# compact

2/2006

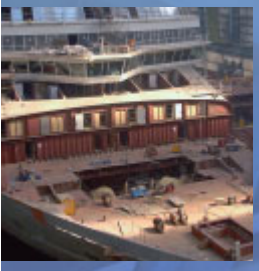
The magazine for customers of ThyssenKrupp Steel

www.thyssenkrupp-steel.com

160 million euro investment

## Rasselstein is the world's largest tinplate production site

The new Opel Corsa
**Duisburg know-how makes for greater safety**



Luxury liner from Papenburg
**Shipbuilding using the Lego principle**

Thinking the future of steel

**ThyssenKrupp** Steel

# compact


## editorial 3

## news

**Ideas Park in Hanover** 4
More than 200,000 visitors discovered technology and shaped the future with ThyssenKrupp.

**Steel pavilion** 6
Christo and Jeanne-Claude showed "The Gates in the Box" in Zurich – a flashback to The Gates in New York.

## coverstory

**Greenfield high tech** 8
Rasselstein invests 160 million euros in its Andernach plant and makes it the world's largest tinplate production site.

## focus

**Hayes Lemmerz manufactures steel wheels** 16
The wheel specialist from Königswinter is very successful with its steel design wheel series.

**Pipes from Bender-Ferndorf** 18
The company from Siegerland is an extended ThyssenKrupp Steel workbench.

**New product from Steel** 21
Cold Performance: A hot-rolled sheet with advantages for customers.

**The new Opel Corsa** 22
Innovative technology and highest safety standards thanks to know-how from ThyssenKrupp Steel.

**Steel Innovation Prize 2006** 25
14 idea generators were awarded prizes for their ground-breaking developments.

**Meyer Shipyard in Papenburg** 26
Luxury liners afloat on the oceans with heavy plate from Duisburg-Süd.

**Tradition and high tech** 30
Technology leader Welser Profile ensures innovative products.

**Environmental Prize 2006** 32
VW Group honors supplier ThyssenKrupp Steel.

**Laser Technology Innovation Prize 2006** 33
Flexible laser optics system welds non-linear tailored blanks with high precision.

**Duisburg Zoo with a new look** 34
ThyssenKrupp Steel supplies modern steel products for the primate house.

## service

**NewsFlash** 15
Company news in brief

**Agenda** 20
Fairs, exhibitions, events



info.steel@thyssenkrupp.com
www.thyssenkrupp-steel.com


### About our cover picture:

Andernach in the German state of Rhineland-Palatinate is the largest and most modern tinplate production site in the world. Rasselstein GmbH recently invested 160 million euros in new facilities there, increasing the company's production capacity by 20 percent. The demand for special tinplate grades is gratifyingly high around the world, and the plant is already working at full capacity until further notice.


**ThyssenKrupp Steel AG**
Kaiser-Wilhelm-Strasse 100, 47166 Duisburg, Germany
Mailing address: 47161 Duisburg, Germany
Phone: +49 (0)203 521
Fax: +49 (0)203 52-25102

**Publishers:**
Executive Affairs/Marketing

**Editorial team:**
Rolf-J. Neumann (responsible within the meaning of German press law)
Marketing
Phone: +49 (0)203 52-41003
Fax: +49 (0)203 52-41007
E-mail: rolf-juergen.neumann@thyssenkrupp.com

Christiane Hoch-Baumann (Editor-in-chief)
Communications/Public Relations
Phone: +49 (0)203 52-24515
Fax: +49 (0)203 52-25707
E-mail: christiane.hoch-baumann@thyssenkrupp.com

Katharina Mette
Communications/Public Relations
Phone: +49 (0)203 52-25152
Fax: +49 (0)203 52-25707
E-mail: katharina.mette@thyssenkrupp.com

**Photographs:**
ThyssenKrupp Steel photography; Michael Schmid (pg. 6/7); Rhineland-Palatinate State Chancellery (pg. 12); Winderberg Hochsauerland Bobsled Run (pg. 21); General Motors (pg. 22); Stahl-Informations-Zentrum, Düsseldorf (pg. 25)

**Design:**
MERZ Werbeagentur, Düsseldorf

**Printing:**
ThyssenKrupp Printmedia GmbH, Duisburg

**Publication frequency:**
Three times a year; the next edition will appear in December

**Issue 24:**
2/2006 – September

*"It's not always quantity alone that counts; it is in particular quality in the form of high efficiency and sophisticated technology that leads to profitable growth and paves the way to economic success."*

Dear Readers,

In recent decades, the steel industry has been repeatedly affected by alliances and mergers of competitors, but the past few months have been particularly eventful. This fiscal year, ThyssenKrupp Steel faced the task of getting our Forward Strategy onto the right track. We succeeded in doing this, and now our ambitious goals are within reach. During that same period, the takeover of Arcelor by Mittal resulted in a market leader that, with 120 million metric tons of crude steel capacity, is setting new standards for the industry in terms of magnitude, and one that will also be influencing developments in the flat carbon steel market, a market that is relevant to our activities.

The emergence of this major competitor also means new challenges for ThyssenKrupp Steel, but we are meeting these head-on as a part of our Forward Strategy: construction has meanwhile started on a complete new steel mill in Brazil, meaning an increase in capacity of five million metric tons. We are currently looking into alternatives for optimally processing and marketing one half of the starting material produced in Brazil in North America for the market there. We are continuing negotiations with Mittal for the acquisition of the Canadian producer Dofasco, which would fit into our NAFTA strategy. But we would be ill-advised if we were to fail to pursue Plan B, namely the construction of a greenfield steel mill. Our Hercules project – aimed at getting our domestic plants in Germany into shape to process the other half of the Brazilian output – is in full swing.

The example of our Rasselstein GmbH subsidiary which, since the introduction of the cumbersome one-way can deposit system in Germany, has developed intelligent strategies in order to bring its material to highly satisfied customers in new markets, shows that it's not always quantity alone that counts; it is in particular quality in the form of high efficiency and sophisticated technology that leads to profitable growth and paves the way to economic success. It goes without saying that this way of thinking is not practiced exclusively by Rasselstein GmbH – a company featured in this issue of Compact – but throughout ThyssenKrupp Steel AG as well.

In this magazine, you can read how we are turning good ideas into products. We have started off this issue with some impressions from the Ideas Park organized and sponsored by our parent company, ThyssenKrupp: more than 200,000 visitors to Hanover experienced hands-on, interactive technology. This generated a lot of interest among a large number of young people, and, during her visit to the Ideas Park, German Chancellor Angela Merkel stressed to the nation: "We must support all of the good ideas and good developments to be found in Germany."

The following pages are also full of interesting facts about our partners, customers and projects. My Executive Board colleagues and I wish you an entertaining read!

Kind regards,

Dr. Karl-Ulrich Köhler
Chairman of the Executive Board

Ideas Park: Discovering technology – Shaping the future

# ThyssenKrupp brings ideas to Hanover

*"Securing jobs, and thus prosperity as well, calls for a country with passion, ideas, a thirst for knowledge and the drive to accomplish. Technical professions are in demand, particularly for girls. In my opinion, girls' brains are just as suitable for technical professions as those of boys."*

German Chancellor Angela Merkel

*"With the Ideas Park, we are today investing in this country and in the minds of its people. Only in this way will they still be able to succeed in the global market 20 years from now."*

ThyssenKrupp CEO Prof. Dr. Ekkehard Schulz

*"Mobility and technology are important for securing our future. People must associate something positive with innovations, and the Ideas Park is an outstanding opportunity in this regard."*

Lower Saxony Premier Christian Wulff

*"Technology is the future, and it is everyday life, it stands for suspense; it is necessary, it inspires and promotes the spirit of discovery – the Ideas Park impressively documents all this and much more."*

ThyssenKrupp Steel CEO Dr. Karl-Ulrich Köhler

*"With the Ideas Park's world of technology and adventure, ThyssenKrupp is fostering the interest particularly of young people, because it combines knowledge transfer and observation in a unique way."*

Science journalist Ranga Yogeshwar

**What do sharks have to do with pipelines, and sandfish with modern steel surfaces? At first glance, not much – but the shark and sandfish are acting as models in the development of new industrial high-tech solutions. Day in and day out, nature reaches top performances with the lowest consumption of energy and material, making it a valuable supplier of ideas for research and development. Visitors to this year's Ideas Park in Hanover could marvel at just how this works.**

For nine days at the end of May, ThyssenKrupp and more than 50 partners from science, society, industry and the media presented the world of the future to more than 200,000 visitors to the German pavilion on the former Expo grounds, and showed that each person can have good ideas and thereby actively shape his or her own future and that of society. Throngs of visitors, including customers, families, students and seniors, strolled through Europe's largest science and technology festival, marveled at the scientists' and researchers' exhibits and demonstrations and conducted innumerable discussions on the topics of mobility, life and the environment, and creativity.

Everywhere there was a chance to potter around, try things out and experiment. Interested people could design their own airplanes and cars and build them with simple instruments. Particularly crowded: the Mobility area, where visitors could test innovative driving aids and progressive materials for themselves.

Visitors were expressly expected to do more than just look. A bobsled rolled on the testing ground in front of the TUI arena, there were science shows and entertainment under the large plaza tent, ZDF television broadcast children's television, primitive robots illustrated how yesterday's technical dreams have long been surpassed by reality. But the organizers were interested in providing more than just a fun event. They hoped to use this project to recruit future engineers and experts and to promote the spirit of the joy of innovating to the country. To this end, numerous technical discussions were held on various key themes.

The Ideas Park is the second event of this type for ThyssenKrupp – the show premiered in Gelsenkirchen in 2004. Additional events are already being planned.

Christiane Hoch-Baumann

www.zukunft-technik-entdecken.de

▶ Making technology accessible and awakening the interest of young people: the sandfish is one example of how this can be done. Day in and day out, nature accomplishes top performances, making it a valuable supplier of ideas for research and development.

Contact: **Dr. Jürgen Claassen,** ThyssenKrupp, tel. +49 (0)211 824-36002, e-mail: press@thyssenkrupp.com

## Short construction time, quality look

# A pavilion of steel for Christo and Jeanne-Claude

To celebrate the 150-year anniversary of its founding, Credit Suisse presented the documentary exhibition "The Gates in the Box" by Christo and Jeanne-Claude in Zurich this spring. The temporary art building was constructed of steel sandwich elements from ThyssenKrupp Hoesch Bausysteme. Just what the artists had in mind.

### *"The best temporary museum in the world."*

Jeanne-Claude

For almost three weeks, the massive steel hangar made of prefabricated elements filled the field at Bellevue Square, one of the central downtown traffic junctions in Zurich. That's why its spiritual parents also lovingly and ironically called it the silver whale: the artistic Bulgarian-French couple Christo Javacheff and Jeanne-Claude de Guillebon, or Christo and Jeanne-Claude for short, had created a temporary museum. Not just any old museum, but the "best in the world", as Jeanne-Claude euphorically claimed.

