



“What drives me to excel is the fact that we establish lasting personal relationships with our customers and partners. Many of them have become close friends, and of course when you work for a friend you want to make sure that he is happy with what you are doing.”

INTERVIEW

Georg Schulze-Duerr, CEO, 3R solutions

■ What does your company specialise in and why is it the best at what it does?

3R solutions specialises in planning automated pipe-spool fabrication shops, with a special focus on the integration of machines, software and handling systems. We find that very often shop managers who want to make improvements only focus on the processes where they notice bottlenecks or problems, but often the actual root of the inefficiency is somewhere earlier in the whole process flow.

If it takes a welder 12 minutes to weld a joint, but it takes my handling team 15 minutes to get the next pipe to him, then I will not solve my problems by improving my welder's time to 10 minutes.

And that is where we come in, because we look at all the intricate ways that the processes are interconnected, and the effect changes to one process will have on the subsequent ones. More than that, over the past 40 years we have continuously developed our software applications, which can help organise and plan the work flow, track the status of every spool in the shop, and can generate a wide range of reports and documentation.

It is this synergy of all aspects involved in the fabrication process, inside and outside the actual workshop that makes 3R so unique.

■ Can you tell us a bit about the history of your company since it was first established.

Our company history actually goes back many years before it was actually established. Our original founder, Mr Gustav Nieweg, was a welding instructor and R&D specialist for a number of large companies. He helped develop a number of different welding machines, and he set up pipe-shops all over the world, including for example a shop in Brazil that was still working along his principles, and with machines that he had installed, when I visited the same yard 35 years later.

In the late 1970s he noted that companies were starting to use computers for their design and engineering, as well as the first CNC machines in their shops. But he also noted that there was a gap in the flow of information and data, because there was no real interface between the engineering department and the workshop.



You had machines with a six figure price-tag, and the operator sat in front of it with the drawing, a calculator and a note-pad, in order to figure out what data to key into the machine.

So in 1981 he founded a software company that he called "Rund um Rohr und Rechner", which is a horrible pun that roughly translates to "[Everything] around the pipe and the computer".

He developed what, to the best of our knowledge, was the first application in the world to create isometric drawings on a computer, and convert these into data the machines in the workshop could actually use. The software quickly became established in the majority of the German shipyards and has been expanded ever since.

I myself started working for him at age 16, while I was still in high school, so I have been in this business myself for almost 35 years by now.

In 1995 I took over the company and renamed it to 3R software solutions, since we also expanded into international markets, such as Singapore, where we still have a very large presence.

Throughout the time we continued to work as consultants for pipe-shop projects, usually in co-operation with a machine manufacturer who acted as the general contractor. We would analyse the customer's requirements, create the concept and layout, and select the machines. The general contractor would then handle all the commercial aspects.

Then in 2010 we had the chance to work directly with a major Singaporean offshore yard, and decided to use this opportunity. So we founded a separate LLC, 3R solutions GmbH, which handles the workshop projects and machine sales. The shop in Singapore was a major success, and for many years the customer not only took prospective clients to visit it, but even heads of state.

