LINE PIPE GLOBAL

SALZGITTER MANNESMANN LINE PIPE
A Member of the Salzgitter Group

Issue 07 · April 2014

Local presence - worldwide

Present around the globe, at home in Germany

Dear Reader:

Under the heading “Present around the globe, at home in Germany”, this issue looks at how we plan and successfully realize projects together with our customers and partners.

Being on site is very important for us, for we need to get to know and precisely understand people, markets and opportunities.

Being at home in Germany means that we can draw here on the potential of our employees, cutting-edge technology and mature processes. Here we can use the impressions and findings gathered on location to develop tailored products, solutions and services, which not only perfectly suit our customers, but also the specific environment of the country concerned.

Our visits to customers frequently lead to return visits and pre-production meetings at our locations in Germany.

Then it‘s time for our people to travel again - in order to be there, for example, when the pipes arrive at the seaports of the world, or to accompany our deliveries to the places where they are processed or where they are put to use on a project site. This way, orders are transformed into joint projects and business contacts into customer relationships.

Focusing on eight projects in seven countries, this issue aims to give you an insight into what our principle of being "Present around the globe, at home in Germany” actually means. The articles extend from Germany, the Netherlands, France and Switzerland to two projects in Africa and from there to the USA.

Besides our new pipe end variant that uses the Zap-Lok® method, we also introduce you to our new OCTG product, Green Tubes J55 UPG, and there‘s some interesting internal news as well: Salzgitter Mannesmann Line Pipe and Salzgitter Mannesmann Grossrohr will in future have shared sales and management. This will improve our customer focus even more. Our customers will now have a single contact for HFI longitudinally welded and spiral-weld pipe in diameters of 114.3 to 1.676 mm and wall thicknesses of 3.2 to 25.4 mm.

Wishing you an inspiring and enjoyable read!

Jörn Winkels
Managing Director Technology and Sales

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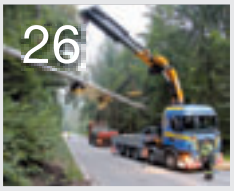
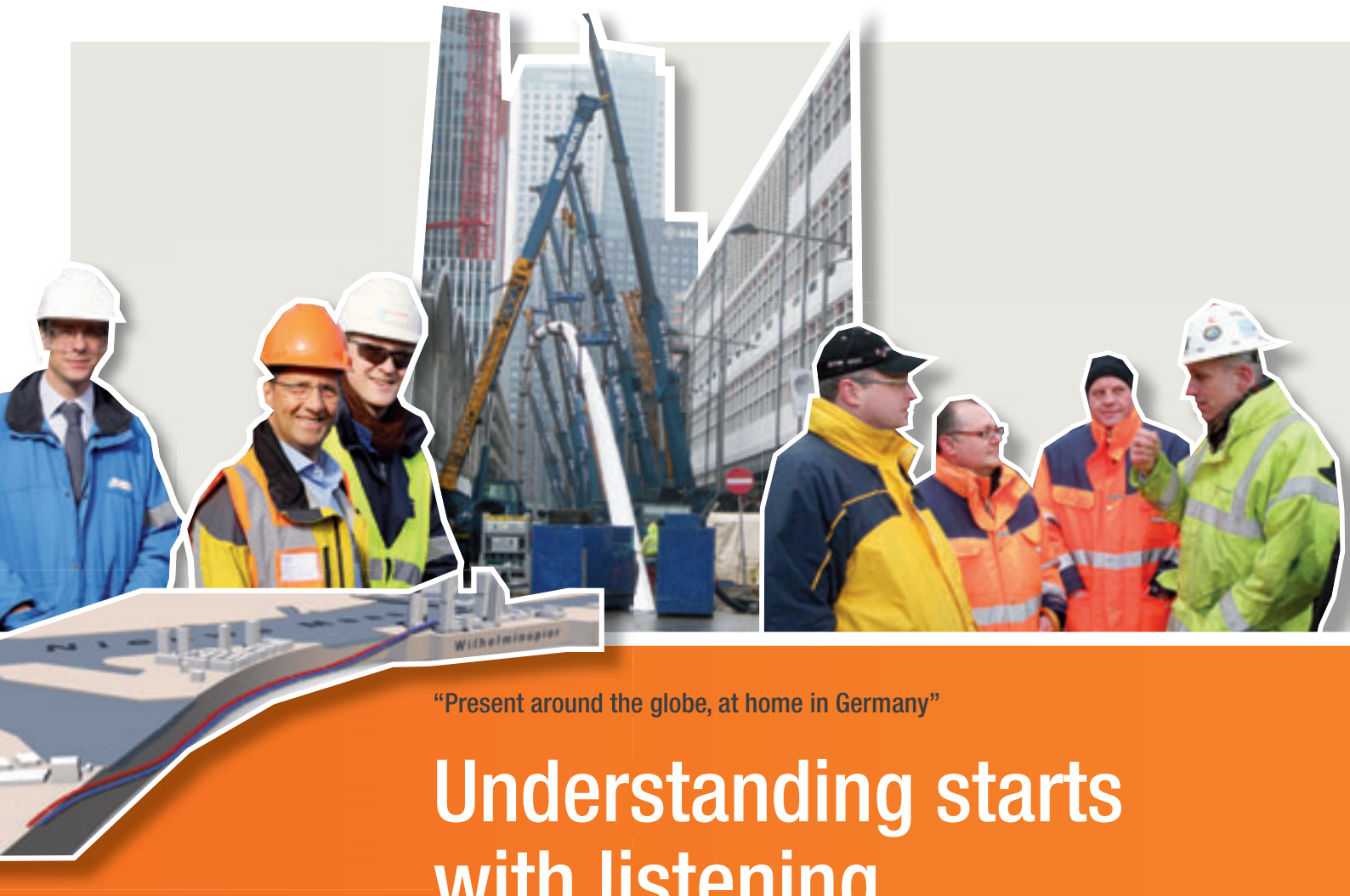




"Present around the globe, at home in Germany"

Understanding starts with listening

In all, Salzgitter Mannesmann Line Pipe employees are fluent in 13 languages. This is certainly an ideal basis for any company that wants to understand its customers. But apart from speaking the customer's language, understanding starts, above all, with listening. We therefore want to know things more precisely and in greater detail, so as to be sure we really grasp the wider context. But the picture only becomes truly complete for us when we see things and experience them right where they happen. This is how we gain a concrete understanding of our customers' needs and requirements and of the conditions and possibilities on site. For the projects described in this issue, many of our employees again travelled all over the world. Here's what three of them have to say about their experience:

We speak your language

Languages spoken by Salzgitter Mannesmann Line Pipe employees:

Arabic, Czech, Dutch, English, French, German, Italian, Polish, Portuguese, Russian, Slovak, Spanish, Ukrainian

"Every country has its own special features. The way we do business in the USA, for example, is entirely different to our business in Germany. In South America, a totally different mentality comes into play. But one thing is the same everywhere: Each customer wants to be taken seriously in his own way and wants the best possible advice and support."

Michael Kosfeld, Division Manager

Michael Kosfeld was born in the Rhineland and grew up in Brazil. During his 30 years in the Group, he has held sales positions for various Salzgitter and Mannesmann companies in Germany and abroad.

"Although one might think that technical competence is what really counts when advising customers, face-to-face meetings with our customers and suppliers are hugely important. Lasting partnerships can only be established on the basis of personal presence and personal exchange."

José Pinto, Technical Customer Support

For the Green Tubes project (page 10), José Pinto traveled to the USA twice and received a team of customers and fabricators for extensive plant tours and pre-production meetings in Siegen and Hamm.

"You can only plan projects abroad if you know the geographical, infrastructural and social conditions and the mentality of the people who live there. Successful realization of such a project depends on one's willingness to accept responsibility in the interests of the customer. That you have to be present at the project site almost goes without saying."

Vincent Bertolone, Area Sales Manager

The native Italian grew up in France and is fluent in French, Italian, German and English. Vincent Bertolone has many years of sales experience in Europe and in Africa.