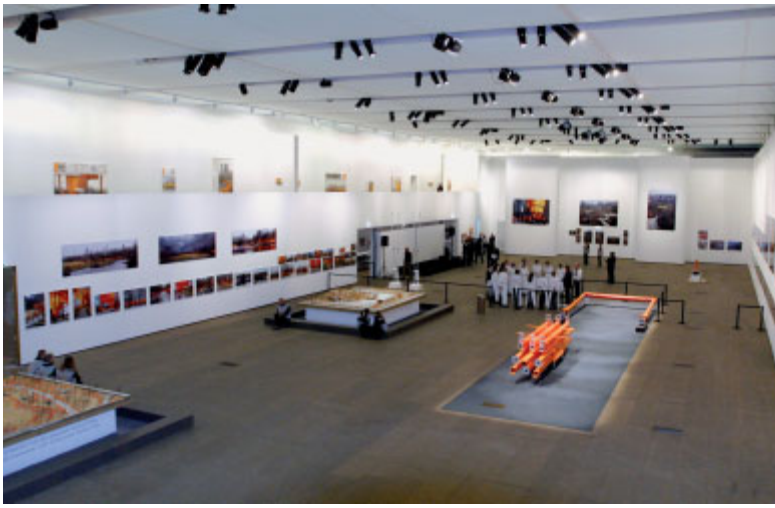
Superlatives are the order of the day for the successful contemporary artist duo. Since the late 1950s, Christo and Jeanne-Claude, who were born on the same June day in 1935, have been a team that, as they always stress, works together intensely, fights regularly and loves each other with all their hearts, even at the age of 71.

But the mutual praise also has a solid basis: Christo and Jeanne-Claude embody a highly lucrative artistic company. It's true that they invest every penny that they earn from merchandising products from their usually gigantic installations and actions back into new projects. Of the 56 ideas that they have pursued, sometimes over decades, they have carried out a total of only 19. But with every action they realize millions. From the wrapping of the Berne Kunsthalle (1968) to the wrapped coast of Australia one year later, the covered Pont Neuf in Paris (1985) and the wrapped Berlin Reichstag (1995) to The Gates, the pathway through saffron-yellow archways in New York's Central Park last year, their actions have become ever more spectacular.

"The Gates in the Box" in Zurich was not an installation, even although it was staged in such a big way. Everything connected with the original The Gates could be viewed on the 1,500-square-meter exhibition area: Christo's sketches, which imagined every possible play of light, color and movement in advance. The entire correspondence from 26 painstaking years of struggle to bring the project to life. A mountain of handwritten notes and extensive photo documentation of the production of the gate poles in America and the lengths of material in Germany. And even a few real gates were standing and lying there. The attendants wore the same gray

Contact: **Roger Görg,** ThyssenKrupp Steel Hoesch Bausysteme, tel. +49 (0)2732 599-1554, e-mail: roger.goerg@thyssenkrupp.com

▲ Christo and Jeanne-Claude had a temporary steel museum created – not just any old museum, but "the best in the world", as Jeanne-Claude euphorically claimed. "The steel gave our exhibition a simple form that acted as a good backdrop," emphasized Christo in retrospect. "That suits us perfectly."



▲ The temporary steel art building in Zurich was set up in only 15 days and housed the eccentric artistic duo Christo and Jeanne-Claude and their exhibition "The Gates in the Box" for almost three weeks. They showed everything connected with the original The Gates installation in New York in February 2005. The gigantic container's basic structure and external envelope are to be reused at the International Motor Show 2007.

plastic vests as their originals in New York, and distributed the same scraps of light orange cloth as souvenirs.

*"The steel gives the art building a simple form and good backdrop."*
Christo

The cleverly and extravagantly staged flashback in the gigantic container could not revive the original euphoria, however. More than 93,000 visitors saw the remake, but they could only roughly recapture the mood that prevailed in New York's Central Park. In spite of all the criticism directed at the populist decorative art, the original installation found an enthusiastic response from the 5,800 visitors each day. A stroll under the cloths with the golden color of the sun invariably put the visitor into a good mood. In Zurich, on the other hand, it was primarily the dimensions of the original that generated respect: 7,532 sails, 965 kilometers of vinyl tubing and 4,799 tons of steel. "That represents almost two-thirds of the Eiffel Tower!", Christo said as he confirmed the impressive comparison.

The exhibition hangar called for somewhat less material: 2,920 square meters of steel sandwich roof elements and 600 square meters of wall area in a metallic silver color. Steel plates originally developed for roofing were used to construct the facades: they are strongly profiled and consequently produced the rhythmically structured exterior that the creators of the exhibition and the artists desired. And so they were also very delighted with the unusual art building. "The steel gave it a simple form that acted as a good backdrop," say Jeanne-Claude and Christo in retrospect. "That suits us perfectly."

Anna Schindler, architectural journalist from Zurich

www.tks-bau.com/en
www.christojeanneclaude.net

## Investments of 160 million euros create the world's largest tinplate production site

# Greenfield high tech


▲ The new facilities of Rasselstein GmbH, a ThyssenKrupp Steel subsidiary, have been operating for exactly one year. A new continuous annealing furnace, an additional coating line, an inspection line and a finished products warehouse provide 20 percent more capacity.

**Germany's only tinplate producer, Rasselstein GmbH with headquarters in Andernach, is taking giant steps in its rush toward the future. Rasselstein GmbH belongs to ThyssenKrupp Steel's Processing business unit. In the past two years, the company has invested the enormous sum of more than 160 million euros in new facilities, advancing it to the world's largest and most modern tinplate production site.**

**In a second step, the existing facilities are currently being modernized and brought up to the latest state of the art for further improvements in product quality.**

## Facts and figures on the tinplate manufacturer Rasselstein

- **Headquarters:** Andernach, Rhineland Palatinate, Germany
- **Employees:** 2,400
- **Facilities:** One pickling line, two cold rolling mills, three continuous annealing furnaces, three skin pass mills and five coating lines
- **Sales volume:** 1.4 million metric tons (70 percent for export)
- **Products:** Tinplate, special chrome-plated black plate, black plate
- **Delivery formats:** Coils, sheets, scroll-cut sheets, narrow strip
- **Coatings:** Painted, PET-coated, PP-coated
- **Applications:** By far the largest portion of the tinplate is needed for the manufacture of cans for foodstuffs and pet food. Other important uses are beverage cans, along with seals and packaging for chemical materials. In addition to the packaging industry, tinplate is also used in the construction and automotive industries, for electronic applications and for household articles.
- **Customers:** More than 400 in 80 countries
- **Sales value:** Around 950 million euros

Rasselstein has had 20 percent more capacity since the fall of last year, allowing it to produce high-grade finished material for all tinplate applications. Decisive for the investments were optimistic sales projections, in spite of the mandatory deposit on cans in Germany. Production has been booked up for years, and today customer requests for more material can be met with additional capacity, unlike in past years. Looking back, Rasselstein's Management Board Chairman Dr. Ulrich Roeske is pleased that ThyssenKrupp made the right choice with its groundbreaking investments, noting that "Our capacities with the new facilities are already fully booked until further notice."

### Capacity increase by a good 20 percent

Attractive both inside and out with its color concept from designer Friedrich Ernst von Garnier, the new factory section went into operation in September of last year. It comprises a new continuous annealing furnace that is equipped with the latest annealing technology, allowing the creation of starting material with very uniform characteristics matched to the customers' complex processing steps. In addition, a new finishing line was built. This line can create especially uniform tinplating thicknesses with an excellent finish. Finally, the new plant section now has an inspection line and its own finished products warehouse with coil pack station and a driverless transport system. By optimizing internal logistics, the company has reduced its internal transport expenditures considerably.

### Investment is reaction to rising demand

Rasselstein's investment strategy is a response to the globally high demand for special tinplate grades. This tinplate meets high technical demands and achieves the necessary physical characteristics by means of recrystallization annealing in the continuous annealing furnace, giving the material particularly narrow tolerances. "Market forecasts anticipate growth in the proportion of these demanding steel grades and products with special surface characteristics and processing qualities within Europe's generally stagnating market," Roeske says. "With its new facilities, Rasselstein is in an advantageous position for meeting future growth, and it is leading the trend for higher and higher grade tinplate."

Katharina Mette

Contact: **Dr. Ulrich Roeske,** Rasselstein GmbH, tel. +49 (0)2631 812267, e-mail: ulrich.roeske@thyssenkrupp.com

*“Our goal is to offer our customers tangible benefits through quality, flexibility, punctuality and better output during processing, and through service. Our customers perceive us as the technological leader among tinplate manufacturers, and our team reconfirms this daily.”*

Dr. Ulrich Roeske,
Chairman of the Board and Chief Sales Officer, Rasselstein GmbH

## Talking to Dr. Ulrich Roeske

# “The growth markets are in America and Eastern Europe.”

**Dr. Roeske, Germany's packaging manufacturers are complaining about the mandatory deposit charged on all packaging containers, and sales figures for beverage cans have dropped drastically in the last three years. Nevertheless, Rasselstein GmbH is building new facilities for 160 million euros in order to produce material for this type of can. A contradiction?**

No, definitely not. When Rasselstein lost almost a third of its domestic business with tinplate for the beverage can segment as a result of the mandatory deposit introduced in 2003, our company was ready: our high product quality also allowed us to fill in the resulting gap with DWI material for the two-piece foodstuff cans prevalent in the USA. Today, the beverage can makes up less than ten percent of our total volume.

**If not in Germany, then where do you see additional growth markets for packaging steel from Rasselstein?**

In addition to the USA, Eastern Europe in particular is a new target market. Furthermore, the company is actively developing and expanding its position in other markets outside Europe, which is leading to sustainable diversification of our customer portfolio, while also increasing the substance and competitive capability.

**What motivates your customers from, say, Eastern Europe or the USA to purchase their tinplate from Rasselstein, the most expensive supplier on the market, instead of from a cheaper local producer?**