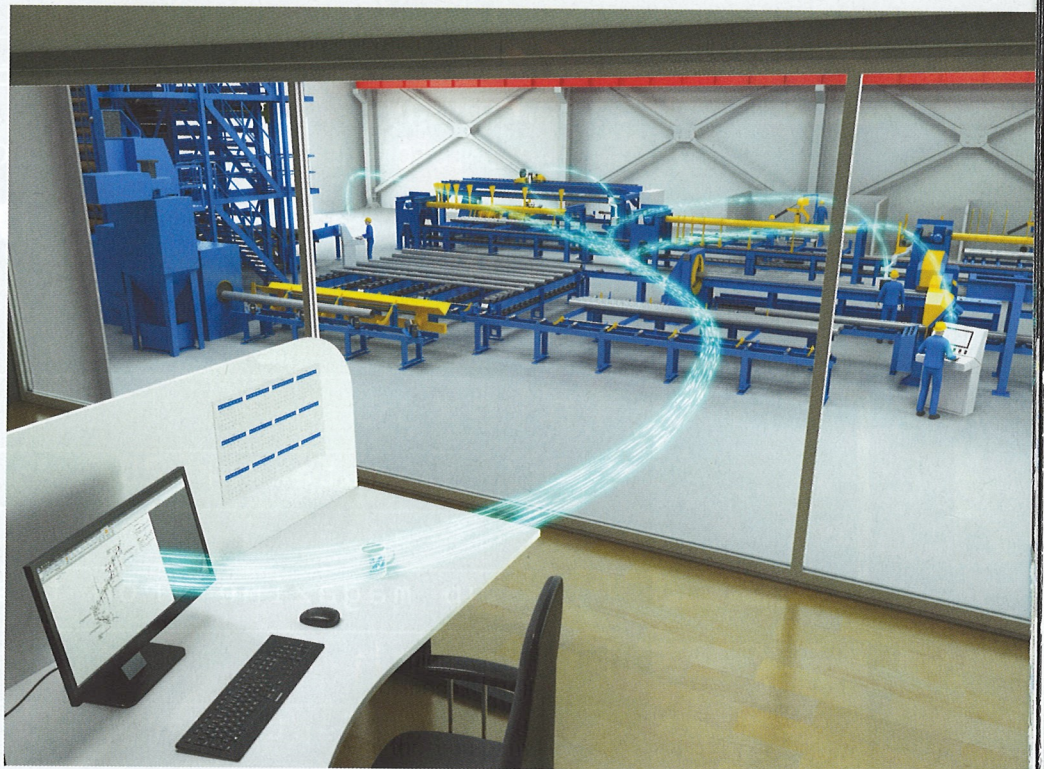
Since then we have continued to set up shops in Europe, the Middle East, and East and South-East Asia, and of course we are hoping to continue to do so for many years to come.

■ What are the main projects or innovations you are working on at the moment?

Due to Corona a lot of ongoing projects had to be postponed, including two major pipe-shop projects in China and Singapore. We are hoping to wrap these up before the end of 2021. We are currently in discussions with some potential clients for some extremely large projects, the biggest ones in our company history, but due to NDAs I cannot go into detail.

Besides continuous development of our software, we are currently working on a system to make a pipe-shop more "mobile".

A lot of companies in the Middle East for example do project work, where they build for example a shopping mall, or an airport, or a stadium. They set up a pipe-shop at the work-site, fabricate huge amounts of pipe-spools, and when the project is completed after a few years, they pick everything up and



move to the next work-site. Conventional spool fabrication is usually very man-power intensive, and while we can reduce the number of workers needed on the shop floor by up to 50 per cent, our systems are designed to be rather permanent.

We are now working on a system that can be disassembled, moved to a new location, and reassembled quickly and easily.

■ What are the future plans for your company? Do you see a lot of potential for growth in the regions and markets that you deal with?

The MENA region is booming, especially the oil & gas sector. A lot of developments will happen there in the next few years.

For 3R I think that there is a lot of potential in the chemical industry. We have been so focused on the shipbuilding, offshore, and oil & gas sector, that we have not been actively looking for opportunity in that industry. Our plan for the future is to explore this field more thoroughly.

■ What is the most enjoyable thing about your job and working in your current role?

Over the years a lot of customers have become close personal friends, who I spend time with socially as well as during the projects. And since the part of the industry we are involved in is at the same time very global, but at the same time also quite close-knit, you keep running into one another.

For example a few years ago I was at a trade show in Houston, where I met a friend from Paderborn in Germany, whom I first met as a customer when he was managing a pipe shop in Malaysia.

And of course we have known the people at the trade magazines for many years by now, so it is nice to see familiar faces at different fairs all over the world.

■ What is the toughest aspect of your job? And what is the most difficult thing about being in a position of responsibility at such a large company?

There is room for improvement everywhere, but I think a lot of people are not aware of what solutions are out there. They tend to think: "Everybody around me is fabricating the same way. So if there was a way to improve things, somebody would have done it already." If everybody thinks that way, nobody is looking for new ways. And if you come and show them something new, you often hear the line "We have always done it this way, why should we do something new now?"

