

seranews

The magazine for **sera** Group customers

Issue 2020





12,30 DM

...that was the price of the magnet lamp that **sera** built and sold in the 1950s and 1960s. Around this time, an increasing number of people were buying motor vehicles, but these vehicles were a long way off the current safety standards. That meant that the **sera** magnet lamp was an important tool, especially when it was dark. Whether you were loading or unloading, filling the vehicle with fuel from canisters, carrying out small repairs or changing tyres, everything could be done with lighting and thus much more safely.

With its strong magnet, the lamp could be secured on all ferrous surfaces in and on the vehicle or could be used as a hand lamp. The four-metre-long cable supplied the 15-watt bulb with 6-volt electricity via the cigarette lighter. Even back then, **sera** offered the right solution for specific problems experienced by individual customers. We are still committed to this concept now.



EDITORIAL

Dear readers,

actually this issue was supposed to be a "very special" one. **sera** is celebrating its 75th anniversary this year and we had planned to look back on our celebrations and annual activities together with you in this **seranews**. 75 years of company history is an achievement of which we can rightly be proud and proof that the **sera** group has been successfully active on the world markets for three generations.

This year, however, has been quite different from what everyone around the world might have thought. **seranews** 2020 has therefore become a very special edition under different circumstances and influences. The COVID-19 pandemic has not only kept the world population on tenterhooks for a year, it is also in many ways the biggest cut in societies in all countries since the Second World War. It has an impact on practically all areas of people's lives, with their individual rights of freedom and the entire social, societal and cultural life. Mastering the resulting challenges and at the same time taking on social responsibility was therefore the most urgent goal of this year for **sera** and all **sera** employees.

In this very special edition of **seranews**, we would like to report to our customers and partners on how **sera** has mastered this situation so far, how we have contributed to this situation in accordance with our company motto: "We create added value for people and the environment" and how we also see the crisis as an opportunity. Our company anniversary year is rightly based on the motto: **YESTERDAY – TODAY – TOMORROW**. **sera** has continuously developed in 75 years and can look back on a long tradition and experience. Take a look into the past together with us, learn about our current approach to the crisis and get an overview of our ideas and goals for the future.

We must assume that the effects of the Corona Pandemic and the associated uncertainties will extend far into 2021. We have therefore decided to postpone this year's anniversary event until 2022 and are confident that we will then be able to celebrate our 77th anniversary in a fitting and carefree manner. I wish you an inspiring read and hope you enjoy this very special latest issue of **seranews**. Stay healthy and confident!

Yours,

Carsten Rahier



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YESTERDAY TODAY TOMORROW

An anniversary that didn't feel quite right. 2020 is extraordinary in all respects. Including and in particular for sera. Originally, we wanted to start getting ready for our 75th anniversary at the end of May from January onwards.

1945

Established in 1945 straight after the war during the "zero hour" period, **sera** developed into a corporate group with an international focus and is very confident about the challenges it faces in the future. Therefore, our anniversary year was also intended to be characterised by the motto: **YESTERDAY – TODAY – TOMORROW**. **YESTERDAY** because we base our actions on the tradition of our 75-year history, **TODAY** because we are a modern company and we are anchored in the here and now, and **TOMORROW** because we are a company that is already thinking about the future.



Yesterday: sera trade fair team in the 1940s with the founders Hubert Rahier (front row left) and Reinhold Seybert (front row right).

Yesterday: sera booth at the ACHEMA in Frankfurt/Main (1970).



2020

A large anniversary event was planned for September with lots of guests, including international ones. **sera** is proud of what it has achieved and we wanted to celebrate that with everyone. But dark clouds began to gather across the world's skies in February; by March, the COVID-19 pandemic had Germany firmly in its grip too. The entirety of public life was closed down very quickly and protection against coronavirus became the top priority. That was the end of all the celebration planning and ideas. Projects or even an event were out of the question and, as such, we simply had to forget about most of the ideas. The situation over the summer was more relaxed, but fear of a second wave and the restrictions already being announced ultimately destroyed all opportunities for celebrations.

Today: A modern company with a clear perspective.



What could we do? **sera** based its decisions on the quality that inspired its founders after the war and is still part of the company's DNA to this very day: doing the right thing at the time. Whilst our founders manufactured everything that was urgently required after the war in the outset (e.g. pans or smoke cabinets for food supply) and only later developed the business fields which are still active now, we activated all our resources in the pandemic and provided the first COVID-19 support at short notice. Help was our top priority, regardless of whether this was about a shopping service or manufacturing disinfectants. And this is how we used one of our company strengths from our 75-year history to help others in the pandemic.

2022

In the meantime, an alternative date for a possible festive event has also been found. In 2022 we hope to be able to host an event in our 77th year of existence. Of course with an appropriate hygiene concept and in compliance with all regulations that will still apply then. We will all have to wait and see how the infection process develops until then and keep our fingers crossed.

This edition of **seranews** was also intended to be slightly different in the outset. But we changed some things around for this edition too, since the pandemic required us to focus on new and different areas. However, you will still find some reports here and a couple of brief insights into our past; we will also be reporting on the current situation at our company and provide you with an overview of our strategies for the future in accordance with our original motto for 2020: **YESTERDAY – TODAY – TOMORROW**.



2020: sera turns 75 years old.



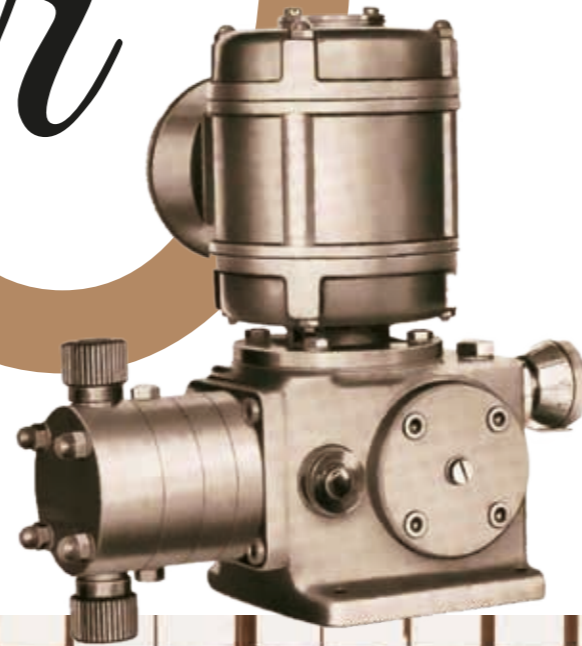
yes·ter·day

['jestərdi]

1. on the day immediately preceding today
"yesterday morning, at the same time".
2. formerly "the world of yesterday".

THE *Sera*

sera was founded 75 years ago. From the simple idea of producing what was necessary after World War II, a globally operating, international company has developed. Today, as a leading company in dosing and compressor technology, we stand for innovation, reliability and flexibility and serve customers worldwide with our solutions. One thing has always remained the same – our will to change. Join us on a journey through time from its beginnings in 1945 to today.

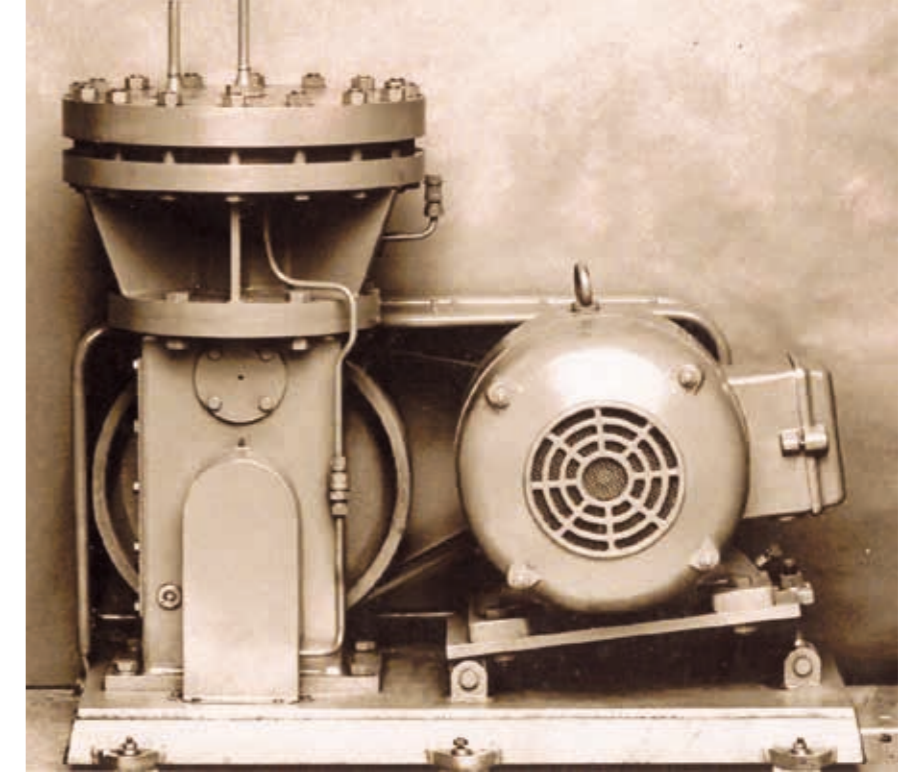


On May 28, Reinhold Seybert and Hubert Rahier founded **Seybert & Rahier OHG** out of nothing. As a result of World War II, there is a shortage of workers, buildings and apartments, raw materials and machines.

The first product range consists of household appliances and baking trays, in addition, repairs of agricultural machines are offered – and generally everything that is needed to rebuild the country. As a first order, five flag spears are manufactured and sold to America for 50 Reichsmarks.

1950 – The product pump

The transfer and filling of acids is problematic and dangerous. At that time, **sera** developed the first diaphragm pump with a valve head made of stoneware and plate valves for the chemical industry and applied for a patent. In the early 1950s, the **sera** product range was



The first **sera** diaphragm compressor (1958).

adjusted – the first products were discontinued, the focus was on pumps and components.

From the very beginning, the company has been working internationally. As early as 1952 the first trading partnerships are established in Holland, Denmark and Austria.