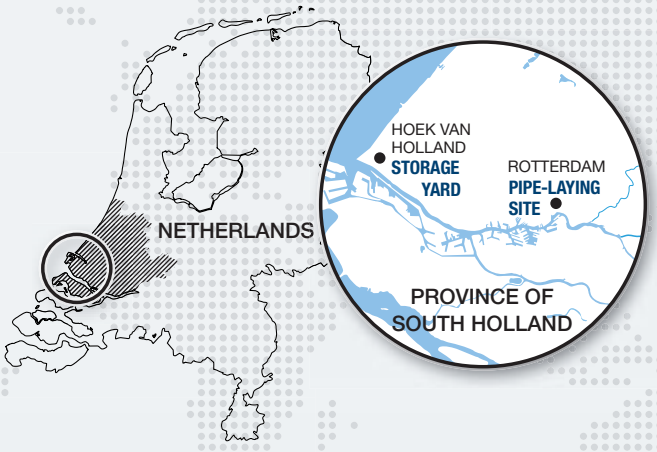
Serving you locally – around the globe

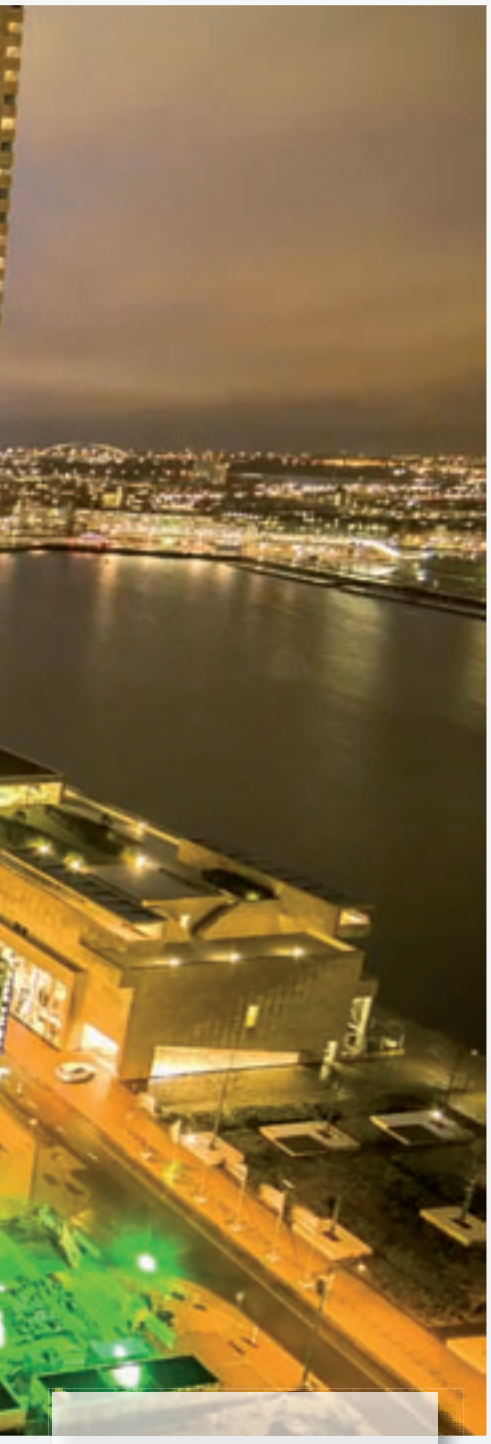
Since 2008, products from Salzgitter Mannesmann Line Pipe have been in use in 75 countries worldwide:

Algeria, Angola, Armenia, Australia, Austria, Azerbaijan, Belgium, Benin, Bosnia-Herzegovina, Brazil, Cameroon, Canada, Chad, Columbia, Croatia, Cyprus, Czech Republic, Denmark, Ecuador, Egypt, Estonia, Germany, Finland, France, Georgia, Greece, Hong Kong, Hungary, Iraq, Ireland, Iceland, Israel, Italy, Jordan, Kazakhstan, Kuwait, Latvia, Libya, Liechtenstein, Lithuania, Luxembourg, Mexico, Morocco, the Netherlands, Niger, Nigeria, Norway, Oman, Panama, People's Republic of China, Poland, Portugal, Qatar, Republic of the Congo, Romania, Russian Federation, Saudi Arabia, Sweden, Serbia, Singapore, Slovakia, Spain, South Africa, South Korea, Switzerland, Syria, Thailand, Trinidad and Tobago, Turkey, Turkmenistan, United Arab Emirates, United Kingdom, Uruguay, USA

2:08 pm

The first of the two pipe strings was pulled under confined conditions in the inner city. The Erasmus bridge (back left), a major inner-city traffic artery, had to be closed for several hours.





8:47 pm

One of the most spectacular pipe-laying projects is now almost history. In Wilhelminakade little reminds us of the engineers' masterly technical and logistical achievement.

10:27 am

Konrad Thannbichler, René Richter and Michael Bick discuss the situation on site with Peter Dennig of Visser & Smit Hanab.

Project Rotterdam district heating pipe

Trenchless through Rotterdam

In March 2013, one of the most spectacular trenchless pipe-laying projects ever was completed in Rotterdam. The project team responsible made it possible with sophisticated logistics, perfect timing and a pipeline that is totally reliable.

In 2011, the City of Rotterdam launched its ambitious project "De Nieuwe Warmteweg" as part of its climate scheme to reduce CO_2 emissions. Computations had shown that the waste heat from a waste-fired thermal power station at Rozenburg would suffice to connect up some 50,000 households to the district heating system. The municipal energy supplier "Warmtebedrijf Rotterdam" then commissioned Visser & Smit Hanab with the construction of a 26 km district heating pipeline from the harbor to the center of the city of Rotterdam.

HDD drilling from both ends

The experts soon realized that the section underneath Katendrecht would be the most critical part of the planned pipeline route. This 1,500 m section of the pipeline had to pass beneath two harbor basins, among other things, and would have to be laid in extremely tight inner-city conditions. There was no way that this could be done using conventional methods. A pipe-laying project like this called for trenchless horizontal directional drilling (HDD).

It was not just the enormous length of the planned borehole that gave the experts a headache, but also the fact that the entry and exit angles and the horizontal arc would have to be calculated with extreme precision. To cover the distance at all in one go, the engineers came up with a very special strategy that involved drilling from both ends. The first drilling rig was set up on Wilhelminapier and the second on Brielselaan. At an angle of 60 degrees the two drilling heads worked their way towards each other, one over a stretch of 500 m and the other over 1,000 m, until – with the aid of GPS localization – the boreholes met at precisely the calculated point. Peter Dennig, project manager at Visser & Smit Hanab: "In order to reach a geologically unproblematic rock stratum under the harbor, we had to drill to a depth of as much as 60 m. Drilling the borehole from both ends and getting the two sections to meet in

"When you have a project on this scale, you have to be able to rely 100 % on the quality of the pipeline."

Peter Dennig
Project manager at Visser & Smit Hanab

vertical and horizontal arcs was a real challenge," he declares proudly.

Three pre-production meetings

Salzgitter Mannesmann Line Pipe supplied the necessary know-how and experience for safe trenchless pipe-laying. Together with FW-Fernwärme of Celle, Salzgitter Mannesmann Stahlhandel, Hannover, and the responsible employees of Visser & Smit Hanab, the project was meticulously planned and prepared in a total of three pre-production meetings. Peter Dennig: "When you have a project on this scale, you have to be able to rely 100 % on the quality of the pipeline. Salzgitter Mannesmann Line Pipe and FW-Fernwärme were the two experienced and competent partners that we needed."

The HFI-welded steel pipes in DN 300 and DN 500 were manufactured in Hamm and processed at FW-Fernwärme into thermally insulated components for a pipe-in-pipe system. For protection of the pipe string when it was pulled into the borehole, a special 6 mm 3-layer polypropylene coating was selected. In January 2013, the pipes were shipped from Celle to Hoek van Holland, where they were welded into four 750-m pipeline strings.

Two years of intensive preparations

On March 9, 2013, after two years of planning and intensive preparations, tugboats carried the first two pipe strings along the Nieuwe Maas river to Rotterdam. One section of pipeline that had to be welded to the other string extended right into the main channel, which therefore had to be closed for several hours. The protruding sections were fixed to specially installed pontoons and held by tugboats, so they could be lifted in the middle to another pontoon. Then the welding and finishing

10:13 am

The pipeline is now in the right position in narrow Wilhelminakade. Twelve mobile cranes lift it into precisely the computed arc, so it can be pulled into the borehole at a rate of 100 m per hour.

operations were performed so as to complete the pipeline. With the aid of a ship hoisting crane and twelve further mobile cranes, the pipeline was pulled ashore from the water and maneuvered elegantly into the right arc for pulling into the pilot hole. It then took 15 hours to pull the first pipeline string through the borehole, arriving right on time and without a hitch at Brielselaan at 4:30 p.m. René Richter, who was onsite for Salzgitter Mannesmann Line Pipe, remembers: “Working in such a great team and on such an unusual project is really something to be proud of – especially when everything is prepared so well and runs so smoothly.”