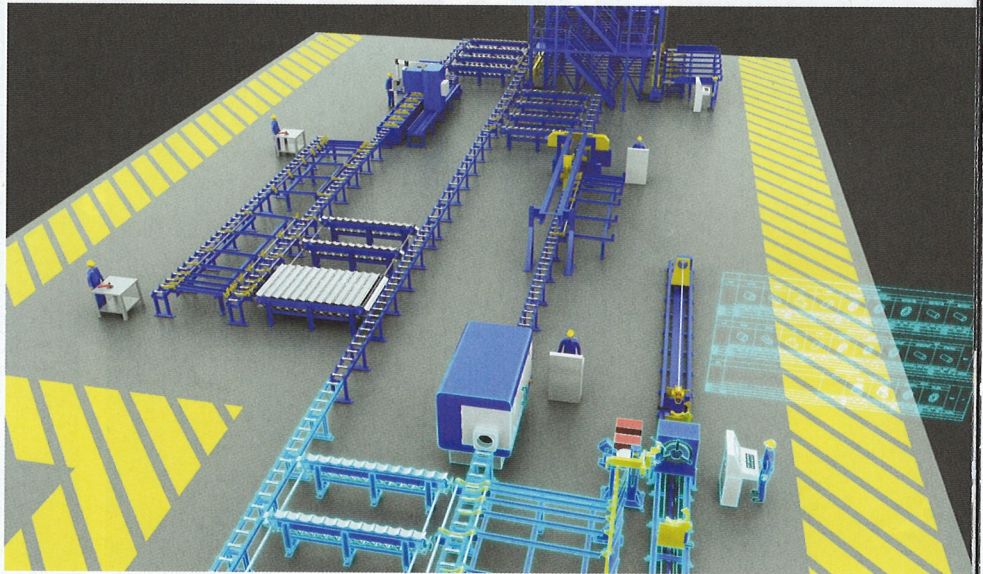
The toughest part when engaging in a new project is to overcome that mentality, to convince the customer to abandon his old notions and processes. You need to get the customer to get to reflect on their processes and make them come up with a reason why they have always done things that way. Very often they realise that there is no good reason to continue working the way they always have, and then they are open to new ideas.

The biggest challenge we face, however, is getting motivated and qualified trainees. We train our developers in-house, and our three-year training program is very hands-on. Our trainees are actively involved in the ongoing projects, deal directly with customers, and often travel abroad. That can be somewhat demanding of course, but we have a lot to offer, so we look for the best qualified people. But where in the past we would forty, fifty applications a year, we now get maybe ten to twenty. And when we send them a test to gauge their programming skills, we may get five to ten answers.

But it is not only us, I have spoken with a lot of small business owners in our town, and also to some partners and customers. It is hard to find young people who are motivated to put in the work and are qualified to actually do it. If I get an applicant for a developer position, whose qualifications are that they like video games and can use the Microsoft Office Suite, then I cannot invest time and manpower into this person, only for them to find out half a year later that developing industrial applications is not glamorous or exciting enough for them.

■ What is the most exciting or challenging project you have been involved in during your career so far?

It is hard to say what the most exciting project was, because every project is special, and I have fond memories of all of them.



I think the most exciting one was the first pipe-shop we built in Singapore in 2009 / 2010, where we were the GC for the first time. Until then we had always been the consultant and coordinator, but not the GC, but by dealing directly with the customer, without any sales agents or intermediaries, we could reduce the customer's costs quite significantly.

It was a huge opportunity for us, and opened many doors for us for future projects. After we successfully completed the project we built two more smaller pipe-shops for the same company in Singapore, and had several big software projects with them and their subsidiary in Brazil.

In fact the former pipe-shop manager is now one of the general managers of the company, and has become a close personal friend.

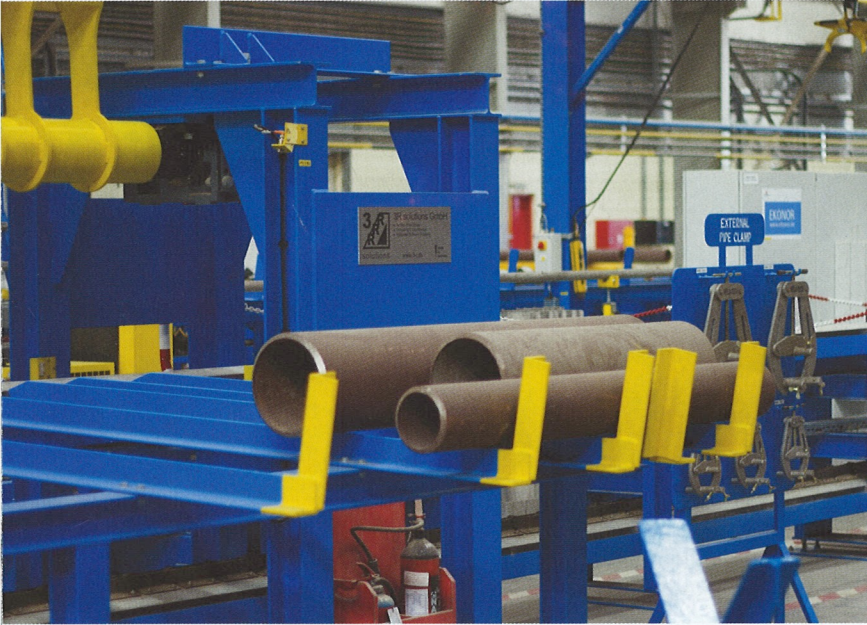
I think the most challenging project we had was for a company in South-East Asia. They insisted on robotic processes, because their CEO had seen a workshop with robots when she visited an automotive supplier. The problem was that their spools were very, very different from those fabricated for the auto industry, but none of her people dared point that out to her.

