The customer magazine of ThyssenKrupp Steel Europe

compact

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1/2009

Pipelines supply the world with energy

Steel lifelines of modern societies

Interview with Edwin Eichler

Reorganization at ThyssenKrupp

Hot stamping

Component forming made easy

ThyssenKrupp Steel Europe
Thinking the future of steel

ThyssenKrupp

compact

Issue 31 1/2009

About our cover picture:

The prosperity of our society depends on their reliability: Pipelines provide us quickly and reliably with oil, natural gas and water. The distribution network now comprises no less than three million kilometers of steel pipework – and continues growing daily, conveying the valuable raw materials from what are in some cases remote sources to industrial centers worldwide.

masthead

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P. 17 Stahl-Zentrum, Düsseldorf
P. 20 TGE Gas Engineering
P. 22 ThyssenKrupp Real Estate
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P. 29 Jürgen Janneck, Alfred-Wegener-Institut
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"ThyssenKrupp has lost no time in responding to the global economic crisis with a program of restructuring measures."

Dear Readers,

2009 will go down in history as the year with the worst economic slump since Word War II. You as our customers were probably as surprised as we were at the speed and intensity of the recession. The bottom line for the steel industry is a sobering one: The fiscal year which has just come to a close was without doubt one of the toughest in the long history of the steel sector as a whole.

The fact that it is currently neither possible to reliably assess nor give a forecast as to the further course of developments doesn't make the situation any easier at the present time, and the concerns that we might well experience a "double dip" – in other words a renewed slump – in the early part of next year are still present. Since the summer we have seen a recovery in terms of new orders, and the slump appears to have bottomed out for now, but talk of a sustained trend reversal would be somewhat premature. In spite of a significantly better second half-year, the latest forecasts for 2009 as a whole predict a shrinkage in German crude steel production by around 30 percent to 33 million metric tons as against the previous year, and the expectations for 2010 are, at best, of a slight upward trend.

Having been severely impacted by the global economic crisis in terms of new orders, sales, employment and earnings in the fiscal year which has just ended, ThyssenKrupp has lost no time in responding to this critical situation with a program of restructuring measures which came into effect on commencement of the new fiscal year 2009/2010 on October 1 and provides for a diversity of far-reaching changes. This issue of compact contains detailed information on this topic.

Just a brief insight in advance: ThyssenKrupp now operates four business areas each in the competency fields of Materials and Technologies, all of which are directly linked to ThyssenKrupp AG. The former Steel, Stainless and Services segments have now been organized into the Materials division, one of the pillars of which will be Steel Europe which essentially embraces all of the Europe-based companies of the former ThyssenKrupp Steel AG. However, it goes without saying that we are not going to content ourselves with what we have achieved in this direction to date. On the contrary, the challenges continue. In the interests of emerging stronger from these difficult times, ThyssenKrupp Steel Europe AG is working intensively on remaining flexible and excellent.
As customers, you expect us to provide outstanding products to help ensure your constant success. We can assure you that this is precisely what we shall continue to guarantee, also because research and development retain the priority status we have always given to these activities in the past.

It is a known fact that a crisis also harbors an opportunity – and our history shows that there is something at which we are particularly good, namely courageously taking chances and translating them into success. We at ThyssenKrupp Steel Europe are well aware that making oneself fit for the future entails a continuous process of regeneration. And it is my conviction that the future lying before us will be a good one for ThyssenKrupp Steel Europe.

Kind regards,

Dr. Jost A. Massenberg
Sales Director
ThyssenKrupp Steel Europe

ThyssenKrupp reorganizes itself

"That is our response to the economic crisis"

Personal profile

Edwin Eichler has been a member of the ThyssenKrupp Executive Board with responsibility for the Materials division with the business areas Steel Europe, Steel Americas, Stainless Global and Materials Service since October 1, 2009. He is at the same time CEO of the Steel Europe and Steel Americas business areas of ThyssenKrupp AG and CEO of ThyssenKrupp Steel Europe AG.

Born in 1958, he studied information technology at the University of the German Armed Forces, Neubiberg, graduating as Diplom-Informatiker in 1982.

He was subsequently trained and employed as an officer in the German Army until 1990 when he joined the Bertelsmann Group in Gütersloh, where he occupied several posts. He became a member of the Management Board of Bertelsmann Industrie AG in 1996.

October 2002 saw Edwin Eichler join the ThyssenKrupp Group as member of the ThyssenKrupp AG Executive Board and Executive Board chairman of ThyssenKrupp Services AG. During the period from October 1, 2006 till March 31, 2009 he was also Executive Board chairman of ThyssenKrupp Elevator AG. On April 1, 2009 he became chairman of the Executive Boards of ThyssenKrupp Steel AG and ThyssenKrupp Stainless AG in addition to his position as chairman of the Executive Board of ThyssenKrupp Services AG.

Mr. Eichler, ThyssenKrupp has completely restructured itself within a very short period of time and established four business areas in each of the Materials and Technologies divisions. What does the Group expect from this radical restructuring?

This restructuring is our emphatic response to the global economic crisis. The fundamental reorganization this entailed was an absolutely essential step towards the successful further development of our group of companies. The Group is now managed and controlled from a significantly strengthened headquarters. The activities have been organized into business areas which are directly linked to ThyssenKrupp AG. This ensures that the Group Executive Board is closer to the operating business, creates more transparency both internally and externally, and enables fast and flexible access to the market.

Materials and Technologies mark the competency areas of the ThyssenKrupp Group; the former Steel, Stainless and Services segments have now been organized into the Materials division, for which I am directly responsible on the Group Executive Board. Technologies and Elevator are now parts of the Technologies division, for which my colleague Dr. Olaf Berlien is responsible on the ThyssenKrupp Executive Board.

What do these changes entail for the customers?

I am firmly convinced that our customers are going to benefit from the new structure. The Materials division is comprised of the four business areas Steel Europe, Steel Americas, Stainless Global and Material Services; these focus and strengthen the expansion of our materials-related competency and services along the value chain – purchasing, production, sales and services. This is a service spectrum which only a few companies worldwide are able to offer.

What we now have to do is continue working on linking up the business areas to form an effective, efficient organizational unit. The grouping is a very close cooperation among partners, even if the partners are of varying sizes and have different strengths – and the thing to do in the coming years is to make optimal use of those strengths. This, together with the competencies and experience of our employees, is something on which our customers can continue to rely on.

There are comments in the media to the effect that the steel business is losing importance. Is this true?

My answer is a clear and unambiguous "no": steel remains a core activity. In its new structure, ThyssenKrupp remains an integrated materials and technologies corporation; after all, the diversified positioning is one of our strengths, and that is something we have no intention whatsoever of changing. It is also a fact that the Group's positive development in the course of the past few years has been largely shaped by the former Steel segment. The steel-related activities will remain a core part of ThyssenKrupp's operations.

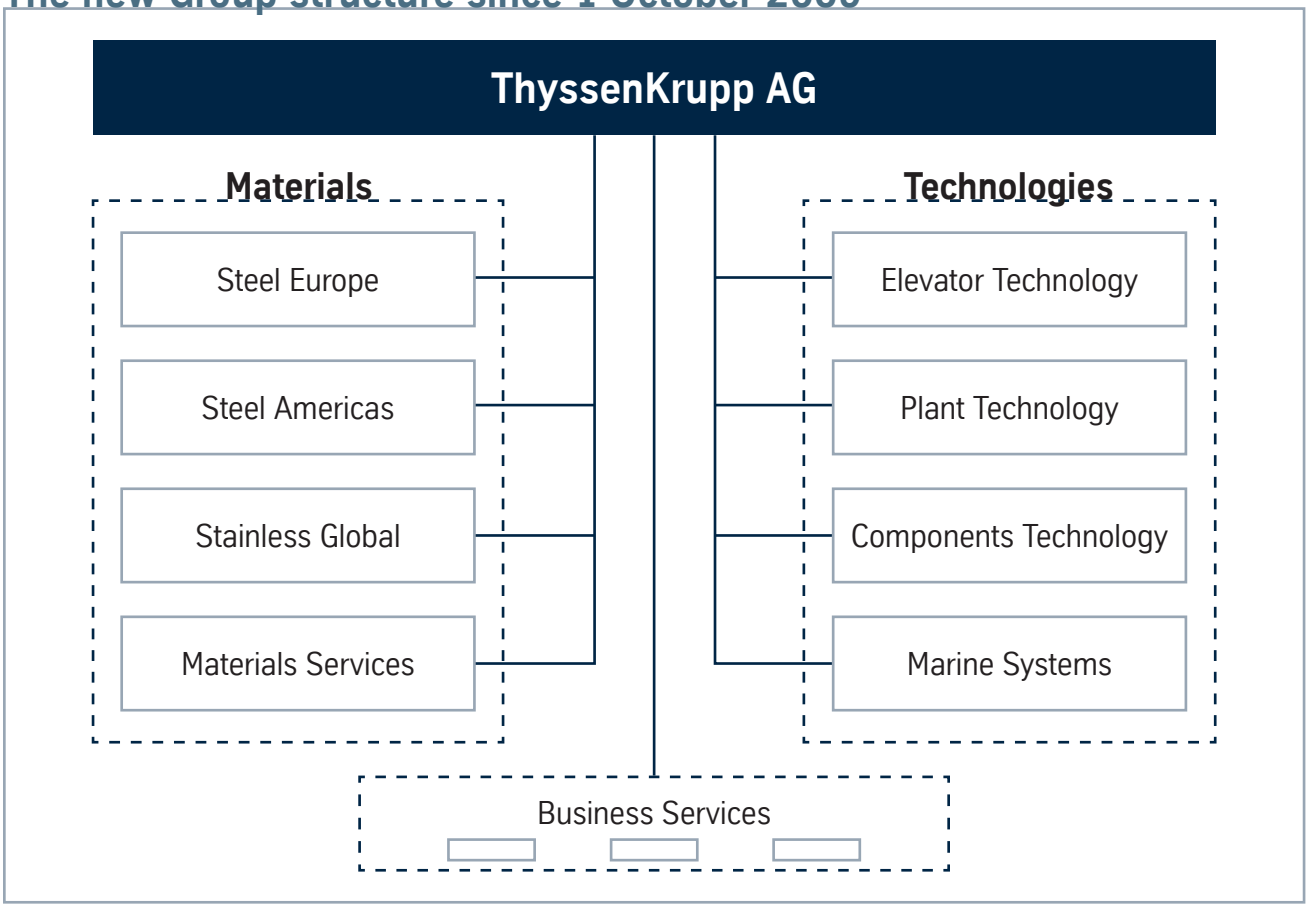
With this in mind, where do the benefits of the restructuring lie?

The benefits are newly gained speed and market proximity. The advantages of the new management/control model are obvious. Up until now, decisions have been taken in a three-stage system with Group holding company, segment holding companies and operating management companies, each with their own supervisory board bodies. This hierarchy meant that approval processes sometimes took a relatively long period of time. The restructuring now means that the decentralized units have been strengthened and are more closely linked with headquarters, thus enabling us to respond even more rapidly to new market trends and developments and customers' requirements. We are now leaner and more efficient, and hence better able to implement operating and strategic measures without delay – which of course benefits our customers.