On March 23 and 24, the second pipeline string was laid – again entirely on schedule and equally smoothly. In August the district heating pipe went onstream. Now 50,000 Rotterdam households are being supplied with both eco- and climate-friendly district heat.

3:56 pm

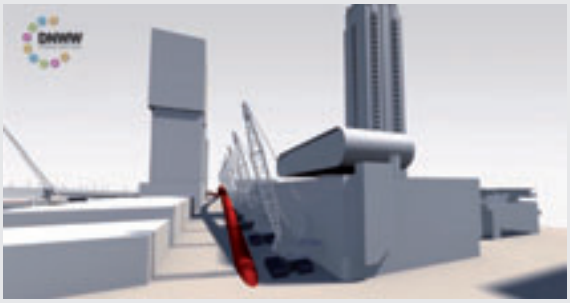
Hotel New York is the only historic building in Rotterdam to have survived World War II bombing. The pipe string is pulled in only a few meters below the hotel bar in the basement, leaving the fabric of the building completely unaffected.

ROTTERDAM.CLIMATE.INITIATIVE

The Rotterdam climate scheme forms a movement in which the government, organizations, companies, research institutes and the population are uniting to adapt Rotterdam to climate change while at the same time contributing to climate protection.

The scheme has set itself the target of reducing Rotterdam’s CO_2 emissions by 50 % by 2025 (compared to 1990) in order to adapt the city to the new climatic conditions and stimulate the economy.

“De Nieuwe Warmteweg” connects the waste-fired power station at Rozenburg (1) in the west of Rotterdam with three transfer points in the inner city (2, 3 and 4). The pipelines were laid at a depth of up to 60 m under the harbor basin.



The new Green Tubes in Grade J55 UPG are manufactured in Germany and can be flexibly heat-treated, tested and further processed locally around the globe.

New product Green Tube J55 UPG OCTG

Making 4 out of 1, Green Tube J55 UPG sets new standards

How can you ensure swift and flexible OCTG deliveries of various grades to your customers without having to keep huge stocks in your warehouse? The solution is Green Tubes, tubes that can be heat-treated to achieve specific properties. With J55 UPG, Salzgitter Mannesmann Line Pipe is now setting a new Green Tube standard.

"Given the many and varied grades, dimensions and thread types, it is decisive for us as dealers to be able to deliver the right tubes as fast as possible," says Steve Munsell of Salzgitter Mannesmann International Houston (SMIH) explaining succinctly what OCTG or oilfield tubes are all about.

The solution is either to have gigantic warehouses with all sorts of finished products, or basic tubes that can be processed locally into a wide variety of finished products to meet specific needs.

"We've been thinking about an intelligent and flexible solution for a long time, and in Salzgitter Mannesmann Line Pipe we have found the right partner for tackling the problem the right way," says the experienced salesman summing up.

The benefits of Group membership

The German manufacturer was of course an obvious option. Firstly, SMIH and Salzgitter Mannesmann Line Pipe can look back on many years of successful cooperation based on trust. And secondly, the renowned manufacturer and member of the Salzgitter Group is also an expert in quenching and tempering tube and pipe products to achieve specific properties. Added to this are excellent intra-group relations when it comes to developing special steel grades on the starting materials side and new standards and specifications for testing and analyzing them.

Product development starts at the steel production stage

"Starting such a project means starting from scratch," says Manfred Veit, in charge of quality management at Salzgitter Mannesmann Line Pipe. Christian Warnecke of Salzgitter Flachstahl GmbH, an experienced steelmaker, was therefore recruited at an early stage to ensure that the right decisions were taken from the steel production stage. He and his team developed a feasible chemical analysis and an alternative variant for a standard analysis.

Green Tubes J55 UPG meet the requirements of **API 5 CT Grade J55** without subsequent heat treatment, so they can be used at least as oilfield tubes in Grade J55. In addition, they can also be heat-treated to the more demanding requirements of grades **N80Q, L80 and P110.** This makes them extremely versatile and suitable for use in various applications.

A mere 12 months elapsed from the first concrete talks through to production, heat treatment and successful testing. The project generated hundreds of documents: emails, minutes, certificates, specifications, definition of the technical standards, orders, customs handling and logistics documents, contracts with the ocean carrier, etc.

17 employees from five different companies in Germany and the USA were intensively involved in the implementation of the project for 12 months **in continuous close contact and communication.**

The HFI-welded and subsequently heat-treated steel tubes are suitable for a wide range of applications, e.g. as casing for the oil and gas industry.

"With the base standard J55 UPG we have positively surprised our customer SMIH once again."

José Pinto, Technical Customer Consultant, Hamm

Fine-tuning in Houston

While the experts in Germany were racking their brains over the starting material, José Pinto, a Technical Customer Consultant at the company's Hamm location went to see Steve Munsell in Houston in order to familiarize himself with Tubular Services where the downstream processing steps were to be done. These included a quench-and-temper treatment to upgrade the material. In intensive talks, unresolved technical questions were clarified and the very tight tolerances for production and testing were defined.

"What our customer SMIH didn't know at that stage was that, in Germany, we were already busy developing a way that would enable us to deliver Green Tubes in a condition that would allow them to be employed as API 5 CT Grade J55, even without subsequent heat treatment," says José Pinto with a chuckle.

Pre-production meeting in Siegen

In August 2012, representatives from SMIH and Tubular Services traveled to Siegen and Hamm to have the HFI welding process and the weld joint geometry explained to them in detail first-hand.

Meantime, all the details and param-

Project milestones

Manfred Veit

NOV 2011

The idea
Salzgitter Mannesmann Line Pipe has the initial idea for Green Tubes for the American market.

Steve Munsell

NOV 2011

Arousing curiosity
Salzgitter Mannesmann International Houston (SMIH) sends a concrete inquiry.

Christiane Bröker

NOV 2011

Checking the specifications
Initial technical correspondence on tolerances, drift and chemical analysis.

Dr. Hendrik Löbbe

DEZ 2011

First visit to the Houston plant
Dr Löbbe, Quality Manager in Hamm, visits Tubular Services in Houston together with Steve Munsell (SMIH).

Johnnie Nguyen

JAN 2012

Order from SMIH
Salzgitter Mannesmann Line Pipe receives an order from SMIH for just under 1,500 t of Green Tubes.

Christian Warnecke

APR 2012

Coordination with Salzgitter Flachstahl
Manfred Veit and Christian Warnecke agree on a basic chemical composition and an alternative to standard analysis.

José Pinto

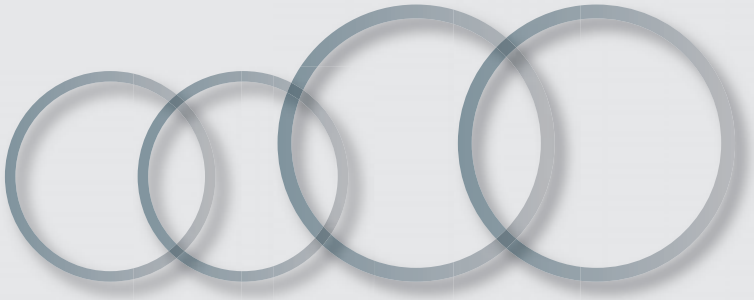
APR 2012

Second visit to the Houston plant
José Pinto, Technical Customer Consultant at Hamm, coordinates the further procedure with Steve Munsell and with employees from Tubular Services and Arctic Pipe Inspections.

“With the new oilfield tubes we can react much more quickly and flexibly to customer requirements.”

Steve Munsell, SMIH

In all, Salzgitter Mannesmann International Houston ordered some 1,500 t of HFI-welded Green Tubes in J55 UPG, in two diameters (177.8 and 244.5 mm) and four wall thicknesses from 8.05 to 11.99 mm. The tubes were heat-treated at Tubular Services from Grade J55 to N80 Q, L80 and P110.