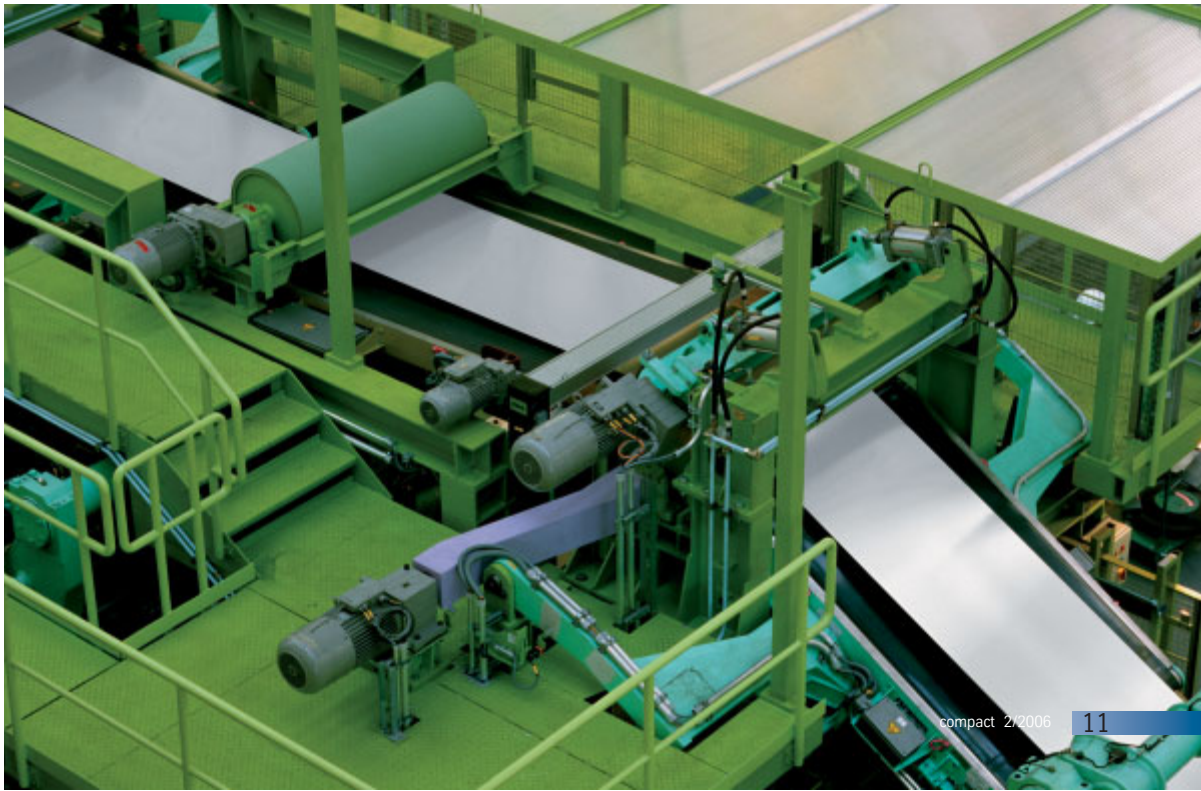
First let me rectify one thing: while Rasselstein is indeed a high-priced supplier, our goal is to offer our customers such tangible benefits through quality, flexibility, punctuality and better output in processing or through special services that our products are seen not as expensive, but as economical.

Critical for the success of such a strategy is that Rasselstein is positioned in the customers' perception as a technologically leading tinplate manufacturer because of the unique selling points just mentioned, technical consultation and problem solving, as well as support during product and process innovations. This position is reconfirmed daily by our team's performance. This alone is why our customers are willing to accept higher prices and sometime longer distances, even all the way across the Atlantic.

**Do you still see opportunities on the local market, do you see the light at the end of the tunnel in Germany, in spite of the mandatory deposit?**

Absolutely, yes. We are confident that things are looking up again, in Germany as well. One positive signal, for example, is the start of the uniform return system for disposable packaging: since May 1, consumers have been able to return their empty cans to any shop, for example. The inconvenient insular solutions are consequently gone, and the path is clear for the return of the beverage can. Visible evidence for the trust our customers in Germany have is that the Ball Packaging Europe beverage can plant in Hassloch is being rebuilt and will probably start operation in the spring of 2007. The plant, with production capacity of around two billion cans a year, was severely damaged in a large fire in April, and consequently had to suspend production.

This discussion was conducted by Katharina Mette



▶ Tinplate from Andernach is in demand around the world. Even customers from the USA, Eastern Europe and outside Europe appreciate the benefits offered by the material and service.

## Rasselstein is positioned to compete

# “A prospering company that is good for the region”

As Premier of Rhineland Palatinate, I congratulate the Management Board and employees of Rasselstein GmbH on the large investments made in Andernach. When, as in this case, a sum of more than 160 million euros is invested in a plant location, it shows that the company is well-positioned.

In times of globalization, “well-positioned” primarily means being competitive. Because above all, we must ensure that the processing industry finds good production conditions here. This includes not only the costs, but also the infrastructure conditions, an area in which the regional government is contributing with numerous measures in various areas. Management and the Works Council have found exemplary solutions for retaining jobs in the “Bündnis für Arbeit und Ausbildung” (Alliance for Work and Training), and training opportunities and jobs are secured by the “Personnel concept for 2009” factory agreement. In times in which many companies fail to meet their full responsibility for training young people, it is important to me to point out that around 220 young people are receiving training in the various professions in Andernach. In this way, Rasselstein is meeting its responsibilities in a very special way.

With around 2,400 employees, Rasselstein is the region’s largest employer, and one of the companies in Rhineland Palatinate with the richest tradition. The company was founded in 1760. The fact that the company has been successful on the market for such a long time is in no small part due to the continuing capability of management and staff to meet new challenges and constantly take up new developments. This applies in both a business and product sense, but also with respect to taking changing employee needs into consideration. Here I’m particularly thinking of the health-related model project “Der gesunderhaltende Betrieb”, which was awarded the “Zukunftsradar 2030” prize in September 2005 by the Zukunftsinitiative Rheinland-Pfalz (ZIRP).

The last time I visited Rasselstein was last December, and I am pleased with the prospering company that is good for the region around Andernach and for all of Rhineland Palatinate.

Kurt Beck, Premier of Rhineland Palatinate

www.stk.rlp.de

## Start-up of the new facilities

# Tinplate stands for growth

**The official start-up of the new production facilities in the middle of June drew more than 300 customers from around the world and top political representatives from the region to Rasselstein in Andernach.**

Before the guests had a chance to form their own opinion of the attractively colored ultramodern facilities, Management Board Chairman Dr. Ulrich Roeske gave a speech explaining the company's Forward Strategy, focusing on customer relations. The company's expanded capacities make it possible to reliably offer the qualities and quantities demanded by the customers: “We want to grow with our customers,” said Roeske, who mentioned Technical Customer Support as the reason for the customers' high regard for Rasselstein. The talk was illustrated by three films, in which the executive directors of the companies Huber Verpackungen, Auxiliar Conservera S.A. and Ball Packaging Europe provided a customer's point of view of what they particularly value in their Rhineland Palatinate-based tinplate supplier.

ThyssenKrupp Steel CEO Dr. Karl-Ulrich Köhler, who is also Chairman of the Rasselstein Supervisory Board, spoke for the Steel segment. He emphasized the significance of tinplate products for the parent group: “Tinplate is an important part of the ThyssenKrupp Steel portfolio, and will remain so in the future.”

Rhineland Palatinate Minister for Economic Affairs Hendrik Hering welcomed the large investment as an affirmation of the confidence in Rhineland Palatinate as a business location. “The expanded Rasselstein GmbH will sustainably promote our region's economic power,” the Minister said happily.

Katharina Mette


▶ A good 300 customers were able to take a look at the attractive interior of the new Rasselstein GmbH buildings in the middle of June. Under the motto “Tinnovation”, the largest tinplate manufacturer issued invitations to the official opening of the new factory section.

## What turns hot strip into a can?

# The secret is in the coating


▶ The final result at the end of the tinplate's long production path: the beverage can made of DWI material from Rasselstein is produced by the Andernach company's customers. But by far the largest portion of Rasselstein's production is needed not for manufacturing beverage cans, but for manufacturing cans for foodstuffs and pet food.

The starting material for DWI (drawn and wall ironed) tinplate from Andernach is hot-rolled wide strip from ThyssenKrupp Steel in Duisburg. After its arrival in Andernach, the hot-rolled strip is first pickled, which means the surface is descaled and greased. The material is then rolled in one of the two tandem cold rolling mills. The thickness of the steel strip is reduced by around 90 percent, with a corresponding increase in the length of the strip. At the end, the black plate is only between 0.12 and 0.44 millimeters thick.

The surface of the rolled material must now again be degreased and cleaned. The next step is annealing, which restores the steel's crystalline structure. The annealing takes place either in batch or continuous annealing furnaces, depending on the composition of the steel, at temperatures between 650 and 800 degrees Celsius. The next processing step is skin-pass rolling of the annealed strip. This is where the mechanical characteristics and surface roughness are adjusted.

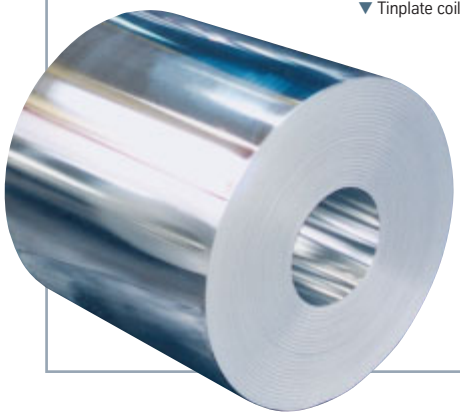
From here, the plate makes its way to the coating line. This is the step that turns black plate into tinplate. After the strip has been trimmed and degreased again, it is given an extremely thin tin coating. The tinplating protects against corrosion and, because of its lubricating effect, it also supports the extremely rapid forming processes during can production.

Katharina Mette

www.rasselstein.com/english

## What is tinplate?

Tinplate is black plate (up to 0.49 millimeter thick) that is given a coating of tin as protection against corrosion. An alternative for certain applications is special chromium-plating of the black plate.



▼ Tinplate coil



Contact: **Dr. Ulrich Roeske,** Rasselstein GmbH, tel. +49 (0)2631 812267, e-mail: ulrich.roeske@thyssenkrupp.com

# NewsFlash

## New Steel Service Center in Poland

Starting in the summer of 2007, the ThyssenKrupp Stahl-Service-Center will be serving the Eastern European market from the southern Polish city of Dàbrowa Górnicza. The new ThyssenKrupp Stal Serwis Polska Service Center will be producing hot and cold-rolled and coated slit strips and blanks with a slitting line and a cut-to-length line. Annual capacity will be 150,000 metric tons. The target groups are customers in Poland and the Czech Republic, as well as in Slovakia and Ukraine, who place particularly high demands on the surface quality and dimensional accuracy of steel products, such as automobile manufacturers and suppliers, and stamping plants, as well as manufacturers and suppliers of household appliances.
www.thyssenkruppstahlservice.com

## New hot-dip coating plant in China

ThyssenKrupp Steel and ANSC Angang New Steel Co., Anshan, are building a second hot-dip coating plant on the site of the TAGAL joint venture in Dalian in the north of China. The companies reached an agreement in April, and construction work started in June. The new TAGAL II high tech plant, with an investment volume of 150 million US dollars, is expected to go into trial operation as soon as early 2008. Each partner holds a 50 percent share in the plant, which is targeted to produce around 400,000 metric tons of hot-dip coated thin sheet that meets the highest standards of surface quality for the automotive and domestic appliance industries.
www.tagal.com.cn

## Horst Schellberg: Retiring after 48 years

◀ Horst Schellberg (l.) is retiring after 48 years with the company. His successor is Peter Georg Selbach.