Allow me to make one thing clear: The restructuring doesn't mean that we are turning everything that has proven itself upside down, but what we have done is set the course for ThyssenKrupp to look ahead on a well-positioned basis, even in what is currently an exceptionally difficult environment. Within the space of just a few months we have made the Group fit for the future via the new structure. This is our launching point. Our customers can rely on the competencies and experience of our employees in the same way as they have done to date. We shall continue to operate efficiently and effectively with high-quality products in the market and do everything within our power to match the healthy operating results achieved in the past few years.

The interview was conducted by
Christiane Hoch-Baumann

The new Group structure since 1 October 2009



The virtual divisions "Materials" and "Technologies" are not independent subholdings but instead serve as organizatonial brackets, describe the strategic focus of the business areas and mark out the competency areas of the Group in its entirety.

New directorates at ThyssenKrupp Steel Europe

Service and sales as priorities

Dr. Jost A. Massenberg, Sales Director ThyssenKrupp Steel Europe

Dr. Ulrich Jaroni, Production Director, ThyssenKrupp Steel Europe

As flagship of the Steel Europe business area, ThyssenKrupp Steel Europe AG is taking on the challenges of the times with a modern structure – with high priority being attached to customer satisfaction and service.

The commencement of the new fiscal year saw the installation of the Sales directorate with the areas of Auto, Industry and Sales Strategy and Planning as a further development of the divisionally oriented organizational structure. Procedures are characterized by short paths and thus faster decisions. "We have never been so lean. The fact that we have dispensed with whole organizational levels means we are now operating with greater market proximity and implementing operating and strategic measures in a flexible and delay-free manner," explains Dr. Jost A. Massenberg, Executive Board member with responsibility for sales at ThyssenKrupp Steel Europe. "We are thus creating the preconditions for leveraging our strengths more targetedly in a tough market environment so we can operate even more effectively and efficiently in the face of the fierce competitive situation."

The new structure is focused on enhanced proximity to customers and ensuring their satisfaction, for which reason the Heavy Plate and Color/Construction Profit Centers as well as the ThyssenKrupp Steel Europe subsidiaries Rasselstein, Hoesch Hohenlimburg, Electrical Steel, Tailored Blanks and Metal Forming handle their sales operations as an independent Processing activity area in the Production directorate.

"We, in close cooperation with the Sales directorate, are offering an effective, standardized sales policy," Dr. Ulrich Jaroni, the responsible Executive Board member, tells us. And Dr. Massenberg adds: "The responsibility for our high-quality products lies with capable and highly motivated production and service teams who will continue to attend to the needs and requirements of a discerning clientele. On this basis we aim to create advantages for our customers in terms of market positioning. All of the Steel Europe sales teams as well as those from the Sales directorate and Processing area will – as usual – be working for and with the customers to find creative solutions. Only in this way will it be possible for Steel Europe's functional focus to have a positive impact already in the medium term for all concerned."

"Short paths, swift decisions, pursuing common goals and developing future-oriented market strategies – those are the aims behind the new organizational structure," emphasizes sales director Massenberg. "However, it is not always possible to prevent changes in responsibilities in some cases, as a result of which there are new faces in several spheres of activity. On the next pages we shall be introducing you to the sales managers at ThyssenKrupp Steel Europe.

Christiane Hoch-Baumann

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Sales Auto

Thilo Lutz

"Our key account teams attend to the needs of customers worldwide in the automotive industry and, with their clearly defined organizational allocation basis, gear themselves optimally to customer-specific processes in the areas of development and production. They provide support in matters relating to sales, material quality and processing. They assist in the selection of suitable material, provide advice on the designing of chassis components and answer material-related inquiries quickly and competently. Our customers benefit from this intensive support, and we work together with them to get the most out of the use of steel. In addition, the key account teams pool activities from other areas, such as, for example, order management, production, first-stage processing, the tailoring of products as well as the development of materials. As part of the restructuring process, the Simultaneous Engineering (SE)/ Applications Technology unit has been relocated to the Production department's R&D section. The result is an intensive cooperation within the new set-up and with other business units in the ThyssenKrupp Group. This generates valuable synergy effects in order to ensure that our steel products are of a consistently high and enhanced quality."

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Sales Industry

Dr. Matthias Gierse

"The whole diversity of applications for steel is reflected in Sales Industry. Whether it's top-quality products for the cold-rolling and metal packaging industries, the pipe steel and construction sectors that are required or for the entire steel-related service and dealer network worldwide – the fact is that optimized solutions would simply not be possible without steel. Our customers are as varied as our products. We produce and sell high-quality steel products to over a thousand customers with the most varying requirements, and the focus of our strategy is on the further optimization of our services in order to meet these requirements to the full extent. The setting up of Sales Industry has given rise to a structure which is fully oriented to the needs of these heterogeneous groups. For example, each customer has a central contact person in Sales Industry, and each customer is assigned to a technical advisory service in order to establish an even more intensive relationship. Our customers can rely on the assistance of our staff for the development and enhancement of custom-tailored material solutions and user-oriented application concepts."

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Sales Strategy and Planning

Marcus Fix

"Our teams handle all of Steel Europe's central sales tasks. We control the company's entire sales planning in the operating area as well as in long-term and strategic terms. This also embraces the harmonization of sales requirements for external customers with the input material requirements of the Processing area to which the Color/Construction and Heavy Plate Profit Centers as well as all subsidiaries belong. In addition, we also provide special services for Sales with its Auto, Industry and Processing operating units; examples in this respect include the coordination of quality management and cross-departmental tasks in the areas of product and market strategy between the units, the development of long-term market scenarios and alternative courses of action, the tracking of commercial actions, and the control of export business. We design marketing strategies and targeted customer loyalty concepts. In doing so, we initiate the market and sales promotion of the operating sales units and companies. Via our Visitor-Center we also offer our customers additional information on plant systems, processes and innovations at ThyssenKrupp Steel Europe."

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Color/Construction Profit Center

Volker Senger

"The Color/Construction Profit Center serves the entire value chain, from hot-dip and coil coating to slitting, trimming and cutting to length right through to complete and installation-ready structural systems. As a profit center of ThyssenKrupp Steel Europe, we take the steel-related expertise of a global corporation and translate it into custom-tailored specialist solutions for the industrial and commercial building construction sector, household appliance manufacturers, the automotive industry and the air-conditioning and refrigeration sector. We are specialists in the area of surface coating and can offer a wide spectrum of innovative coating systems and design alternatives in all areas. The Color/Construction Profit Center can be relied upon at all times to provide its customers with expert advice on availability and work on the further, sector-specific development of steel products. In keeping with the motto: Innovations as response to the challenges of our times – with our commitment to optimum product quality and excellent supply and delivery performance."

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Heavy Plate Profit Center

Peter G. Selbach

"The Heavy Plate Profit Center manufactures tempered, high-strength and wear-resistant heavy plate from special structural steels. These products make steel structures not only lighter and more durable but also more cost-efficient. We offer our customers throughout the world quarto and cut-to-length plate for the most diverse applications: besides general structural steels, pressure vessel steels, steels for the shipbuilding and pipeline construction sectors, our special steel grades XAR®, N-A-XTRA® and XABO® for highly stressed steel structures – as can be found, for example, on dumper trucks, earth-moving machines and mobile cranes – constitute a specialty. However, rather than being solely a materials supplier, we focus on the specific needs and requirements of our customers and provide them with custom-tailored steels. The global distribution network which has been built up and expanded for heavy plate products helps our teams ensure availability and just-in-time delivery to the end consumers. To this end we have concluded cooperation agreements with steel service centers throughout the world which can also provide pre-machined and prefabricated parts."

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Hoesch Hohenlimburg

Michael Stausberg

"Hoesch Hohenlimburg sees itself as a specialist for customer-specific applications which permit cost-effective production in small batches as well. Our hot-rolled medium-wide strip is a specialty which meets the most individual customer requirements and is known for its consistently high technical quality. You can rely on our competent experts to guide you to custom-tailored solutions. Try us! With the benefits of our constant enhancement of processes and product quality behind it, medium-wide strip from Hohenlimburg is used as input material for the cold-rolling industry and direct usage, predominantly in the automotive industry. The continuously modernized medium-wide strip line is fully automated, and thus provides the best possible preconditions for the optimal presetting of ultra-tight thickness tolerances and technological characteristics. A wide spectrum of qualities, short lead times and high deadline flexibility – right through to custom-tailored logistics concepts – are further success factors which put Hohenlimburg medium-wide strip in a class of its own. Our activities are focused on you and your needs as customer."

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Rasselstein

Dr. Ulrich Roeske

"Rasselstein is Germany's only manufacturer of tinplate. At our plant in Andernach – the world's largest such facility for packaging steel – we produce tin-coated and special chromium-coated steel for a wide variety of packaging solutions, for example food and aerosol cans. Innovation, quality and customer service are the three factors which have had our topmost priority right from the very start. Our customers can rely on our support in all application-related matters, and the spectrum of services we provide ranges from technical consultancy and custom-tailored logistics concepts right through to customer-specific solutions for the optimizing and recycling of packaging. We also put our extensive know-how at your disposal in all matters relating to research and development, for instance in the implementation of new product concepts. Consistent customer proximity, short communication channels and rapid response are strengths of ours. Sound order management and key accounting mean that you as customer can count on our direct sales team to provide you with specialized, competent advice – no matter where in the world you have your operations."

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ThyssenKrupp Electrical Steel

Dr. Henrik Adam

"ThyssenKrupp Electrical Steel is a globally active premium manufacturer of high-tech electrical steel products under the brand name PowerCore®. PowerCore® meets the demanding requirements of our customers in the electrical engineering industry and is used in a diversity of applications along the entire energy value chain, from energy production (generators), transmission and distribution (transformers) right through to consumption (engines, electrical devices). For more than 50 years we have gathered a wealth of expertise in the manufacture and usage of electrical steel, and deploy it purposefully and efficiently for our customers. The complex production flow and the product characteristics of our PowerCore® electrical steel are subject to a permanent process of optimization on the part of our R&D department. ThyssenKrupp Electrical Steel is optimally positioned in the global electrical engineering market and figures among the world's top suppliers of electrical steel."

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ThyssenKrupp Umformtechnik

Bernhard Osburg

"Progress and innovation in the car-building sector call for the pooling of creativity and productivity – which is a specialty of the Metal Forming Group. At 18 plants in Europe and China with a total workforce of 5,900 employees we develop and manufacture high-quality body and chassis stampings and assemblies for the international automotive industry. Our spectrum of services ranges from the initial idea to component design, simulation, prototyping and component testing right through to equipment manufacture and volume production. As a full-service provider, we have extensive expertise in the area of sheet metal forming. Depending on the customer's needs, we work with steel, special steel and aluminum and make a cost-effective production process possible for every application. On the basis of effective technology and innovation management and across-the-board competency we contribute via our products to ensuring added comfort and safety as well as reducing CO_2 emissions for the mobility of tomorrow. Examples in this respect include innovative lightweight design concepts and intelligent system solutions which we realize in close system partnership with our customers."