J55 UPG **N80 Q** **L80** **P110**

eters regarding the starting material tubes of base grade J55 had been clarified with Salzgitter Flachstahl, so tube production could get underway in September in two diameters and four wall thicknesses.

A surprise for SMIH

In the presence of José Pinto and Steve Munsell, Tubular Services started heat-treating the first tubes to Grade P110 on October 29, 2012. All eyes were then apprehensively focused on subsequent tests at Arctic Pipe Inspections. What had been meticulously planned and prepared now went off without a hitch at first attempt: all the tubes passed all the tests with flying colors. These included ultrasonic weld testing, wet magnetic particle inspection of the tube ends, and 100 % stray flux testing.

Steve Munsell recalls: “We were more than happy with the results. We now not only have tubes that we can ‘upgrade’ flexibly and swiftly, but also an initial product that is certified to the J55 standard and can also be used without subsequent heat treatment. Salzgitter Mannesmann Line Pipe really surprised us.”

Jointly developing an innovative product

From the experience gained with this project and the careful post-processing in Houston and Siegen, everyone involved is now very confident about the future. Within a very short period of time, their close cooperation has generated an innovative, sought-after product. Meantime, stocks in Houston are running low, and Salzgitter Mannesmann Line Pipe has already received new requests for Green Tubes.

Production in Siegen

MAY 2012

Defining the standard
T2.11.0.1 HS is adopted as technical standard for upgradeable Green Tube J55 and included in the QM System.

Christo Drakidis

AUG 2012

Return visit
Representatives from Tubular Services visit the Siegen plant in the run-up to production.

Production in Siegen

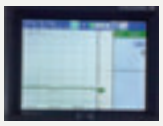
SEP 2012

Production and shipment
Within a few weeks, all the tubes are produced and shipped to Houston.

The Port of Houston

OCT 2012

Arrival of the tubes
On 13 October, the tubes arrive in Houston. Heat treatment and testing begin at the end of October in the presence of José Pinto.



Test report

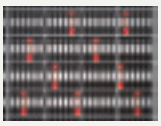
DEC 2012

Completion of heat treatment and testing
Heat treatment to N80 Q, L80 and P110 and the testing of all 2,637 tubes are successfully completed.

SMIH, Houston

FEB 2013

Review in Houston
Representatives from all companies involved are delighted with the outcome.



Documentation

MAR 2013

Review in Siegen
Documentation of the findings gained, updating of QM.

NEW
Zap-Lok®
Weld-free pipe connection

Top: Technicians from NOV-Tuboscope, Gladbeck, Zap-Lok®, Houston, and Salzgitter Mannesmann Line Pipe

Innovative Zap-Lok® connection

Investment in technology and partnerships

In connection with a customer order, Salzgitter Mannesmann Line Pipe invested in its pipe processing facilities. Within just two months, the Zap-Lok® system was successfully integrated in the production process at the Siegen location by a project team comprising employees from Siegen, Gladbeck and Houston, USA.

Left: The bell ends of the HDPE-coated Zap-Lok® pipes were provided with an approximately 10 mm plastic coating overlap and corrosion protection of the pipe end bevel. The black plastic caps are designed to protect the pipe ends from damage.
Top: Pipe loading at the port of Antwerp

Introducing a new product within the shortest possible time is always a challenge. In order to achieve this, a team of staff from the Sales, Technical Customer Support, Planning, Production, Logistics and Maintenance departments was set up. When the necessary machines had been ordered from NOV Tuboscope in Texas, USA, and the timing for start-up had been discussed and approved, internal preparations at Salzgitter Mannesmann Line Pipe's Siegen plant got underway. The team decided at an early stage that the new process would be implemented in the coupling line. However, to make this possible, extensive alterations had to be made to the existing line. "The drive elements, hydraulic piping, pipe conveyors and the machine control system had to be modified, the pipe tables had to be extended, splash guard walls were put up, and dirty water basins were installed," says Falk Meyer, one of the men in charge of this operation, summing up.

Pipe specimens for test connections

On June 13, 2013, the Zap-Lok® machines from the USA arrived in Siegen. The next day, employees from the USA and from Gladbeck arrived to make up the Siegen project team and get the new machines ready for operation. Then the pipes that had been welded and cut to specimen length two days earlier were formed to produce the Zap-Lok® bell and pin ends.

Extensive quality checks

The pipe specimens were used for making up complete Zap-Lok® test connections, which were thoroughly tested by Zap-Lok® employees for their press-fitting characteristics. The pipe joints were then transferred to the Salzgitter Mannesmann Research Center in Duisburg for extensive tests of their pressure resistance. The burst pressures achieved were

“Our whole team was impressed with the professional project management at Salzgitter Mannesmann Line Pipe. Everything was prepared to perfection, and the implementation of the Zap-Lok® process went off without a hitch.”

William Forster
NOV Tuboscope

significantly higher than those specified by the customer.

Special pipe ends
For the laying and connection process, the bell end of a Zap-Lok® pipe has to be given an approximately 10 mm overlap of the plastic coating, and the chamfer must be provided with an anti-corrosive coating. For the tests, the toolmakers developed customized connectors and cutting tools which were later also used in the series production of the plastic coating.

Unique process for the plastic coating of Zap-Lok® pipes
The bare Zap-Lok® pipes for the customer order were manufactured within the next three weeks and then given a 3-layer HDPE coating.

Everything from a single source
From Siegen, the finished pipes were transported via rail to the port of Antwerp and arrived three weeks afterwards at their port of destination. Vincent Bertolone and Markus Ketelhut were there to supervise the unloading, transshipment and storage of the pipes. “We’ve once again demonstrated our ability to uphold the quality of order handling right through to delivery and acceptance,” says Vincent Bertolone expressing the seller‘s point of view. “It all goes to show that quality, reliability and trust are still the fundamental values for safeguarding our future. For only a satisfied customer will see us as a long-time partner and entrust further projects to us.” How true. Meantime, further interesting orders for HFI-welded pipes with Zap-Lok® connection have been booked.

Left: The international project team comprising technicians from Zap-Lok® Houston and NOV Tuboscope, Gladbeck, and employees from the Sales and Technology departments of Salzgitter Mannesmann Line Pipe

Bottom left: Storage yard at the destination site
Bottom right: Vincent Bertolone, Gilles Ngatchou (Director of Bolloré Africa Logistics), Markus Ketelhut and Eckhard Donner (BOCS, Bremen Overseas Chartering and Shipping GmbH)

How Zap-Lok® works

NEW Zap-Lok® Weld-free pipe connection

Zap-Lok® is a patented pipe connection system developed by NOV Tuboscope that does entirely without welding.

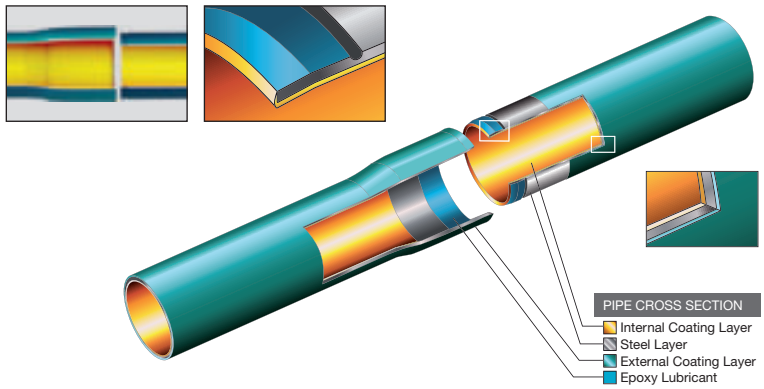
The connection is effected by pressfitting and is suitable for all types of line pipe (gas sour/non-sour, oil, water), including offshore and high-pressure projects. Zap-Lok® is capable of connecting pipes in outside diameters of 60.3 to 323.9 mm (2 3/8″ to 12 3/4″).

On the machines developed by NOV Tuboscope, one pipe end is given a bell shape, and the other a pin shape. During pipe-laying, special equipment is used to push the pin end into a bell end and press them together to a tight fit.

Since welding and X-raying can be dispensed with, the laying of Zap-Lok® pipes is extremely fast and cost-effective. Given the simplicity of the process, up to 300 pipes can be laid per day.

The system has been successfully used for some 30 years in many countries. At the Salzgitter Mannesmann Research Center in Duisburg, the pipe connections manufactured for the pilot project in Siegen achieved burst pressures that were significantly higher than those specified by the customer.

