiated with a glass manufacturer which belongs to one of the world's largest breweries. Assistance will be provided for a facility that, when it comes to the manufacturing equipment at the Hot End, was completely built and set up by Heye. Clients will receive the same support during glass melt as they are given during quality control and the inspection processes for the containers at the Cold End.

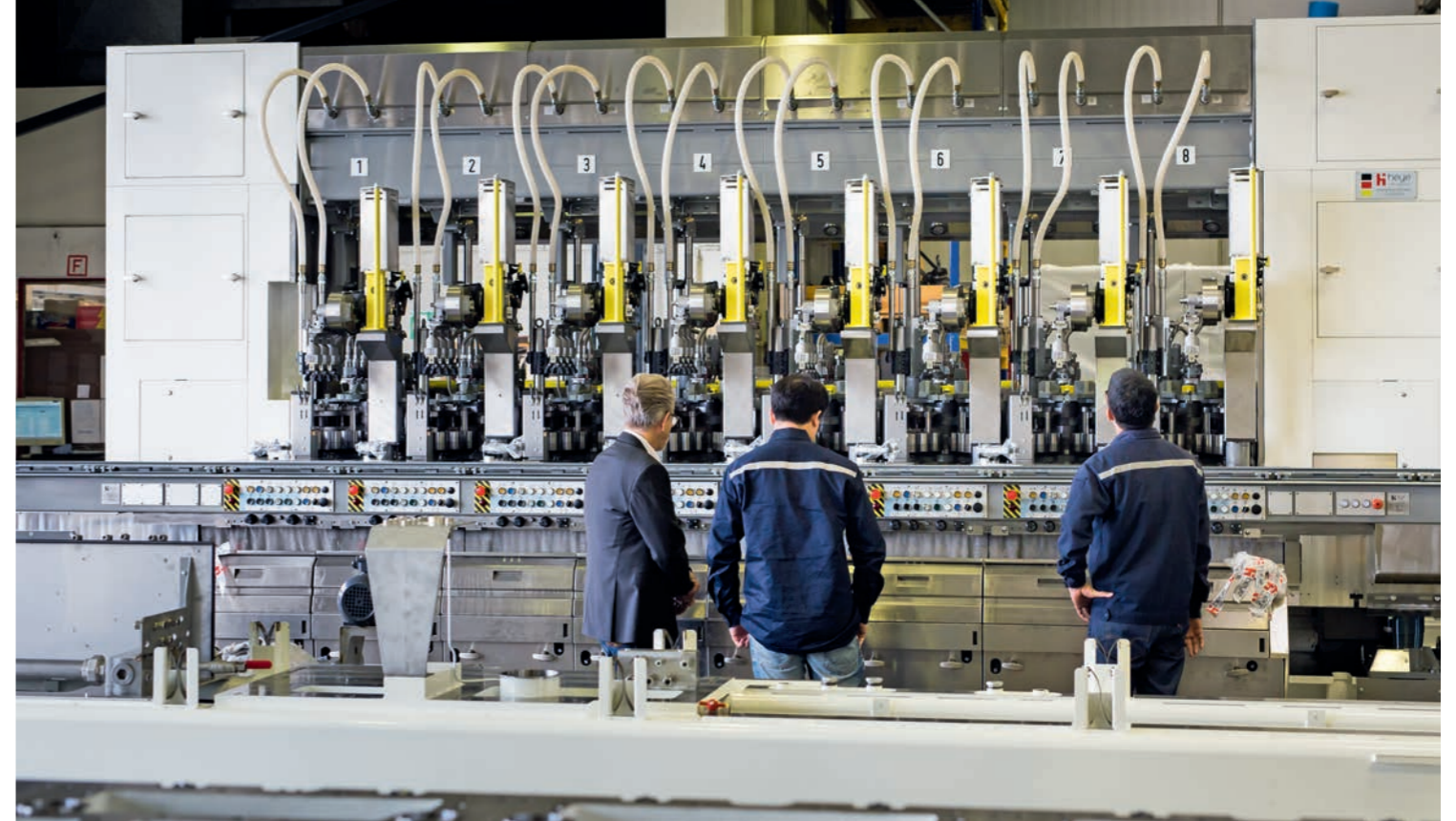
Before he became Head of Technical Assistance, Prasuhn travelled around the world as the company's leading