1955 – The course is set

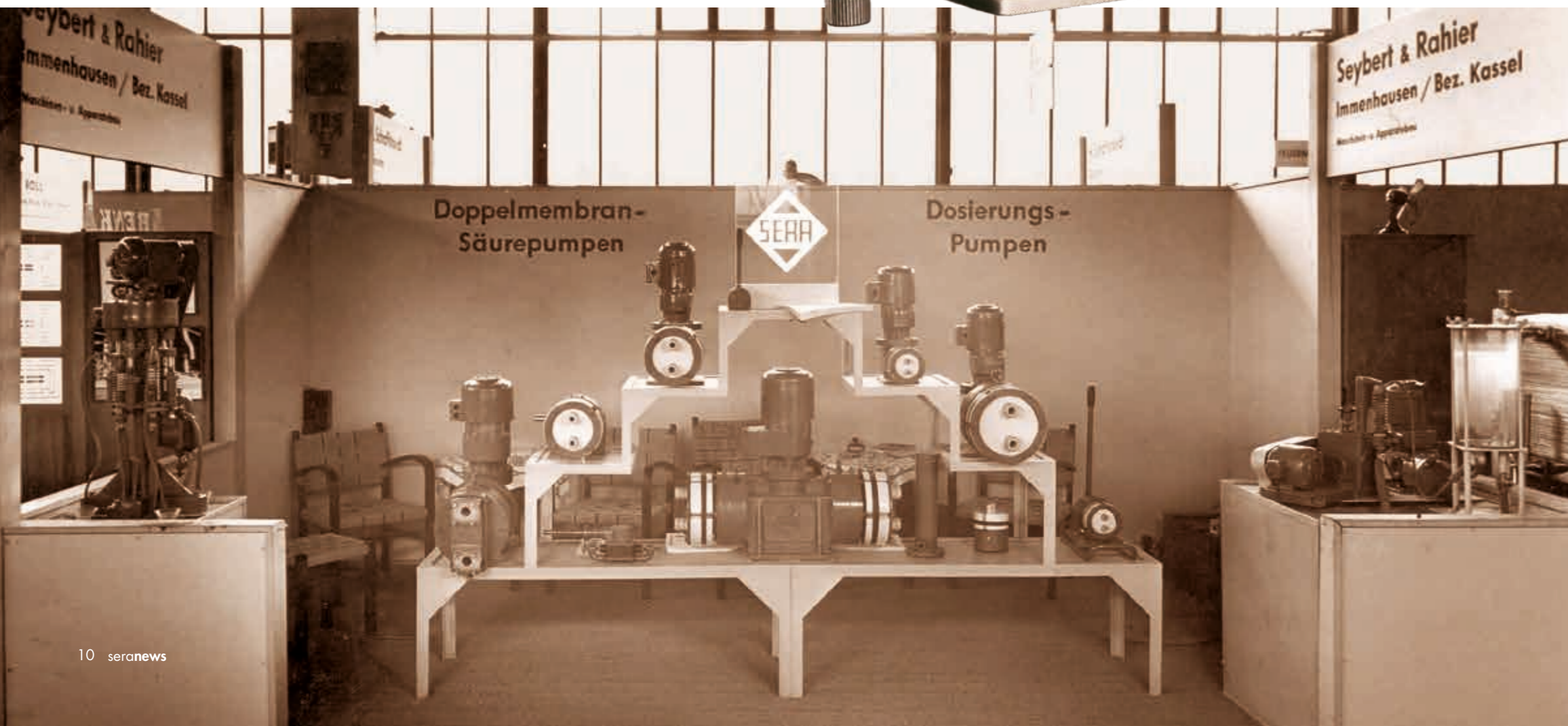
Within a few years, **sera** closes international trade partnerships and **sera** is already represented in ten European countries in 1955. In the same year, **sera** exhibited for the first time at the AICHE trade fair in Frankfurt / Main – one of the most important international trade fairs in the field of process technology, then as now. Small metering pumps for water treatment are in high demand, the **sera** pump R409 is a bestseller. **sera** also takes over the entire Nold product range: single, double and quadruple dosing units with glass pumps and single diaphragm pumps.

sera builds and moves into its first state-of-the-art manufacturing facility with affiliated offices at today's main location on **sera**-Straße in Immenhausen.

1960 – The expansion of the product range

The first metal diaphragm compressors from **sera** are created in 1958 together with the Hoechst company. **sera** develops, Hoechst takes over the test series. In the late 1950s, in addition to the R408 diaphragm pump, the first piston diaphragm pump is developed and successfully launched on the market. At that time the export share is 20%, the annual turnover was 1.4 million DM – generated by 45 **sera** employees.

sera booth at the spring fair in Frankfurt/Main (1955s).





Extension of the company building (1960).

1965 – An economic heyday

In 1964, **sera** is converted from an OHG to a KG. The product portfolio is constantly expanding: in addition to pumps, customers are asking for complete units such as a dosing pump with variable speed gearbox and complex control. The electrical department is expanded, from 1967 **sera** is able to build control cabinets with the necessary controls.



Company outing to the 25th anniversary.

1970 – A quarter of a century sera

At the end of the 1960s, **sera** introduces factory lessons for apprentices that still exist today. In 1970 **sera** celebrates its 25th anniversary, the entire workforce – 85 colleagues – celebrate together in the Sauerland. The company premises are expanded again, the turning shop is enlarged. 2-stage systems, horizontal vacuum compressors, oxygen compressors and special designs especially for nuclear power plants now complement the compressor range. In 1972 the new Works Constitution Act comes into force, which also provides for a works council for smaller companies. In July 1972, the first five-member works council is elected at **sera**. A year later, the first youth council is elected and regulations for bonuses and Christmas bonuses are established, which are still valid today in a modified form.

sera celebrates (1963).



1975 – One provider for many industries

sera is entering new markets such as the paper, textile, food, iron and steel industry and many more. **sera** is internationally known for sophisticated technology, for materials from PVC to stainless steel and for the highest delivery quality. **sera** is the first company in Northern Hesse to receive the permission to “stamp” materials in accordance with DIN 50049 / 3.1B. A pump for the textile dyeing process is being developed with the Hoechst company – the **sera** KKV pump.

1980 – The next generation

Founder Hubert Rahier retires in 1980. After Hubert Rahier, his son Helmut took over the management of the company in 1976 together with Reinhold Seybert. **sera** is converted into a GmbH & Co. KG, thereby initiating a capital increase. It is also he who starts production automation at **sera** and invests a lot of money in the first CNC-controlled machining center. With dosing systems for the cooling water area, the sales figures increase significantly. **sera** supplies ready-to-connect dosing systems according to customer specifications. The first large and series customers are won, a new IT system sets new standards in the offer and order placement.



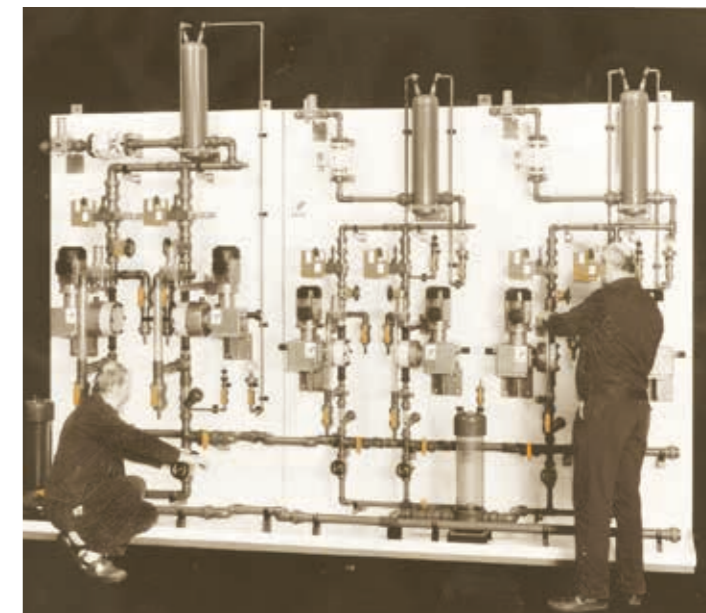
Testing of a completed pump (1980s).

1985 – The time of innovations

The company founder Reinhold Seybert retires in 1985 and Helmut Rahier takes over the management of the company. With the extension in which the paint spraying shop is located, the structural possibilities have been exhausted. The border stream is relocated to be able to build an additional hall. The first canteen is inaugurated in 1988 and the 43-year-old **sera** logo is replaced by a modern logo. The **sera** brand has been protected worldwide ever since.

1990 – The demands are increasing

Hygiene standards reach a new level in the 1990s. Cleaning and disinfection processes are increasingly finding their way into the field of food producers – dosing pumps from **sera** are becoming an integral part of these processes. The existing pump portfolio is being innovatively revised, the 408.1, 409.1, 411.1, 408.1 – P and 409.1 – K.1 successfully launched on the market.



Assembly of a FeCl₃ dosing station.

1995 – A milestone

In 1994 and 1995, the company premises are converted and expanded, doubling production capacity. **sera** celebrates the 50th anniversary of the company in the expanded plant in Immenhausen. A short time later, the company



Aerial view of the **sera** company premises (1985).

shares still held by the Seybert family are transferred to the Rahier family, which now holds 100% of the shares. The expansion of the international sales network is being pushed and cooperation partnerships are being established. For the first time, **sera** acts as a complete and system provider for all services related to metering system construction. In addition to customer-specific engineering in the offer and project phase, it also offers assembly and commissioning, pre- and after-sales services and the first customer training courses.

INTERVIEW WITH THE PUMP POPE

Nowadays, it is really unusual for an employee to work for one company for over 50 years. We spoke to Rudolf Mendel about why he worked here for so long, what working at sera was like 50 years ago and how someone becomes the 'pump pope'.

Rudi, how did you come to work for sera in 1961?

Rudi (laughs): It was kind of a coincidence because sera (which was still Seybert & Rahier back then) wrote to my school to advertise a training position for an engineering draughtsman. I thought it might be a good fit for me. And it did actually work out.

What happened next during your career at sera?

Rudi: After three years of training to qualify as an engineering draughtsman, I spent three and a half years studying – doing a construction course at the technology night school in Kassel. Then I wanted to apply everything I had learnt at sera but, instead, I was conscripted to the military for one and a half years first. But I was truly able to get started as a draughtsman at sera in 1969.



The founding fathers Hubert Rahier and Reinhold Seybert were still at the company when you started out. What were they like?

Rudi: Oh, they couldn't have been more different from one another. Sometimes I wondered how they found each other in the first place, but they did seem to complement each other well with their differences and, as such, they made a good team for the company. Hubert Rahier was calm and considerate and knew about everyone in the company, went round and talked to all the employees and always made notes. Reinhold Seybert was more of an 'uncouth klutz'; he did some straight talking, but once the conversation was over, the topic was settled and nobody bore a grudge.

Both of them were managing directors; what were their tasks?

Rudi: Hubert Rahier dealt with manufacturing and Reinhold Seybert was responsible for sales and preparing quotes. The quotes were so long that they sometimes even looked like pieces of prose, but nobody had the guts to tell him to make them shorter (chuckles). By and large the bosses let us get on



Rudolf Mendel (left) with his colleagues in design (1968).

with it and thus trusted us employees a great deal, but that also meant that we were responsible for any errors that occurred.

The company had already been around for almost 20 years when you joined it, but was there still anything along the lines of a founding myth?

Rudi: I wouldn't say a founding myth; we were simply a good bunch, a great team that wanted to achieve even more, having been spurred on by the success and the full order books. We were incredibly proud of what we had already achieved, wanted more and just enjoyed our work.

You developed innovative products by enjoying your work. Where did the ideas for these products come from?

Rudi: We were in very close contact with our field sales staff who were close to the customers and gave us valuable feedback. That enabled us to work out demands. As such, we knew, for example, that pumps in swimming pool technology were too big and too expensive, so we looked for new materials and models and then quickly brought a more cost-effective and smaller product onto the market, which became a real best-seller. But some of our own ideas led to success too. For example, a colleague was 'simply playing

around a bit' and developed a pump for really tiny chlorine dosing. At the same time, a cholera epidemic broke out and exactly that kind of pump was needed to fight it, which led to the creation of a new sales market, and we had the right product.

What was the greatest step in terms of innovation at sera during your era?

Rudi: I think the development of the double diaphragm was a small revolution back then. The single diaphragms were not resistant to all chemicals, meaning that there was a great deal of leakage. We tried out new, resistant materials for a second diaphragm which was positioned in front of the drive diaphragm and came into contact with the medium which was to be transported. This was how, for example, Hypalon and Viton plates were vulcanised and then punched and processed as a diaphragm. This enabled us to achieve a high level of resistance and thus be more effective in meeting the requirements of the chemicals industry, for example.