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ThyssenKrupp Tailored Blanks

Dr. Oliver Tietze

"ThyssenKrupp Tailored Blanks supplies customers throughout the world with innovative, custom-tailored solutions in the area of lightweight steel construction for the vehicles of the future. With our sites in Europe, Asia and America, we are the world market leaders and the only globally positioned provider of tailored products, which include, among others, Tailored Strips® for forming in progressive compound dies, Hotform Blanks® for solutions for hot stamping, and Tailored Orbitals®, which are orbitally welded pipes which are for example used in exhaust systems. Our teams work in close cooperation with the vehicle manufacturers, from the early phases of a vehicle's development right through to successful production launch. In coordination with our production teams, the key account staff work out optimal solutions as early as during the tendering phase, and organize the entire order management activities in cooperation with the quality and logistics teams. We provide support throughout the order process, from logistics optimization through to enhancement in terms of materials usage, and combine our expertise in terms of materials, tailored products and innovative production technologies on the way to the optimal solution for each vehicle component. In short: 'We tailor your success' is not only a motto, but also determines the way we go about our business every day."

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Pipelines deliver energy for the world

The lifelines of the modern economy

Whether driving our car or flying to our holiday destination or heating our home – oil and natural gas guarantee our mobility and power supply. They are the engines of economic prosperity – and pipelines reliably supply the world with these valuable commodities.

The world's daily requirements equate to entire oceans: Where oil is concerned, for example, we're talking about almost 86 million barrels, with a barrel amounting to 42 US gallons or 159 liters. And even then, the hunger has not been satisfied by a long way. Modern and developing industrial societies need more and more oil and gas, for which reason a huge technical outlay is deployed in the search for new sources of the industrial elixir, even in the most secluded regions. Pipelines can convey these underground treasures quickly and safely for years from the in part remote production fields to consumers.

This is reflected in the fact that our globe is covered by a widely ramified network of steel pipes. From the icy expanses of Alaska to the sandy wastes of the Arabian deserts, from the depths of the oceans to the heights of the Caucasus Mountains, the steel energy lifelines make up an indispensable distribution network which pumps the oil and gas through to the industrial centers. There are three million kilometers of pipelines at present which, if all lined up in a row, would encircle the equator no less than 75 times. And every year sees a further 25,000 to 50,000 kilometers of new pipeline being put into operation.

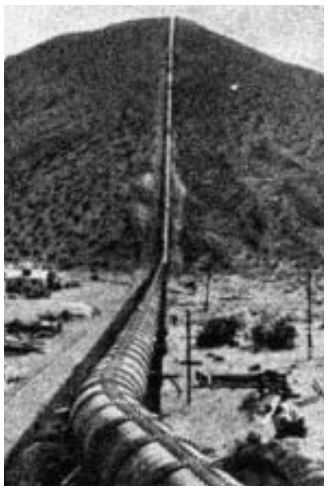
The network of energy arteries is growing at an untiring pace as result of the desire for ever more prosperity, and this development is sparking off debates at the political level. It is not only the prosperity of the world's inhabitants that is the foremost consideration but, in many cases, national (economic) interests as well, for which reason the dependency on oil and gas and its distribution network is making pipeline systems a strategic chip in the international poker game for political power; this was something we learnt from the gas conflict between Russia and Ukraine. Russia's blockage of the "Druschba" pipeline – a name which means "friendship" – put at risk the energy supply and economies of several European countries at the beginning of the year.

Against this background, the search is on for further possibilities, among these being the much discussed projects such as the Baltic pipeline which is planned to run along the bed of the Baltic Sea and convey Russian gas from Siberia to Germany from 2011 onwards with an envisaged ultimate capacity of 55 billion cubic meters per year. This is a German-Russian project on the part of Nord Stream – a joint venture in which Russian monopolist Gazprom holds a 51-percent interest and German companies Wintershall and E.ON and the Dutch corporation Gasunie the remaining 49 percent – and is a controversial undertaking in view of the fact that the pipeline among other things runs through nature reserves off Sweden and bypasses Poland and the Baltic states. The planned rival Nabucco Pipeline project in which German power provider RWE is involved is a topic of discussion as well; it is intended to be 3,300 kilometers in length and convey gas as of 2013 from the Caspian region far down in the south of Europe through Turkey, Bulgaria, Romania and Hungary right through to Austria without crossing through any Russian territory. Headed by Austrian oil and gas corporation OMV, the Nabucco consortium is reckoning with a conveyed annual volume of 31 billion cubic meters of gas from 2020 onwards.

However, there are other, more flexible forms of conveyance with lesser degrees of dependence, namely, for example, the supply of liquefied natural gas – or LNG for short – by ship. Other measures are under discussion too, for instance the expansion of storage capacities and floating power stations which would be brought to their respective operational locations with the aid of tugboats. Irrespective of by which means oil and natural gas are brought to where they are needed, the material used to convey them has to be of the very highest quality. The following pages will give you an insight into the requirements and developments in this area of activity and ThyssenKrupp Steel Europe's solutions.

Christiane Hoch-Baumann

The first pipelines



October 10, 1865 sees the American Samuel van Syckel successfully complete what is one of the 19th century's greatest engineering feats with the inauguration of his eight-kilometer long pipeline. Comprised of two-inch wrought iron pipe, it conveys oil from a well called Pithole in the state of Pennsylvania to "Miller Farm" at an hourly rate equating to 81 barrels. At around the same time, his fellow countryman Henry Harley lays a pipeline for crude oil which likewise proves a successful venture.

These pipelines soon inspire similar, well-known projects; on May 28, 1879, Byron Benson completes a pioneering technical achievement in the fight against John D. Rockefeller's oil monopoly in the form of the 180-kilometer long Tidewater pipeline which conveys oil from the inland oilfields to the eastern coast in the vicinity of the Port of New York. 250 barrels arrive in Williamsport every hour and are then shipped to New York. The transport costs are thus cut from a previous level of 85 cents per barrel to just 17 cents.

The 19th century's pipeline construction projects open the door to a new era of raw-materials transportation and soon lead to an oil boom. It is interesting to note that Benson's historical Tidewater pipeline is still operating perfectly even now in the 21st century – even if in a different function. Its steel body no longer transports oil, but instead houses glass-fiber cable which efficiently conveys data.

Safety is a top priority

“Pipelines are an indispensable means of conveyance”

Hans-Joachim de la Camp checks pipelines from top to bottom for Germany's TÜV SÜD Industrie Service technical inspectorate.

Mr. de la Camp, never has a gas line been as hotly debated in Germany as the planned Baltic pipeline and its rival Nabucco project. It's all about money, influence and politics, and the quality of the kilometer-long steel pipelines is a topic which is falling right into the background.

That is correct, yet the quality of the steel pipelines is decisive in terms of their reliability and operating efficiency. Pipelines are highly complex systems which first collect the oil and gas from a number of small drilling sites on the earth's surface, bring the respective volumes together and ultimately pump them through pipe networks which are in some cases several thousand kilometers in length. The extreme conditions involved in the conveyance of these raw materials place particularly high requirements on steel: It has to withstand decades of high operating pressure levels, extreme weather conditions, for example in permafrost regions, external forces and damage in deserts or, when laid offshore, in saltwater, as well as aggressive sulfur compounds.

Which steel qualities are called for against this background?

The steel needs to be of a high quality and be capable of withstanding all the operating and external influences to which pipelines are subjected. The mandatory mechanical and technical characteristics for pipelines are detailed in special standards and specifications and ensure good deformability, durability and weldability.

However, this is not all that is called for. Where larger-scale overland projects are concerned, the pipes have a diameter of up to 1.2 meters and more. Oil pipelines are subject to internal pressure levels of between 60 and 70 bar, and gas pipelines to levels of up to as much as 200 bar. Wall thicknesses of up to three centimeters are mandatory. An outer

Natural gas: fuel with tradition

An unimaginable figure for the non-scientifically minded: natural gas came into being millions of years ago. Most of the deposits available today are between 15 million and 600 million years old. Crude oil is its baby brother, so to speak. Like natural gas, crude oil is made up of fossilized oceanic microorganisms, algae or plankton trapped under the surface of the earth. On the floor of the oceans they became covered in time with impermeable rock layers comprised of sand and scree. The sediment made for high pressures and temperatures, and a series of chemical processes commenced. Natural gas came into being.

The ancient Greeks discovered a gas source on Mount Parnassos in approximately 1000 BC. This was perceived as a miracle since the source was on fire. Since the people in those days were unable to find an explanation for the origin of the "eternal flame", they interpreted the source as a divine power and worshipped it in a temple especially built for the purpose; it went down in history as the Oracle of Delphi.

"Divine miracles" of a similar nature – which perhaps never became as famous – burned in ancient Persia and India. It wasn't until centuries later that the burning gas was demystified. In about 500 BC, the ancient Chinese started using natural gas to make seawater potable by means of distillation. It was also the Chinese who created the first prototype of a gas pipeline by conveying gas via bamboo canes.

Hot flame: natural gas is still used as a burning source and today helps advance economic activity and prosperity.

plastic jacket several millimeters in thickness protects the pipe against corrosion. When the pipelines are in operation, sensors in the stations monitor whether everything is in order, and check the pressure and temperature levels of the conveyed raw material and the tightness of the pipeline system. The measured values are transmitted regularly to the control center, and unusual circumstances are thus identified immediately and measures accordingly initiated.

Pipelines in some cases convey highly volatile media. How do you ensure the operational safety that is required in such instances?

Pipelines are welded together in up to five layers with millimeter precision with a longitudinal or spiral seam, and absolute precision is the order of the day. Here too, standards and specifications establish the demanding requirements and determine that the pipework sections have to be separated and re-welded if even the slightest deviations from those standards and specifications are found. Each and every weld seam is closely checked ultrasonically and by radiography before the pipe is approved for use, with the required strength and tightness being verified by means of water pressure. At the building site the individual pipework sections are then connected up by special welders and put through a renewed water pressure or stress test. The pipeline is then put into operation if absolutely no nonconformities are discovered.

Inspection vehicles known as "pigs" carry out regular checks on the interior of the pipeline during operation and scan it for abnormalities. This procedure can take several days for a stretch of more than 100 kilometers. A data storage device documents all measurement results and these are subsequently evaluated by our specialists.

Depending on the respective operating conditions, the extensive maintenance sessions with inspection pigs are necessary at intervals of several years, and ensure high degrees of system availability. Besides this, the pipeline routes are routinely inspected by helicopter. This enables, for example, the identification of approaching construction activities in the surrounding area, which is of importance since external impacts are still the most frequent cause of damage to pipelines. From the air it is also possible to locate changes in the vegetation which might provide indications as to the condition of the pipeline.