production specialist. After the set-up of the facilities had been completed by mechanics and electricians, Prasuhn and his team would arrive to configure them for operation – setting them up for the desired quantities, speed, containers' weights and so on. He has since passed on the role of leading the production team to his successor. The principle for success remains the same: when the parameters desired by the client are all perfectly met, then the whole process is set up in the shortest possible ramp-up phase. "So that the machine can perform quickly and the client is satisfied," is how Prasuhn simply sums up the technically demanding process. Because, in the end, that's what it should be for the client too: simple.

And everything should stay easy while the plant is running under normal operations. Easy, efficient and cost-saving – "Smart Plant" is the key word here.

One hundred years on from when his great grandfather learned the old craft of glass-blowing in Obernkirchen and when his grandfather and father witnessed the groundbreaking union of glasswork craft and mechanical engineering under one company roof, Knut Prasuhn is now part of implementing the next revolution in glass container production. Knowledge and experience of glass, acquired by people over many decades, is increasingly becoming a characteristic of the machine itself.

Being a Smart Plant, the container glass production facility controls the entire process autonomously by using sophisticated sensors and digital networking. It interlinks all its levels and phases so intelligently that the plant operator always has a full overview of the current state of the production process and the product's quality through integrated real-time tracking of all data from the Hot and Cold End. "The Plant Pilot tells me where the ranking stands, what my focus areas are, what I need to work on first, when I have to begin preventative maintenance to avoid losses, and when I have to change a mould,"



Before transportation the machine is assessed with the client

Experts are needed time and again, during operation, who can feed the Smart Plant with exactly the right data to fully exploit its potential

says Prasuhn. This simple process control, which uses an intuitive information management system, is already an imperative because there is a growing lack of trained expert staff in many parts of the world.

Given these technological advances, the question arises as to whether the technical assistance team will at some point be superfluous. "Not at all," Prasuhn says vigorously. The developments in the Smart Plant area are definitely impressive but good judgement for the living material glass can ultimately only be developed by humans, with the mould construction field being the best example: "Many of our competitors try to work with simulation programmes when they develop blank mould profiles. But our experts' accuracy has, so far, never been reached," Prasuhn says.

And that's what matters in the end because, besides the tailor-made customisation of the machine, a successful blank mould profile is one of the decisive factors in minimising downtimes – as well as set-up times and job changes. In addition, experts are needed time and again, during operation, who can feed the Smart Plant with exactly the right data to fully exploit its potential and to further increase the plant's efficiency.

Prasuhn can quantify this potential exactly: "We assume that a machine's life is 15 years and that it requires only one small overhaul during that time. With this, we give our clients what they really need – this is one of Heye's best advantages. That is our task for the future."

While we are on the subject of being proactive, how does he think glass production will develop in the coming years? "The machines largely run well and very safely thanks to the multilevel safety concept which comprehensively uses protective devices and swabbing robots. Now we need to make sure that the containers get even lighter while improving the material's strength," answers Prasuhn. Here, bigger gains in efficiency would certainly be possible to save costs and resources, he says.

That covers the purely economic reasons why Heye will carry on promoting innovation. However, when thinking

about any further optimisation of the containers, it is hard to ignore the impression that Prasuhn's interest lies in something else as well: the joy of holding an ever thinner and ever more robust glass container with a smooth surface in your hands.

Switching on some of the new electric components – such as the intelligent central lubrication – on the IS-Machine



It might look like a spaceship, but it is actually a machine being delivered to a client

Spin the bottle

It is, without doubt, very smart to produce glass containers for food and drink packaging. Particularly when you can use the technology of a company that knows exactly how to do it. There are good reasons to go for glass – whichever way you spin it.