How did you get the title 'pump pope'?

Rudi (laughs): Yes, that was a funny story. A customer had a problem with a pump from a competitor and called their customer service. After lots of toing and froing, nobody there knew how to solve the problem.

One of the competitor's employees then recommended that the customer call sera because they said there was a 'pump pope' there. Until that time, I hadn't known anything about this reputation, but I was very flattered, of course.

What has changed since you started out at sera?

Rudi: We now have three times as many employees and the product portfolio has expanded, of course. But something that's noticeable is that sera is much more well-known than it was back then. 40 years ago, there were even lots of people from Immenhausen who didn't know what sera did. Most people thought it was something to do with plastic because there were always lots of plastic splinters from systems engineering lying around in the yard. Nowadays, people have heard of sera far beyond the borders of the town and the country and that's a good thing. The openness to new product developments returned to the company when Carsten joined 20 years ago. We were a little risk-averse for a while but development and innovation is always associated with a little bit of risk too and believing in what people might need in the future. That brings the company forwards again.

Let's try and think about the future together: where do you see sera being in 10 years?

Rudi: I think it was exactly the right decision to go into hydrogen technology a couple of years ago and develop innovative products in that field. The patent for a new compressor shows that there has been lots of good development work which can really help sera get ahead. That's because this technology is bound to play a major role in the coming years and be a future market.

And I think that I will still be invited to a glittering sera Christmas party ten years from now. It is a pity that it will not be possible this year.

NATIONAL AND INTERNATIONAL EXPANSION

Under the leadership of Carsten Rahier, the company has since been comprehensively modernised and given an international orientation. The first international subsidiary is founded 2007 with **sera ProDos UK Ltd.** in England.

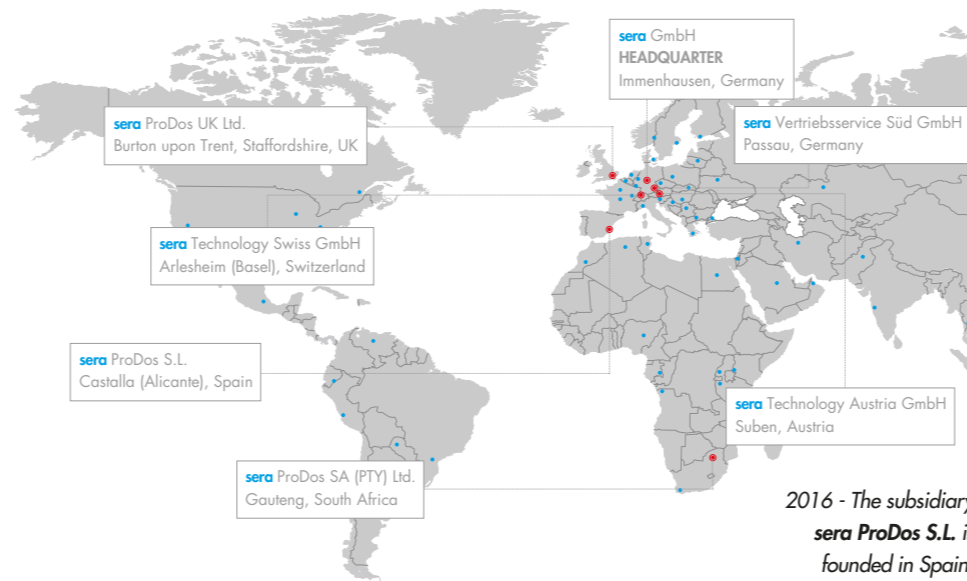
2010 – Expansion: With the establishment of **sera ProDos SA (PTY) Ltd.** in South Africa, **sera** is even closer to the customer internationally. In addition, **sera** establishes the two subsidiaries **sera ProDos GmbH** and **sera ComPress GmbH** in Germany – in order to be closer to the respective customers in the dosing and compressor area. In addition to various pump series, **sera** also introduces the standard dosing system CVD.

2013 – Modern Times: With the modernization and the complete renovation of the headquarters in Immenhausen, another important step into the future is taken. **Seybert & Rahier GmbH + Co. Betriebs-KG** now officially becomes **sera GmbH**.

2016 – Capacity expansion and innovations: The **sera ProDos S.L.** is founded in Spain and gradually expanded to another production location. At the same time, production capacity is expanded with the construction of plant 2 at the Immenhausen location. The first hydrogen filling station in Northern Hesse is put into operation on the **sera** site in Immenhausen. **sera ComPress GmbH** is starting into the future market H₂.

2018 til 2019 – The D-A-CH region: At the beginning of 2018, **sera** founds the two subsidiaries **sera Technology Austria GmbH** and **sera Vertriebservice Süd GmbH**. **sera Technology Swiss GmbH** in Basel follows in 2019 as the youngest

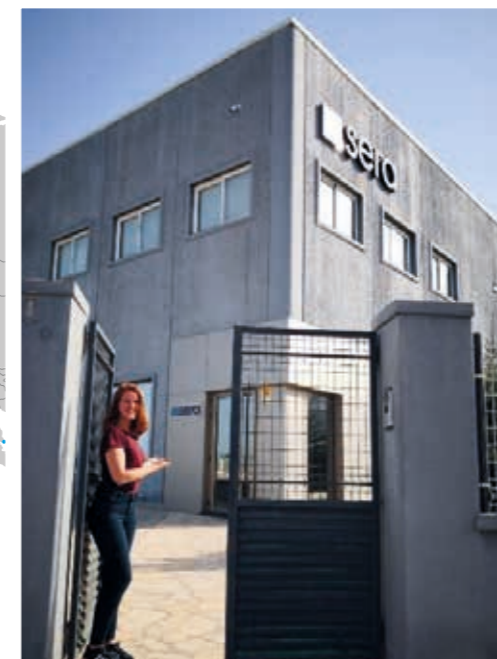
subsidiary of the **sera group**. This means that **sera** has subsidiaries in the DACH region in every country and can therefore live up to its claim of maximum customer proximity.



2013 – Modernization of the headquarters in Immenhausen (Germany).



2016 - The subsidiary **sera ProDos S.L.** is founded in Spain.



2018 to 2019 – The **sera Technology Swiss GmbH** branch office in Basel.



2016 – Construction of factory location 2 at the Immenhausen site (Germany).



to-day

[tə'dei]

...be sera

1. on this day "what is the date today?".
2. in the present, in the present time
"much is different today than it was in the past".



"The fast and flexible response of the entire company was impressive."

Stefan Merwar,
Member of the Management.

In order to protect the **seranians** on site, all wear mouth and nose protectors on the paths through the **sera** buildings.

CORONAVIRUS AND HOW **sera** HAS DEALT WITH THE SITUATION

The coronavirus pandemic has turned every area of all of our lives upside down. We're reporting on how we are dealing with the challenges created by a pandemic as a company and as a team and why we do actually see some positive aspects in the situation.

"The goal has always been: To protect the health of our colleagues."

In January 2020, the first news of a novel coronavirus reached the German media and therefore us. One piece of news amongst many. We'd already experienced similar circumstances with swine fever and mad-cow disease. At that time, nobody anticipated how bad it would get and how much COVID-19 would affect all our lives all over the world.

We were soon taught a lesson. Over the following weeks, the virus was identified in an increasing number of countries. The number

of cases in Asia went through the roof, and the death figures increased rapidly too. It had already reached Southern Europe and was having a destructive effect there. Coronavirus would spread rapidly in a globalised world...across every continent. The German government issued social-distancing rules and asked the population to comply with them. At that point in time, by the beginning of March, we'd already taken action at **sera**: a crisis team, consisting of the **sera** management team and employee representatives, looked at various scenari-

os and measures. From an employee contracting the virus and supply chain issues to economic downturns, we developed measures to counteract all the possible restrictions at that time. The aims in doing so were always to protect the health of our colleagues and ensure the continuation of all business activities in as seamless a manner as possible.

sera Group

HYGIENE MEASURES

The first measures were introduced immediately and were based on the government's recommendations regarding social distancing, preventing contact and increased handwashing. Everyone at **sera** was informed about the strategies by their supervisors and also via our info boards (screens which are set up throughout the company) at the same time. In addition to the commonly used social-distancing rules, the following measures were introduced on an ad-hoc basis: all doors, regardless of whether office or meeting rooms, were to be kept open at all times to avoid having to open and close them by hand. The cleaning frequency of contact surfaces (e.g. handrails) was doubled and now took place twice a day. Lifts were out of use. Our cafeterias at both locations in Immenhausen extended their hours for serving breakfast and lunch in order to avoid people coming into contact with each other there too. However, this was only for **sera** team members in training and from assembly. All other **seranians** were asked to spend their breaks at their workstations.

Unfortunately, all events, such as our anniversary event, as well as the Blind Breakfast, **sera** sport courses and our massage appointments, had to be cancelled at the last minute. The **sera Environment Day** and **sera Social Day**, both established and important calendar events at **sera**, had to be cancelled too. And the table football tables which people enjoy using in their breaks also had to be put out of operation, of

course. In order to avoid mixing of colleagues from both locations in Immenhausen, all colleagues were asked to only spend time in "their" respective building. Internal company transport took place via a double-door system and external suppliers were made aware of social-distancing rules, which they were strictly required to comply with, via signs in various languages. Meetings were reduced to a minimum and only carried out in cases in which it was absolutely essential. Visits to other offices were prohibited. Visits from external guests were prohibited and customer inspections were carried out by telephone and video. Service deployments were also no longer possible from the start of lockdown. When restrictions were eased after lockdown, we allowed external visitors again but only in the event of compliance with the social-distancing rules and when wearing a face mask. In addition, we made face coverings mandatory for all **seranians** when infection figures started to rise again for whenever they are away from their workstation. Every **seranian** was given their own **sera** face covering for this purpose.

REMOTE WORKING

In parallel with the hygiene measures, all office-based **sera** team members were asked to work from home from the start of the first lockdown. Our IT Department did a great job here and provided almost all colleagues who did not yet have a laptop with one in just a few days. They also provided screens, keyboards and everything else required to allow people to do their job just as well from home as in the office. Images that we found moving: Colleagues who packed their IT equipment into their cars at the end of a working day only to look back at the office nostalgically and set off home without knowing when they would be there again and next see their colleagues. The fast transition to remote working was largely as seamless as it was because **sera** had already introduced Microsoft TEAMS at the start of 2019. This meant that

all data was accessible via the cloud and internal communications could take place via TEAMS. Team meetings, cross-departmental meetings and the weekly coronavirus update from the crisis team were held as video conferences, and all **seranians** got used to this very quickly.

When the easing of restrictions after lockdown began, **sera** team members were free to decide whether and to what extent they wished to use their workstations in the office again. However, the respective supervisors ensured that more colleagues than permitted by social-distancing rules were not in the offices at the same time. However, since the infection figures rose for the second time in autumn, all **seranians** have been asked to work remotely again.



We protect one another.