So pipelines are built to last. But what happens with them when resources dry up?

Hardly a day goes by in the meantime without a discussion on the end for fossil fuels. The forecasts as to when the current reserves will be exhausted vary considerably, but we are not in any case likely to find out about the definite points in time involved since the information on the actual size of the deposits is and will continue to be treated as top secret.

But pipelines won't become less important even if the sources do dry up. Increasing importance is being attached to the construction of water pipelines because potable water – which is even more vital than oil and gas – is getting to be in short supply in some countries. The desalination of seawater is a possible solution to this problem, and that in turn has to be safely and reliably transported. In Saudi Arabia, for example, pipelines with a diameter of almost two meters are currently being built exclusively for conveying water. A number of scientists are futuristically prophesying goods transport by means of huge, underground pipeline systems. Even if a scenario of this nature is likely to remain utopia in view of the massive costs it would entail, one thing is certain: There will continue to be pipelines because they are the safest, most efficient and reliable means of conveyance.

The interview was conducted by Christiane Hoch-Baumann.

www.tuev-sued.de

Alongside gas, crude oil is today's industrial elixir. The global population consumes 86 million barrels a day – and its hunger is still not sated.

Crude oil: Black gold

Bitumen was already a widely valued material in Mesopotamia as long ago as almost 4000 years. It was known as "naptu" at the time, after the Babylonian word for "glow", and was primarily used as fuel for lamps. Other uses included caulking – in other words sealing – of a ship's hull, having been mixed with sand, reeds and other materials.

Some time later, Roman legionnaires discovered oil in an Egyptian mountain range on the Gulf of Suez; this oil emerged from the earth's surface and was thus easily drawn upon. They called this raw material "oleum petrae", which means stone or rock oil.

The Byzantines used oil for military purposes, and spread terror and fear among their enemies by using flaming pots of oil – known as Greek fire – which they catapulted onto opposing lines and towns.

Crude oil was used as a medicine in the nineteenth century, above all in the USA. It was sold in little bottles and claimed to have a blood-purifying effect for people suffering from cholera, bronchitis or tuberculosis. Both sales and success were minimal since many patients preferred to remain ill rather than drink the awful-tasting oil.

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Energy policy of the future

Steel is always a part of the solution

There are few fields of activity in Germany in which there is such intensive conflict as to the future course of action as in that of energy policy. Which objective should be given the greater priority – security of supply, economic efficiency or climate protection? Should we go for natural gas or coal, nuclear energy or renewable energies? No matter what the answer turns out to be, steel is always a part of the solution.

Reliable supplies to Germany and Europe by pipeline or liquefied-gas tankers would not be possible without high-quality steel – and the environmentally-friendly generation of electricity is likewise dependent on this material. The use of new high-temperature steels in boilers and steam piping makes possible power stations with the highest degree of efficiency. Those putting their faith in renewable energies cannot do without steel, irrespective of whether it's the construction of wind energy turbines or underwater turbines. The fact is that no material other than steel could withstand the mighty forces generated by tidal ebb and flow. And even in fuel cells, steel fulfils a key function.

This all means that the availability of high-quality, high-performance steel materials is of critical importance in terms of the future of our energy supply. The connection between steel and energy also becomes evident from another perspective; the steel production industry in Germany and Europe is dependent on affordable energy in order to hold its own in the international competitive environment. In fact, energy costs account for around twenty-five percent of the overall costs entailed in steel production. Electricity is necessary for the melting of scrap in electric steel plants in particular, and natural gas is essential in the generation of heat and process steam.

Given the high level of importance for the competitiveness of the steel industry, some of the developments in the sphere of energy policy continue to give rise to considerable concern, unfortunately. The simultaneous phasing out of nuclear and coal-fired energy would lead to a massive upsurge in power costs; this is because it would not be possible for gas and renewable energies to fill the resultant supply gap without entailing extra costs. What the industry needs instead is a balanced power generation mix comprised of all energy sources. In particular the European trade in CO_2 emissions should not be allowed to continue weighing down the industrial sector as long as steel-producing regions such as Asia, Russia or America are not subject to comparable environmental protection regulations – in addition to which the environment and climate would not in any case benefit. The steel industry is playing an active part in the sphere of climate protection, this being reflected in, among other things, energy-efficient production and sustainable products. Nevertheless, energy and environmental policy must on no account put international competitiveness at risk.

Personal profile

Hans Jürgen Kerkhoff became president of Wirtschaftsvereinigung Stahl (the German steel trade association) one year ago as well as chairman of the German Steel Institute VDEh. His affiliation with the steel trade association commenced as long ago as 1987, since which time he has occupied a variety of positions. In 2004 he was appointed managing director.

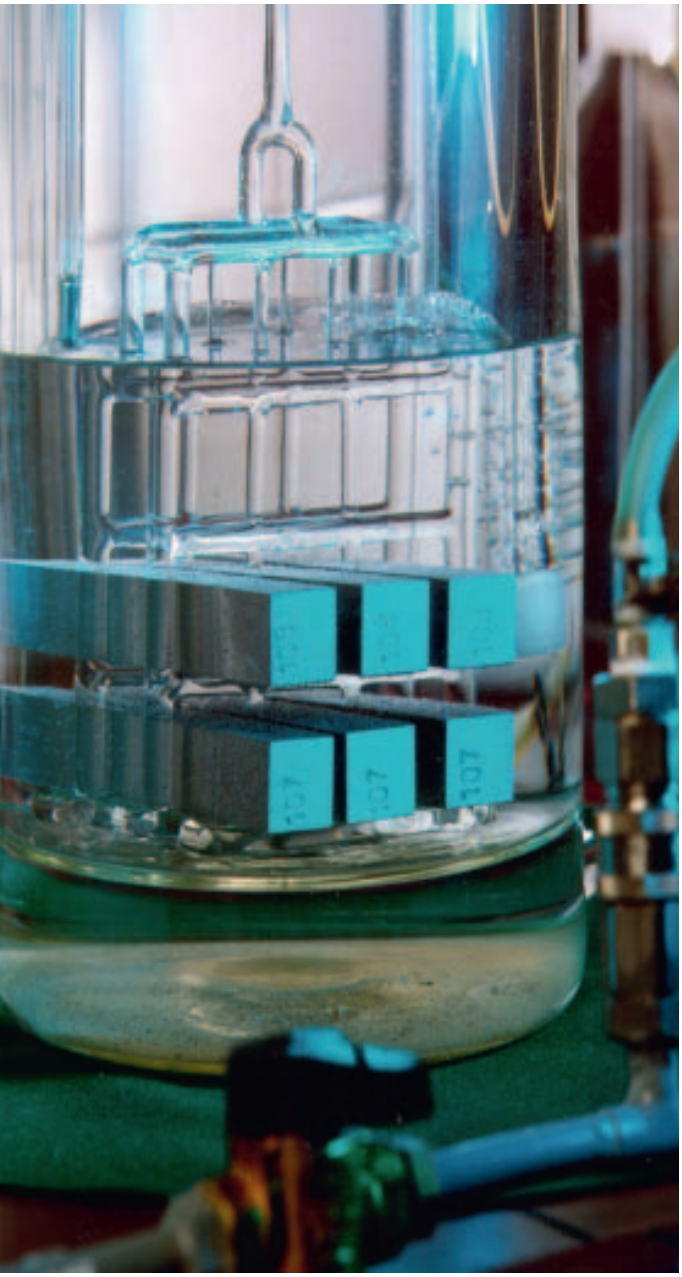
The father of four was previously active as a political adviser and spent the period 1982-1985 as a research assistant in the German Bundestag. Hans Jürgen Kerkhoff was born in 1956 in Süchteln am Niederrhein, and laid the foundations for his career by graduating in humanities and economics at the Universities of Düsseldorf and Cambridge/England between 1976 and 1981.

Pipelines: Sales market with a future

No drying up in demand for oil and gas

"We're among the best", emphasizes Hendrik Langenbach, customer consultant with Sales Industry at ThyssenKrupp Steel Europe. He's referring to the production of special pipe steel grades for the conveyance of highly acidic oil and gas. "Our products are of the very highest quality."

The test pieces are left submerged in an acidic solution for 96 hours, after which they are comprehensively checked ultrasonically for cracks. Only flawless materials go out to customers.



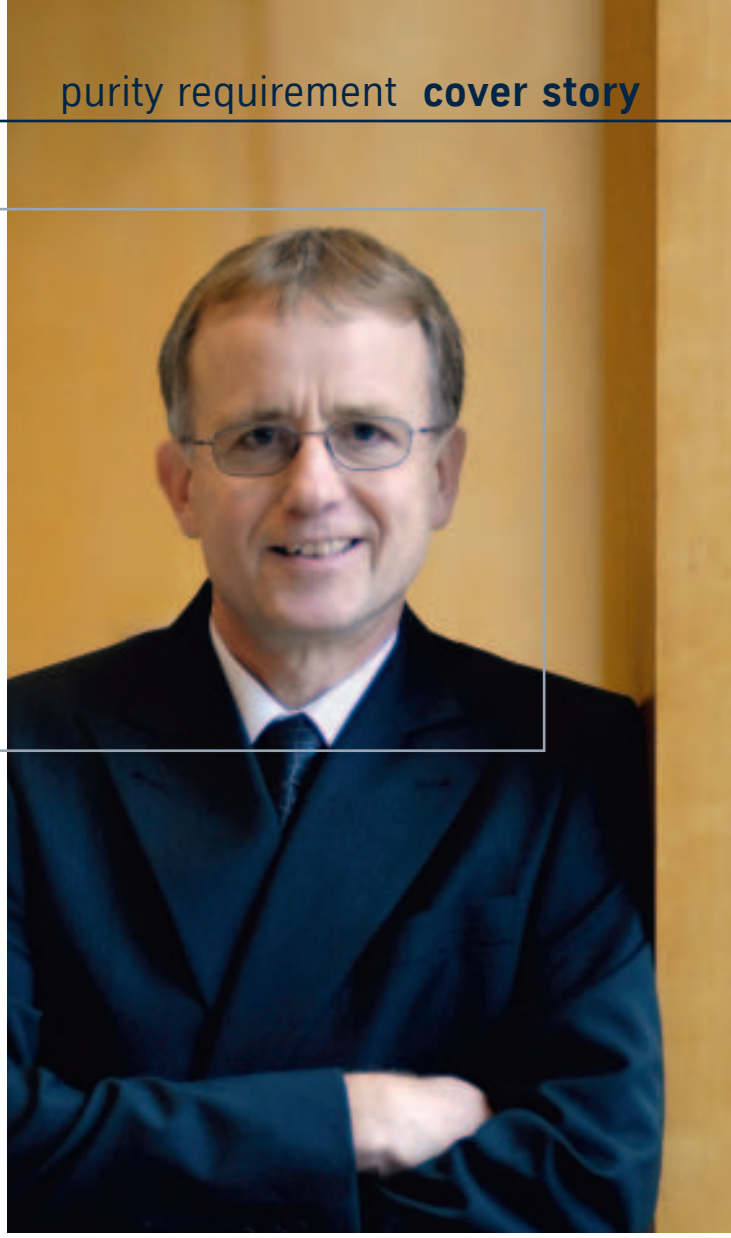
ThyssenKrupp Steel Europe is one of only three manufacturers worldwide that is capable of the series production of hot strip for HIC (hydrogen induced cracking) resistant pipes which can even withstand the most acidic raw materials with a low pH value. "Having been specially treated in a complex process in the steelworks, these steels are extremely pure and have a particularly consistent structure in order to be able to remain unaffected by the extreme degrees of corrosive attack to which the pipe interior is subjected," explains Langenbach. Engineer Wolfgang Arendt of ThyssenKrupp Steel Europe's Materials Center of Excellence knows why this happens: "Hydrogen sulfide, which is always transported along with the other materials in the oil and gas production processes, accelerates the steel's hydrogen uptake. It gathers purposefully at points in the material where there are nonmetallic inclusions and the structure is not homogeneous – and it is there that it causes cracking in the material."