The new director of sales for IDS (Industry, Distribution, Service Center) is Peter Georg Selbach. On July 1, the 45-year-old business graduate, who has already held numerous management positions in international companies over the last 16 years, took over as successor to Horst Schellberg, who started his well-deserved retirement at the same time, after 48 years. “Horst Schellberg served the company for almost half a century. I respect this greatly, and also see it as a big challenge for me, one that I am highly motivated to take on,” Selbach says in praise of his predecessor’s accomplishments.
www.thyssenkrupp-steel.de/industry

## Rhenus: DAVEX® profiles in high-bay storage

ThyssenKrupp DAVEX® has mastered its first assignment in the area of high-bay storage systems with style. It took the Gelsenkirchen-based profile manufacturer only six weeks to deliver almost 52,000 meters of DAVEX® beams to Tegometall Industrieregale from Switzerland, who used them to manufacture and install a high-bay storage system for Rhenus Logistics in Duisburg. The advantages for the end user are obvious: weight reductions with cost savings as a result of optimized material use. In no small part due to this, Rhenus has ordered additional DAVEX® profiles.
www.rhenus.com / www.davex.de/en/home

## JSAE Annual Congress 2006

At the end of May, the JSAE (Japanese Society of Automotive Engineers) automobile conference was held in Yokohama. JEVISE Corporation, a joint venture of ThyssenKrupp Steel and JFE Steel, gave a talk on “Intelligent Steel Applications for Safer and Fuel Efficient Automobiles”. The emphasis was on “Early Vendor Involvement”, a process in which both joint venture partners contribute their competencies and know-how in body development early on during the initial development phases in project work with the large automobile manufacturers. The example components mentioned in the talk by Dr. Dominik Schwarz, Executive Vice President JEVISE, such as NSB® and tailored blanks B-pillars, could be seen at the ThyssenKrupp Steel booth.

## Bauelemente group realigned

◀ Dr. Horst Dieter Schulz (l.) and Leendert Dorjee form the management of the newly aligned ThyssenKrupp Steel Bauelemente group.

ThyssenKrupp Steel is aligning its Bauelemente group more strongly to target markets in Western and Eastern Europe. In the future, production of steel sandwich elements will be concentrated at the sites at Kreuztal-Eichen in Siegerland and Oldenburg in Holstein. They are taking over practically the complete production volume of the two other plants in Hof and Leipzig, which will be shut down in 2007. The 53 employees affected will be offered new jobs in the Bauelemente group or the ThyssenKrupp Group, or other socially acceptable solutions. Plans for Eastern Europe call for a Forward Strategy that can only be implemented by a new location. For this reason, a new plant is to be established in Hungary or Romania using systems from Hof that are no longer required. The starting material will be supplied by the ThyssenKrupp Steel Color Profit Center.
www.tks-bau.com/en

## Hayes Lemmerz: the steel wheel specialist

# Steel design wheel successfully rolls off the line

**Wheels “R” Us: this is the slogan of Hayes Lemmerz in Königswinter. Wheels have been produced at the foot of the Drachenfels mountain since 1919. The site is Germany’s largest wheel producer, with around 7.7 million truck and car wheels annually. The plant belongs to the US firm Hayes Lemmerz International Inc., the world’s largest wheel manufacturer.**



The fathers of the steel design wheel: Karl Rode (l.) and Werner Kermelk have made the steel wheel popular again with their development. The product successfully went into production in 2005. By the end of this year, around 1.3 million steel design wheels are expected to have been sold.

The people in Königswinter specialize in wheels made of steel. This means wheels on which the majority of motorists continue to travel. However, there has been a development here in recent years that the steel wheel specialists can't be happy about: more and more cars are rolling on wheels made of aluminum. In Europe, aluminum wheels for cars make up around 55 percent of the market. Especially critical: aluminum wheels are gaining ground even in mid-class and lower mid-class automobiles, which is the area with an especially high number of units, even though such wheels are considerably more expensive. The reason: aluminum wheels are cast, so that they offer more possibilities for attractive design.

Reacting to this trend was the job of Werner Kermelk, Karl Rode and Günter Stelzer. The three are developers at Hayes Lemmerz, and they found an answer. It's called the steel design wheel, and is so successful that steel is regaining lost market shares. The product went into production in 2005, and 600,000 wheels were sold in the first year. By the end of the current year, around 1.3 million steel design wheels are expected to have been sold. "The product has exceeded our expectations," states Kermelk, Director of Development. No wonder – it is at least 15 euros cheaper than an aluminum wheel, and looks almost as good.

What makes the steel design wheel special is the center piece, the disk. It is not made of a closed plate with the typical rim of small holes for ventilating the brakes, but instead of five filigree spokes. In between is only air, or "design leeway for our customers," as Rode, Director of Automotive Wheel Development, explains. A plastic panel that clips to the wheel or is screwed to it gives the steel design wheel its attractive look. The two-piece design, in which the panel takes over the design functions, gives automobile manufacturers many design options, without having to redesign the wheels each time.

To allow the filigree wheel to carry the same loads as a conventional steel wheel, the plate for the design wheel disk is considerably thicker: six millimeters. For added stability, the spokes are in the shape of a double Z. The material must be extremely strong, while still being very workable, so that the presses at Hayes Lemmerz can form the spokes into the desired shape.

This is why the developers selected DP-W 600 dual-phase steel from ThyssenKrupp Steel, with a strength level of 600 megapascals and 24 percent elongation. The plant has been using the steel since the 1980s, and has had good experience with it. Kermelk says: "There is no better material in this steel class for the ratio of strength and elongation." In addition, ThyssenKrupp Steel was the only producer who could supply steel as six-millimeter hot strip, a basic requirement for putting the steel design wheel idea into action in the first place.

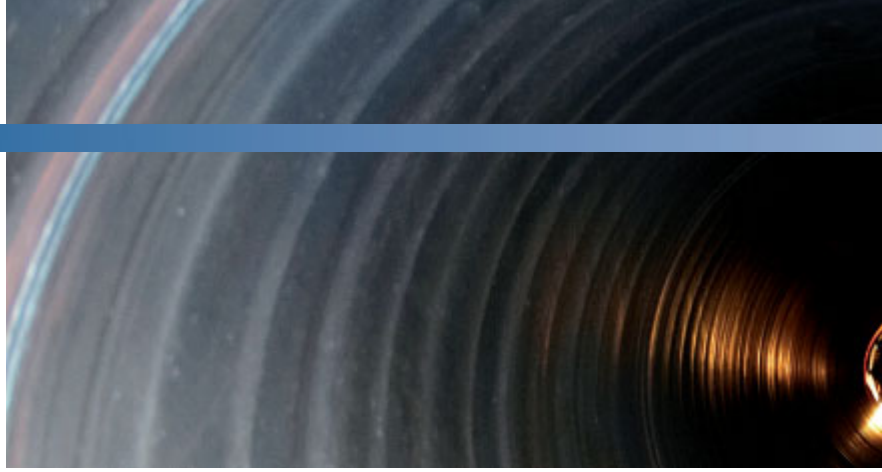
Not only the material is responsible for the fact that today, every four seconds, regular as clockwork, a design wheel disk leaves the transfer press that shapes the component in eight steps. The people at Hayes Lemmerz had to come up with several ingenious procedures so that, for example, the die-cutting tools would not prematurely fall victim to the thickness and strength of the steel plate. Patents have also been filed here. The engineers are not revealing any details, however. The rule that applies here again is: Wheels "R" Us.

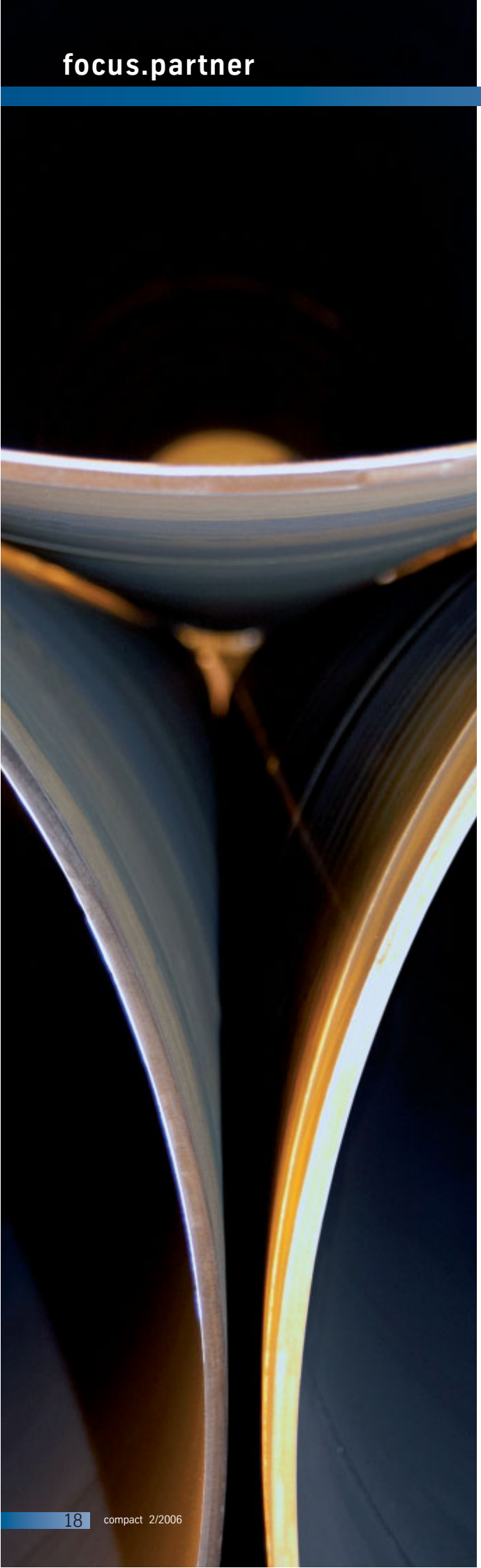
Bernd Overmaat

www.hayes-lemmerz.com/
www.thyssenkrupp-steel.com/auto

◀ Wheels from Hayes Lemmerz in Königswinter: The factory manufactures around 7.7 million units each year, with steel from ThyssenKrupp Steel playing a crucial role.

Contact: **Werner Kermelk** and **Karl Rode,** Hayes Lemmerz, tel. +49 (0)2223 710, e-mail: wkermelk@hayes-lemmerz.com and krohde@hayes-lemmerz.com
**Peter Reiterer,** Auto Division, tel. +49 (0)203 52-40329, e-mail: peter.reiterer@thyssenkrupp.com

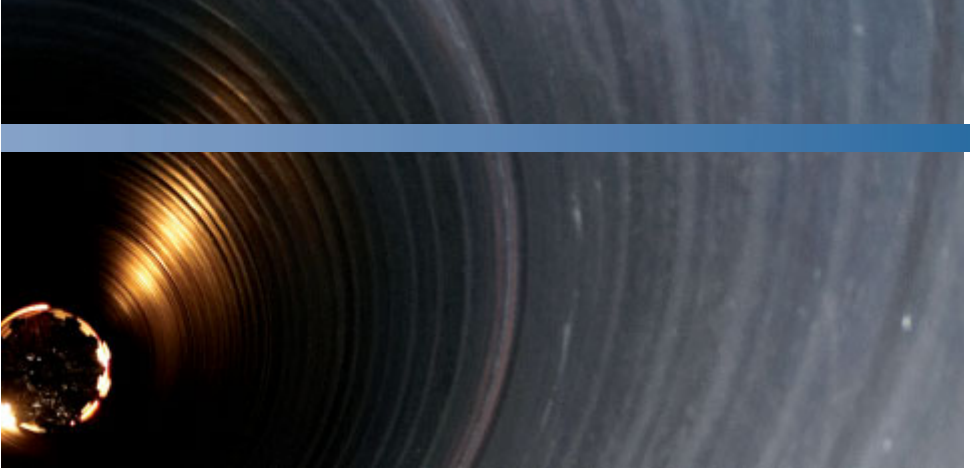




## Bender-Ferndorf: extended workbench of ThyssenKrupp Steel

# Pipelines transport valuable goods in style

**Demand and the markets for natural gas are growing rapidly in modern industrial nations. Europe and North America need more and more energy, while China and India are hungry for development. According to calculations by the International Energy Agency, the quantity required will double by 2030. Ten years before this, gas should be covering a quarter of global energy needs, according the energy group Exxon Mobil (Esso). Shell is even expecting that gas business will double by the end of this decade.**



▲ Innovation is not neglected at Bender-Ferndorf: The Siegerland family enterprise is thinking one step ahead when it comes to the field stress test for high-pressure gas pipelines. It offers its customers a modified water pressure test, in which the individual steel pipe is already pre-stressed during production. The goal is to provide added quality features and security to the pipe and pipeline, and to make the procedure more economical.