WE CREATE ADDED VALUE

Whilst the majority of the employees moved to short-time working and worked from home, our trainees and students held down the fort at the premises. They continued to process projects in the departments to which they were assigned and had the opportunity to complete tasks they were given by their vocational college/uni at the company. And they set up a wonderful neighbourhood help campaign, the "**sera** purchasing campaign".



sera PURCHASING CAMPAIGN

WE HELP IN DIFFICULT TIMES

In 2020, with the Covid-19 pandemic, a dangerous, globally spreading virus has entered our daily lives. It paralyses our society in various and massive ways. We all have to cope with conditions that we are not yet familiar with. With domestic quarantine, contact avoidance and the request to stay at home, many people urgently needed support. We seranians strive to create added value for people and the environment. So we could not and did not want to stand idly by and felt called to help immediately.

The new generation reports. An article by Tom Haeder, industrial clerk trainee at sera.

In March of this year, we trainees and students, together with the human resources department, developed the idea of taking over grocery shopping trips for people in the vicinity of our headquarters in Immenhausen. People who cannot or do not want to provide for themselves. Without exception, all of them were immediately hooked and wanted to get involved. The idea turned

into a well-rounded concept: The customer calls the retail trade and orders his goods, they put everything together. We pick up the goods and bring them to the customer's door together with the invoice. There, the customer hands over the money for the goods to us, and we bring it back to the retail trade. We presented this concept to the local retail trade and quickly had the local supermarket, a bakery and two butcher's shops on board. **sera** provided two company vehicles for the deliveries and

enabled us to take over the organisation and journeys during our working hours for a total of 20 project members consisting of trainees and students. From this point on we organised the entire project independently. Everybody could take on different roles. There were drivers who picked up the ordered goods from the supplier and brought them to those in need. We also held talks with the suppliers and planned both the timing and sequence of the trips so that we could help as many



People help people – **sera** assumes responsibility for the residents of the main location in Immenhausen and the associated communities.

people as possible as quickly as possible. We also procured cool bags, gloves and other equipment for self-protection. On April 7th we were ready to start our first shopping trip. Everyone was curious to see how our concept would work. Afterwards we organised a meeting to give the riders the opportunity to share their experiences with all

team members. We exchanged views on what equipment was still missing and how the contactless delivery could be further optimised. From then on we delivered purchases in two shifts three times a week in the regional area. The feedback was great and the people had joy and gratitude written all over their faces. Everyone thanked us warmly. Some

„We are proud to be integrated into a company that is involved in voluntary work and supports the region. It was a great pleasure for us to be able to make a contribution. “

Tom Haeder, Trainee

even called us again afterwards and thanked us by phone for our support. This made us just as happy, because it gave us the impression that our project

really supports our environment and that we can create added value.

CORONA PURCHASING AID

We do not want to remain inactive in this time and help people in our direct environment. That is why we as a company have decided to make our contribution and make our resources available to people who urgently need this help. An initiative by people for people.

HOW CORONAVIRUS AFFECTED OUR BRANCHES

The sera Group has branches in Austria, Switzerland, Spain, England and South Africa. They were, of course, also affected by the coronavirus pandemic.

All branches were temporarily switched to short-time working or even had to shut down entirely except for key workers (in England, a single colleague was on site to accept goods; in Spain, the service workshop stayed open). In South Africa, there was a tough six-week lockdown from March to May and in Spain, it even continued into June. Austria was always a glimpse of the future for **sera**. They were generally two weeks ahead of Germany when it came to infection figures, as well as measures.

Whilst the majority of the earnings lost due to short-time working was covered by the short-time allowance in Germany, this regulation did not apply in our branch countries. England only introduced a short-time working system similar to Germany's in July and, before this, employees could only be assigned to short-time working for up to three weeks. Spain did have the short-time working system with a payment of a short-time working allowance of up to EUR 1,100, but the government payments were delayed due to the large demand and the coronavirus pandemic, meaning that colleagues in Spain had to wait four months for their money. Compensation was very low in South Africa. Naturally, **sera** came to the rescue here because no colleague should be put in a situation in which they cannot cover their

day-to-day costs. This applied and continues to apply to all branches, of course, as well as the headquarters.

FINDING POSITIVE ELEMENTS IN THE CRISIS

We have never been such a close-knit team before. As a company, personally and in our working lives. People became closer to one another despite social distancing, and we noticed this at **sera** too: each one of us, regardless of our role or our country of residence, did our bit towards making sure both superordinate goals – protecting the health of **sera** team members and the continuation of business activities in as seamless a manner as possible – did not fall by the wayside. We continued to give our all to creating added value for people and the environment thanks to a great deal of dedication.

We acted quickly when it came to offering help. With the **sera** purchasing campaign or with the production of urgently required disinfectants. In April, we answered the Hessen state government's call to increase production of disinfectants. In order to do this, a plant owned by the company Innowattech GmbH was repurposed, which actually used integrated **sera** dosing technology to disinfect and sterilise the company's water lines at its plant locations.

The plant was repurposed for the production and filling of canisters and bottles in a very short space of time. This plant has now been producing 500 litres of the bottle disinfectant Anolyte® every day since mid-April. Organisations requiring particular protection – such as hospitals, care homes, care services and fire services – in the region are given preference when it comes to sales. There are also special offers for associations.

Even though informal chats at the coffee machine have been off the cards, colleagues still stayed in touch and communicated. For example, taking a look at colleagues' home offices or living rooms created a starting point for some interesting discussions. We learnt that we are great at remote working and can work just as efficiently at home as in the office. We are currently studying what we have learnt from this and we will continue to use these working methods in the future when coronavirus no longer impacts our everyday lives and our working life. Despite the circumstances and the negative impact, we are positive about the future. We are a strong team that can overcome even the most difficult of challenges together.



An aerial photograph of a coastal city and harbor. In the foreground, there is a large industrial facility, likely a desalination plant, with several large rectangular basins and buildings. The harbor is filled with numerous small boats and yachts. The city extends along the coast, with a mix of residential and commercial buildings. The ocean is a deep blue, and the sky is clear and bright. The overall scene depicts a modern coastal urban environment.

sera MAKES SEAWATER DRINKABLE

Morocco is an arid country which is badly affected by climate change. Population growth, the progression of industrialisation, the growth of the tourism industry and agriculture have led to the groundwater table sinking continuously in recent years. Large seawater desalination projects for drinking water production are intended to counteract the drinking water scarcity, and sera is contributing to this.

sera MAKES SEAWATER DRINKABLE

Morocco – the cultural, political and economic link between Europe and Africa – has always been an arid country. Climate change and the increased development of exports of agricultural products have made the situation even more severe in recent years. A programme initiated by the Moroccan government and supported by the EU therefore includes plans to develop and construct seawater desalination plants for producing drinking and irrigation water by 2030. Currently, 30 million cubic metres of seawater and brackish water are processed each year in Morocco at ten plants, and this figure is set to increase to 400 million cubic metres a year by 2030.

LARGEST SEAWATER DESALINATION PLANT IN AFRICA – THE WORLD'S MOST MODERN PLANT

The Souss-Massa region in the southwestern part of Morocco is home to more than 2.7 million people in an area comprising approx. 51,600 km². Agriculture is the region's most important branch of the economy and its capital city, Agadir, is an important fishing and tourist port. Drought and water shortages are very problematic here too and ultimately cost thousands of jobs in agriculture.

In order to counteract the water shortages, a tender was issued for the construction of a seawater desalination plant for the region, intended to cover both the water requirements for domestic use and irrigation requirements for the region. As such, the plant is intended to contribute to developing the most important branches of the economy, tourism and agriculture, and thus maintaining the groundwater level in the region at its current level. At the start of 2019, the Moroccan Ministry of Agriculture and Economy awarded the construction to the Spanish company Abengoa, which is a leading provider of technology solutions for sustainability in the energy and environmental sector.

Seawater desalination is an energy-intensive process. Abengoa planned to carry out the seawater desalination using reverse osmosis, a process in which the seawater is pressed through semi-permeable membranes, which do not let the salt pass through, at high pressure. In comparison with distillation with around ten kilowatt hours per cubic metre of water, only three kilowatt hours are required for this process. It's still a high level of energy consumption. Therefore, the desalination plant in Agadir is exclusively powered with renewable energies: it gets its electricity from the Noor Ourzazate solar power station, which is approxi-

mately 400 km away, and is thus the largest solar-powered seawater desalination plant in the world. An extension and use of wind turbines is planned for the future. The total costs of the project are over EUR 370 million. The region's farmers have each contributed around EUR 930 Euro in exchange for a price reduction for desalinated water in the future.

GERMAN-SPANISH sera PARTNERSHIP

Abengoa was aware that **sera** had already supplied dosing systems for a seawater desalination plant in Salaha in Oman (113,500 m³ drinking water per day) and therefore used the expertise of the Spanish **sera** branch. The planned plant in Agadir was initially intended to produce 275,000 m³ desalinated water per day in order to subsequently achieve a maximum capacity of 450,000 m³ per day. This makes it the largest seawater desalination plant in Africa and such a large project for **sera** that the Spanish branch worked on it together with the headquarters in Immenhausen.



The project required a very wide range of dosing and feeding systems which are needed at different process steps in the seawater desalination process. The comprehensive, customised project was managed by the Spanish branch, **sera ProDos S.L.** All the engineering also took place in Spain, as did the project documentation. The control cabinets for the plants were also designed and built at **sera** Spain. The dosing systems were ultimately produced and implemented by a German-Spanish **sera** team at the site in Immenhausen. Working

IMMENHAUSEN

MOROCCO

sera IN THE PROCESS OF SEAWATER DESALINATION



30.000.000

Ten plants in Morocco are currently treating 30 million cubic meters of sea- and brackish water per year, and this figure is expected to rise to 400 million cubic meters by 2030.

In order to ensure seamless functionality and the longest possible service life of the seawater desalination plant, sufficient preliminary treatment of the incoming water is essential. **sera** dosing and conveyor systems are used here. The water is analysed and, depending on its composition/contamination, various chemicals are added to facilitate reverse osmosis. From chlorine to protect against bacteria and microorganisms and sodium hydroxide to adjust the pH to sulphuric acid for cleaning in place...**sera** doses the right medium in the right concentration. And this applies not only to preliminary treatment, but also to the important cleaning of the diaphragms. This means that **sera** is providing clean water again and creating added value for people and the environment in a state-of-the-art seawater desalination plant with the highest environmental standards.

methods were developed in collaboration to allow such a large-scale project to be processed quickly and effectively. In total, 17 systems in 25 PE cabinets had to be built. This kind of scale is very much a challenge for medium-sized companies in terms of production. We had to be clever here to avoid overburdening the limited storage and production space.

After the cabinets had been manufactured from a total of 15 t of technical plastics (PE, PVC, PP and PVDF), they were assembled: in addition to a total of 77 pumps (dosing, feeding and combination pumps), over 900 valves such as line strainers and ball valves, more than 1000 fittings and over 600 m pipe were installed. Three colleagues worked exclusively for several weeks on fitting the **sera** cabinets; this did not include supply departments, such as pump construction. The collaborative project, with all its challenges, brought colleagues from Germany and Spain even closer together. After the successful customer acceptance in January 2020, the first 20 cabinets started their long journey via Spain to Agadir by lorry in February and the remaining five cabinets are to be delivered by the end of the year. The seawater desalination plant should go into operation in March 2021.