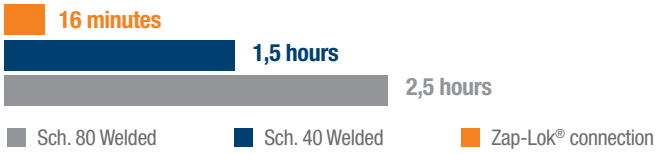
Connection and coating



TK linings and the Zap-Lok® connections ensure seamless corrosion protection along the pipeline as well as increased flow rates and minimum surface deposits.

Art design and information: NOV Tuboscope

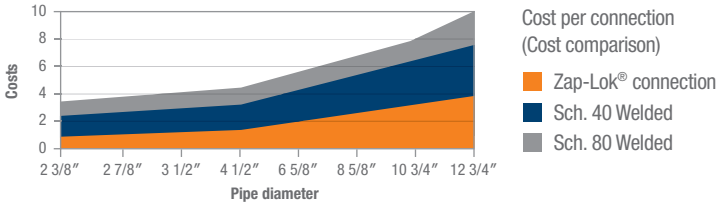
Time savings



The Zap-Lok® system accelerates pipe-laying operations significantly. Zap-Lok® only takes a fraction of the time needed for a welded joint. Besides welding, X-raying and deburring of the welds are also rendered superfluous.

Art design and information: NOV Tuboscope

Cost savings



A major item in pipeline construction is skilled man hours. The Zap-Lok® system permits savings here of up to 90%: instead of qualified welders, all that is needed is a small team of workers and a hydraulic Zap-Lok® press.

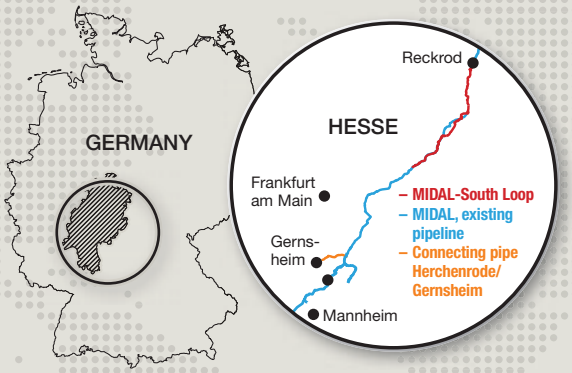
Art design and information: NOV Tuboscope

Project MIDAL Pipeline

Further extension of gas grid and partner network

With a length of over 100 km, the MIDAL Pipeline extension was Germany's longest construction site in 2013. Salzgitter Mannesmann Grossrohr and Salzgitter Mannesmann Line Pipe supplied the pipes for this project.

Top: Pipes as far as the eye can see. More than 5,000 of them were welded and laid for the MIDAL South Loop extension.
Right: High-tech bending machines were available on site to bend pipes through angles of up to 16 degrees.



Pipeline operator Gascade not only built the MIDAL South Loop, but also laid a connecting pipe between Herchenrode and Gernsheim.

MIDAL South Loop

The spiral-weld pipes required for this 90 km section of the gas pipeline extension were manufactured at Salzgitter Mannesmann Grossrohr in Salzgitter, in an outside diameter of 1,016 mm and three different wall thicknesses. As a primary precondition for the placement of the order, the customer specified pipe cleaning before coating. So a high-pressure washing plant for diameters of 600 to 1,700 mm and a maximum operating pressure of 1,350 bar was built especially for this purpose. Besides the sophisticated pipe production and coating processes, Salzgitter Mannesmann Grossrohr was also responsible for preparing the logistics strategy as well as fallback and emergency plans for the transportation of 5,100 pipes to nine storage yards. In addition, the company provided the digital certificates and GPS-based transmission of position and pipe data needed by the customer for the creation of an electronic pipe book.

Given the relative proximity of the production site to the storage yards, the employees responsible for the logistics decided to rely on road transport for all the pipe deliveries – a first for a project of this size. Every day over a period of five months, up to 27 trucks with telescopic semitrailers were each loaded with three pipes. Thanks to the efficient coordination of the team and the truck drivers' experience of pipe transportation, only one minor scratch in the polyethylene coating of a pipe had to be repaired, despite the almost 1,700 transport trips and over 10,000 pipe loading and unloading operations involved.

DN 500 connecting pipe

In the spring of 2013, Gascade laid a connecting pipe for the new South Loop from the shut-off station at Herchenrode to the compressor station at Gernsheim. The HFI-welded steel pipes required for this 16 km long pipeline in DN 500 were supplied by Salzgitter Mannesmann Line Pipe.

Pipes from now on from a single source

For both projects, Gascade was able to rely on the quality and reliability of two companies of the Salzgitter Group. Since their manufacturing programs complement each other perfectly, Salzgitter Mannesmann Line Pipe and Salzgitter Mannesmann Grossrohr will in future operate jointly in the market. HFI-welded and spiral-weld steel pipes in diameters of 114.3 to 1,676 mm with wall thicknesses of 3.2 to 25.4 mm are as of now available from a single source.

MIDAL is one of the most important German high-pressure gas pipelines. It runs from the natural gas sources in the North Sea to the major centers of consumption and industry, from the Dutch border in the north to the south-west of Germany. With its connection to the NEL (North-European Natural Gas Pipeline), it also carries Siberian gas arriving via the North Stream pipeline through the Baltic Sea. This pipeline previously transported 9.5 billion cubic meters of natural gas per year, which amounts to just under ten percent of Germany's annual consumption. The new pipeline can transport an additional volume of up to 3.3 billion cubic meters per year, which is enough to supply some 1.8 million single-family homes.

At times, up to 550 people were working on the project to ensure compliance with the planned completion date. In all, more than 5,000 pipes were laid, each 18 m long and weighing up to 6.8 t. Each individual weld was inspected by TÜV experts.

Interview Sales training courses

“Recognizing what makes the customer tick”

DEVCON-CT has been training Salzgitter Mannesmann Line Pipe‘s sales staff and technical customer consultants for about two years now. In particular, the training focuses on positioning the company‘s own strengths in the competitive international arena. Konrad Thannbichler talked to the DEVCON-CT trainer and managing director Reinhard Gasch about the objectives and achievements of the training courses.

Reinhard Gasch is the founder, managing director and senior trainer of DEVCON-CT

Mr. Gasch, does the steel and pipe industry tick differently from other sectors?
Every industry has features that make it different. One example I see for the steel and pipe industry is its lack of opportunity to inspire customers on the principle of: “Isn‘t it time you tackled a new water pipeline project?” At the same time, there are parallels that only become apparent at second glance. We frequently experience scales falling from employees’ eyes when they realize that successful strategies from other sectors are also applicable to their own companies.

What were the objectives and subject-matter of the sales training courses in our company?
To start with, we subjected the industry‘s practices to close scrutiny. Then, after a detailed analysis, we identified points where the selling process in place at your company could be improved. We shall thus reform the bidding phase so as to improve your success rate. For example, the sales team is called upon to include details that the specific customer can identify with so that he will find it easier to appreciate the special added value he can expect from Salzgitter Mannesmann Line Pipe.

Does this work the same way with all customers?
What works well in Germany cannot in all cases be transferred 1:1 to other countries. Internationally, the main thing is to analyze the actual environment and draw the necessary conclusions. The big challenge is adapting the sales pitch to the customer‘s national and cultural environment. This also includes understanding what the customer is saying. During our sales training, we made a video that shows how negotiations with a French business partner can be conducted on equal terms in a spirit of partnership.

What are the requirements that emerge for our employees?
What it takes here is, first and foremost, agility and adaptability in an international setting. Products from Salzgitter Mannesmann Line Pipe meet customer requirements in different countries for several reasons. These have to be identified. Needless to say, it takes high intercultural awareness to recognize where and to what

Although 'Made in Germany' is still a seal of quality, it's no longer sufficient for positioning a company successfully in the market.

Reinhard Gasch

extent nationalities differ and what that means for the sales strategy. Language, of course, plays a key role here.

In what way have customer expectations changed during the past 20 years?
Customer satisfaction consists of several components: implicit expectations, explicit demands, and positive surprises. What the customer implicitly expects, such as special services and constant availability, is steadily growing. At the same time, it is becoming increasingly difficult to really surprise a customer. Our credo is to regularly ask customers what they expect – ideally in a face-to-face meeting.