100

percent recyclable – Glass is exclusively produced from natural or nature-identical inorganic raw materials. It can be used again and again in an almost closed cycle.



The splinter effect: cullet can help the environment, too. In many parts of the world where there is intensive recycling, cullet has already replaced sand as the main raw material component in the mix for container glass. This avoids waste, preserves primary raw materials and reduces energy consumption.

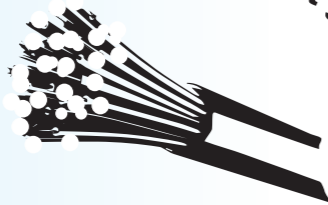
Glass production is very energy intensive but from 1970 to 2006 the German glass industry has achieved a 77 percent reduction in energy consumption. It has done so by increasing the use of cullet in production and a number of other energy-saving measures.



Clearly interesting – some fun facts about glass



Glass production began millions of years ago in a natural way: if lightning strikes sand the heat makes the sand almost evaporate and long, narrow glass strands called fulgurite are created. In the intense heat of a volcano, rock and sand sometimes melt together to make lava glass obsidian. In the Stone Age, people used this razor-sharp glass to cut things. Ancient Romans made tools, sculptures and jewellery from it.

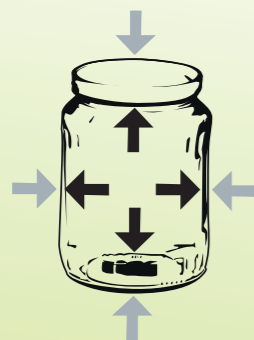


The things networking is made of – are glass too. Glass fibre forms the backbone of the digital world carrying information at the speed of light. It was Thuringian glass-blowers, by the way, who produced glass fibres for the first time and initially marketed them as a decorative material. Their excellent light conduction and durability only became apparent later.

4500 km/h

4500 km/h – this is the speed of breakage tearing when glass cracks. Heye may not be quite that quick but it is working fast to improve container glass production to minimise breakages.

Health – safe keeping in glass containers



As a food and drinks container, glass can **protect vitamins, aromas and freshness**. That's because it is gas-tight, neutral in taste and inert. It shows practically no interaction with its content and acts as a natural barrier against harmful bacteria and changes in temperature.

61

percent of consumers in Europe knowingly choose glass packaging because of its health-promoting effects.

0

Other packaging materials release chemicals into their contents. Glass containers release:

15

A glassworks in the Netherlands has been using the SpeedLine IS-Machine to produce 660-ml beer bottles since 2015, which has made production **15 percent** faster while having the same high yield. With Heye's help, uniting speed and quality was a simple task.

Ecology – glass has a clear advantage



More than a third lighter. Beer bottles have decreased in weight on average by more than 33% since the 1950s. This is largely due to the NNPB lightweight standard developed by Heye.

15

years. That is the average age that a Heye production plant reaches – often it is even more. During this time, only minor maintenance work is required.

A 30 percent raw material saving has been made possible by Heye for customers all over the world with its internationally introduced NNPB lightweight standard.



Over 200 production plants on every continent around the world rely on Heye's technological and technical assistance.

Best in glass

It started out as a medium-sized glass factory and became a global company operating in container glass production. Heye's story is one of bottles that have been made dramatically lighter and of a few smart experts who made it all possible.

If you travelled back in time to 1960, Heye's global success today would seem, at the first glance, pretty unbelievable. What you would see would be a medium-sized glass factory in a rural landscape at the edge of the Weser Hills. In 1960, the company was already looking back on a 100-year-long history built on the foundations of an old craft tradition. In the 1960s, it was using the technological means of the time to produce container glass for customers in West Germany using the traditional glass-blowing technique. It was without doubt doing a good job and the company was known in the region for its quality. But at the beginning of the 1960s, Heye was one of many glass factories in Germany.