DOSING SYSTEMS AT THE SEAWATER DESALINATION PLANT IN AGADIR

- Sodium hypochlorite for absorption
- Sodium hypochlorite for chemically supported backwashing and ultrafiltration
- Sodium hypochlorite for post-treatment
- Iron chloride
- Sulphuric acid for reverse osmosis, cleaning in place and ultrafiltration
- Sulphuric acid for chemically supported backwashing and ultrafiltration
- Sulphuric acid wastewater
- Sodium hydroxide for pH adjustment reverse osmosis
- Sodium hydroxide for cleaning in place ultrafiltration and reverse osmosis
- Sodium hydroxide for ultrafiltration and chemically supported backwashing
- Treatment of sodium hydroxide waste water
- Sodium hydroxide remineralisation
- Antiscalant intermediate pump before high pressure
- Antiscalant interim product for energy recovery
- Bisulphite intermediate pump after high pressure
- Bisulphite intermediate pump for energy recovery

CONGRATULATIONS

GRØNBEC & SØNNER AS

"Grønbech & Sønnen would like to congratulate **sera** on their 75th anniversary! We have been proud Danish partner with **sera** for more than 20 years, a highly appreciated partnership based on mutual flexibility, expertise, outstanding service and a high level of support. **sera's** products and solutions are valued for the high level of quality, innovation and expertise and are providing great value for a wide range of applications in Danish industries. In particular, **sera's** extensive product range of dosing technology precisely adapted to the customer needs are in great demand. Grønbech & Sønnen sends all our best wishes to **sera** on their anniversary and we are looking forward to continuing our partnership in many years to come."



Jens Bang Holmgår,
Grønbech & Sønnen AS (Denmark)

FluidPro FZE

"We would like to share our gratitude and congratulation for **sera's** achievements in the past 75 years. We started our cooperation with **sera** in 2011 through a small company in UAE. This meeting back then with the **sera** Management team and with the managing partner Mr. Carsten Rahier, who was so open and friendly during all times, lead to a lot of future plans and a successful cooperation in our region. Along with the great, friendly and supportive **sera** team and along with our technical background and our respectful customer relations we managed and still are penetrating the market to prove that the **sera** products FluidPro provides, are the best fit for all needs. As a part of the **sera** family, we are so proud of all the achievements and would like to congratulate you for the 75th anniversary and renew our commitment of cooperation based on the **sera** strategy."



Amro Yassein, FluidPro FZE
(UAE, KSA & Egypt)

Hennlich s.r.o.

"We congratulate the entire **sera** company on its 75th anniversary. The long operation of the company represents several generations of employees, customers and business partners who are certainly proud to be part of this history. Our company HENNLICH in the Czech Republic also appreciates the cooperation with **sera** that has existed since 1991. We are pleased that our relationship is based on mutual respect and joint efforts for success. We wish all **sera** employees health, much satisfaction and success for the coming years."



Pavel Sumera & Martin Pavliska,
Hennlich s.r.o. (Czech Republic & Slovakia)

NETZSCH do Brasil

"We have been working with **sera** since 1998; and since then, we have bought approximately 6.000 pumps. We use the **sera** products in Brazil mainly for the waste water and general industry markets. In Brazil the "Blue" pumps are a well-known product because of its reliability and great repeatability. In our company, **sera** is a well-known product and it is already part of the NETZSCH do Brasil family. Most of the colleagues have experience with the product and we have good communication with the **sera** headquarter. Because of the Germanic immigration in Pomerode, we can communicate with **sera** colleagues direct in German language that make us proud and more confident. We would like to congratulate **sera** for this important milestone and thank for the cooperation for more than 22 years. We hope the company will continue with the innovative spirit to develop new products and technologies and we wish success for the years to come."



Oswaldo Ferreira,
NETZSCH do Brasil (Brazil)



The **sera** headquarters in Immenhausen.



"Since 2003 InnVendo and **sera** have been partners. We appreciate the fast, reliable and on-time delivery. Whenever we have questions, we find someone to listen and solve our problems. We wish you all the best for the next 75 years to come. Keep this closeness with your customers, this so special human relationship."

Christopher Ruzic,
InnVendo (France)

Our **sera** men



Thanks for great cooperation
with HENNLICH Russia! Keep it up!



"We congratulate **sera** with 75 anniversary! During these 9 years of cooperation we'd like to thank **sera** for your help and support. Every company in the water technology sector should rely on **sera**!"

*Dmitry Sipovitch & Gennady Grigoryev,
Hennlich s.r.o. (Russia)*

"We have been a happy and satisfied customer for 64 years. Not bad considering **sera** turned 75 this year! We are sending you the warmest greetings and wish you all the best. We are proud to be your long standing partner in Norway and we are also proud to say that **sera** is "our brand" because of the outstanding product quality and reliability. Congratulations – well done!"



*Pål Tveten & Gard Christensen,
Alfsen og Gunderson AS (Norway)*

"A couple of years ago, HyXo celebrated its 50th anniversary. Now it is our turn to congratulate our partner **sera**, which has reached the dignified age of 75 years. We Finns appreciate your way of manufacturing products that always function impeccably. Throughout our 34 years of cooperation, **sera** products have been praised by users for their perfect accuracy and user friendliness. Especially the Finnish menus/operating systems of the new pump models are well liked by our customers, and also a sign for us at HyXo that our customers are important to you.

We raise a toast to you and wish you many more decades of success to come!"



*Harto Viiala,
Hyxo Oy (Finland)*

BEIJING LONGRADAR TECHNOLOGY & TRADING Co., Ltd.

"2020 is the eighth year of our partnership with **sera**. I'm grateful for the acquaintance with **sera** in 2013, and I'm also grateful for the trust and support from **sera** over the years. **sera** has always been adhering to the philosophy of "Solid, Effective, Responsible, Added Value Oriented", serving users with high-quality products, which is consistent with the business philosophy of our company. During the eight years of cooperation, nearly 200 **sera** compressors have served Chinese users through our joint efforts and have been recognized by users! We often hear from users that **sera** compressors are "reliable," "durable," and "convenient," and we're proud to be a partner of **sera**! In 2020, Novel Coronavirus (CoVID-19) is a global epidemic that has seriously affected our personal life and work, in such a difficult time, we have seen **sera** measures actively in case of emergency, continues to provide the key technology, professional knowledge and more support for the global customers and channel partners to ensure normal product delivery and provide solutions they need, that minimizes impact on the business, while protecting the health of **sera's** employees. It's clear that we will continue to trust you and we are willing and confident that we will overcome this difficult time hand in hand. Finally, we wish you all the best and hope that **sera** keeps getting better! We look forward to a bright future and hope to continue to work together with **sera** to embark on a new journey in the new era."



*March He,
BEIJING LONGRADAR
TECHNOLOGY & TRADING Co., Ltd. (China)*

NETZSCH Asia Pacific Pte. Ltd.

"Happy 75th Anniversary to **sera**! **sera** has been a strategic partner with NETZSCH Asia Pacific Pte Ltd for Singapore and the region in the last two decades. Congratulations to **sera** on this special occasion and best wishes for many more good years of success!"



*Kelvin Ng, NETZSCH Asia
Pacific Pte. Ltd. (Singapore)*

Linde Group

"We've been working with **sera** for three years now and appreciate the high performance compressors as well as the technical skills of our **sera** contact persons. Congratulations to **sera**! 75 years is a long time in which **sera** has been able to provide high quality service in business and continuously bring new technological products to the market. Keep it up!"



*Johnny Chen,
Linde Group (Taiwan)*

CHRISTIAN BERNER AB

"We at Christian Berner in Sweden have had a 5 year long successful partnership with **sera**. What makes **sera** special for us is that they help us provide affordable dosing units and dosing pumps to the endcustomer. We also like the more special multi-layer diaphragm pumps for higher counter pressures or ATEX-areas. A bonus is the possibility to order custom made dosing units for lager projects. We at Christian Berner would like to take this opportunity to congratulate you on the 75th anniversary. We wish **sera** all the best in the future and hope that you will continue to develop fine products in the environmental field. We look forward to many more years of outstanding cooperation."



*Natalia Vincic,
CHRISTIAN BERNER AB
(Sweden)*

Kalteren Pompen

"Kalteren Pompen congratulates **sera** on its 75th anniversary. We are proud to be a **sera** partner in the Netherlands for 67 years now. Working with **sera** has been a pleasure for us and our customers, due to the quality of the innovative products and the great support. We are looking forward to the next 75 years of **sera**."



*Frank Boonstoppel, Symen Jellesma,
Kalteren Pompen (Netherlands)*



**AWARDED
PERFORMANCE**

Großer Preis des Mittelstandes 2020

No other business competition in Germany has received such a large and long-lasting response as the 'Großer Preis des Mittelstandes', which has been awarded by the Oskar Patzelt Foundation in Leipzig since 1994. In addition to promoting networks in small and medium-sized enterprises, the primary aim of the competition is to gain public recognition and acknowledgement of the achievements of the nominated companies; the prize is not endowed. This competition year, 4,970 small and medium-sized businesses were nominated throughout Germany, of which 553 made it onto the panel list. Four finalists and two prize-winners were crowned in Hessen.

You cannot nominate yourself for the Großer Preis des Mittelstandes, a German Award for small and medium sized enterprises; instead, candidates are nominated by an independent third party. In 2018, the **sera Group** was already one of the TOP FIVE small and medium-sized businesses in Hessen and the panel of the Großer Preis des Mittelstandes selected us as one of the five best small and medium-sized businesses from over 250 nominees. Being named a finalist was a great success, especially when you consider the fact that we had made it onto the panel list for this competition for the first time. After another nomination in 2019, we were nominated for the third consecutive time in 2020. The nominated enterprises were evaluated comprehensively according to the criteria overall development of the enterprise, creation and safeguarding of jobs and training positions, innovation and modernisation, commitment in the region as well as service, customer focus and marketing. An independent panel of experts then decided on the winners and finalists.

A delegation of **sera** representatives headed to a gala event in Würzburg in September, hosted by the Oskar Patzelt Foundation, where the Großer Preis des Mittelstandes for the states

of Bavaria, Hessen, Thuringia and Baden-Württemberg were awarded. This event was the first larger-scale event in Würzburg since the start



of the coronavirus pandemic and also the first time we had taken part in an event of this size for months. At the location, all the hygiene measures were implemented perfectly by the organiser. The prizes were awarded in parallel in two large halls and the individual table groups were separated to allow social distancing to be maintained at all times. In parallel

with some delicious food, the finalists were gradually named. And the first prize-winners. The **sera** representatives in attendance became more and more excited and at the end when the **sera** image film was shown, it became clear that the **sera Group** had won the Großer Preis des Mittelstandes for Hessen! What an achievement: the Großer Preis des Mittelstandes is THE award for small and medium-sized businesses and proof of the fact that **sera** has done lots right over the past 75 years. The Managing Partner of the **sera Group**, Carsten Rahier, was joyful and proud as he accepted the prize with just the right words: 'This is a special appreciation of our work and affirmation that we have set the right course for the future with our strong values and clear strategy. This is a prize for everyone at **sera**. Each of them have done their part to ensure that the **sera Group** is where it is today, and that it is where it belongs.'

The Großer Preis des Mittelstandes is proof that, with our mix of tradition and innovation, we are operating exactly in the right way and that we are creating real added value. We could not be any more proud, especially in an unusual and challenging year like this one.

NO OLD TECHNIQUES –

ABSOLUTE PURITY WITH CO₂ SNOW

Photolithography is a key technology in the manufacturing of integrated circuit boards (known colloquially as microchips). This technology, which is used in the semiconductor industry, requires absolute purity when it comes to the manufacturing and cleaning processes. **sera** is part of this procedure thanks to its products.