How important are people in relation to the other factors of a company's success?
Today there are hardly any products in the market that "sell themselves". It's up to the sales staff to point out to customers the benefits they can gain from a product. Here, it's important to find out and respond to what makes the customer tick – something that neither a machine nor a computer can do. At the same time, we can see that, increasingly, the reason for customer complaints is not so much product deficiencies as human error. So it's people who decide essentially over the success of their company – and that includes everybody, from the apprentice right up to the senior manager.

You have got to know our company pretty well in the past two years. What do you think are our strengths?
As I see it, your company's most outstanding strength is your employees. What I have observed in our training sessions is a particularly high degree of identification with the company, along with technical professionalism. Customers benefit from opposite numbers that are really interested in the special features of their project and who can offer sound recommendations in the context of cooperation.

Konrad Thannbichler has been division manager at Salzgitter Mannesmann Line Pipe for three years.

In all, 40 employees from the Sales and Technical Customer Consulting departments are undergoing training. Over a period of three years, they will be completing ten training modules. In 2015, on completion of the program, they will have taken 448 training lessons in all.

DEVCON-CT

can look back on over 25 years of training services to enterprises and their top performers. The company believes in the principle of responsible and self-regulated learning. DEVCON-CT customers are open to change and prepared to actively shape their future.

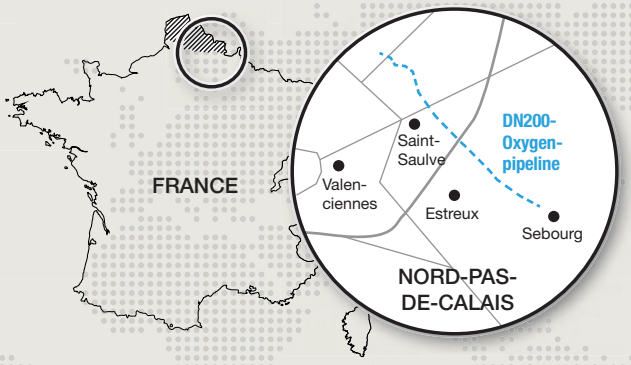
Reinhard Gasch

is the founder, managing director and senior trainer of DEVCON-CT. After graduating in business administration in Münster, Germany, he held various positions in industry. His last position was sales manager at Hoechst AG. In 1984, he embarked on his career as a trainer, consultant and coach.

Project Oxygen pipeline for Air Liquide

New pipeline also conveys trust

For the first time in France, Salzgitter Mannesmann Line Pipe has supplied HFI-welded steel pipes with an FCM-S top coat on a PE coating with integrated T-ribbing. In the course of the project for the construction of an oxygen pipeline, the many advantages of this combination over a pure PP-coating impressed even the staunchest opponents.



The roughly EUR 6 million investment in a pure oxygen supply to a steelworks comprised a pipeline and the construction of a docking station and a transfer station in which the gas is decompressed from 64 to 20 bar.

A peculiarity of the French market

Traditionally, steel pipes with a polypropylene coating are used in such projects in the French market. However, given the varying geological conditions along the planned pipeline route and the resultant need for the trenchless pipe-laying of various sections, the engineers at Air Liquide decided to go new ways.

On behalf of Salzgitter Mannesmann Line Pipe, Vincent Bertolone was responsible for the project. In addition to being a proven expert in this field, he is also familiar with the mentality of the people in the Nord-Pas-de-Calais region. “Building up trust and introducing the customer‘s representatives to a product that was new and unknown to them was at first the most difficult task for us,” says Bertolone.

Left: The new coating material stimulated lively interest on the construction site. Bottom: Vincent Bertolone (2nd left) and customer representatives were delighted with the coating's successful premiere.

"Building up trust was at first the most difficult task for us."

Vincent Bertolone

AIR LIQUIDE

DN200 oxygen pipeline for Air Liquide

The varying geological conditions placed high demands on the pipe material and the coating. Pipe with **two different wall thicknesses** was used for the DN200 pipeline: 7.1 mm for the conventionally laid sections in rural areas and 8.8 mm in the vicinity of the town and for the HDD sections.

Three different pipe coatings were employed: HDPE for the conventional sections, HDPE plus FCM-N for the sections laid in peatland, and HDPE plus FCM-S on PE T-ribbing for the three trenchless sections. For field coating, the quick-setting MAPUR® coating was used to ensure seamless corrosion protection of the complete pipeline.

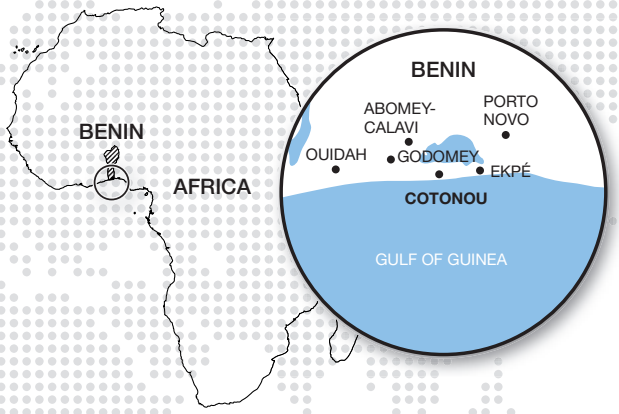
Although a native Italian, the employee of many years' standing grew up in northern France.

Consultations, experience and a product portfolio made a big impression

Besides guided tours of the Hamm and Siegen plants, visits to several reference projects were also on the agenda of the Air Liquide employees. At a later meeting with staff from the French Eureteq / Tarbes engineering office and Technical Customer Support, the pipe specifications were discussed in detail, and the best-suited product for the envisaged application was selected. The quality of the consultations with Salzgitter Mannesmann Line Pipe, its experience of complex projects, and its broad product portfolio geared to all conceivable applications impressed even the hardened critics. For the pipes intended for the trenchless sections to be installed by horizontal flush drilling, an FCM-S coat was selected on top of the PE coating with integrated T-ribbing. This combination provides optimum mechanical protection in trenchless pipe-laying. But external mechanical protection was not the only issue of interest. The condition of the pipe inside surface was also important, because the intended medium – oxygen – required maximum cleanliness. Accordingly, the customer specified internal hydromechanical flushing instead of the customary shot blasting method, to ensure absolute freedom from oil and grease. This is where Air Liquide brought in an experienced Swiss partner, who cleaned the pipes to the most exacting specifications. To ensure that the pipes would remain clean during subsequent transportation and storage, silica gel bags were placed inside the pipes and the pipe ends were sealed with air-tight protector caps until the start of welding on the project site.

Challenging pipeline route and complex approval procedures

The planned pipeline route passed along the periphery of the industrial town of Valenciennes in northern France through a former mining area and then skirted a nature reserve. In all, three sections were to be installed by trenchless pipe-laying, e.g. underneath the A2 freeway. All this made the pipeline approval procedures a real test of patience for all those working on the project, since different authorities and official bodies had to be consulted. Pipe-laying operations were completed in September 2013, and the trenchless sections were also executed without a hitch, from planning through to commissioning and start-up of the pipeline. "Establishing a new product in a market dominated by a different product is always a special task," says Bertolone speaking from experience. Thanks to the commitment of all the project parties, this was achieved at the first attempt. "In my view, the pipeline not only conveys the oxygen needed for steel production, but also mutual trust for future projects," is his positive conclusion.



Project Benin

Making the impossible possible

For the development of a secondary recovery oilfield off the coast of Benin, Salzgitter Mannesmann Line Pipe supplied HFI-welded steel pipes in record time. Despite continual changes in the technical specifications, quantities ordered and logistical services, a team from Sales, Logistics, Technical Customer Support and Production succeeded in getting the pipes to Africa exactly on schedule.

"The constantly changing specifications, enormous deadline pressure and complex logistical requirements proved to be a real challenge for all those involved. A great opportunity for us to demonstrate what our team can do."

Friedemann Dörfer
Area Sales Manager

The original bidding invitation was for a lot of 7,700 m of 20" HFI-welded pipe. All the other pipes were to be seamless. Given the extremely tight schedule, it came in handy for the customer that Salzgitter Mannesmann Line Pipe was able to produce the pipes in parallel at two locations. So, without further ado, another lot of 14,300 m of 8" pipe was added to the order.