▲ To be able to participate in the boom on the market for gas and oil pipelines, Bender-Ferndorf Managing Director Dr. Siegfried Thomalla, Head of Materials Management Martin Stötzel, and Quality Manager Franz-Josef Schmeck are working hand in hand with Hendrik Langenbach, Technical Customer Advisor at the starting material supplier ThyssenKrupp Steel (from right).

Northern Africa and Russia hold enormous natural gas reserves that can only be transported in bulk via pipelines – systems of pipes that first bring the gas to the surface, then collect it from many small drilling sites and finally pump it into the big pipelines. In this way, gas will soon travel from Siberia to Germany in seven days via the planned Baltic Sea pipeline, the most expensive underwater pipeline in the world, which is expected to be finished in four years.

"In the future, we want to contribute to this important project for the European energy supply, and also to concepts for the increasingly important long-distance underwater pipelines," stresses Dr. Siegfried Thomalla, Executive Director of pipe specialist Eisen- und Metallwerke Ferndorf, or Bender-Ferndorf for short. And the Siegerland family enterprise proves daily that it is capable of meeting these goals. Gas is already flowing through several hundred kilometers of Bender-Ferndorf pipes in Algeria. But gas transport is only one example: quality pipes from the Kreuztal area wind 20 kilometers through the European Laboratory for Particle Research (CERN) and are the core of an accelerator system. In Venice, a total of 20,000 metric tons of structural pipes from the family firm protect the city from the threatening abrasion of the water. And in Berlin, jacking pipes are helping to build the Kanzler subway line, which will connect two large lines before the end of this year.

Bender-Ferndorf's specialty is spirally-welded pipes in the upper range of pipe wall thicknesses and diameters. ThyssenKrupp Steel hot strip coils of the X70 brand (L485 MB), a high-strength steel with mill edges, which can be up to 22 millimeters thick and 1,600 millimeters wide, is continually welded. The company produces more than one kilometer of pipe with a diameter of 500 to 1,800 millimeters each day; this is up to 170 kilometers of pipe or 70,000 to 80,000 metric tons a year.

*"We're in the major league of pipe manufacturers."*

Dr. Siegfried Thomalla, Managing Director, Eisen- and Metallwerke Ferndorf

"The design engineers of the gigantic Baltic Sea pipeline need pipes made of special high-strength steel grades," explains Martin Stötzel, Head of Materials Management. This calls for the know-how of starting material supplier ThyssenKrupp Steel. "Together with ThyssenKrupp Steel, we are currently testing these grades on our systems and conducting intensive talks on how to proceed with these steel grades in processing, i.e. during welding and when the pipes are laid on site."

ThyssenKrupp Steel has already used Bender-Ferndorf as an extended workbench in the past, in order to test and further improve steel grades for the very specialized pipe market. "We have been working very closely together for 13 years," is how Hendrik Langenbach from Technical Sales in the Industry Division at ThyssenKrupp Steel describes the trusting cooperation. And Bender-Ferndorf is also a believer in the cooperation. "The starting material from ThyssenKrupp Steel is characterized by consistently good quality," explains Technical Director Franz-Josef Schmeck. Managing Director Thomalla is convinced that "now we are going to tackle the next stage together, and, together with ThyssenKrupp Steel, meet the growing demand for high-strength steels in pipe production, so that in the future, we will continue to be players in the large projects, such as the Baltic Sea pipeline."

Christiane Hoch-Baumann

www.bender-ferndorf.de
www.thyssenkrupp-steel.com/industry

Contact: **Dr. Siegfried Thomalla,** Eisen- und Metallwerke Ferndorf GmbH, tel. +49 (0)2732 55-2200, e-mail: siegfried.thomalla@bender-ferndorf.de
**Hendrik Langenbach,** Industry Division, tel. +49 (0)203 52-41170, e-mail: hendrik.langenbach@thyssenkrupp.com

# Agenda

**Alihankinta 2006**
**September 13 - 15, 2006**
**Tampere, Finland**
This trade fair for the components industry is frequented by visitors from Scandinavia and Russia. The ThyssenKrupp Steel Heavy Plate Profit Center will be represented with high-strength and wear-resistant steels as a co-exhibitor at the booth of its long-time trade partner Flinkenberg.

**IAA Commercial Vehicles**
**September 21 - 28, 2006**
**Hanover**
In close cooperation with ThyssenKrupp Automotive, the ThyssenKrupp Steel Auto Division will be shining at the commercial vehicle trade fair in Hanover with a newly designed 500-square-meter fair booth, showing highlights of commercial vehicle body construction.

**International Components Marketplace IZB**
**October 11 - 13, 2006**
**Wolfsburg**
Under the motto "Connecting car competence" the IZB has developed into a supra-regional marketplace of automotive competence that covers the entire value-added spectrum of suppliers to the automotive industry; it offers a platform for contact with VW and other automobile manufacturers. ThyssenKrupp Tailored Blanks and the ThyssenKrupp Steel Service Center will be there in hall 3.

**Defense Asia**
**Exhibition and Conference**
**October 18 - 22, 2006**
**Gyeryoung Dae, Korea**
As a part of the German national exhibition involvement, the ThyssenKrupp Steel Heavy Plate Profit Center will be represented at this exhibition with its ballistic steels from the SECURE brand.

**EuroBLECH**
**19th International Sheet Metal Working Technology Exhibition**
**October 24 - 28, 2006**
**Hanover**
At EuroBLECH, the leading international fair for the entire sheet metal working process chain, ThyssenKrupp Materials, ThyssenKrupp Nirosta and ThyssenKrupp Steel, together with seven other companies from the Steel group, will be presenting innovative solutions in steel for industrial sheet metal working processes. In addition, ThyssenKrupp Steel is inviting its customers to a special customer event at Hanover Zoo on the evening of Wednesday, October 25.

**Event Cooperation**
**RWTH Aachen/ThyssenKrupp**
**October 28, 2006**
**Cologne/Duisburg**
In the framework of an agreement on cooperation and partnership, ThyssenKrupp works together with the RWTH Aachen University in many ways. The event with students from this university will be taking place against the background of efforts to acquire academically trained newcomers for ThyssenKrupp. On a boat tour on the Rhine from Cologne to the ThyssenKrupp Steel harbor in Duisburg-Schwelgern, the student participants will be introduced to the fields of activity and job opportunities in segments of the ThyssenKrupp Group.
The tour will end with the presentation of a ThyssenKrupp Award for this year's best intermediate examination in mechanical engineering and a tour of the Duisburger iron and steel plant in a veteran train.

**Big 5 Show**
**October 28 - November 1, 2006**
**Dubai**
The Big 5 Show in Dubai is the largest annual construction trade fair in the Persian Gulf region. It covers the five main areas of building construction for this region: building and construction, water technology, air conditioning, building management, and glass and metal design. ThyssenKrupp Steel Hoesch Bausysteme will be there for the first time, in the framework of group participation by German companies, in order to check out the acceptance of thermally insulated ceiling and wall panels, DAVEX construction elements and ThyssenKrupp Solartec Systems in the company of other interested market participants.

**Stahl 2006**
**November 9, 2006**
**Düsseldorf**
The Stahlzentrum (Steel Center) invites participants to its traditional Stahl 2006 annual conference in the Düsseldorf Congress Center Süd in November. The customer-oriented steel forum deals with the topic "Steel Connects – Connections with Steel". The focus here is on joining technologies. The technical steel dialogs look into more recent developments in systems engineering and metallurgical methods. ThyssenKrupp Steel is participating in the event with an open meeting point and a presentation area under the motto "ThyssenKrupp Steel goes global".

**Metal Expo**
**November 15 - 18, 2006**
**Moscow**
The Metal Expo is the largest annual exhibition targeted at metal and metallurgical methods held at the All-Union exhibition grounds in the north of Moscow. ThyssenKrupp Steel will be taking part in this exhibition for the second time. Co-exhibitors are the Steel Service Centers, Rasselstein, Electrical Steel and DAVEX, as well as ThyssenKrupp Nirosta, ThyssenKrupp Materials Europe and ThyssenKrupp VDM. The exhibition stand will be constructed with elements from ThyssenKrupp Hoesch Bausysteme.

**Bauma China**
**November 21 - 24, 2006**
**Shanghai**
International trade fair for construction machines, construction material machines, construction vehicles and construction equipment. The ThyssenKrupp Steel Heavy Plate Profit Center will be taking part in this growing trade fair for the third time, with its wear-resistant and high-strength steels XAR®, N-A-XTRA® and XABO®, as well as the special SECURE steel. This trade fair is an expression and reflection of the boom in China.



Contact: **Dr. Jens Jordan,** Executive Affairs/Marketing, tel. +49 (0)203 52-45560, e-mail: jens.jordan@thyssenkrupp.com

## Cold Performance jazzes up thin sheet

# Hot-rolled with the finest quality

**"Hot-rolled thin sheet – there is no such thing," is the popular opinion in the steel industry. ThyssenKrupp Steel is shaking up this preconception and proving the opposite with its latest innovation.**

In addition to conventional production of hot-dip galvanized thin sheets, which are cold-rolled to the customer's requested dimensions on tandem lines and then hot-dip galvanized, the steel group is now offering a new manufacturing technique, and therefore an improved product, with the name "MHZ-W with Cold Performance". "The characteristics of our hot-rolled, micro-alloyed and hot-dip galvanized steel outstrip the high quality of conventional micro-alloyed hot-dip galvanized thin sheets," states Dr. Peter Biele, Head of Technical Customer Support in Industry, Distribution, Service Center (IDS) sales. He lists the high-tech product's advantages: "The surface of the hot-rolled and then hot-dip galvanized steel is noticeably more uniform than that of conventional micro-alloyed thin sheets of this thickness and strength. Furthermore, the product is easier to process because its mechanical characteristics, such as yield strength and stability, lie in even narrower tolerance ranges and, thanks to the latest hot-rolling technology, the strip has recognizably more uniform thickness across the entire width."

The new high-strength steel from ThyssenKrupp Steel is particularly interesting for fabricators in the motor vehicle industry. "It is ideally suited for body components, such as structural members and pillars," explains Ullrich Heidtmann from the Quality Coordination department. The new thin sheet is produced on the Duisburg casting-rolling mill, which has a capacity of up to two million metric tons annually. "The new technology allows us to produce strip widths between 900 and 1,600 millimeters and thickness of 1.4 to three millimeters. Furthermore, we can bring to market thin sheet with even higher strengths than before," he explains.