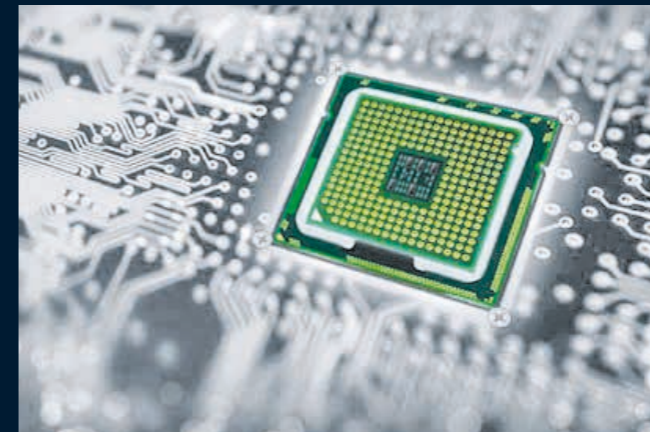
Wafer production in the high-purity range.

Photolithography is a procedural area in which highly specialised expertise and the highest of standards for all process steps are required. On the one hand, cleaning needs to take place in the manufacturing machines and, on the other hand, various gases are required which are essential for manufacturing semiconductor materials. For example, GaAs (gallium arsenide) is used for the material for red LEDs in car brake lights.

High level of purity

The individual process steps are often a well-kept secret of the industry. However, all processes have one thing in common: they require absolute cleanliness. Impurities are measured in ppt in this industry, i.e. in parts per trillion: "1 ppt" means that only one single foreign particle may be present in one trillion (1,000,000,000,000) parts of a material.

SEMICONDUCTOR



Instrument rack and control cabinet for controlling the two metal diaphragm compressors of type MV3 at our Taiwanese customer.

A thought experiment to illustrate this: when full, the Edersee reservoir contains 199.3 million cubic metres of water. If you poured a glass (containing 0.2 l) of raspberry syrup into the full Edersee reservoir and stirred it in well, the resulting mixture would be around 1 ppt raspberry syrup. That's not very much... In order to be able to further process such ultrapure materials, the tools and machines also need to have a corresponding level of cleanliness. This means that extremely high standards are also held when it comes to the cleaning processes.

Gas is used to create crystals

Cleaning with CO₂ snow is tried and tested when it comes to cleaning mirrors which are used in the manufacturing of so-called wafers for chip production. This is a special processing step which requires the ultimate cleanliness. At the premises of our customer in the semiconductor industry, **sera** compressors are used to compress high-purity, gaseous CO₂, which is fed through a cooler after the compression stage and condensed there. The CO₂, which is now liquid, is sent through a kind of spray gun and is transformed into very fine CO₂ crystals thanks to being eased to ambient pressure. This snow

CO₂

then, for example, allows deflection mirrors to be cleaned without leaving any residue at all. The precision of these mirrors is just as high as the other standards in this industry are too. Here is an example: If a concave mirror, which actually has a diameter of approx. 50 cm, were as big as the Earth, the greatest unevenness on this mirror would measure just a few millimetres.

The right technology for ultrapure compression

By implication, this means that **sera** compressors must carry out their compression work in an extremely "clean" manner in order to meet the standards. We ensure this by having the widest technology portfolio in the field of hydrogen technology. **sera** can provide the most optimum technology for each respective application. In this case, this is why a metal diaphragm compressor was used because its purity optimally meets the high standards in this field. **sera** has been developing and producing metal diaphragm compressors for many decades now and has a great deal of experience in this field. The fact that, ever since, the compressor has been doing its job in this highly sensitive field without any errors says a lot about the quality and reliability of this technology.



Clearly visible in the image: The (black) insulation of the electrically heated valve heads and the arrangement of the redundant compressor stages.

to-mor-row

[tə'mɒrəʊ]

1. the following day;
on the day which follows immediately after today
"tomorrow is a holiday".
2. in the near future; in the future,
in future "tomorrow as little as today".



WORKING FOR THE FUTURE...

RESEARCH AT TU GRAZ WITH THE HELP OF sera PRODUCTS

'Research is the continuation of curiosity with other tools.'

This is a quote by the German chemistry Professor Hans-Jürgen Quadbeck-Seeger. If you take this concept to heart, there are lots of students at TU Graz who have been driven into research by curiosity.

sera provides high pressure units for various applications.



The Austrian branch of the **sera Group** got to work on the matter straight away and supplied TU Graz with a new **sera** high-pressure system with a CAT high-pressure pump.

The high-quality plunger pumps with ceramic pistons are suitable for continuous operation in industry. Thanks to the high quality of the pumps and the option of a very wide range of material pairings, the pump can be used for almost all media. The pump heads are available in stainless steel, brass, nickel / aluminium / bronze and block style. The seal material is either made from NBR, EPDM, FPM or PTFE. Where required, a corresponding FDA certificate for the food

or pharmaceutical industry can be provided for the seals.

The diaphragm system is now fully functional again and is primarily used for experiments with one of the by-products created in one of the most important processes in the paper industry. The goal of this is to generate chemicals which can be used in industry for various purposes. The research is intended to make a contribution to facilitating the switch from petroleum-based chemicals to sustainably manufactured chemicals. Since sustainability is a core component of the **sera Group's** guiding principle ('We create added value for people and the environment'),

But research is not possible without tools. For example, a high-pressure pump in a diaphragm system no longer offered the performance needed for scientifically substantiated experiments in the chemistry department. It quickly became clear that only a new high-pressure device would bring the diaphragm system back to full functionality again. Since sera Technology Austria is known for being a true expert in the field of high-pressure technology in Austria, contact was established quickly.

The sera Group has equipped a laboratory of the TU Graz with a new high pressure unit with CAT high pressure pump.

sera Austria sold the product to TU Graz with a price reduction. Research is the key to a sustainable future.

As an environmental technology company, the **sera Group** is contributing to paving the way to a sustainable future: it develops and manufactures hydrogen filling stations and compressors for hydrogen applications and is a pioneer in this field. In addition, **sera** offers dosing pumps, dosing systems, polymer systems and other products which are used in lots of environmental protection fields: in water treatment, in food production or in seawater desalination plants and much more.

The **sera Group** also strives to achieve sustainability in its everyday work: at the moment, various steps are being taken along the path to a 100% emission-free mobility strategy, production locations are being modernised and processes continuously reviewed with regard to their sustainability.

sera Technology Austria GmbH designs complete high-pressure units and/or pump-motor units up to 1000 bar to meet customers' needs. For complete solutions (e.g. pumps – spray nozzle – control unit), all system components (pump unit, control system, nozzles, fittings) are coordinated and thoroughly tested before delivery. All products by **sera Technology Austria GmbH** are, of course, suitable for 24-hour operation and can be supplied throughout Germany, Austria and Switzerland.

The diaphragm system in the chemistry department at TU Graz is, in addition to its use in researching sustainably produced chemicals, also regularly used to teach students about the mechanism of reverse osmosis as part of lab sessions. The system is therefore the tool that allows curiosity to be transformed into research.



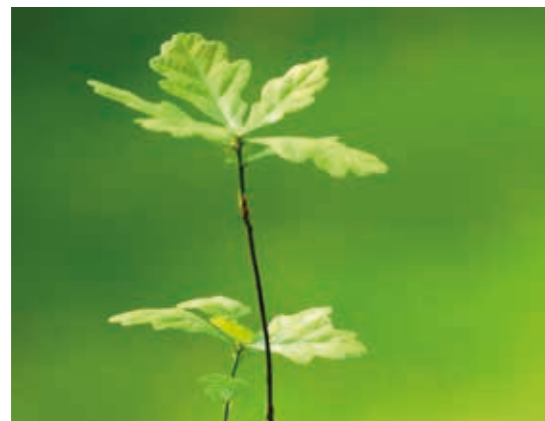
*The Energy Observer,
an energy self-sufficient
ship with sera compressor
technology on board,
travelling in the Arctic.*

SUSTAINABILITY AS A SUCCESS FACTOR

According to a survey by the German Future Institute, GREEN PRESSURE is 2020's "word of the future". This will not come as a surprise, seeing as young people are going on strike every Friday for more climate protection, the European Commission has announced the GREEN DEAL and even the financial world is increasingly offering sustainable forms of investment. So it's high time for sustainability to be anchored in companies' economic activities as a key element, too. In order to translate words into actions, we need economic implementation to ensure that sustainability becomes part of our new normal in our everyday lives. And sera is on board.



GREEN PRESSURE refers to pressure from environmental groups and Green political parties, which is increasing significantly. The topic of global warming affects all industries nowadays and all economic and political discourse. It's high time to take action when it comes to climate issues – and by now, the wider population also agrees with this perspective. Even though some individuals are still burying their heads in the sand, the number of people who are seriously concerned about the planet is rising rapidly. This year, we saw huge floods in Southeast Asia and massive forest fires in Australia and California. In Germany, drought conditions are now causing significant damage (including economic damage) in our forests. This summer, water was temporarily rationed by some local government authorities because deep wells had run dry. The dangers of climate change are therefore no longer just statistical projections created by scientists, but are now associated with tangible changes in many people's lives.



The forest ecosystem is increasingly at risk.

GREEN DEAL

We have been aware for a long time that the dangers are also (and primarily) associated with economic effects. In order to overcome these climate and environmental challenges, the EU Commission has developed a new growth strategy. The EU Commission President, Ursula von der Leyen, presented the new Green Deal in December 2019. The most important goal of the draft: the European Union aims to become climate-neutral by 2050!

2050

GOALS

The individual goals include:

- No more net greenhouse gas emissions should be released.
- Resource consumption and economic growth should be permanently decoupled.
- Natural capital should be maintained and improved.
- And people should be protected against environment-related risks and repercussions.

The Green Deal includes a package of measures for sustainably redesigning the economy and society.

Germany as a pioneer:

The non-profit organisation "The Climate Reality Project", founded by Al Gore, the well-known environmentalist who received the Nobel Peace Prize, published a list of eleven countries which are distinguishing themselves in the battle against the climate crisis just before the Paris Agreement and placed emphasis on sustainability.

The Climate Reality Project 2016 considered the following countries to be the top five climate pioneers: Sweden, Costa Rica, Nicaragua, Scotland, Germany. Germany not only achieved the best results of the major industrial countries, but was also the only one of them to make it into the top five.

The Greendustrial Revolution is already in full swing and Germany is at the very forefront of it. According to a study by the Federal Ministry for the Environment, German green-tech companies had a 14 percent share of the global market for green products, processes and services in 2018. And this market is growing significantly. The global market for green tech is set to grow to well over EUR 5,900 billion by 2025. So there are good prospects – for both the economy and the environment. A broader cross-section of German companies is now focusing much more on sustainability. This includes reducing the CO₂ footprint with new fleet management, the use of renewable energies or making process chains more energy-efficient. The effects of this change do not just include the many local, regional and national efforts. Internationally as well (and in particular), German companies are increasingly playing a leading technological role as high-tech providers in the field of environmental engineering and in many industries. This is an important growth engine of the economy for the future and is receiving political support accordingly.



Sustainability is a central value at sera.