Both pipe sizes were to be plastic-coated and provided with a heavy coat of concrete. Initial talks between the customer and Technical Customer Support revealed, however, that various technical issues still had to be clarified between the contractor and the actual customer. The lines of communication between the contractor, Salzgitter Mannesmann International in France (with help from the central office in Düsseldorf) and Salzgitter Mannesmann Line Pipe in Siegen were buzzing on several occasions. A meeting in Cassis, France, a meeting in the Netherlands, several telephone conferences and countless emails eventually got things on the right track, so the starter's gun for production was fired after the kick-off and pre-production meeting on August 12 and 13 in Hamm.

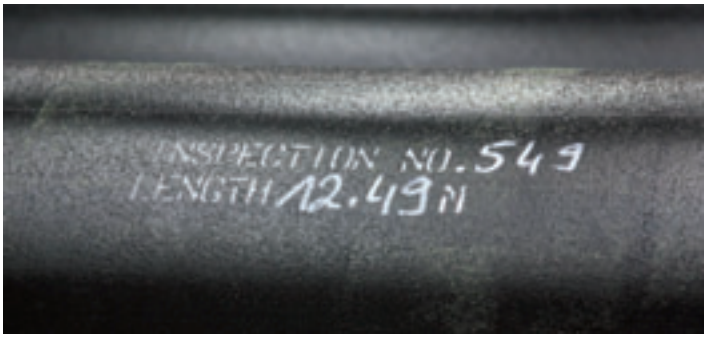
Extra deadline pressure from extra lot

And then, just one week before the start of production on September 10, the customer decided to order another 1,800 m of HFI-welded pipe (219.1 x 12.7 mm) – putting extra pressure on everyone involved. Had it not been for the exemplary coordination between the purchasing department and the strip supplier coupled with perfect timing by the work planning, production, plastic coating and shipping departments plus the technical staff functions – the deadline could never have been kept. Nor should we forget the incredible flexibility of our Dutch partner who was responsible for the application of the heavy concrete coat.

Loading and stowing responsibility

The original agreement merely envisaged pipe delivery to the port of Rotterdam. But then Salzgitter Mannesmann Line Pipe decided at short notice to also accept the responsibility for loading and stowing the pipes. The fact that the logistics department of Salzgitter Mannesmann International in Düsseldorf had already inquired about the type of vessel concerned brought some relief as regards the fear of unpleasant surprises during loading. So the ship was able to leave the Dutch port on November 23 without any complications.

On December 10, the captain reported the ship's arrival on time at the port of Cotonou.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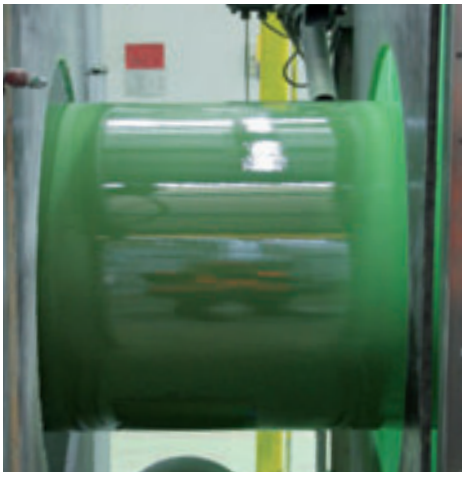
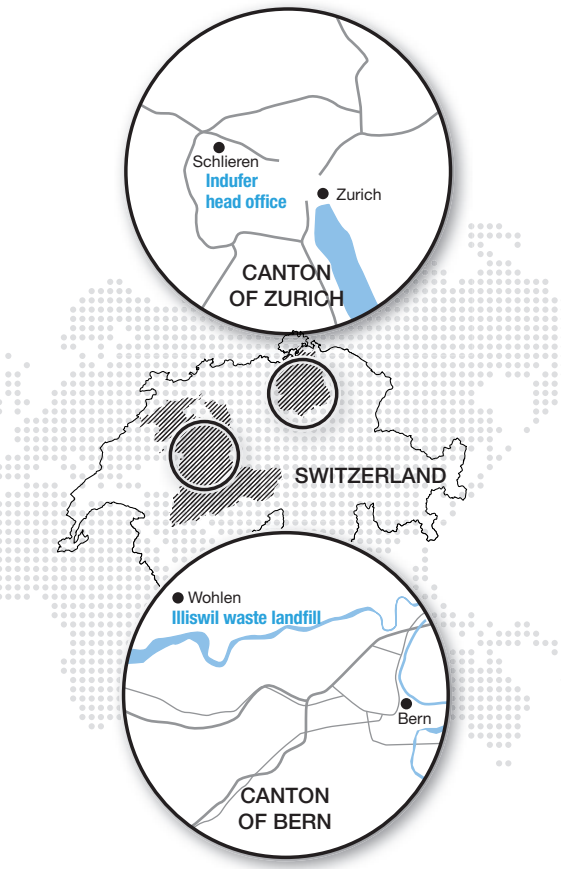


Sales partner Indufer AG, Switzerland

Successful with continuity and reliability

Since its establishment, Indufer AG based near Zurich has been Salzgitter Mannesmann Line Pipe's exclusive sales partner in Switzerland. But the ties between the two companies are not founded on their long-standing partnership alone, since they also both originate in Siegen.



Since its foundation 50 years ago, Indufer AG has developed into the leading materials supplier to the steel pipeline construction sector in Switzerland. Set up in 1963 by Röhrenwerke Gebrüder Fuchs, the predecessor of Salzgitter Mannesmann Line Pipe, Indufer AG now supplies steel pipe, valves and fittings to the entire Swiss gas and water sector. With its broad product portfolio, our sales partner also serves large projects in the fields of power plant construction, cooling pipes, wastewater disposal and snow-making systems.
The most recent joint project was the delivery of HFI-welded pipes for the rehabilitation of a waste landfill.

In the 1960s and 1970s, building waste, household garbage, slag, road mud, wastewater sludge and liquid and oily industrial waste were dumped at the Illiswil waste landfill near the Swiss municipality of Wohlen. When an analysis of the leachate revealed increased ammonia and vinylchloride concentrations, the Canton of Bern decided to rehabilitate the landfill. The project comprised the construction of a wastewater pipe and a detention basin that will collect the leachate and

The pipeline had to be installed in rough terrain. Using a trenchless technique, about half of the 660 m long pipe string was laid under a forest, and the remainder under farmland.

discharge it into the sewerage. This way, the water can be cleaned in the municipal wastewater treatment plant.

"The geology varied a great deal and ranged from sandstone to cohesive and clay-like marl rock. For the construction of the pipeline, this posed a real challenge," says Curdin Pinggera, project manager and member of the management board of Schenk AG. The Swiss company specializes in horizontal directional drilling and was commissioned with the construction of the pipeline and the detention basin. By means of slurry rotary drilling, a trenchless technique, the steel pipeline was laid under a forest and farmland at a gradient of 3 percent. The geological conditions meant that the borehole had to be flushed out several times before the approximately 660 m long steel pipeline could be pulled in in one go. The pipe was lined with a special cement mortar grade for wastewater and landfill water. For external protection, an FCM-S coating was chosen. This consists of a 3-layer MAPEC® coating with T-ribbing and a top coat of fiber cement mortar.

"Both the pipeline and the basin have passed the leakage test with flying colors. Yet another example of how we satisfy our customers with advice, know-how and quality," says Indufer AG manager Werner Freuler. "We deliver what we promise. Continuity and reliability have been our hallmark for more than 50 years now."

50 years of Indufer

Swiss company with German roots recently celebrated its 50th anniversary

It was a sunny day when Indufer manager Werner Freuler welcomed over 70 guests to the Gas Museum on the former gas works site in Schlieren near Zurich. In his celebratory speech, Axel E. Barten, Chairman of the Indufer Board, gave a review of the company's eventful history. This did not start in Schlieren, as one might think, but several hundreds of kilometers to the north, in Germany: The company was founded in 1963 by Röhrenwerke Gebrüder Fuchs GmbH, a predecessor of Salzgitter Mannesmann Line Pipe.

Pipeline builders with a vision

The pipe manufacturers based in Siegen soon identified the enormous potential of the up-and-coming Swiss gas market at the time. And the good reception of their services proved them right: The steel pipe business thrived, and, over the decades, Indufer developed increasingly into today's highly valued partner to the Swiss gas and water sector.

