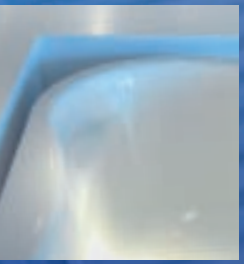
compact

The customer magazine of ThyssenKrupp Steel www.thyssenkrupp-steel.com 3/2008

Construction Group: Partner to the building industry

All-rounder along the entire process chain

InCar
The big ThyssenKrupp research offensive



Kaldewei
Bathtubs for body and soul

Thinking the future of steel **ThyssenKrupp** Steel

compact

Issue 30 3/2008

About our cover picture:

Steel makes ecological and economic sense, and is the ideal material for the construction industry. Steel enables functional, modern, aesthetically sophisticated and sustainable building – which is something you can see for yourself at the BAU 2009 show in Munich, 12 - 17 January. But it is not only there that steel cuts a perfect figure: you can also admire the material in Vienna's aesthetically sophisticated Ville Verdi social housing project or in the attractive and functional car park building at Düsseldorf airport (cover picture). Turn to page 8 to find out more in our title story.

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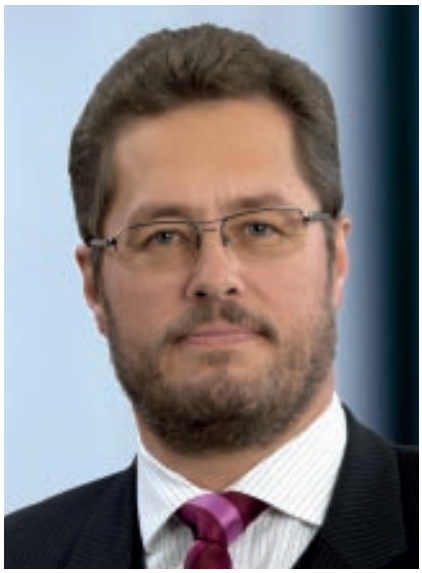
Dear Readers,

The past twelve months we can now look back on have made for a truly extraordinary fiscal year of extremes. 2007/2008 was on the one hand successful for us, though for reasons of capacity we were, unfortunately, not always able to fully meet the huge demand for flat-rolled carbon steel products. On the other hand, however, we also found ourselves having to cope with raw material and energy prices which soared to unprecedented heights. These rises negatively impacted us with unforeseeable costs amounting to over one billion euros, with the proportion of raw material and production costs per metric ton of hot-rolled wide strip climbing to 70 percent. Positive effects on operating earnings arising from the current efficiency enhancement programs and additional cost-cutting programs enabled us to compensate this upward price spiral, though we had to pass on a part of the extra costs to our customers via steel price increases and the renegotiation of contracts.



"2009 promises to be a difficult but also eventful year of milestones."

2009 promises to be an equally difficult and eventful year. There are too many question marks to enable an accurate economic forecast, indeed it has seldom been so difficult to venture a prediction as to what lies ahead of us in the coming months. The uncertainties as to which course the financial crisis – which has now reached the real economy as well – will take are clouding the outlook and will leave their mark on our field of business.

Nevertheless, 2009 will also be the year of milestones in our forward strategy with which we will successfully position ourselves in global competition and not deviate from this chosen path. In the first quarter we anticipate the commissioning of port, coking plant and power plant of our new iron and steel mill in Brazil. The blast furnaces and melt shops as core elements of the facility are expected to go into operation at the end of the year. 2010 will see us celebrating the commissioning of the new steel and processing plant in Alabama/USA. Work is in progress at the same time on the expansion of our domestic processing and finishing/refining capacities, which will strengthen our German sites. Whilst it is true to say that we are currently registering an economic downturn, the fact is that we have a solid foundation and my assumption is that we can cushion the impacts of the economic trough. Steel is and remains the world's number one material. There are no alternatives to it, for which reason I am optimistic for our sector. The fundamental data are continuing to indicate highly promising growth prospects for the steel industry in the medium term – and ThyssenKrupp Steel will be making full use of these chances.

However, we are watching developments in Brussels with concern. The rules on allocation for emissions trading to take effect as of 2013 are due to be determined in spring. In the post-Kyoto period the European Commission is planning not to grant the carbon dioxide emission rights free of charge anymore. A certificate price of, say, 50 euros per ton of steel would mean us having to shoulder additional annual costs of up to one billion euros. The competitive situation at global level does not permit us to pass on the respective costs – to which other steel producers outside of the EU are not subject – to our customers, for which reason we are emphatically calling for a cost-free allocation of the certificates.

Climate change and environmental protection are topics to which we continue to attach high priority. We are developing steel further in such a way as to continually enhance its role as an active climate protector and continually reduce environmental pollution. In January we shall be providing some impressions of our technological competencies at the BAU 2009 trade show in Munich for the building and construction industry, to which we are pleased to extend you a warm invitation.