H2 – energy of the future

In order to achieve the target CO₂ reductions, mobility, for example, needs to change and reduce its emissions. However, electric cars require increasing amounts of electricity to do that, which is why alternative mobility technologies also need to be used. One path to this is the hydrogen initiative announced by the Federal Ministry for the Environment.

“We need to set the course now to ensure that Germany becomes number one in the world when it comes to hydrogen technologies.”

Peter Altmaier, German Minister of Economics and Technology, at the “Wasserstoff und Energiewende” stakeholder conference on 5 November 2019 in Berlin.

According to the Federal Ministry for Economic Affairs and Energy, hydrogen does not only have potential from an energy perspective. 5.4 million jobs globally in the hydrogen industry are also predicted by 2050, as well as annual turnover of EUR 800 billion. The development of hydrogen as a comprehensive energy source is still in its early stages, but the political course has been set for strong growth with the 2020 National Reform Programme. In its press statement, the Federal Ministry for Economic Affairs and Energy commented that “The National Hydrogen Strategy links climate, energy, industrial and innovation policy. The goal is to make Germany an international pioneer when it comes to green hydrogen and achieve and maintain world market leadership in the field of hydrogen technologies in the long term. Climate protection technologies which are “made in Germany” should become a new trade mark: German research and companies are some of the world’s best in the field of hydrogen technologies, and the installation of complex industrial systems is a key skill in plant engineering. We need to make the most of this one-time opportunity to use our expertise to shape the global energy revolution.”

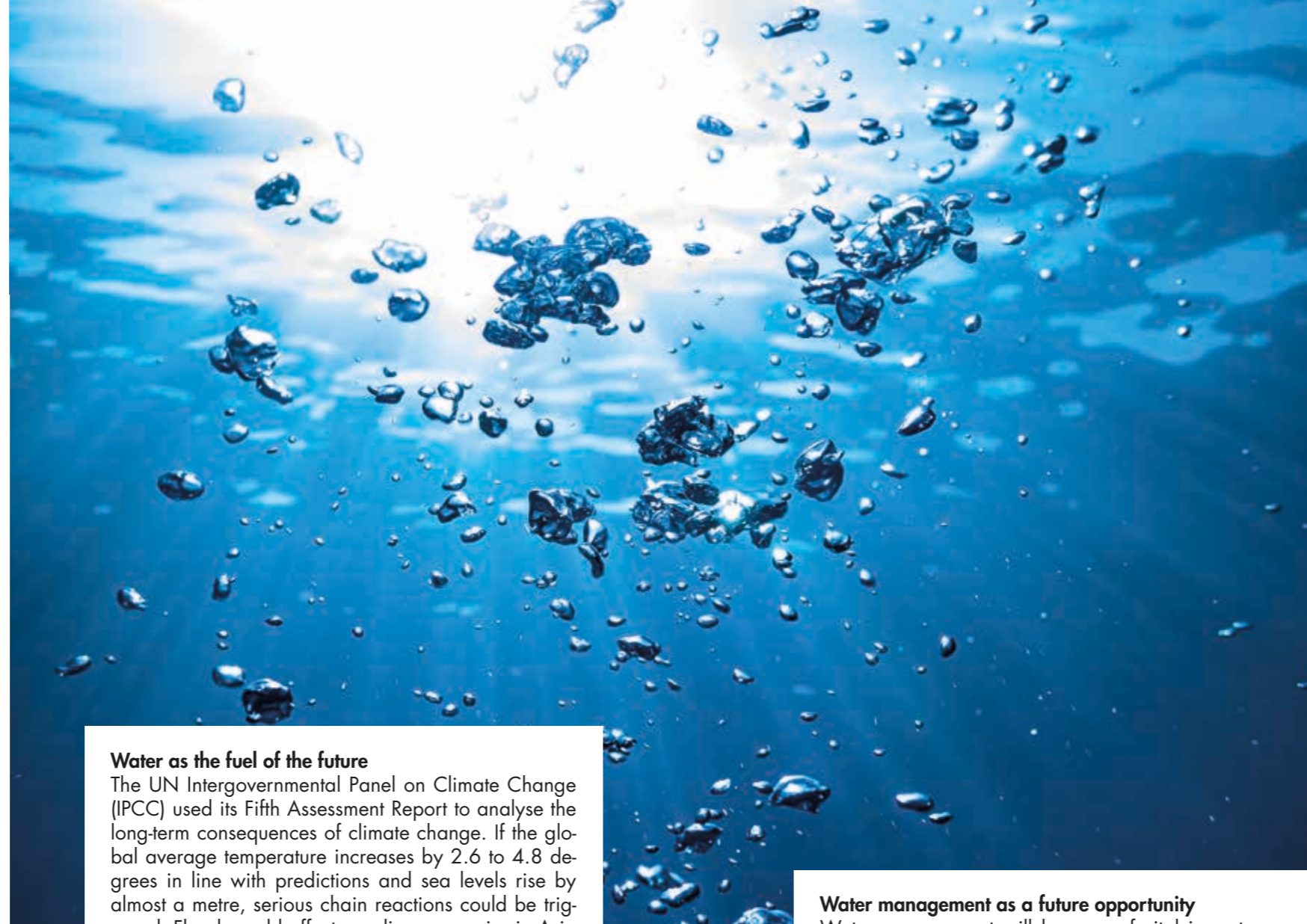
sera as a FirstMover and pioneer

Hydrogen is one of the key topics for the **sera Group**. In **sera Hydrogen GmbH**, the Group has its own business division which specialises in the development and production of hydrogen technologies. In doing so, **sera** makes use of its decades of experience in the field of hydrogen (see also Hydrogen article). With **sera Hydrogen GmbH**, we are one of the high-tech providers of the Greendustrial Revolution and are thus living up to our commitment to sustainability in connection with innovative technology. However, there are also other topics which are of interest to our company's sustainability efforts.



With the **sera** hydrogen filling station for emission-free mobility.

H₂



Water as the fuel of the future

The UN Intergovernmental Panel on Climate Change (IPCC) used its Fifth Assessment Report to analyse the long-term consequences of climate change. If the global average temperature increases by 2.6 to 4.8 degrees in line with predictions and sea levels rise by almost a metre, serious chain reactions could be triggered. Floods could affect supplier companies in Asia and disrupt global supply chains much more than was the case with the coronavirus crisis at the start of the year. This would, for example, result in production outages in IT or car factories.

In particular, however, water scarcity could significantly restrict industrial production and the forestry sector. Even just in mining (which is very water-intensive), this would lead to the closure of lots of mines, which in turn would disrupt the acquisition of necessary natural resources. The consequence would be significant systemic disruption.

The report also made particular reference to the risk associated with continuation of supply by global agriculture. In North America, water resources are already under significant pressure now. This has an impact on the entire agricultural sector. Other affected areas would be the energy industry, tourism, health and general industry. Everything put together would also have a significant impact on national economies, in particular in Europe and North America.

Water management as a future opportunity

Water management will become of vital importance in the coming years in Germany too. This is not just about drinking water supplies. Water consumption in industry and infrastructure improvements will also be a key topic.

Water consumption for cooling water and for other industrial uses can often be reduced with internal recirculation; however, the options are very different and specific depending on the technology and products. For the remaining water, the central task of industry is to clean industrial wastewater such

sera container solutions in use in municipal sewage treatment plants.



Process and waste water treatment with **sera** dosing systems.

that no substances that do not belong in natural ecosystems remain in it. The goal is to become a zero-wastewater company (zero-effluent strategy).

In recent years, Germany has already made some significant efforts: nowhere else in Europe is as much wastewater reprocessed as in Germany – around 96 percent from private households and public bodies. Despite this, significant investment will be required in the future as well in order to further improve the process that has been started. This also creates significant opportunities for growth for German industry. It's not only countries in the Global South that are battling the challenges of water scarcity; most industrialised countries are also dealing with outdated infrastructure. In view of global investment demand, a rapid-growth market for water and wastewater technologies is to be expected, which also provides sales opportunities for German industry.

H₂O

sera as a system provider in the field of water treatment

sera has been offering a wide range of system solutions for the field of water and wastewater technology for many years already. We have a wide selection of systems which can be used for very varied process steps. sera aims to provide customers with a system for its specific applications which is as close to optimum as possible. Whether it relates to design, projection or technical implementation up to commissioning, sera provides flexible solutions here. With decades of experience, we can thus make a significant contribution to clean water. Wastewater technology is another important pillar for the sera Group when it comes to our understanding of ourselves as an environmental technology company and will provide significant growth opportunities in the future, especially internationally, too. This is how we connect sustainability with economic efficiency. In terms of future plans, we also want to become an innovative and fully integrated system provider in this area in order to protect the resource of water in the long term too.

Internal efforts within the company

In addition to the activities in our business divisions, we also make a great deal of effort on-site to achieve sustainability.

Our goal: 100% emission-free driving in the sera vehicle fleet. With two production sites in Immenhausen, there is no lack of internal goods traffic. sera has purchased three cargo e-bikes from the company XCYC to relieve the environment.



sera replaces all company and pool vehicles and converts to hybrid/electric drive. In addition, four e-charging stations were installed in front of the headquarters: not only the company fleet is charged here – environmentally conscious serans with an electric car can also use the working hours to charge their vehicle.



Emission-free driving

In order to reduce our CO₂ footprint, we are working on making our company fleet emission-free in the short term to medium term. As a first step towards this goal, a hydrogen vehicle was procured in 2016. A range of company vehicles have now been switched to electric cars or hybrid versions. In order to support this, vehicles can be charged directly on-site using the company's own charging stations. We are also following an emission-free path when it comes to internal company transport. For example, three cargo e-bikes were commissioned this year to make short journeys between the plants more sustainable. In the coming year, the corresponding electric charging station with integrated PV modules will be added. Employees can contribute here too. There is the option of leasing bikes or e-bikes via the company's internal bike leasing scheme, which will thus make commuter traffic significantly more sustainable. More than 15% of employees are already making use of this service.



ZERC EMISSION



The sera hydrogen filling station on our own premises.

Sustainable modification of Plant 1

Sustainable and energy-related improvements are also being integrated in the current modification of our main location. As such, the building envelopes are being given significantly better heat insulation and the heating systems resized accordingly. Large windows provide more natural light, and the lighting system has been redesigned to use LED technology to make significant energy savings here too. The entire system is then supplied directly using a PV system with the goal of producing a maximum amount of energy directly at the location in a sustainable manner.

Certified environmental management

Starting this year, the **sera Group** is also certified according to DIN ISO 14001 environmental management and is committed to reviewing the entire area of environmental processes in a sustainable and systematic manner. The certification is just the next logical step to continue to pursue our goal of sustainability. With DIN ISO 14001, a very wide range of processes and work steps are significantly restructured and newly systematised. In addition, we now have a clear monitoring structure for compliance with our goals. For us, it is also a clear sign to the outside world that we actively implement our company values: "We create added value for people and the environment".



15 new bird houses were built.

Environmental awareness

The **sera Environment Day** enjoys a long tradition. The entire team takes part in this day once a year to deepen their knowledge of the environment even further in an intensive session. Activities include reforesting some oak woodland, cleaning up the site around the company premises or working together to build an insect hotel. In this regard, something which is more important than the result of the work is for all of our employees to renew their focus on the environment and thus deepen their environmental awareness. Due to coronavirus, the planned projects unfortunately could not go ahead this year, but will be able to be resumed again with even more enthusiasm next year.