"Because you can rely on us"

It is not only the company's high-quality products, but also its committed employees that have contributed in no small measure to Indufer's success. Thanks to their long-standing experience from a multitude of projects, the experts at Indufer can draw on a wealth of expertise. "The reason why Indufer is so successful is that you can rely on us," says Werner Freuler. "Even though Indufer has changed quite considerably since the time of its foundation, two things have remained the same: Our untiring commitment to our customers and our proven partnership with Salzgitter Mannesmann Line Pipe," says the contented manager at the anniversary celebration.

Werner Freuler, Indufer AG manager

The Gas Museum provided a historical setting for the celebration

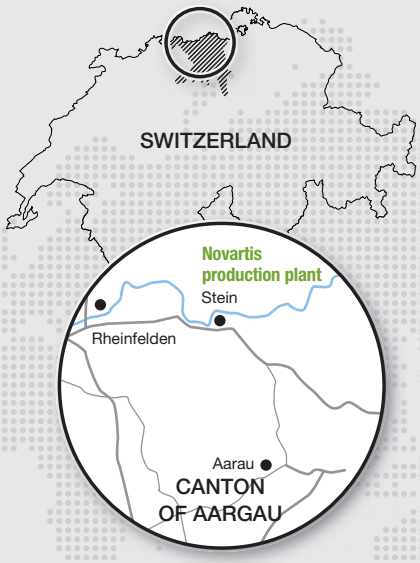
More than 70 customers, partners and suppliers attended the celebration.

2016

In 2016, the new plant will blend into the idyllic countryside of the Swiss-German border region.

Project Novartis

Just-in-time follow-up contract



The Novartis pharmaceuticals company is investing 500 million Swiss Francs in a new production plant for solid drugs at its location in Stein, Switzerland. 160 metric tons of HFI-welded steel pipe from Salzgitter Mannesmann Line Pipe have been installed in the process.

"Novartis could have built the plant at a location with lower labor costs," says Group CEO Joseph Jimenez at the groundbreaking ceremony in June 2012. With its highly skilled workforce and exceptionally high product quality, Stein was nevertheless the ideal site for the plant. In Stein, Novartis produces more than four billion tablets, capsules, ampoules, prefilled syringes and injection vials which are exported to about 150 countries worldwide. The CHF 500 million or roughly EUR 420 million investment will have effects on the entire border region. About a third of the 1,500 employees come from Germany. Although the new plant, which is to replace an immediately adjacent, obsolete production facility as of 2016, will not generate any new jobs, it will enhance the security of existing jobs. The building fabric costing about CHF 250 million is to be completed within 18 months. To stay on time and on budget, efficiently organized advance planning and site

2013

At Kindlimann and Tuchschmid the pipes from Salzgitter Mannesmann Line Pipe were sawn to length, welded, cement-lined, coated and delivered just in time.

2014

The construction site in 2014. The new plant is scheduled to go into operation in 2016.

NOVARTIS

Novartis was founded in 1996 through the merger of Ciba-Geigy and Sandoz and is managed by Joseph Jimenez. In 2011 the corporation domiciled in Basel generated net sales of USD 58.6 billion. The Novartis Group companies employ a 124,000 strong workforce in more than 140 countries.

The Stein location is the biggest production plant of the Pharmaceuticals Division. The roughly 1,500 employees here produce more than 4.3 billion tablets, capsules, ampoules, prefilled syringes, injection vials and transdermal therapeutic systems each year.

> *Thanks to the flexibility of Salzgitter Mannesmann Line Pipe, we were able to keep to the very tight time scale and satisfy our customers' requirements.*
>
> *Marco Giovanoli, Kindlimann*

logistics are the key to successful completion. Urgency has therefore been of the essence from the outset for everyone involved in this mega project.

Superlative quality in the shortest time

"Meeting the challenging quality requirements of one of the world's biggest pharmaceuticals corporations in the shortest time was the order of the day," recalls Guido Ludwig who was responsible for the contract at Salzgitter Mannesmann Line Pipe. He also masterminded the coordination of delivery between the Swiss dealer Kindlimann and Stahl- und Metallbau Tuchschmid AG, which is also Swiss-based. "Kindlimann placed the first order for 100 tonnes of HFI-welded 610 mm diameter steel pipe with a 6.3 mm wall thickness in mid-January 2013 and delivery to further processor Tuchschmid was scheduled for the end of March," says the 44-year-old explaining the deadline pressure. At the experienced steel and metal constructor, the pipes were given perfect preparation so that they could be installed immediately on site. After delivery of the first 24 pipes, logistics was once again fine-tuned. "We got together with the experts at Kindlimann and Tuchschmid and worked on a solution that would be optimal for both customer and supplier," Ludwig continues. In practice, this meant that the pipes were no longer cut to length at Tuchschmid but at Kindlimann. This relieved the steel and metal constructor of a work cycle and short-notice dispatch was made more flexible, as the pipes were now only 23 km away at Kindlimann. Tuchschmid was thus free to concentrate entirely on the welding, cement-lining, shot blasting, coating and just-in-time delivery to the site.

Even greater deadline pressure for the follow-up contract

With the end of the first contract, Salzgitter Mannesmann Line Pipe received just-in-time as it were, in June, a follow-up contract for a further 60 tons of the same dimensions. The deadline pressure here was even greater. The Swiss building contractor Erne AG had already purchased spiral-weld pipes for the same project, but these were barred from use for specification reasons. "Via Kindlimann acting as the dealer, we were able to help everyone concerned out of a predicament with direct deliveries to Erne within 10 days," says a proud Ludwig. With the adoption of the existing successful procedure, the remaining 96 pipes were then again supplied on demand to Kindlimann, who was very satisfied with the overall package of quality, delivery performance and logistics handling. "Thanks to the flexibility of Salzgitter Mannesmann Line Pipe, we were able to keep to the very tight time scale and satisfy our customers' requirements," says Marco Giovanoli from Kindlimann, summing up the project from his point of view. "We were also very satisfied with the quality and price/performance ratio."

After the event, those in charge on both sides reviewed the project again together to draw their conclusions. Again, Kindlimann was very happy. Further joint contracts have since been booked.

© Wasser Berlin International

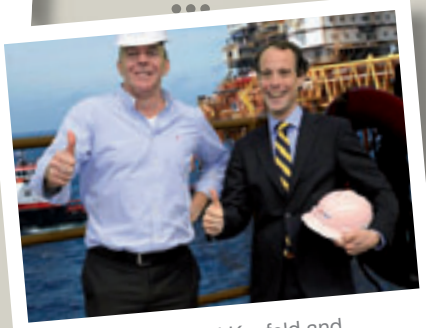
2 Germany WASSER BERLIN INTERNATIONAL 2013
Opening tour (from left): Jörn Winkels, H.E. Dr. Eng. Abdel Qawi Khalifa, Dirk Niebel, H.E. Melanie Schultz van Haegen-Maas Geesteranus, Jörg Simon, Kaldon Kaschman.

1 Croatia Pipe delivery for a drinking water pipeline between the Croatian islands of Brac and Hvar.

3 USA Roland Friedla and Greg Miller, EOG Resources, at the "Oktoberfest" of Salzgitter Mannesmann International in Houston.

5 Norway Thomas Elzenbaumer visiting a customer in Norway.

4 Brazil Snapshot of the port of Rio de Janeiro taken en route to a customer visit.



6 Mexico Michael Kosfeld and Johannes Roos, Salzgitter Mannesmann International Düsseldorf, at the "International Conference and Exhibition on Logistics, Transportation and Distribution of Hydrocarbons 2013" in León.

Present around the globe, at home in Germany.

7 Scotland Technip Spoolbase at Evanton: Loading pipes onboard a pipe-laying vessel.

8 Benin Friedemann Dörfer with employees from the new Representative Office in West Africa.

9 Germany Participants in the customer conference on "Trenchless pipe-laying" on February 20, 2014, in Siegen.

10 Sweden "Hindersmässan" customer conference of Salzgitter Mannesmann (Scandinavia) AB in Örebro, January 23, 2014.

11 Australia José Pinto at Salzgitter Mannesmann Line Pipe's stand at the "NO-DIG Sidney 2013" trade fair.

12 Netherlands René Richter excitedly watching HDD pipe-laying operations in the port of Rotterdam.

Legal notes

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