You – our customers, suppliers and employees – have decisively contributed towards the successful development of ThyssenKrupp Steel, and I should like to take this opportunity to thank you, also on behalf of my colleagues on the Executive Board, for your excellent cooperation. Let us all look forwards with optimism and together shoulder the challenges that lie ahead of us. With this in mind, may I wish you all a successful start into 2009.

Yours,

Dr. Karl-Ulrich Köhler

Member of the Executive Board of ThyssenKrupp AG

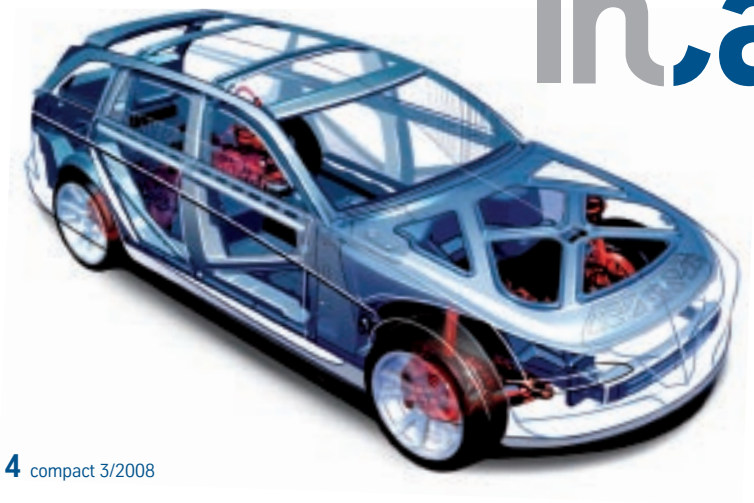
and Chairman of the Executive Board of ThyssenKrupp Steel AG

InCar – the innovative solutions kit

Technology platform for bodywork, chassis, suspension and powertrain

ThyssenKrupp has developed a benchmark basis with the vendor-independent reference structure InCar. Its purpose is to allow an optimum comparison between all InCar solutions. For this purpose, the reference structure has been subjected to an extensive validation process in terms of structural analysis, feasibility, production planning and efficiency.

"We want to help the car manufacturers to implement their vehicle concepts using individual and largely validated approaches to solutions, thereby helping them with their developments," says Jessica Hermenitt-Faath, the team member responsible for the communication strategy, summarizing the idea behind InCar. "This means we are making a contribution to enabling our customers to build lighter and more environmentally friendly cars under economic conditions."



InCar is part of an extensive research and development campaign by ThyssenKrupp. The objective: to transfer innovative solutions from the areas of bodywork, chassis, suspension and powertrain into the car, which explains why it is called "InCar". Hermenitt-Faath: "For us, InCar is a technology platform and a development tool rolled into one. We wanted the project to provide car manufacturers with food for thought, so we contacted them at a very early stage and tailored the main areas of our approach to their requirements."

For example, workshops were held last year involving a great deal of discussion, the results of which have been incorporated into the project. “For us, the question that most urgently needed answering was: How can we support our customers in their development tasks and reduce their workload?” she remembers. “We gleaned a great deal of constructive criticism in the process and were able to improve our systematic customer orientation.”

A central feature of InCar is the wide-ranging validation of the solution approaches applying methods and tools that are used in the same form at the carmakers as well. “We didn’t rely on data from existing cars in order to obtain meaningful comparisons about the optimizations achieved in terms of cost, weight and performance, instead we developed a non-proprietary reference structure and validated it to an extremely high level using extensive analyses,” explains Jessica Hermenitt-Faath. This involves an upper-medium category car which already coresponds to the future state of the art. Vehicle developers can select the solution they need from this, like from a kit. “For example, the InCar pool includes three B-pillar concepts: one with weight optimization, one that is particularly economical and one designed to meet the most exacting safety requirements,” she says, listing the solutions.

Whereas InCar was initially only a virtual construction kit, it is now taking shape. Prototypes such as pillars, support members and doors – 300 in total – are currently being built. “We’re now moving on to the analysis,” she says, explaining the tight schedule. “We’re testing the properties of the individual components with as much detail as our customers do. We’ll be presenting the results at the IAA 2009, and will be offering numerous points of linkage to various vehicle concepts and categories. It goes without saying that we check every new InCar solution for feasibility.” Here’s looking forward to the next motor show in Frankfurt.

Christiane Hoch-Baumann

www.thyssenkrupp.com

Super light: The new spring from ThyssenKrupp Technologies in the InCar suspension is up to 20% lighter. Less material is required because a particularly high-strength steel is used in conjunction with an innovative production process. Less material means less weight. And: the spring creates space because it has been possible to reduce the number of windings, and therefore the construction height.