What impulse suddenly brought about this wealth of opportunities that led to "Heye International" – a company which now has a presence in more than 50 countries across the world with its technology for container glass manufacturing? A time traveller wouldn't be able to detect one specific trigger for this development. But what he would see would be a multitude of opportunities existing alongside each other, as



What impulse suddenly brought about this wealth of opportunities?

yet still unconnected. Our time traveller would meet people with a very special character, an aspect of Heye which is still typical today: people who burn with passion to produce glass and who will never be content with what has been so far achieved.

In the 1960s, Hans-Heinrich Baum and his technical team simply couldn't accept that all the possibilities that the material glass offered could be fully exhausted. Bottles were still too chunky and too heavy. So-called substitution packaging made from plastic, metal and card was also entering the market. So to fight this competition, Baum and his team had one specific goal: to manufacture significantly lighter glass containers with sufficient strength and to do it with an economic production method. Lighter bottles,

produced more easily. Easy to say it, but how do you do it?

Back in those days, Heye was a medium-sized company and could not yet afford comprehensive basic research, but targeted development work was possible. So Baum and his team tried to think outside the box, or rather the bottle, and found an advantage in the pressing and blowing process which up until then had only been used in the production of wide-neck jars. In October 1968, they introduced the first serial production of a weight-reduced beer bottle for regional brewers Paderborner Pils and commenced operation on an 8-section-double-gob IS-Machine specifically converted for this method.

But there was still a long way to go to reach today's glass packaging landscape characterised by lightweight glass bottles. The decisive element was still missing before the big push in that direction became possible. If the term "Smart Plant" had been around back then, it would have certainly fitted this paradigm shift. For the first time Heye's entire knowledge of glass was used to approach glass container machine construction according to the demands of glass production and its heart: mould construction. The prerequisite for this had been created in the mid 1960s. With the foundation of Heye International the two resources of glass expertise and mechanical engineering, which until then had existed separately, were united under one company roof, the Heye roof. This was a first in the history of container glass production.

Alongside the vision for lightweight glass, the development team worked

full steam on the development of a completely new generation of machines which could produce lighter bottles more precisely and more economically than ever before. Previously Heinrich Baum's team had learned that if the new Heye-NNPB-Process was applied on the conventional technology of the IS-Machines, then the glass did not have the time it needed for the moulding process. It did not get the careful treatment that it actually required. In short, making the best glass meant that the processing had to be different.

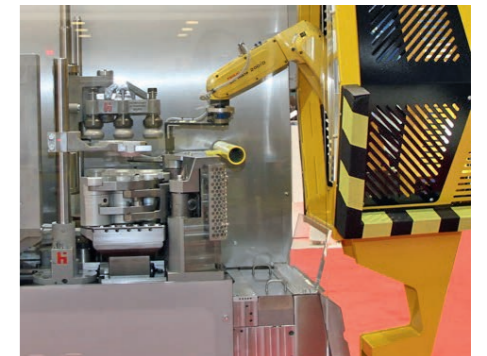
It was typical that the developers at Heye didn't rest on their laurels

Developers showed the glass industry exactly how this could be done in 1974 after intense research work in the form of the novel H 1-2-production machine. It was capable of producing ultra-lightweight glass – with considerable glass finishing and precision measurements. Now, weight reductions of up to 40 percent were possible and significantly thinner-walled glass containers, which were also strong enough for use, could be produced efficiently.