When we tried to discuss potential alternatives or additions that would allow for better efficiency, we were shut down, and then later we were blamed for the very problems we had warned them about. The company later went into bankruptcy, because they made some other very bad business decisions, so the very expensive line with very sophisticated robotic machines was never actually used to fabricate a single spool.

■ What is the worst crisis you have faced – or your proudest moment during your career so far?

We had a subcontractor go bankrupt in the middle of a project, even though he was financially sound when we started the project.

That meant that we had to find a replacement at very short notice to continue the job. Luckily we have a lot of contacts and partners, so finding a new supplier was not the issue. But we had to spend a lot of extra money on this project.



Georg Schulze-Duerr CEO, 3R solutions

Georg Schulze-Duerr wrote his first software applications at the age of 11, and started working in the piping industry at age 16, while he was still in high school.

He has been the CEO of 3R solutions for 25 years, after starting at the company as a teenager. Originally a software developer he has turned a small software company into a world leader in the field of piping automation and systems integration.

An avid traveller Mr Schulze-Duerr can be encountered all over the world, proving that our world is at the same time global yet also very personal.

We always do our due diligence of course, and had had multiple successful projects with the subcontractor, but sometimes there are things beyond our control that then affect us quite badly.

My proudest moment, however, is from the early days of the company. A shipyard in northern Germany was using a competitor's software, and wanted an interface to their workshop machines, which included a pipe-storage system, a band-saw, a plasma-cutting machine, a flange-welding machine and a bending machine.

The competitor had not managed to establish a working interface in five years, and the customer's head of production was very sceptical when we told him that we could do it in three months. In fact, it took our team (three developers including myself) only five days to program a working interface and have a successful test run.

The competitor is no longer around, by the way.

■ How do you see the tube and pipe industry changing over the next five to ten years following the global recession and the recent pandemic? What do you think the industry can learn for the future from the past few years?

I think that there will be a lot of focus on modernisation and automation. There are always certain buzzwords that you hear, such as Industry 4.0 or the Internet of Things. In fact, there is already a concept for Industry 5.0 and even talk about Industry 6.0.

A lot of these are still somewhat vague, but we expect a lot more integration of fabrication processes. Which is great for us, because we have been implementing Industry 4.0 principles and methods for more than 20 years. Back in 2001 for example, we set up a pipe-shop in northern Germany, where there is full integration of the workshop processes and our software in production planning and engineering.

■ What advice would you give to someone trying to make a career in the tube industry as you did yourself? If a student or young person wanted to get involved what should they do?

Be pro-active and open-minded, and think globally. This is not specific to the tube industry, but any industry, but it is the best advice I can give.

Always look beyond what everybody else is doing, not just in your industry or country, but worldwide and also in other fields. Keep learning, keep expanding your mind. Never rest on the knowledge you have, and never discard a suggestion or idea because it does not match your ideas or expectations. At the same time, never be afraid to make suggestions or ask questions. Even if your suggestion is wrong, you will learn something, and the next time you can make a better suggestion.

Try not to be the best at everything, because that is impossible. You cannot be the best developer, engineer, welder and salesperson at the same time, so play to your strengths and focus on what you are good at already. At the same time establish a personal network of contacts who are the best in their respective fields, so you can support each other.

Together you can achieve much greater things than alone, and you can create synergy effects that everybody benefits from.

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