Open door for new corrosion protection concepts: the innovative zinc/magnesium coating ZMg Eco-Protect® used in the InCar door offers more than just outstanding protection. It also makes it possible to dispense with secondary corrosion protection measures such as cavity sealing, and thereby reduces costs.

Quiet please! No problem with the new BONDAL® CB material. Used in the dash panel of InCar, it deadens the sound that is transmitted by vibration, for example from the engine, into the body. Compared to conventional insulation materials, which are often thick, this saves valuable design space and reduces weight.

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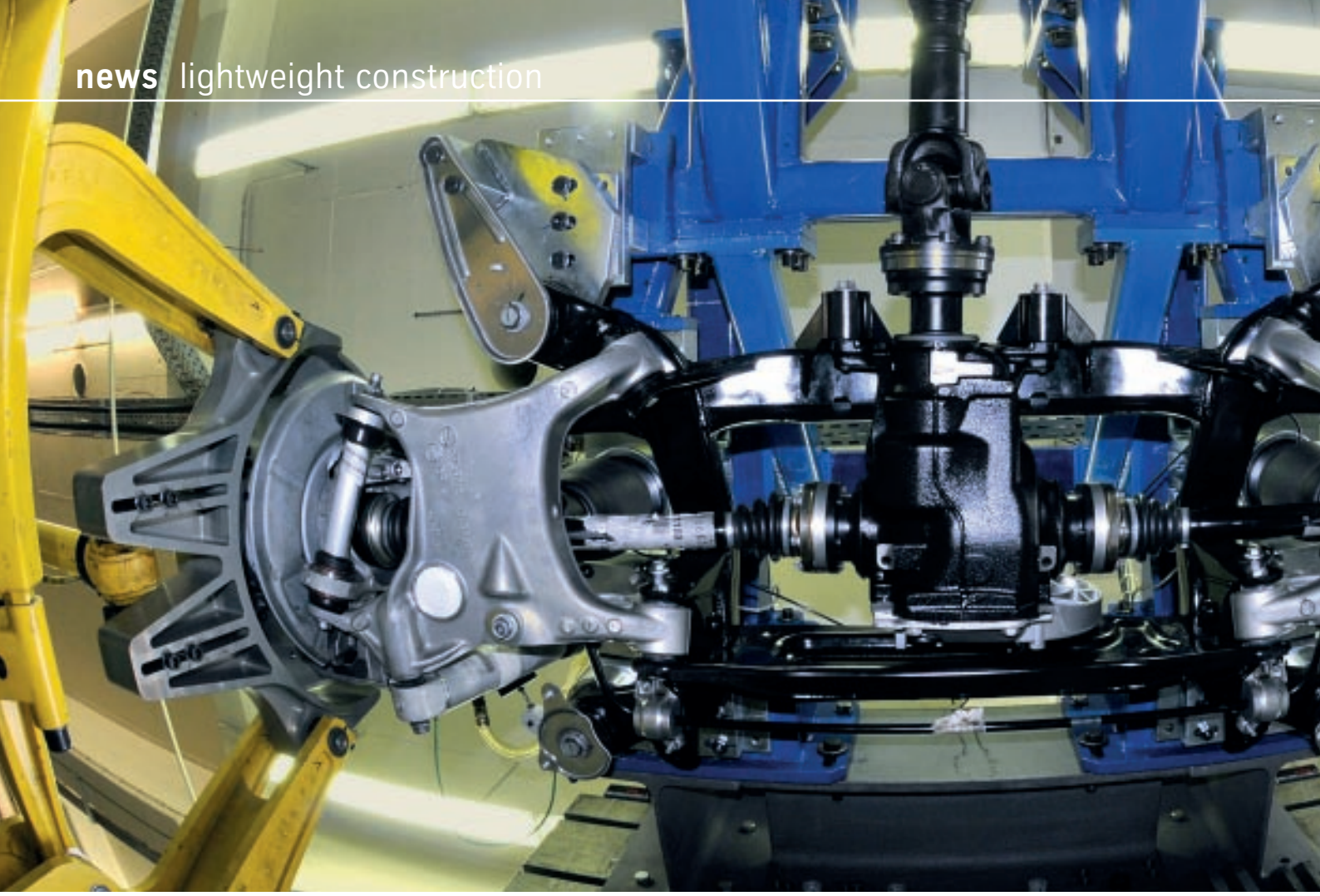

Team player for the automotive industry

New lightweight chassis halves costs

Good teams are made up of people with different skills. And teams can only work really well when they get together to work with high motivation on a complicated task. Whenever the ThyssenKrupp Steel and Technologies segments get together round a table to discuss lightweight automotive construction with steel, this adds up to a major concentration of expertise – in the most recent case, for a rear axle member made from steel that will not only cut the automotive industry's costs in two but also make optimum use of the space available and deliver even more dynamic driving.