Numerous pipelines built from acidic-gas resistant steels from ThyssenKrupp Steel Europe can be found on the Arabian Peninsula where the conveyed raw materials have a naturally very low pH value. "Our product has seen phenomenal sales over the past four years, and at times we were unable to keep up with the demand," Hendrik Langenbach tells us. While things have now quietened down somewhat against the background of the current situation, he nevertheless sees a growing market for pipe strip – above all in the USA as well: "The demand for oil and gas is growing, and, in order to meet this demand, sources with a high hydrogen sulphide content are being increasingly tapped on the Arabian Peninsula as well as in Canada and Mexico. The pipelines conveying the raw materials from those remote locations to refineries have to have particularly high degrees of resistance to the aforementioned conditions – just like our HIC resistant steels."

ThyssenKrupp Steel Europe started specializing in the production of acidic-gas resistant steels as long ago as the 1970s, and a lot has happened since then: "Our steels embody the wealth of experience gathered in the course of the past decades – and it certainly shows," emphasizes Langenbach.

Personal profile

Hendrik Langenbach has been Manager of Customer Support in Sales Industry for a year. He has worked in technical customer support for more than 25 years, advising customers from an extremely wide range of industry sectors, and is an expert in the field of pipe materials.



In the early days, 9.52 millimeter-thick HIC-resistant pipe strip types with strengths of X52 were considered to be bestsellers, but nowadays it is 16 mm thick hot-rolled strip up to a strength of X65 that is top of the list. And this trend is on the increase. “The higher the value after the X, the greater the strength and therefore the carrying capacity,” he explains, “because the raw materials can be pressed through the lines at a greater pressure without damaging the material.” The maximum-strength standard pipe made of hot-rolled strip in Europe, without any demands on the HIC resistance, is now the X70 pipe. It is up to 22 millimeters thick. “We are already working towards X80 and wall thicknesses of 25.4 millimeters.”

In recent years, ThyssenKrupp Steel Europe has stepped up its research in this area of application. In addition to increasing the strength, the focal aim is improving the toughness and weldability. “There are many pitfalls to avoid,” says Langenbach. “In the case of our HIC-resistant steels we can only moderately increase the alloy contents which provide the material’s strength, because otherwise the resistance to acid gas is adversely affected. In addition, larger and larger wall thicknesses have a detrimental effect on the toughness of the pipe.” A conflict which cannot be resolved? “No. Otherwise, we would not have invested in two new coilers which are designed for 25.4-millimeter thick pipe strip up to a strength of at least X80.”

Customers benefit from the company’s passion for development. Good, better, best: this goes not only for improved qualities of steel, but also well-founded advice. “We will be expanding our welding laboratory in order to increase the exchange of knowledge with our customers and to perform welding experiments jointly with them.” The laboratory of the Materials Center of Excellence, the key element of quality control in terms of resistance to acid gas, is to be expanded as well. “As a rule, we examine one coil per heat,” explains technician Arendt. The hot strip mills automatically supply the laboratory with test plates, which are then cut to a predetermined size there. Three test pieces per plate are exposed to a saturated hydrogen sulfide solution for several days. “The pH value is three and simulates the conditions of the acidic raw materials which will subsequently flow through the pipes.” The samples are then quickly put under the “microscope” and examined ultrasonically for internal cracks. “Our tests are much more stringent than those specified by the customer,” he says. This again clearly shows how interested the company is in the detail. “We examine the entire sample completely with our tried-and-tested ultrasound machine and with the control and evaluation software developed by ThyssenKrupp Steel Europe.” If there are no abnormalities, the coil is immediately cleared via data transfer; if there are any irregularities, the process is reversed and the reason for this is investigated step by step. In addition to the traditional light microscopy, an analytical measurement center boasts modern metallographic and metallurgical testing methods such as scanning electron microscopy and electron beam microanalysis for this very purpose. “We only clear materials which do not have any defects,” summarizes Langenbach. “That goes without saying if you want to rank among the best.”

Christiane Hoch-Baumann

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The Isabella Kosan tanker – one of more than 50 launched in 2008 – carries LNG. Tanks made of nine-percent nickel steel produced by ThyssenKrupp Steel Europe ensure that the LNG is transported safely.

Shipping natural gas by tankers

Floating pipelines

Tankers which transport liquefied natural gas, or LNG for short, provide a flexible alternative to the pipeline which is much discussed in politics. Natural gas, which is frequently a by-product of oil production, can be transported by ships over very great distances and is not dependent on the rigid network of pipelines.

A prerequisite for this is suitable quality steel. And ThyssenKrupp Steel Europe's Heavy Plate Profit Center has a special solution in the form of its specialty structural steels: cryogenic nickel steels. "The low transport temperatures place extreme demands on the materials used to make the ship's and storage tanks," emphasizes Dr. Hans-Jürgen Kaiser of the Heavy Plate Profit Center. "Under these conditions, general structural steels do not have sufficient strength or adequate toughness. The risk of the tanks becoming cracked and bursting would be much too great if these structural steels were to be used," he explains. "Our cryogenic nickel steels are ideal for this application. They contain up to nine percent nickel, which makes them particularly tough at the low operating temperatures." However, they also need to have high strength. And that is ensured by a special heat treatment process which involves quenching in water followed by heating. This is referred to as quenching and tempering.

This is how the transport chain operates: The gas is initially liquefied and stored at temperatures of minus 162 degrees Celsius in terminals close to the transportation location. This reduces its volume to one six-hundredth and makes it possible to accommodate up to 100 million cubic meters of natural gas in just one of the 220 special ships now sailing on the oceans – which is enough to supply a city of approximately 50,000 households for a year. After arriving at the port, the LNG is first stored in terminals again, where it is converted back into gas, i.e. re-gasified, before it can be fed into the network.

More than 90 per cent of Europe's natural gas supply is still transported by pipelines, especially from Siberia. Transportation via pipelines is less expensive for distances of up to 3000 kilometers, but transport by ship over longer distances has economic advantages. Thanks to the use of modern LNG tankers, the EU could therefore soon purchase natural gas from Algeria, Qatar and Nigeria as well, perhaps even from Indonesia and Malaysia, so that gas disputes like those between Russia and the Ukraine earlier this year could be followed in a more relaxed manner in future.

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Sustainability report

The second report is online

The concept of sustainability is alive and well at ThyssenKrupp Steel Europe: the second Sustainability Report has been published, but only on the up-to-the-minute medium of the Internet. The publication is now available to download at www.thyssenkrupp-steel-europe.com.

The new sustainability report, which is geared to the guidelines of the internationally recognized Global Reporting Initiative (GRI), is now available online at www.thyssenkrupp-steel-europe.com

Following an initial evaluation of the situation in the 2006 Sustainability Report, the current report now provides information on the actual progress made. An important factor in this respect is the setting up of company-wide sustainability management system, from which courses of action can be systematically derived. The concept of sustainability is thus becoming an integral part of the business strategy and it is no longer possible to imagine corporate practice without it.

ThyssenKrupp Steel Europe bases its understanding of sustainability on six success factors: effectiveness, efficiency, resources, impact, solidarity and justice. The ultimate goal – and this is outlined by the factors effectiveness and efficiency – is to protect our ability to act. After all, the greater the economic leeway, the greater the independence from factual constraints when considering strategic options – it is only on this basis that a balance between economy, ecology and social responsibility can be established.

The resources success factor denotes a practice which has long been in place, namely that the company has already been using raw materials and energy in a particularly efficient manner for many years. The amounts of energy arising, for example, during steel production are utilized to the full in a sophisticated recycling system. Irrespective of this, the question of how to further improve the company's energy balance is being investigated. The same applies to environmental protection at ThyssenKrupp Steel Europe and, thus, to the success factor of minimizing impact. High standards of technology ensure, for example, that we have an almost complete recycling system for water and residual substances and that we minimize emissions.

ThyssenKrupp Steel Europe does justice to its solidarity success factor as a Good Corporate Citizen, championing values and goals not only inside but also outside the company. With this in mind, the steel manufacturer provides training beyond its own requirements, acts as a good neighbor and demonstrates social responsibility – not only in Germany but also abroad, particularly in Brazil and the USA.

Finally, the global player is expressly committed to fairness and integrity in all its decisions with its sixth success factor, justice. The focal point of this is compliance, and employees are made aware in workshops of how to recognize the limits of legally permissible behavior.

Sustainable development for ThyssenKrupp Steel Europe means a continual, never-ending process. The company is therefore satisfying the needs of the present generation, but without preventing future generations from fulfilling their own needs.

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ThyssenKrupp Quarter as flagship of innovation

Steel dominates the face of the new corporate headquarters

What do facades, beams and sunblind slats have in common? They are all innovations from ThyssenKrupp Steel Europe and which will shortly be installed at the ThyssenKrupp Group's new headquarters in Essen. A little bit of the future which shows the global player's clear commitment to Germany and, in particular, to North Rhine-Westphalia.

The new corporate headquarters of the ThyssenKrupp Group is to be a flagship of innovation. In many ways. Materials, products and services of all areas of activity are defined as priorities. And for good reason: The architecture will reflect the technological capabilities of the entire Group. Thus, high-quality, beveled steel panels will shortly adorn the buildings and the Forum, the future home of catering facilities and various communication rooms. The innovative flat material for the large facades comes from the Color Profit Center in Eichen. Director Reinhard Täger is confident: "A successful innovation. We produce the steel strip using the tried-and-tested coil coating process, but are using a new coating for it." The material in question is Pladur® coil-coated sheet based on a zinc-magnesium coating called ZM EcoProtect. "Combined with a fluoropolymer-quality multi-layer coating structure, the surface enables an exceptionally high resistance to corrosion, particularly as regards its long-term behavior," explains Täger. "In addition, by using high-quality pigments we are able to achieve an excellent champagne metallic shade and guarantee pronounced gloss retention and chalk resistance," he promises.