Christiane Hoch-Baumann

www.thyssenkrupp-steel.com/industry
www.thyssenkrupp-steel.com/auto/en

Contact: **Dr. Peter Biele,** Industry Division, tel. +49 (0)203 52-41166, e-mail: peter.biele@thyssenkrupp.de
**Ullrich Heidtmann,** Auto Division, tel. +49 (0)203 52-41159, e-mail: ullrich.heidtmann@thyssenkrupp.de

## The new Opel Corsa makes a big entrance

# Stylish design and innovative technology from Rüsselsheim

**The little Corsa is making a big entrance: sporty and timelessly chic, but also serious and roomy. Four models will be available when sales start in October: Basis, Edition, Sport and Cosmo, to be joined later by the powerful OPC version. The fourth generation of the 13-million strong bestseller has grown: it offers a great deal of room with a length of almost four meters – around 15 centimeters longer than the previous model – a width of 1.71 meters and a height of 1.49 meters.**


◀ Celebrated a strong showing at the British International Motor Show in London on July 18: the new Opel Corsa came with a fresh design and innovative technology - stylish, youthful, dynamic and delightfully timeless.

The new Corsa also shows just how big it is when it comes to its equipment: navigation system with dynamic route guidance, halogen cornering and curve light, heated steering wheel, CD radio with MP3 function, to mention just a few. It's also beefed up when it comes to safety – likewise thanks to the good cooperation between General Motors and ThyssenKrupp Steel.

For three years, Stefan Mayer from the General Motors Key Account Team at ThyssenKrupp Steel, together with Silke Baumann and Stephan Schoss, has been in close contact with those at General Motors responsible for development. One of the tasks has been to support the development of the new Opel Corsa. "Together, we have worked out new crash concepts, discussed ultra high strength steels and their possibilities and put innovative structural components to use," Mayer recalls. "Countless crashes were simulated on the computer. Our main interest was particularly the safety of the passengers and reinforcement of the critical door area."

Axel Kaiser, head of the Body & Safety area in the Advance Development department at Opel, appreciates this expert support: "The concepts convinced us, and are reflected in the new Corsa. Thanks to the intensive work with ThyssenKrupp Steel, we have introduced efficient technical solutions into the body, in spite of shortened development times."

"We are currently investigating pedestrian and passenger protection, as well as the integration of high and ultra high strength steels in vehicle bodies of the next generation," Mayer continues. Work is proceeding on further optimizing coming models with respect to their crash performance and lightweight steel construction. "For the car driver, these technical criteria mean safety and economy," Mayer explains. Axel Kaiser is satisfied: "ThyssenKrupp Steel has enormous know-how and is extremely flexible. The steel producer is very well positioned internationally, and can supply us around the world."

The Opel Corsa body-in-white has been in production in Zaragoza, Spain since the end of July, and Hermann Rippberger, head of Steel Scheduling at General Motors Europe is working with his team to ensure that the stamping plants have a constant supply of thin sheet. "A plant standstill would be expensive," he says. "But because of the many years of reliable work with Planning and Controlling and the Key Account Team from ThyssenKrupp Steel, this has never happened." Talks are held every four to six weeks to plan the distribution of the delivery capacities for the coming weeks and months. In addition, capacities for the following year are estimated two to three times a year. "We can count on each other," Rippberger stresses, "and this is a basic prerequisite in our business."

General Motors sources thin sheet from all ThyssenKrupp Steel sites, predominantly Neuwied and Dortmund. Electrolytically galvanized thin sheet is preferred for exterior parts of the body. In addition, General Motors receives bake-hardening steels for exterior and interior parts, as well as modern multi-phase steels and hot-dip galvanized thin sheets for structural parts.

*"The presses need a constant supply of thin sheet."*

Hermann Rippberger, General Motors

In the event of problems with quality, or if the supply flow should happen to falter, as was the case in 2003 when there was a fire at the Dortmund cold rolling plant, Dr. Michael Rupp, head of Steel Quality & Technical Application at General Motors, and his team come into play. Together with Dr. Peter Paul Masarczyk, head of the ThyssenKrupp Steel General Motors Key Account, he has overcome every crisis so far. "Our prime objective is to ensure that there are no disruptions to production," Rupp explains. Masarczyk adds, "Sales, customer support and engineering activities were combined in Key Account Teams three years ago. As the General Motors Key Account Team, we are now the first contact point for our customer; we can offer integrated and efficient service for every issue. We hope to strengthen our position as a supplier for General Motors even more with this service agreement."

After all, both companies are profiting from this cooperation: Opel recently won second place in this year's steel innovation competition with its groundbreaking steel engine hood concept with organic coated thin sheet, and ThyssenKrupp Steel has repeatedly been named Supplier of the Year by General Motors in past years. But the figures also speak for themselves: whereas General Motors purchased a good 350,000 metric tons of thin sheet in 2002, sales had already reached 422,000 metric tons in 2005.

Christiane Hoch-Baumann

www.opel.de
www.thyssenkrupp-steel.com/auto/en

▼ Dr. Peter Paul Masarczyk (front) is head of the General Motors Key Account Team in Sales/Engineering in the ThyssenKrupp Steel Auto Division. A total of ten employees work on his team, committed to successful dealings with the major customer.



Contact: **Karl Mauer,** General Motors Europe, tel. +49 (0)6142 77-2220, e-mail: karl.mauer@de.gm.com
**Dr. Peter Paul Masarczyk,** Auto Division, tel. +49 (0)203 52-40490, e-mail: peter.masarczyk@thyssenkrupp.com

## Prizes awarded to innovations in steel

# 14 innovators honored

The Steel Innovation Prize was awarded for the seventh time in late June. A total of 14 innovators received their awards from the competition's patron and CEO of Porsche Wendelin Wiedeking in the Essen Philharmonic Hall. The prize is offered by the Steel Information Center every three years, and is endowed with a total of 70,000 euros.

"The response of engineers, researchers, architects and designers to our competition is impressive," stresses ThyssenKrupp Steel CEO Dr. Karl-Ulrich Köhler, acting in his function as Chairman of the Steel Information Center. "This shows that steel continues to offer incentives and options for developing something completely new, as well as for adding further improvements to existing products and methods."

The competition, which is one of the most successful of its type in Germany, rewards innovations in four categories: steel products, research and development, design, and steel components and systems for construction. This year, a special prize was awarded for the first time for the most innovative entry from a small or medium-sized company.

The winner of the Steel Innovation Prize 2006 in the category "Research and Development" was NANO-X GmbH. Together with Volkswagen AG, the University of Kassel, the ThyssenKrupp Steel Auto Division and the DOC Dortmunder OberflächenCentrum (surface engineering center), the company from Saarbrücken developed a paint system that provides sure protection against scaling for components undergoing indirect hot forming in automobile production. This product has now become a market success under the name x-tec®.

In the "Products" category, the winner was Adam Opel GmbH with its development of the new engine hood for the Zafira. The thin steel plate with modern organic coating makes it lighter than the previous model and fulfills the requirements for improved pedestrian protection. This innovation has also profited from the system partnership between Opel and ThyssenKrupp Steel.

ed

www.stahl-info.de
www.thyssenkrupp-steel.com/auto/en

Contact: **Horst Woeckner,** Steel Information Center, tel. +49 (0)211 6707-849, e-mail: horst.woeckner@stahl-info.de

## Details of the Norwegian Pearl

**Shipping company:**
Norwegian Cruise Line

**Shipyard:**
Meyer Shipyard, Papenburg

| | |
|---|---|
| **Usable tonnage (gross tonnage):** | 93,502 |
| **Year of construction:** | 2006 |
| **Flag:** | Bahamas |
| **Length:** | 295 meters |
| **Width:** | 33 meters |
| **Draft:** | 8 meters |
| **Decks:** | 15 |
| **Crew:** | 1,154 |
| **Passengers:** | 2,466 |

## Meyer Werft shipyard builds luxury liner with heavy plate from Duisburg-Süd

# Håvard Ramsøy manages without a compass

A report by Christiane Hoch-Baumann
Photographs: Rainer Kaysers

At the end of the year, Staff Captain Håvard Ramsøy, in a white uniform trimmed in gold, will stand next to his captain on the spacious command bridge of the Norwegian Pearl. He'll look out over the deep blue sea to the horizon with his binoculars in hand, and safely navigate the gigantic cruise ship through the Caribbean, following Columbus's trail past the idyllic atolls and endless dream beaches.

But what once took Christopher Columbus four voyages and many years will take Staff Captain Håvard Ramsøy, the captain's assistant and also the person responsible for personnel, only a few days, thanks to modern monitoring, steering and drive technologies and the experienced crew. "There's now more high tech on board than can be found in a passenger airplane," is how he describes the Norwegian Pearl's first-class equipment. "Navigation is by means of GPS (Global Positioning System), and on long stretches we follow the autopilot. Sextant, sea charts and compass belong to the past, but are still on board just to be sure."

The luxury ship is currently still in dry dock in one of the two giant construction docks of the Meyer Werft shipyard in Papenburg, where it is being prepared to leave the dock in October. Ramsøy stands in his shirtsleeves at the foot of the Norwegian Pearl's gigantic bow and routinely checks the progress. "Every shipyard designs the nose differently," he explains. "It parts the water, without creating any turbulence, if possible, so that the hull generates almost no resistance in the water."

More than 10,000 people have spent two years planning, developing, designing and building the mega ship. Ramsøy was involved right from the start. He was appointed by the American shipping company Norwegian Cruise Line in 1997, and will direct the shipping company's newest ocean giant in the coming years: "This is the only way to get to know a ship, to know the strengths and weaknesses," explains the experienced seaman, who has been sailing the seas since 1989. "This is the basic requirement for bringing the ship that is entrusted to me, with its crew and passengers, to its destination safely and on time."

*"I am observing the building progress and getting to know the new ship."*
Håvard Ramsøy, Staff Captain

But it's not only the captain's experience that is crucial for a dream trip on a luxury liner: "Building a modern cruise ship is an extremely complex, extensively automated process," explains Vesa Airaksinen, Project Manager at Meyer Werft in Papenburg, which is the region's largest employer with 2,250 employees. "Drawing boards, blueprints and transparent copies don't exist anymore." Computer-aided design, or CAD for short, is the indispensable tool for engineers and designers today. Using this, they first create a virtual passenger ship on their monitors, laying hundreds of kilometers of pipes and thousand of kilometers of cable and installing air conditioning systems, power lines, desalination plants and waste management equipment. "The trick is to avoid the feeling of confinement in the limited space of a ship," says Airaksinen. Without the special hardware and software, whose computing capacity would be enough to develop a city for several hundred thousand people, it wouldn't be possible to build the approximately 400-million-euro giant. "The practical implementation doesn't even begin until everything has been precisely calculated on the computer, exactly according to plan."

## Why does steel float?

A luxury liner like the Norwegian Pearl, which is currently being built at the Meyer Werft shipyard, weighs around 45,000 metric tons – and it floats. A one-pound hammer sinks immediately, on the other hand. How is this possible? The Greek mathematician and physicist Archimedes knew the answer: according to his principle, a body that is submersed in a liquid has exactly as much buoyancy as the weight of the liquid that it displaces.