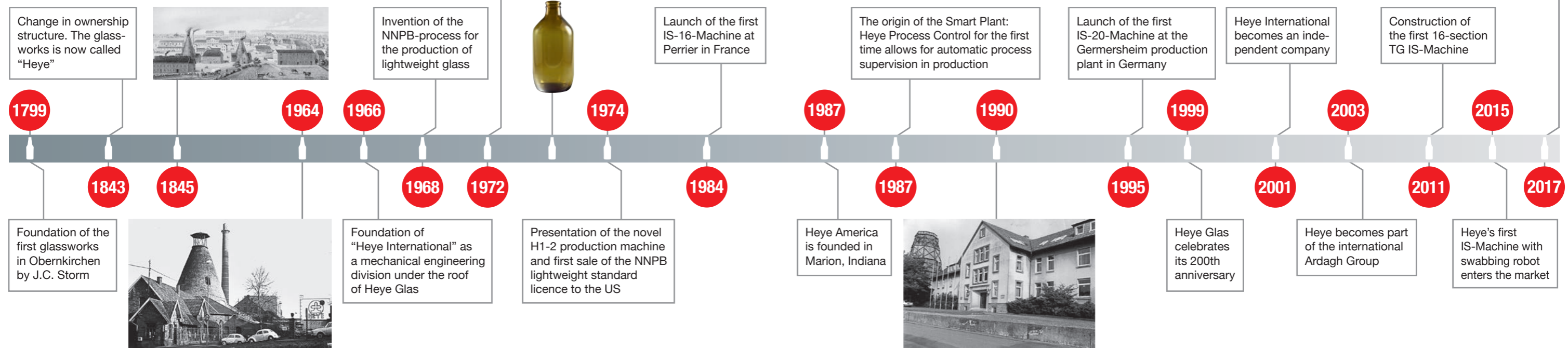
After that, one thing followed another. Bottling plants which were filling containers with all sorts of products were suddenly interested in lighter bottles and Heye licensed the NNPB-process to glass plants all over the world.

It was typical that the developers at Heye didn't rest on their laurels, quite the contrary. From the beginning of the 1980s, they developed several generations of high-performance production plants which steadily increased production volume and achieved optimum efficiency. For example, the IS-16-section-machine, which was initially operated by the Southern French mineral water producer Perrier, produced millions of its famous green bottles over the years. Heye also pioneered the construction of smaller tailor-made machines – until the developers then became aware of the opportunities made possible by modern information technology and began to experiment with cameras and sensors. The vision of the Smart Plant was born.

Time travel aside, the things that have stayed the same over decades are apparent. The people at Heye are fascinated by glass as a packaging material. Today, as much as in the past, they can't stop thinking that the potential for glass is by no means exhausted (see interview page 14 and 15).



Heye milestones





“So that the customer can fully exploit the plant’s potential”

A Smart Plant has to consider the operator's needs. And to be able to benefit from all the possibilities there are, the operator needs solid training – at Heye. Martin Bradt, our Customer Service Director, explains how it all works.

The “Smart Plant” makes life easier for plant operators. Does that mean that the training courses you offer clients are any less demanding because of that?

Smart Plant offers excellent tools which help identify and rectify errors more quickly. You nevertheless still have to be able to deal with the machine and observe the correct settings. The more glass containers the plant operator can package and sell from what used to be a glass gob, the larger his profits will be. Further training is absolutely essential so that the operator can fully exploit the plant’s potential.

What level of knowledge do participants have?

It is very varied. There are those who have been using a competitor’s machine for some time. They already have quite a lot of knowledge and so only need to familiarise themselves with the specific characteristics of a Heye IS-Machine. But then there are, of course, those who have never seen a glassworks before. With greenfield projects, staff have to be trained first.

Three days surely isn’t enough for this...

No, a course like that runs for several months. We start from scratch with

theoretical knowledge addressing things like: what is glass? How does a glassworks like this function? Then the focal point is how to operate an IS-Machine, how to shape a bottle from the cut gob and then take it to the Lehr. For this, the participants need lots of expertise: what is a pneumatic drive, what manoeuvres are necessary? All of these are important practical skills, otherwise mistakes can occur that can have fatal consequences later on at the bottling process or even with the consumer.

What can you do as a plant operator with this newly acquired knowledge?

The training equips people to operate a machine. But they still need support from experts in the future to carry out important readjustments on the machines when errors occur.

For those inexperienced people taking part, the focus is probably mostly on safety issues.

Not just for inexperienced participants. A machine like this still poses a risk despite all the modern safety technology. We are handling glass that drops into a mould at a temperature of up to 1100 degrees. We are also dealing with pneumatic drives which use huge force. You’d rather not put your hand in there. There are rules that definitely have to be followed with such a machine to protect your health and safety. It also helps that by now we have constructed very good technical barriers and protective grids.