Approximately 1,600 square meters will be covered with the modern cladding panels, which represents a further chal-

A vast number of slats made of stainless steel, which were given an appropriate form by ThyssenKrupp Umformtechnik, will shortly be protecting the main building from sunlight.

Fine and light – those are the features of the Forum, the future home of catering facilities and various communication rooms. The innovative VISS-DAVEX system will contribute significantly to this impression.

lenge: “Our steel sheets, which measure up to 3.60 meters in length and are only 1.25 millimeters thick, are relatively thin. They are very easy to shape. Nevertheless, the individual, beveled panels can be installed absolutely flat without deep-drawing or other machining steps and can be installed on the large walled areas and joined with millimeter precision.”

The Forum also features VISS-DAVEX facade systems. This follows the supply by ThyssenKrupp Steel Europe of DAVEX profiles for the public designer hoarding around the large construction site on Altendorfer Strasse. DAVEX project manager Siear Qaimi explains why: “We deliberately drew on our existing working relationship with Schüco, the market leader in the field of windows, doors and facades, and will use this project to demonstrate the filigree nature and lightness of our VISS-DAVEX system.” The innovative system is being used on approximately 3,000 square meters, i.e. on the entire surface of the visible steel and glass facades of the Forum. “The structure comprising rectangular VISS box sections and our DAVEX beams combines static and structural advantages with modern architecture, and has a very high load capacity so that it complies with the architectural requirements and, at the same time, a low construction depth and a cutting-edge appearance.”

Finally, a vast number of slats made of stainless steel, which were given an appropriate form by ThyssenKrupp Umformtechnik, will shortly be protecting the main building from sunlight. Franz Helbrecht, spokesman for the Bielefeld-based company, knows what is special about this: “We are producing more than 380 different types of slats for the supplier of the sun protection system, and are therefore highlighting the distinctive appearance of the Quarter. The slats, which vary in length from 90 to 576 millimeters, are really thick at two millimeters, have rounded corners and a very flat contour. Despite their incredible diversity, they are manufactured with just one tool.” It is like a puzzle, matching the different parts to assemble suitable sun protection units. A complete element is assembled on the facades as a triangle, a rectangle or in the shape of a trapezoid. Sun protection – an eye-catcher? “The shading system has an unconventional and, therefore, an eye-catching design,” says Helbrecht. Moreover, the complete element is moved as a single unit in order to adjust to the position of the sun.

ThyssenKrupp is currently constructing its Quarter on the former Krupp site within the Krupp belt of Essen. The site boasts an area of more than 20 hectares and is located close to the city center. The headquarters will be opened in the summer of next year.

Christiane Hoch-Baumann and Daria Szygalski

www.thyssenkrupp.com
www.thyssenkrupp-umformtechnik.com
www.thyssenkrupp-realestate.com

High quality, beveled steel panels which will shortly adorn the buildings and the Forum of the Essen Quarter. The flat material for the large facades comes from the Color Profit Center in Eichen.

Chronology

- June 2010: Relocation of the ThyssenKrupp headquarters from Düsseldorf to Essen.
- The other buildings and the Forum as well as the central underground garage and the multi-storey car park will also be finished in 2010.
- Additional buildings will follow during the second phase of construction.
- The first section of the Berthold Beitz Boulevard and the Krupp Park have already been completed right next to the Quarter. Measuring almost three kilometers in length, the four-lane main traffic artery will become the central north-south axis in the area which will cover approximately 230 hectares and which was previously partially inaccessible. The inner-city park, where employees and visitors can relax, extends over almost 25 hectares.

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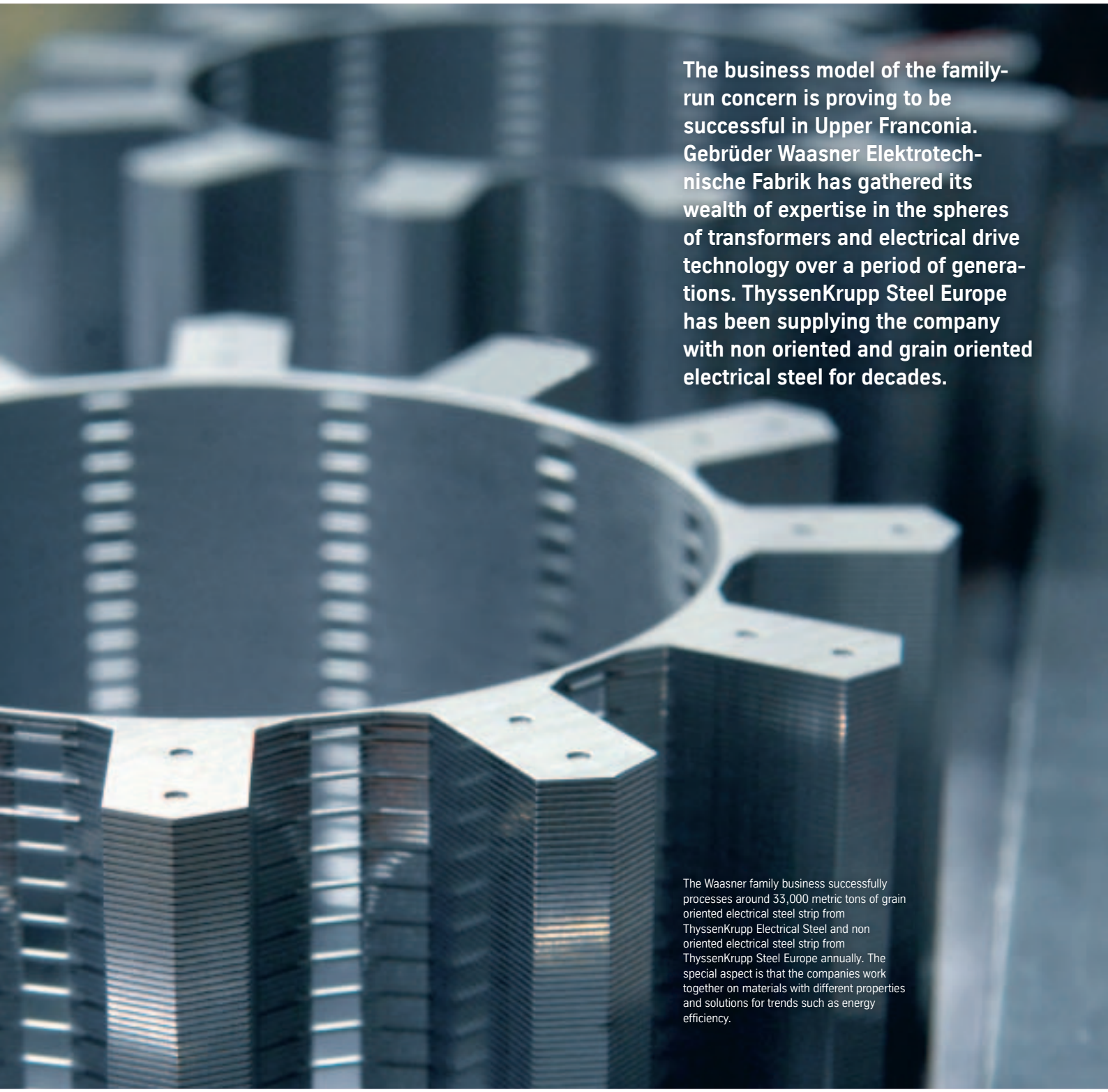
Top-class lamination producer

Greater energy efficiency makes for a carefree future



The business model of the family-run concern is proving to be successful in Upper Franconia. Gebrüder Waasner Elektrotechnische Fabrik has gathered its wealth of expertise in the spheres of transformers and electrical drive technology over a period of generations. ThyssenKrupp Steel Europe has been supplying the company with non oriented and grain oriented electrical steel for decades.

The Waasner family business successfully processes around 33,000 metric tons of grain oriented electrical steel strip from ThyssenKrupp Electrical Steel and non oriented electrical steel strip from ThyssenKrupp Steel Europe annually. The special aspect is that the companies work together on materials with different properties and solutions for trends such as energy efficiency.

Uncle, father and son: Rolf-Dietrich Waasner, Christian Waasner and Dr. Michael Waasner are directors in Forchheim who see innovation as a guiding principle. Their products are mainly found in industrial goods, but also in electric toothbrushes, fuel pumps and X-ray equipment. The name Waasner has been synonymous with quality and leading technology for generations. "Future through the generations," says Dr. Michael Waasner, the youngest member of the group who is responsible for finance, purchasing and IT, explaining the business model.

But first the past: His father Christian Waasner, who is responsible for human resources and marketing, says: "Our fathers Bruno and Kurt founded the Elektromechanische Werkstätten in Schlüsselfeld in 1946." They started off by repairing a rare commodity: radios. The company quickly expanded and moved to neighboring Forchheim. "They discovered a new area of business," adds his cousin, Rolf-Dietrich Waasner, the company's technical expert, "the production of transformer sheets."

The Waasners have expanded the electric motor and transformer business and the associated skills over two generations. Today, Gebrüder Waasner Elektrotechnische Fabrik, which has been the name of the business since 1973, is a leading manufacturer and service provider in Europe with representatives all over the world: "We offer an across-the-board service," say the cousins, "from consultancy, development, sample production to series production and just-in-time delivery. We have evolved in the past few years into a competent partner in the manufacture and production of stacks with lamination punching dies with an extremely wide range of shapes. Currently, in the case of the highest stack, over 700 laminations are stacked on top of one another in the tool and pressed together. Most recently, the range of services was expanded in 2008 to include aluminum die casting."

And that goes down well: the company's approximately 800 customers include industrial heavyweights such as Siemens, ABM Greiffenberger and Continental Automotive. Demand has resulted in revenue growing to a current level of 80 million euros per year, and capacity has had to be expanded again despite three-shift production. The company has remained loyal to the former royal town of Forchheim. For a year now, the company has had two plants there: the old plant in the north measuring 25,000 square meters and the new plant in the south which covers an area of 50,000 square meters. "There is still sufficient room to grow," say Christian and Rolf-Dietrich Waasner.

About one year ago the third generation of the family joined the management – in the form of Dr. Michael Waasner: "I believe there are very good opportunities for growth in our family business. This is because, in addition to drives, our other business areas involving the supply of transformer laminations, strips and wound cores to target markets in the energy supply and distribution sectors are also benefiting from the trend towards greater energy efficiency." Many of the other 380 employees know this as well, some of whom are also the third generation of the same family to work for the company. And the juniors are looking to the future. "The energy efficiency of electrical drives requires special capabilities on the part of the lamination manufacturer," explains the doctor of physics. "In order to achieve higher performance levels with smaller motors, you need lower-loss electrical steel strip which can be better magnetized. In addition, this material is harder and the demands on the geometric accuracy will be higher." The bottom line: "The products require sophisticated tools. To meet with the high tolerance requirements for punch-bundled parts we need sheets of consistent quality and – depending on the application – a variety of properties."