The extinction of species concerns us all – and each of us can make a contribution.



sera creates living space with the insect hotel.

Prize was awarded to the company JokerTech, which developed a highly innovative solar module inverter to enable significantly higher yields to be realised at very reduced costs. As such, JokerTech is also making an important contribution to sustainable energy production and therefore deserved the award it received from us. In addition, many other activities take place in everyday life. For us, sustainability is therefore not just an economic success factor that we need to master, but also an approach which is put into practice by all **sera** team members.



Environment Prize

Like the Environment Day, the award of the Environment Prize within the framework of the business plan competition "promotion nordhessen" has become a fixed part of the calendar over recent years. Since 2016, **sera** has been awarding prizes to start-up companies which are particularly dedicated to the environment or environmental engineering. Many of the companies which have received the award have consequently undergone considerable development and have been able to profit from the award (see also 2019 **seranews**). This year, prize-winners were named again at an event for which attendance was limited due to coronavirus. The 2020 Environment

*The **sera** environmental prize was awarded to JokerTech GmbH in 2020.*



2020

In conclusion, the question remains: will GREEN PRESSURE be reduced after the coronavirus pandemic is over, or will there be any potential setbacks? Our answer is: no. The coronavirus crisis has made it clear that efforts by society as a whole and political change are possible, even very quickly and flexibly. Very soon after the pandemic, environmental topics will become the focus again – and why should "flatten the curve" ultimately not also be possible for CO2 emissions?

We are working on the technology for the problems of the future and remain committed to this work.

ISO 14001



H2 ENERGY OF THE FUTURE

sera

THE ENERGY SUPERHERO

OR HOW HYDROGEN WILL HELP US SAVE THE WORLD

The months leading up to the pandemic were characterised by discussions about globalisation and digitalisation, but the main focus was the energy revolution. Young people took to the streets to do their bit as part of the Fridays For Future strikes, the environment was the main focus of talk shows and the public was pretty much under the spell of this topic. Perhaps in part due to this public pressure, both the federal government and the European Union announced pioneering strategies in mid-2020 by declaring hydrogen to be a key raw material for long-term success in the energy revolution.

HYDROGEN

TECHNOLOGY

H₂

If you take a look at the ambitious goals of the Paris Agreement, which the EU ratified in 2016, it quickly becomes clear that we need to really accelerate to even achieve these goals in part.

Everyone wants to be the pioneer

The race seems to have started because, all of a sudden, many German federal states want to be the pioneer and lots of countries want to be the global market leader when it comes to hydrogen. This is definitely also associated with the large funding pots promised by both the federal government (in the tens of millions) and the European Union.

In 2020, Germany, Norway and the Netherlands created hydrogen strategies and the European Union followed suit in July with the "Green Deal". But other European neighbours such as France, Spain and Portugal also have these kinds of strategies, and they are right at the top of the national agenda in countries like Australia, Japan and South Korea. All strategies aim at preventing greenhouse gas emissions and promoting the growth of technological development, as well as the integration of renewable energies.

In Northwest Europe alone, there are currently over 100 hydrogen projects with a total H₂ capacity of one GW. This trend is increasing significantly and rapidly. The EU wants to raise this capacity to six GW by 2024. The main focus is on the transport sector and industry. For the market, this is definitely the best

opportunity to finally wake the versatile talent of hydrogen out of its deep slumber and help create market-ready products. The bandwidth of innovative projects in the field of hydrogen technology is just endless. Research is being carried out and numerous pilot systems installed in all areas of industry. Hydrogen-powered trains are travelling on North German tracks, a French H₂ catamaran (Energy Observer) has been travelling the world's oceans with a **sera** compressor pump on board since 2017, 300 more hydrogen filling stations are planned in Korea and German car manufacturers are working on fuel cell vehicles to add to their product ranges.

Sector coupling is the new keyword in the industry. Bringing together multiple sectors to further use hydrogen where it is created as a by-product or, even better, to store renewable energies with hydrogen temporarily in order to then be able to use them, for example, for zero-emission mobility in fuel cell vehicles. As such, hydrogen is an attractive alternative in the field of interim energy storage.

Decades of H₂ experience at sera

As an environmental technology company, **sera** has over 50 years of experience with the fascinating, energy-rich gas hydrogen. Initially "only" working in the area of compression of the gas by means of metal diaphragm compressors, the Compressor Technology division developed some innovative products and solutions for the hydrogen market and is now the only provider of the full spectrum of compressor technology with the subsidiary **sera Hydrogen GmbH**. The **sera** "H₂ – Energy of the Future" products offer solutions for building services (temporary filling storage), mobility and the transport of the future (hydrogen fuel stations), power-to-gas systems and decarbonisation of industry. Back in 2016, **sera** presented the first company hydrogen filling station in North Hesse on its own company site. **sera** now provides modular and scalable H₂ filling station systems for all application purposes and sizes. Another exciting project in Thuringia demonstrates how sector coupling can work and, in the future, potentially even both **sera** business divisions could create synergies.

Sector coupling par excellence – refuelling at the sewage treatment plant

Within the framework of the LocalHy project, an association of economic, scientific and community decision-makers who have set themselves the goal of generating and using hydrogen on a decentral basis has been testing a novel power-to-gas system at the municipal sewage treatment plant in Sonneberg in South Thuringia since the start of 2019. This makes it possible to use renewable electricity to split water into hydrogen and oxygen with a pressure electrolyser with the goal of using hydrogen for mobility purposes or for subsequent reconversion via a hydrogen-oxygen cycle engine. The oxygen not required for the refuelling is used for a biological cleaning stage in the test sewage treatment plant. A hydrogen filling station by **sera Hydrogen GmbH** refuels six municipal hydrogen vehicles on-site. Vehicles powered by fuel cells require gaseous hydrogen for refuelling. For this application, the innovative dry-running piston compressor with electro-hydrostatic drive by **sera Hydrogen** is the ideal choice. It compresses large quantities of hydrogen (H₂) of up to 1,000 bar. The unique design reliably prevents fuel contamination and satisfies the high cleanliness standards required by vehicle manufacturers.



Central component of the **sera** hydrogen filling station: the innovative Infinity compressor.

GY

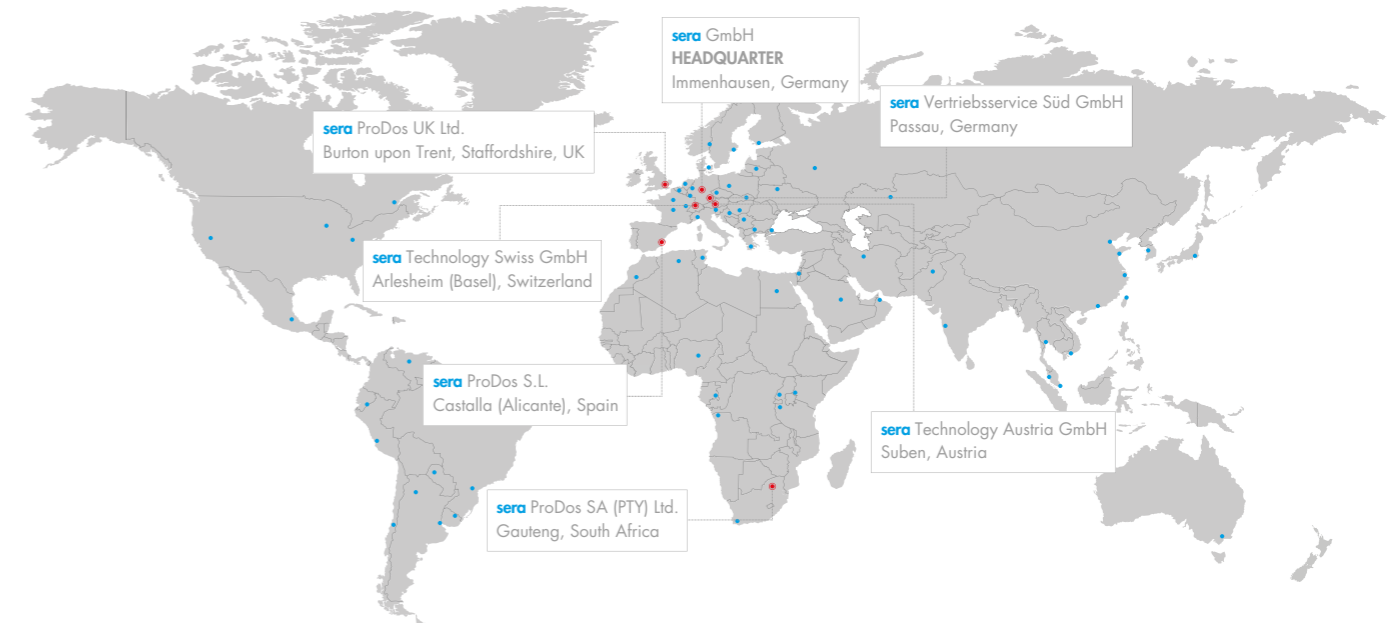
"True added value for people and the environment is being created here," comments Stephan Hillebrand, Managing Director of **sera Hydrogen GmbH**. **"We anticipate the field of hydrogen technology becoming increasingly important. This project highlights the potential integration options for various sectors within the energy and mobility revolution. We have developed some exciting solutions in the field of hydrogen technologies using our systems. It is great that, in the future, this product will make energy storage problems a thing of the past."**

With this hydrogen technology business division, **sera** is opening up what is perhaps one of the most important markets of the future and thus preparing itself to be able to provide innovative system solutions for the challenges of the future.

WORKING FOR YOU ALL OVER THE WORLD

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With headquarters in Germany and subsidiaries in the UK, Spain, Austria, Switzerland and South Africa, as well as a global sales and service network with over 30 partners in more than 80 countries all over the world, sera guarantees the best possible customer care on-site.



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“Print CO₂-checked” initiative

In the print and media industry, too, awareness of climate change is ubiquitous at the moment. The “Print CO₂-checked” initiative, led by the associations of the printing and media industries, is raising awareness of harmful emissions in the sector. “Print CO₂-checked” was set up by the Bundesverband Druck und Medien (Federal Association of Print and Media (BVDM)).

The Association developed the principles for its approach and the CO₂ calculations in consultation with the Federal Ministry for the Environment and the Öko-Institut Freiburg. Companies interested in participating in the initiative simply have to be members of an association in the printing or media industries. Across Germany, more than 100 businesses are already working to improve their climate balance with the aid of “Print CO₂-checked”.

The “Print CO₂-checked” seal stands for three basic objectives:

- determining CO₂
- avoiding CO₂
- offsetting CO₂

If you wish to join the “Print CO₂-checked” initiative, you also undertake to review your energy consumption with the help of independent experts. Opportunities to make savings can often be identified in this process.

At the end of it, companies are shown ways to neutralise harmful emissions and thus to get involved actively in climate protection. The company First Climate, which promotes renewable energies in cooperation with the WWF, is responsible for neutralisation. The CO₂ certificates in the printing industry support a project to reduce flue gas in Kenya.

This edition of **seranews** was printed by our partner printshop in the region in a CO₂-neutral process. The waste heat from the printing machines, for example, is used to heat the building. In addition, only mineral-oil-free inks were used during printing, as they contain plant oils from sustainable agriculture that are easily bio-degradable and thus leave no residues when recycling used paper.



IMPRESSUM

Publisher sera GmbH // Editorial team

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Publication frequency: einmal jährlich //

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