In other words, a ship is more than just its steel hull. It is also the space that this hull encloses. This space is largely filled with air. And because air is lighter than water, the ship's total weight is exactly the same as the weight of the water that it displaces. This makes it buoyant, and it floats. A solid block of steel weighing as much as the ship would sink, just like the hammer.

▶ The bow of the Norwegian Pearl will soon be parting the waves in the Caribbean and giving almost 2,500 passengers their dream vacation. Meyer Werft will hand over the completed luxury liner to the shipping company in December after only two years of building time.

◀ Thanks to the modular construction and pre-fabricated systems, a job that used to take years is now finished in just a few months. "If the Titanic had been built to today's standards, the disaster would never have happened," says Meyer Werft project manager, Vesa Airaksinen. For example, the ship's hull comprises multiple chambers, each of which is absolutely watertight. "Even if three or four chambers were to completely fill with water, the ship would not capsize."

A good 20,000 metric tons of heavy plate were processed for the Norwegian Pearl, around 1,000 kilometers of steel welds were placed and roughly 250,000 individual steel components were joined together. How? In the Meyer Werft shipyard steel construction center, fully automated plasma cutters cut the three-by-ten-meter heavy plate from ThyssenKrupp Steel to size. The plate has already been cleaned by a Service Center and given special corrosion protection. Four modern laser systems then weld the blanks into one giant 20-by-20-meter plate, which is finished with steel profiles, girders and side walls to form the "sections". At this time, the sections are already given holes into which doors and steps will be placed later.

*"Logistics are indispensable at a shipyard."*

Lambert Kruse, Meyer Werft Managing Director

Around eight sections are now being built into a good 800-metric-ton block directly next to the construction dock. 70 of these blocks, already pre-equipped with cableways, pipelines and air conditioning ducts, are positioned in the dock with two gigantic cranes and many other technical tools, and welded into a ship. "The principle is the same as with Lego building blocks," the project director explains. "You put the separate pieces together, push the completely pre-assembled interior fittings and machines into the blocks where they belong, and our cruise ship is finished." Construction designs for the luxury liners are becoming more and more delicate, however. The shipping companies are increasingly asking for open, light-flooded spaces with a view of the ocean. "That doesn't change the principle. But the trend is for more demanding starting material, meaning high-strength steel that is easy to process in spite of its higher strength and robustness."

Staff Captain Håvard Ramsøy has meanwhile moved to the future bridge, and shakes his head in wonder. "I can't imagine how the enormous quantities of separate parts, components and systems that are built into a cruise ship like this one always arrive at the right place at the right time in the right size and quantity." Project Director Vesa Airaksinen grins and proudly explains that today, revolutionary design methods, planning tools, manufacturing processes, and also the improved quality of the heavy plate make even bold design visions and the highest quality standards possible. "On average, we have three cruise ships of this magnitude under construction, and we finish two each year."

## A modern, floating city

The passengers on board the Norwegian Pearl experience luxury and well-organized pleasure. In addition to first-class accommodations and dining (water treatment systems and giant cold storage rooms and food lockers ensure the basics), sport, games, fun and wellness are offered in abundance, as is an incredibly diverse entertainment program, with shows, movies and theater, almost taking away the excitement of docking at the next port. The ship's own hospitals offer comprehensive medical service and computer-controlled, moving stabilizers counteract the motions of the waves – it's a rare guest who gets seasick. The modern luxury liners are seafaring's most colossal machines, resembling floating cities.

Contact: **Peter Hackmann,** Meyer Werft, tel. +49 (0)4961 81 45 19, e-mail: hackmann@meyerwerft.de
**Dr. Marco Pfeiffer,** Heavy Plate Profit Center, tel. +49 (0)203 52-75170, e-mail: marco.pfeiffer@thyssenkrupp.com


*"The market demands that we build such gigantic and safe hulls within the shortest possible time."*
Vesa Airaksinen, Project Manager

Computer-aided planning and design methods reduce not only the building time, but also the testing phase. Time-consuming and expensive trials with true-to-scale models in large water tanks are increasingly becoming unnecessary. All imaginable incidents are simulated on the monitor. Because of this fact, which the Staff Captain is particularly happy about, he and his captain will only have to wait until November to meet the 1,000-member crew, and then set sail under the name of the shipping company and the flag of the Bahamas.

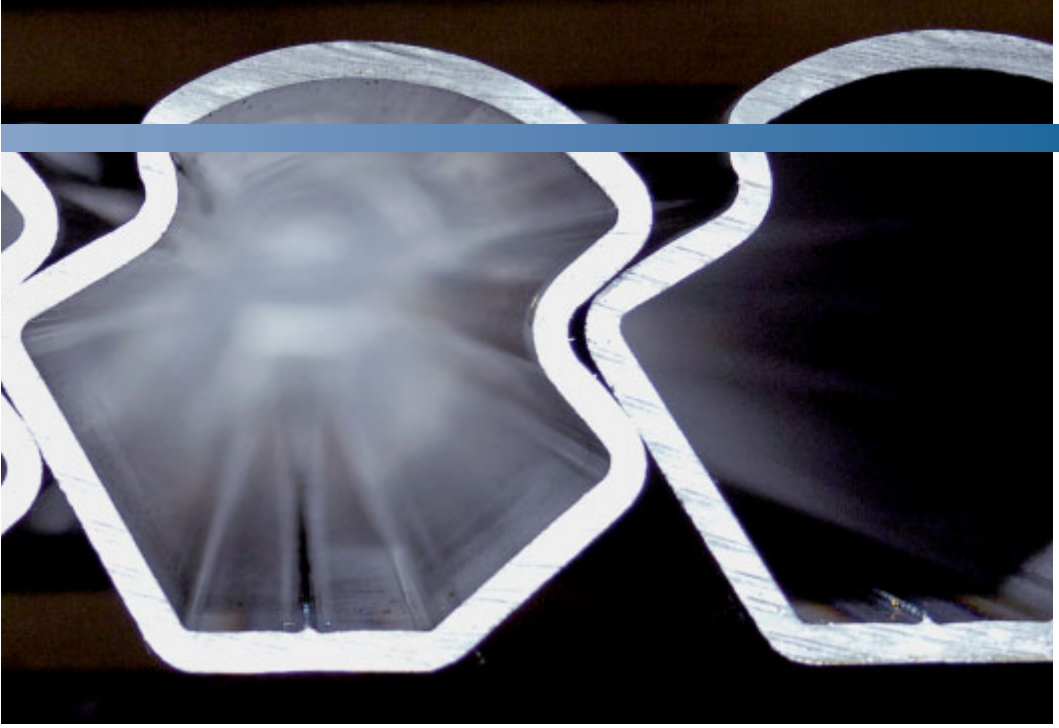
www.meyerwerft.de
www.thyssenkrupp-steel.de/plate

## Welser Profile: tradition and high tech

# Custom profiles

Flange plus web equals profile?! It's not quite that easy for the specialist Welser Profile in the Lower Austrian town of Ybbsitz. Because at Europe's leading manufacturer of open special profiles, welded tubular products and profile systems, the construction plan for each product has its own complexity. The company, with locations in the Lower Austrian towns of Gresten and Ybbsitz and one in Bönen in Westphalia, does not produce any run-of-the-mill profiles, but instead only special products. "We have a total of around 16,000 cross-sections in our range, with three to five new developments being added each day," Chief Production Officer Andreas Welser states proudly. "No two of the profiles that we produce are the same – our products are as different and unique as the products of our customers." And completely different requirements are placed on the profiles by every one of Welser's customers, the majority of whom are in Europe, although others are dotted around the world. The profiles must ensure safety and mobility, for example in cars, buses or trains, must guarantee stability in concrete formwork technology and scaffolding or allow a view in windows, doors and gates. Profiles can also be found in furniture, kitchen cabinets, washing machines and air conditioning and ventilation technology. A subsidiary in Bönen manufactures profile systems for glass and metal facade construction as well as for the door, window and partition wall segment. "Our products are a part of practically every area of life," Welser declares.

▶ Profile check: Welser Profile Chief Production Officer Andreas Welser, Friedhelm Heller (sales staff member at ThyssenKrupp Steel), Barbara Dornbusch (team manager in sales at ThyssenKrupp Steel), Welser Purchasing Head Gerhard Hasenbein and Axel Durh (Technical Customer Support at ThyssenKrupp Steel) see for themselves that good input stock means excellent end products.



◀ Welser manufactures special profiles for all aspects of life, on customer request. The company can produce 16,000 various models, with three to five new developments coming in daily.

▼ Steel processing in the eleventh generation marks the family business that has been located in the Lower Austrian town of Ybbsitz since the 17th century. Welser now has two production locations, eleven sales offices throughout Europe and 1,500 employees who annually process 350,000 metric tons of steel into special profiles.


As Purchasing Head Gerhard Hasenbein makes clear, this calls for custom work: "We don't have a catalog to order from. Instead, we produce only to order." A team of specialists, consisting of around 80 people, works with the customers to develop the cross-sections. Welser builds its own tools for producing the profiles. As though in an oversized case, hundreds of thousands of various roll tool parts are stored in a giant high-bay storage system. Depending on the complexity of the component requested by the customer, the development time to produce an end product can range from one week to six months.

## Special production by order

The result of the custom work is an immeasurable number of profiles. "They have individual shapes, can be open or welded, have various surfaces, are stamped, curved, laser-cut or riveted," Andreas Welser explains. "99 percent of our work is in steel, in the form of hot-rolled wide strip, cold-rolled thin sheet, painted, electrolytic, hot-dip galvanized or foil-coated material, but also stainless steel, aluminum and titanium, in thickness of from 0.3 to 8 millimeters." Month for month, more than 50 systems process around 30,000 metric tons of steel, with a considerable portion of the starting material coming from ThyssenKrupp Steel. Calculated in linear meters, profile production at Welser amounts to an impressive 140,000 kilometers, or enough to go around the earth three times.

## Iron will to succeed

"Our recipe for success is based on a number of completely different ingredients, with the most important of these probably being an iron will to succeed," Andreas Welser explains. "We are number one in Europe as a technology leader, because we have been working with steel for eleven generations, and over the course of all that time we have developed an instinctive feeling for our customers' needs." The most modern production facilities and a dedicated employee team of 1,500 people throughout Europe ensure innovative products and good service. "We develop products, have our own training programs, work only with first-class starting material and cultivate long-term relationships with customers and suppliers," Purchasing Head Hasenbein sums it up. "This proves that we have the right strategy." And the success story is continuing: Welser Profile is investing heavily in technology and capacity. "We recognize the challenges presented by the market, and we are taking them on," Welser says.