Even if Heye’s machines are very reliable – machine failures can still sometimes occur. Can you also teach people how to repair them?

We also offer training in the areas of mechanics and electronics. You need the electronics knowledge to find faults and to troubleshoot. Mechanical knowledge is necessary to be able to repair machines like Heye’s. Generally, we offer a broad spectrum – we also impart the knowledge as to how to prepare the variables which are the parts that need to be changed in a job change. We also provide training for how to optimise conversion times so that the machine runs as smoothly as possible. We offer training for mould design. We also train our clients in the Cold End area on inspection machines. We combine all together in the technical assistance training.

Where does the training take place? It can’t all be in a seminar room.

We have our own training centre for the theory lessons and it also has some training stations. And of course we have a complete IS-Machine which we use for training the individual stations with

the participants until we finally get to go to the glassworks themselves where we can work under real-life conditions.

A packed programme. How many people can take part in the course?

We limit the number of participants to five or six people. You can’t really look properly after more people than that. Also, we are able to conduct the training in both German and English – but we often have clients from Asia for whom

we need translators. Extra time needs to be allowed for that.

Do cultural differences play a role in any of this?

We learn a lot from each other. And we prepare our staff with targeted cultural training when we have people from completely different cultures coming to us. What we have often experienced is that some clients couldn’t cope so well with our eating habits. But that hasn’t

been a problem. We just don’t go to the canteen and have food delivered instead.

Do those taking part also have a chance to experience a bit of the local area?

Yes they do. We organise an enjoyable accompanying programme. We go bowling and spend a relaxing evening together. The participants usually stay at a hotel in the small town nearby where you can go for short walks in the evening or do some sport.

There’s a lot happening

What does the future of glass container production look like? Heye’s Head of Research Dr Michael Kellner explains it all in detail.

“Product Development”, that’s the name of the department at Heye which turns visionary dreams into concrete plans. Sometimes those plans start out as research, but they are exactly what is required to be well prepared for the future. When asked what the industrial production of container glass will look like in ten years, Head of Research Dr Michael Kellner doesn’t have to think for long: “Hollow glass production will be completely automated. The machines will work autonomously and will be able to identify and correct any faults or disruption quicker than before. They will be closed so that people will be kept completely away from this dangerous environment. Staff will only undertake monitoring and documentation tasks.”

That sounds very self-confident, but the preconditions at Heye are simply very good – over 20 percent of its staff work in product development. They conduct basic research in cooperation with universities and develop specific solutions using new technology. The developers have access to over 15 glassworks in Europe because of Heye’s affiliation with the Ardagh Group.

There are other signs to back up this optimistic view of the future. The milestones that have already been reached were by no means a foregone conclusion. Automated machines need intelligent sensors to observe process operations and actuators that can influence them – for example to compensate deviations during the shaping and cooling process of the glass. In hollow glass production, however, this sensitive technology has

to work in close quarters with hot glass which reaches temperatures of up to 1000 °C. For this operation, Dr Kellner and his team have developed a completely new generation of production machines which can integrate Smart Plant modules.

Today the Heye PlantPilot registers information about every single glass container and prepares the data so that profound decisions can be made to increase efficiency. With around 1 million containers on the production line per day, that amounts to a data volume of 25 million bits of information. However, a lot more information still needs to be gathered – and this will soon be performed by sophisticated sensor technology made possible by the research and development work.

Closing the loop in hollow glass production, however, is not the only thing that the Product Development department has on its agenda. Other major tasks include developing servo drives which can achieve ever more accurate motion sequences to optimise safety and deploy material and energy more efficiently.

And of course the area that has made Heye a real driver of innovation is that it has made glass containers lighter and lighter while maintaining their strength and meeting the increasing demands for individual design and appeal.

Dr Kellner notes that the excellent connection that Heye has to the people operating the machinery helps him confidently tackle these projects: “Often, we find our partners for constructive research among our international clients,” he says.



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Publisher | Editor:

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Concept, Text & Layout:

Geyer Creative, Bielefeld | Germany
www.geyer-creative.de

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