All of this is provided by ThyssenKrupp Steel Europe: "We have been a partner of the company for more than 50 years," recall Christian and Rolf-Dietrich Waasner. "It was and still is a reliable supplier and an innovative partner." The Upper Franconians process around 33,000 metric tons of non oriented and grain-oriented electrical steel strip each year. Michael Schmidtz and Florian Knorpp, both of ThyssenKrupp Steel Europe, appreciate the constructive and cooperative partnership with Waasner as an innovation partner. Schmidtz comments: "Made-in-Forchheim innovations in electrical steel strip can be relied upon to be marketable."

The Waasner team is unanimous: "A strategic and long-term partnership is essential for our success, and we are certain that we will be continuing to work with ThyssenKrupp Steel Europe."

Thus positioned, the management regards the competition in Asia and the current situation affably as challenges: "We aim to grow and be the contact of choice for high-quality innovations." After all, trends such as renewable energies and electric and hybrid drives will not change so quickly. "In addition, we can build on our expertise, our many years of experience and our reliable partners," says Dr. Waasner confidently.

Daria Szygalski

www.waasner.com

The name Waasner has already been synonymous with quality and technology leadership in the areas of transformers, electric motors and electric drive technology for generations. The Waasner products make a huge difference, especially in industrial goods.

Gebrüder Waasner Elektrotechnische Fabrik has been working with ThyssenKrupp Steel Europe for over 50 years. In the meantime, the companies have established a true partnership which both the directors, (from left) Christian Waasner, Rolf-Dietrich Waasner and Dr. Michael Waasner, and Michael Schmidtz and Florian Knorpp from ThyssenKrupp Steel Europe greatly appreciate.

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Manufacturers place their trust in hot stamping

Hot trend in the automotive industry

Citroen C5 bumper, Daimler C-Class roof frame, Passat B6 tunnel, Audi A4 and Renault Laguna B-pillar as well as Ford Galaxy B-pillar reinforcement – all of these are hot-stamped components. The technology is experiencing a boom from the compact class right through to the SUV. ThyssenKrupp Steel Europe not only delivers the appropriate manganese-boron steels and tailored blanks for the hot stamping, but also parts and components.

"So-called hot form blanks are used especially in the production of crash-relevant components," stresses Jörg Maas of ThyssenKrupp Tailored Blanks – the company supplied approximately two million blanks for production hot stamping in 2008. "Even extremely complex parts can be shaped easily and accurately when hot. During this process they attain maximum strengths which guarantee reliable protection combined with optimized weight and material use." Dr. Ilse Heckelmann of the Materials Center of Excellence knows what matters for the material: "We are developing suitable steel grades for hot stamping and are constantly improving their properties with respect to customized crash, cost and weight performance. Special steels alloyed with manganese and boron (MBW®) are particularly suitable; they are heated in the furnace to 880 to 950 degrees Celsius, stamped into components and very quickly cooled in the die. The high temperature ensures excellent forming properties, and the rapid cooling makes the material extremely hard due to a structural transformation to martensite."

The challenges during this process are scaling, i.e. the contamination of the component surface by oxidation, and the required corrosion protection. "The use of uncoated sheets would lead to scaling of the component surfaces and, consequently, to an extremely high level of die wear. In order to prevent this, we need scale protection in the process," comments Dr. Oliver Straube of Metal Forming. Manfred Meurer from the DOC Dortmund Surface Center knows what to do: "Metallic coatings such as aluminum dip coating can solve this. In addition, lacquer systems such as x-tec® are used to protect against scaling. We are constantly working to further optimize their properties in terms of weldability and corrosion resistance." At the same time, research is being carried out at the DOC® on a completely new metallic coating system. The objective is to achieve cathodic protection against corrosion following hot stamping – particularly for the one-stage process.

ThyssenKrupp Steel Europe is the only steel manufacturer in the world to have mastered the entire process chain of hot stamping, from material and surface development to semi-finished and processed products right through to complete parts and component manufacturing at the metal forming sites in Ludwigsfelde and Le Theil in France. The steel group is constantly developing its process technology in order to optimize the properties of hot-formed components. In the Applications Technology department in Dortmund the customers' processing methods are simulated, true to scale, with a furnace, presses and

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heatable dies. “As part of a cross-company competence team, we are researching and optimizing the process chain of hot stamping here in order to offer our customers integrated solutions. Energy-efficient heating technologies and optimized die technologies play a particular part in this,” says Franz-Josef Lenze from Applications Technology. “This is how we determine the optimum parameters for the hot stamping process in advance for our customers. It is our aim to adapt the components even better to different local stresses.”

Lenze and Straube cite the example of the B-pillar of a mid-size station wagon: “We are currently researching a component variant called Tailored Tempering which, unlike the current two-piece production component is produced from a single manganese-boron steel blank, but which has different properties locally.” The bottom third of the B-pillar is responsible for reducing the crash energy and has a tensile strength of 700 megapascals (MPa) with an elongation of 17 percent. The tensile strength of the rest is 1,500 MPa. How is this possible? “The B-pillar variant is produced in a partially heatable stamping die. Targeted heating of a certain area creates zones in which the heated blank cools less quickly and, as a result, it also hardens to a lesser degree.”

Is tailored tempering a trend-setting technology for ThyssenKrupp Steel Europe? If it were up to Straube of Metal Forming, nothing would stand in the way of this process soon being used in series production and for good reason: “It is possible to save investment costs running into six figures in terms of the dies and the production equipment. The number of components is reduced, thus eliminating joining operations and process costs.”

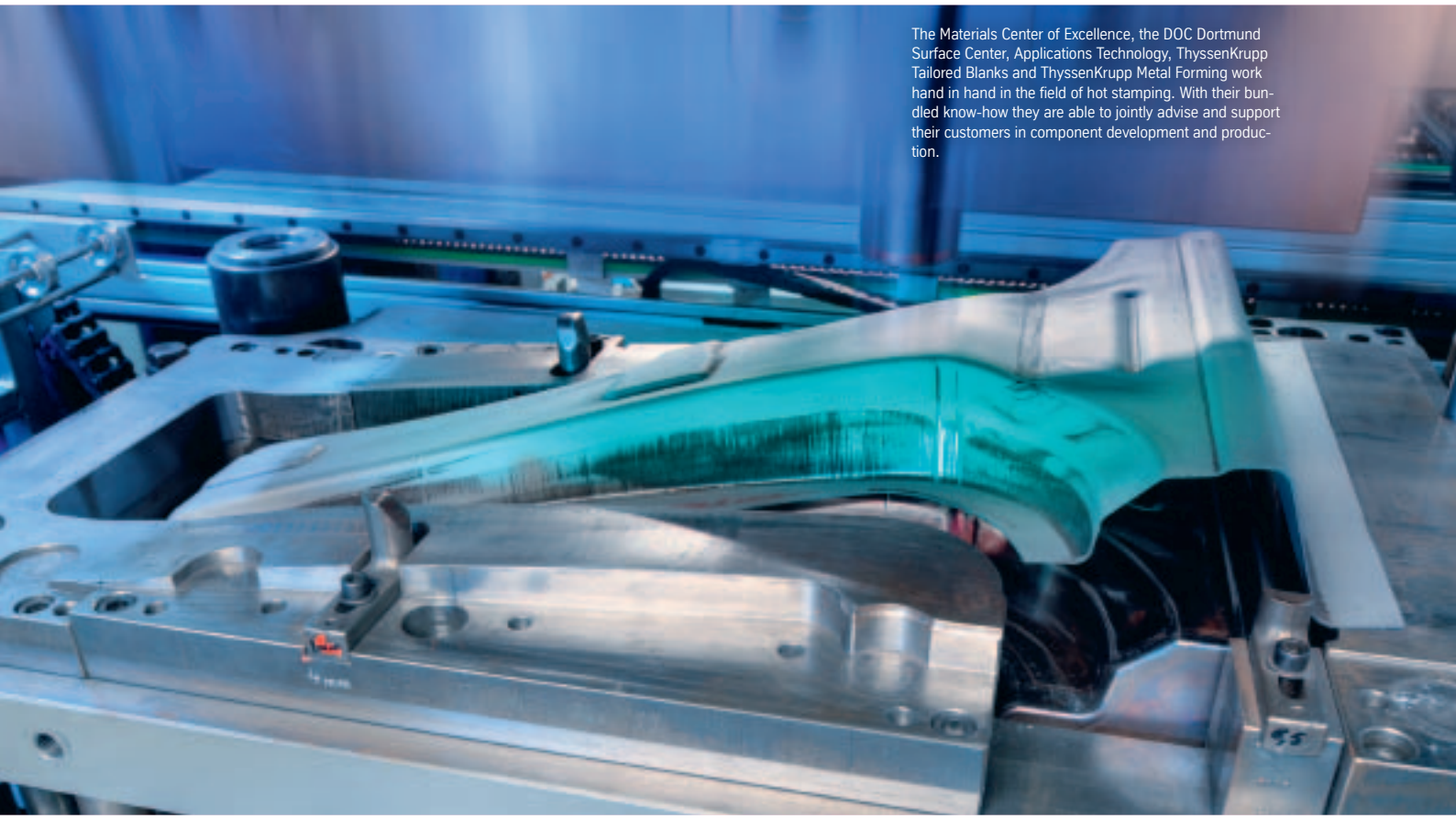
Christiane Hoch-Baumann

www.thyssenkrupp-umformtechnik.com
www.thyssenkrupp-steel-europe.com
www.tailored-blanks.com

Tailored Tempering

Complex and crash-relevant components such as the B-pillar are being produced from a single manganese-boron steel blank with ThyssenKrupp Steel Europe’s new technology. The benefits for automotive customers are obvious:

- ▷ Better crash performance due to tailored component properties with varying strength and elongation
- ▷ Varying strength ranges can be set: multiple changes from “hard” and “soft” areas in the component
- ▷ Weight reduction due to high strengths, especially when combined with tailored blanks
- ▷ Stamping dies and joining steps can be saved



The Materials Center of Excellence, the DOC Dortmund Surface Center, Applications Technology, ThyssenKrupp Tailored Blanks and ThyssenKrupp Metal Forming work hand in hand in the field of hot stamping. With their bundled know-how they are able to jointly advise and support their customers in component development and production.

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InCar®: the program

ThyssenKrupp thinks future solutions with customers

InCar® is the ThyssenKrupp Group's most comprehensive research and development program to date. It stands for innovations in automotive construction.

With InCar®, a cutting-edge technology program, ThyssenKrupp has its finger on its customers' pulse. "We have specified the development priorities in close consultation with our partners from the automotive industry," says program manager Oliver Hoffmann, explaining the advantages of the modular package of independently developed innovations. "Customers have provided us with important input for technology selection." The focus is on sustained improvements in weight, cost, function and emissions – and the results speak for themselves: "Our customers can choose from more than 30 innovations for their body, chassis and powertrain."