Katharina Mette

www.welser.com
www.thyssenkrupp-steel.com/industry

Contact: **Klaus Preyler,** Welser Profile, Marketing, tel. +43 (0)7443 80000, e-mail: at@welser.com
**Axel Duhr,** Industry Division, tel. +49 (0)203 52-40794, e-mail: axel.duhr@thyssenkrupp.com

## VW Environmental Prize for ThyssenKrupp Steel

# Innovative solutions for environmentally friendly cars

Volkswagen AG has awarded its supplier ThyssenKrupp Steel with this year's Group Award for the Environment. The reason given in the citation: "ThyssenKrupp Steel uses environmentally friendly technologies for the economic manufacture and processing of innovative steel products, which, due to their high rigidity combined with high formability, allow thin-walled, weight-optimized car components. This means that, in addition to the effective use of energy in the Duisburg plant, Volkswagen customers also see a reduction in fuel consumption." ThyssenKrupp Steel has also recently been added to the group of Volkswagen Sustainability Partners, a distinction awarded only to suppliers who, like the steel producer, expressly state their support for the objectives of sustainable development.



◀ Group Award for the Environment from VW for ThyssenKrupp Steel AG and its sustainable business development: Dr. Ulrich Jaroni, member of the ThyssenKrupp Steel AG Executive Board, accepts the award from Dr. Bernd Pitschetsrieder, Volkswagen AG CEO, at the end of June.

Dr. Ulrich Jaroni, ThyssenKrupp Steel Executive Board member in charge of the Auto Business Unit, points out, "We are proud of this recognition of our achievements. It shows that not only are we aiming for sustainable actions, we are actually putting them into practice."

The company's detailed declaration for sustainability is given in the first sustainability report, which ThyssenKrupp Steel issued in the middle of the year. The publication, entitled "Doing the right thing. Right?" explains the company's sustainability attitude: meeting the needs of the current generation without compromising the ability of future generations to meet their own needs. The company sees sustainable development as a continuous process with no fixed end point. "Alongside optimized business performance, the ability to innovate is a decisive criterion for sustainable development," said CEO Dr. Karl-Ulrich Köhler upon the presentation of the publication.

The 94-page ThyssenKrupp Steel AG Sustainability Report is based on the guidelines of the international recognized Global Reporting Initiative (GRI). It includes a CD-ROM containing extensive supplementary data, facts and figures, as well as GRI references. A microsite dedicated to the report has been set up on the internet, and the report is also available for downloading as a PDF file.

ed

www.volkswagen.com
www.thyssenkrupp-steel.com/en

### Interested in the Sustainability Report?

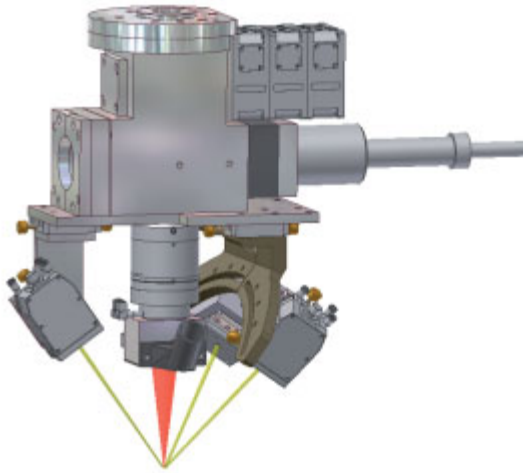
You can find the publication at a microsite on the internet. The link is: http://www.thyssenkrupp-steel.com/nachhaltigkeitsbericht2004_2005/en/. You can also download the report as a PDF file from this address.

We would also be happy to send you individual bound copies of the publication. Please contact: Claudia Drüppel-Fink, tel. +49 (0)203 52-25168, e-mail: claudia.drueppel-fink@thyssenkrupp.com.

Contact: **Dr. Markus Weber,** Auto Division, tel. +49 (0)203 52-44109, e-mail: markus.weber@thyssenkrupp.com
**Dietmar Stamm,** Communications, tel. +49 (0)203 52-25168, e-mail: dietmar.stamm@thyssenkrupp.com

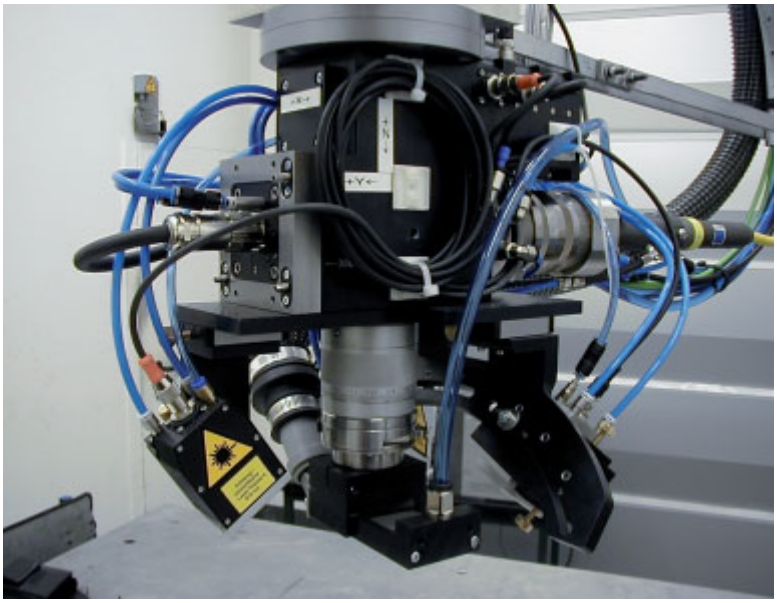
## Laser Technology Innovation Prize 2006

# Flexible laser optics weld tailored blanks



▶ With the new laser optics system, only the laser beam needs to be moved to follow the weld, rather than the entire laser welding head or even the entire gantry. This is achieved by using a small scanning mirror that can reposition up to 200 times per second. ▼

Stefan Wischmann, director of the Beam and Sensor Technology Department in the ThyssenKrupp Steel Auto Division, was awarded the Laser Technology Innovation Prize 2006 for the development of a new laser welding optics system called Beam Control Optic (BCO). The new optics system allows greater precision, higher quality and greater productivity in laser welding on non-linear tailored blanks. The prize, which is offered every two years by Arbeitskreis Lasertechnik e.V., was presented to Wischmann in May in the Aula Carolina building in Aachen.



Non-linear tailored blanks, developed by ThyssenKrupp Steel under the brand name Thyssen Engineered Blanks®, are steel blanks made up of individual sheets of different strengths, thicknesses or surface finishes. Unlike standard tailored blanks, Thyssen Engineered Blanks® feature non-linear welds. This allows the blanks, which are processed into body and chassis parts in the stamping shops of automobile manufacturers, to be tailored exactly to the actual stresses faced by the finished part.

With the new laser optics system, only the laser beam needs to be moved to follow the weld seam, rather than the entire laser welding head or even the entire gantry. This is achieved by using a small scanning mirror – some 50 mm in diameter, depending on the application – which can reposition up to 200 times per second to keep the laser beam in exactly the required welding position. The "weld tracking sensor" almost instantaneously reports the exact position to an electronic unit controlling the scanning mirror. The laser optics system is an independent unit which can be mounted on any system. The new technology makes it possible to produce non-linear tailored blanks using comparatively low-cost industrial robots rather than expensive gantries. ThyssenKrupp Steel has patent applications pending for key elements of the new technology.

Bernd Overmaat

www.akl-ev.de
www.thyssenkrupp-steel.com/auto/en/highlights/

Contact: **Stefan Wischmann,** Auto Division, tel. +49 (0)203 52-44552, e-mail : stefan.wischmann@thyssenkrupp.com

## ThyssenKrupp Steel sponsors zoo

# Steel finds a new role in the zoo

**A modern building has graced Duisburg Zoo since the end of May: with support from ThyssenKrupp Steel, the zoo has added a new entry area to the east entrance of its primate house. In the thick of things, is the motto of the new structure: the entrance functions namely not only as just an access to the animal enclosures – it also has a gigantic panorama window behind which lives a rare type of ape. It also harbors an accessible aviary for parrots.**

The building's special feature: the 200-square-meter, five-meter-high building has an unconventional and friendly look with modern steel products, instead of the brick, cement and thick bars used in the plain square block principle adopted by many zoos.

### DAVEX® profiles as girders

Designer Klaus Kottkamp from ThyssenKrupp Steel, originator of the new entrance to the Equatorium and pacesetter for modern architecture at the Duisburg Zoo, explains his concept: "The greatest challenge was to structurally enhance what had been a relatively unattractive corner of the zoo, in order to make the visitor curious and specifically head there in order to find out what the area holds." Naturally, the design for the new structure was also expected to create a solid and useful structure that would also have a filigree effect and sense of timelessness, one that was primarily built of steel elements at reasonably low cost.

Kottkamp accomplished his aim of creating a building at the Duisburg Zoo with a completely new architectural symbolism: the new entrance has turned out to be a real eye-catcher. With its unusual shape and color, it clearly and positively stands out from all existing structures at the Duisburg Zoo. Seen from above, the entrance is fan-shaped, with a sloping roof executed in large waves. The exterior facade's round arch and the roof structure are constructed of ThyssenKrupp Steel products: the roof is made of insulated trapezoidal sheet metal and the facade is made of sandwich elements that are combined with glass elements in the entrance area. "My special concern regarding the facade was to ensure that glass was specifically used only where a large amount of natural light was to enter. The compactness of the sandwich elements, on the other hand, serves to direct the visitor's attention exclusively to the fauna." ThyssenKrupp Davex®-design beams, which structural engineer Kottkamp says "give the building a special airiness thanks to their perforated webs," were used for the building's structural framework.

The color design of the building is the design element that first catches the eye, even from a distance. Using colors from the ThyssenKrupp Steel **Reflections**One® color collection, only light green tones are used on the outside. This allows optimal integration into the natural landscape on the Duisburg Kaiserberg hill. The white and light blue tones of the interior design provide transparency. "We wanted to provide airiness inside with the subtle coloring and the elegant beams as structural details," Kottkamp explains. The building takes back the coloring and, in turn, allows the focus to be on the animals to be seen here.

### Modern zoo architecture

"Until now, steel was basically only a favorite material in the zoo for producing products such as fences, bars and barriers, that, while necessary, are somewhat unfriendly," Kottkamp points out. "With the modern entrance to the Equatorium, we are opening a new chapter for steel in zoos. Here we see that steel joins, instead of dividing. Its form is inviting to visitors and is contemporary. My hope is that with the new building, I have given an idea of how modern zoo architecture can look in the future."

Katharina Mette

www.zoo-duisburg.de
www.tks-bau.com/en

▶ Satisfied with the result of their work are structural engineer Klaus Kottkamp (l.) and his colleague Thorsten Schumacher from ThyssenKrupp Steel: steel now speaks the language of an innovative material at the Duisburg Zoo. It joins, instead of dividing.

Contact: **Klaus Kottkamp,** Construction Marketing Initiative, tel. +49 (0)203 52-25211, e-mail: klaus.kottkamp@thyssenkrupp.com

## EuroBLECH 2006

International Sheet Metal Working Technology Exhibition

October 24 – 28, 2006, Hanover

# Steel shows the way

We already have our eyes on tomorrow's markets today.

We already have our eyes on tomorrow's markets today.
We work as partners, sharing our know-how of forward-looking technologies and advanced processes for steel.
Our presentation at **EuroBLECH** in Hanover will offer a platform for a valuable exchange of information.
We look forward to welcoming you to our booth at the fair.


Thinking the future of steel

**ThyssenKrupp** Steel

Further information is available on the internet at **www.thyssenkrupp-steel.com**