"InCar® is setting standards with the high level of sophistication and the proven feasibility of the new development approaches," continues Hoffman. "Our solutions are coherent and sophisticated. They can be more quickly and more easily adapted to individual customers' vehicle requirements." A benchmark, which is independent of any one manufacturer, makes the benefits of the respective InCar® solution transparent and comparable with respect to the state of the art. "Of course we are also taking account of the results of a comprehensive CO_2 analysis."

The program manager describes the highlight of InCar® as follows: "InCar® not only provides reliable statements regarding costs and production concepts, the project also draws on the entire automotive expertise of the ThyssenKrupp Group. A large number of Group companies with expertise in materials development, engineering, component production, plant engineering and construction, toolmaking and prototype construction have collaborated closely to advance the project. All of the companies are leaders in their fields and they represent the more than 100-year tradition of the ThyssenKrupp Group as a partner to the automotive industry." And automotive customers can now also confirm this for themselves. The InCar® project team is touring with the Tech Truck and presenting its innovations to interested parties.

Editorial staff

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Customers can choose between more than 30 innovations for the body, chassis and powertrain. The InCar® project team is touring with the Tech Truck and presenting its innovations.

Neumayer III Antarctic station

Polar research in a high-tech structure

Majestically, the Neumayer III research station braves the most extreme weather conditions in the Antarctic. Well cladded with sandwich elements made of primary material supplied by ThyssenKrupp Steel Europe, it is impervious to the weather.

The new German Neumayer III research station in the Antarctic is now open. The steel colossus is a never before attempted high-tech structure on hydraulic legs which are designed to prevent the station sinking into the 200 meter-thick Ekström ice shelf. The facades provided by ThyssenKrupp Steel Europe make for a pleasant indoor climate in the eternal ice.

Located more than 13,000 kilometers from Germany, the research base stands on 16 stilts in the South Polar Region. Well cladded with sandwich panels, the ultra-modern building is able to withstand the extreme weather – Antarctica is the coldest, windiest and driest continent on earth. The lowest temperature recorded there is minus 89.2 degrees. The primary material for the facades originates from ThyssenKrupp Steel Europe's Color/Construction Profit Center in the Siegerland area. "We delivered 100 metric tons of polyester-coated flat steel in the shades pure white, blood orange and cobalt blue via the Patz Steel Service Center to Teledoor in Melle," recalls the customer consultant in charge, Gerd Wendt. "Compared with other materials, it is a low-cost material of excellent quality, and was accordingly selected in view of the extreme Antarctic weather conditions."

Nine people can spend winter in the station; during the Antarctic summer there is room for more researchers. Their job is to gather climate-related data, measure the concentration of greenhouse gases, help monitor compliance with the comprehensive ban on nuclear testing and also help with research into the behavior of whales. The air-conditioned floor space extends to 1,850 square meters over three floors, including laboratories, offices and a sickbay.

One important special feature of the station is that, unlike its predecessors, it will not be buried by the snow cover which rises by approximately one meter annually; instead it can be lifted above it with its 16 legs. The 2,300-metric ton steel structure stands on stilts which can be raised hydraulically. While the legs rise, snow is shoveled under it and compacted. The stilts are then adjusted to the new height. The whole process is monitored electronically and has worked well in the test runs carried out up to now. In addition, the station moves horizontally: it moves 157 meters each year with the ice shelf. The ice is connected to the land-based ice and is growing further out towards the ocean.

Christiane Hoch-Baumann

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More can – less steel

Lighter than ever

Zero point one hundred is the in-house name given by tinplate specialist Rasselstein to its latest innovation. The abbreviation stands for the technology for manufacturing the world's thinnest tinplate. The basic product for this – hot-rolled steel strip – is supplied by Rasselstein's parent company, ThyssenKrupp Steel Europe.

A can is a can. That's what end-users think and all they see is a container for transportation and storage purposes – whether it is for food, drinks, sprays or lubricants. But far from it: cans are now real high-tech products. Their starting material, tinplate, therefore has to be of top quality as well. Rasselstein supplies the 1-a quality from Andernach – from its ultra-modern plant not far from the Rhine. There, the approximately 2,400 employees of the premium steel processing firm manufacture just under 1.5 million metric tons of steel for packaging purposes. The company's customers include can manufacturers in Germany, Europe and around the globe.

Rasselstein recently presented its latest top-class product – ultra-thin tinplate of a thickness of 0.100 mm; which is known in-house as zero point one hundred. A can body made of such a thin material, although still only a prototype, is as light as a feather. With this benchmark the Andernach-based company is demonstrating its performance capability and consolidating its leading position

in global competition. “Once again, we are at the forefront as far as the continuous reduction in thickness of steel for packaging is concerned,” stresses Rasselstein CEO Dr. Ulrich Roeske. Customers will benefit directly from this. “They save material with each step of the reduction in thickness of packaging and reduce their transportation costs because of the lower empty weight per unit. This also has a positive effect on the CO_2 balance.”

The untrained human eye can barely see the recent optimization. But it makes a world of difference. “The target is to achieve 20 percent savings in materials compared to today – i.e. more cans per metric ton of zero point one hundred tinplate,” says Karl Ernst Friedrich, Technology Director. The thinnest tinplate to date measures 0.125 millimeters and has been used in many applications since 1994. The standard thickness for can bodies is currently 0.130 to 0.140, while that for lids and bottoms is 0.180 to 0.200 millimeters for reasons of stability. As Technology Director Friedrich says: “The prototype shows where we are heading. Ultra-thin tinplate will initially be on offer for the bodies of, for instance, deep-drawn food trays – as packaging, for example, for ready meals.”

Rasselstein has been working on thinner and thinner tin for making cans for 20 years, the basic prerequisite in this respect being steel of corresponding quality. This is purchased by the tinplate producer, a subsidiary of ThyssenKrupp Steel Europe, exclusively from the latter. “We are working closely with our parent company on high-precision steel development,” says Friedrich. He does not believe that thinner and thinner tinplate could reduce the parent company’s sales: “Progress here does not mean losses there.” On the contrary, Rasselstein increased its sales volume from 1.2 million metric tons in 2003 to 1.5 million metric tons in 2007.

The success story of the traditional “tin can” packaging is continuing. Its qualities: it is unbreakable, it does not affect the taste, it is opaque, it acts as a barrier and can be transported safely, it is durable and 100 percent recyclable. Rasselstein is Germany’s only tinplate manufacturer today, supplying more than 400 customers in over 80 countries from Andernach, and it recently generated sales worth 1.2 billion euros. In terms of capacity the specialist has the world’s largest tinplate production site and, with an export quota of 75 percent, is one of the world’s leading tinplate suppliers. In order to more closely meet its customers’ wishes, Rasselstein operates its own application technology and research departments. “We attach great importance to being a leader in technology, quality and service,” says Roeske. The factors driving quality for the staff at Rasselstein include mastering all of the parameters in tinplate production and, especially, skillful handling of the tolerances of thinner and thinner sheets.

With its target of zero point one hundred, Rasselstein is pointing the way forward for the developments of the next few years. As Roeske says, “Due to its low carbon content, the steel grade used has optimum forming properties, especially as regards its deep-drawing capacity. The material is well able to cope with further processing and subsequent use.” A few more adjustments to the further processing are still required to make the ultra-thin tinplate product ready for the market. Rasselstein is currently working on this with customers, machinery manufacturers and other parties concerned. Rasselstein is providing suitable amounts of the new material for the production of prototypes, and is assisting with the various stages of further processing. This assistance includes conducting its own tests in Andernach.

“The present state of the art on our production machines is sufficient, and just a few minor modifications are required,” says Rolf Geide, the managing director of Cantec in Essen. The company is part of the Swiss Soudronic Group, a mechanical engineering specialist in the field of can manufacture. The Swiss build innovative welding systems, and Cantec in Essen is building the CAN-O-MAT – an all-rounder system for shaping the tinplate into cans. Cantec and Rasselstein are currently in the fine-tuning phase.

Ulrike Wirtz

www.rasselstein.com

Whether cans or food trays, a great deal will soon be possible with the new ultra-thin zero point one hundred tinplate from Rasselstein. It is particularly suitable for the bodies of deep-drawn food trays – as packaging, for example, for ready meals.

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thyssenkrupp-steel-europe.com

The new www.thyssenkrupp-steel-europe website is now up and running. The aim was to make our website better: easier to navigate, clearer presentation of the range of services on offer. We now invite you to discover the new online world of ThyssenKrupp Steel Europe. From the "Products" section to "Service" to the "Careers" area, a great deal – not just the design – has changed.

Agenda

Industrie & Projectbouw
18 – 19 November 2009
Antwerp, Belgium
The national Industrie & Projectbouw construction trade exhibition is being held in Antwerp for the third time. Isocab will be exhibiting its innovative steel products for refrigeration and air conditioning on Booth 3012.

Blechexpo 2009
1 – 4 December 2009
Stuttgart
The Blechexpo exhibition which is being held this year in the new Stuttgart Exhibition Center for the second time has, within a very short time, secured a leading position in Europe and now ranks second in the world rankings of exhibitions for sheet metal working. In addition to ThyssenKrupp Steel Europe and ThyssenKrupp Materials International, ThyssenKrupp Nirosta, the ThyssenKrupp Steel Service Center, ThyssenKrupp Schulte and Hoesch Hohenlimburg will be exhibiting on the joint exhibition booth in Hall 7, Booth no. 73.06.

bauma 2010
19 – 25 April 2010
Munich
Bauma is considered by visitors to be the top event in the construction and mining machinery industry. It is the world's largest fair of its kind and is held every three years in the Neue Messe [New Exhibition Center] in Munich. In addition to all of the exhibition halls, the complete, extended outdoor area, which measures approximately 540,000 square meters, is also fully occupied. ThyssenKrupp Steel Europe will be taking part with the range of products and services of the Heavy Plate Profit Center in Hall A6, Booth no. 429.

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Echo

Best Annual Report
ThyssenKrupp AG produced the best annual report of the largest listed European companies. This is the result of this year's "Best Annual Report" competition which is run by manager magazine. The award went to the report, in particular, for the outstanding presentation of the financial and profit situations, and for the excellent visual quality and the quality of the text.

www.manager-magazin.de, Sept. 3, 2009

Diplomatic jam
Accompanied by some 200 diplomatic representatives from around the world, Federal President Horst Köhler …stopped off in Duisburg … Köhler went on a tour of blast furnace 8 at the ThyssenKrupp site … On board the passenger ship "Drachenfels" (he) … signed … the city's Golden Book.

Rheinische Post, Oct. 1, 2009

World steel market drifting apart
German steel consumption will this year drop to the 1996 level. It is true that the World Steel Association is expecting demand for the coming year to increase again globally to 1.2 billion metric tons, i.e. the volume of 2008, but even the projected increase in Germany of around ten per cent to 32 million metric tons is only a small step towards achieving earlier orders of magnitude …

Frankfurter Allgemeine, Oct. 13, 2009