"Our steel member is only five percent heavier than its reference, an aluminum member used in upper medium category volume production, yet it is 50% cheaper," observes Ulf Sudowe from ThyssenKrupp Umformtechnik, stating the advantages for the customer. "It goes without saying that it meets the requirements in terms of strength and stiffness." The modern rear axle member will soon be proving its everyday practicality at ThyssenKrupp Automotive Systems in Essen: it will be subjected to an endurance test on a test rig that simulates a very wide range of road conditions.

The steel rear axle member will soon be put through its paces at ThyssenKrupp Technologies in Essen. After all, only products that are good and have proven themselves will be presented to customers.

Yield strenght information

LCK, the lightweight chassis concept, uses CP-W 800 hot-rolled complex-phase steel amongst other materials. With a yield strenght of 680 megapascals (MPa), the material is significantly stronger than steels predominantly used in current chassis construction with yield points of 355 to 420 MPa.

This has been made possible because of consistent use of modern complex-phase steels, a suitable coating as well as innovative forming and joining technology during which the individual shell components of the rear axle member are welded without flanges, i.e. butt-welded. This is a perfect blend of material expertise and skill with tooling which can only be offered in this format by a team player such as ThyssenKrupp. "Our lightweight chassis concept, which we call LCK, is bursting with expertise in materials, forming, coating and design," says Ulf Sudowe, thinking back over a one-and-a-half year project which featured excellent partnership and daily exchanges between the development partners: ThyssenKrupp Automotive Systems from the Technologies segment, ThyssenKrupp Steel and its subsidiaries Umformtechnik, Tailored Blanks as well as the DOC Dortmunder OberflächenCentrum.

The result is very impressive. "The OEMs are highly interested in our new concept," he emphasizes. "This is because the use of high-strength steels in chassis is something new. It makes it possible to have designs with thin walls, which means saving weight and space." ThyssenKrupp Tailored Blanks are always involved. These blanks consist of individual sheets of different thickness to take account of the specific loads to which the finished component will be subject.

The new concept requires flexibility from Umformtechnik: "We had to completely revise our tooling methods and adapt them to the new conditions. It was also important to select the correct coating for the tools so that we could shape the complex geometries." But this is by no means the end of the possibilities. "We will be able to achieve even more demanding forming using the multi-phase steels that our parent company ThyssenKrupp Steel is currently researching," says Ulf Sudowe rather cryptically.

The development has been made possible not least because of a modern joining technology that matches the new steel generation. Ulf Sudowe: "We weld the individual components of the member, which are made up of two half shells, using what we call an I-weld. The procedure dispenses with the welding flanges that would otherwise be required, and would have accounted for up to five percent of the component weight." In addition, this makes it possible to use the available space much more effectively. Expressed in numbers, this means up to ten millimeters more space at each side of the member. In view of the current debate about climate change, this is a real bonus above all for alternative drives such as the hybrid system. They need lots of space for their accessories.

Another plus point: "Corrosion protection is guaranteed even in the area of the laser weld," explains Peter Seyfried from the Auto division of ThyssenKrupp Steel. "Steel used in the chassis area must be protected particularly effectively, because it is directly exposed to the elements and stone impacts. By working together with a paint manufacturer, we have developed an effective zinc flake coating that can cope with these requirements." At the same time, the DOC Dortmunder OberflächenCentrum is also researching an in-house solution that holds just as much promise. Its name: Zinc/magnesium coating, ZMg for short. (You can read more about this on page 21.)

"The advantages of our new rear axle member are indisputable," explain Peter Seyfried and Ulf Sudowe, justifying the trend that is seeing many automobile manufacturers switching from aluminum to steel. "The savings that OEMs make with our concept can be put to use in additional measures to reduce CO_2, for example in the drivetrain. The existing optimization budget can therefore be used extremely effectively in order to achieve ambitious climate targets." The enormous weight saving achieved by LCK compared to conventional steel chassis also offers potential for reducing consumption and therefore also cutting emissions of greenhouse gases and lowering costs. The pieces fit together brilliantly, and not just in the ThyssenKrupp Group.

Christiane Hoch-Baumann

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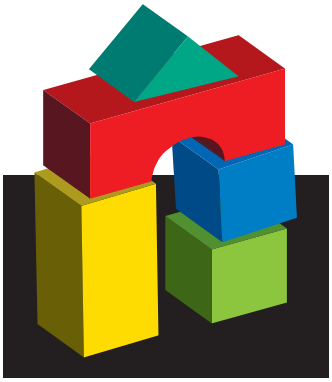
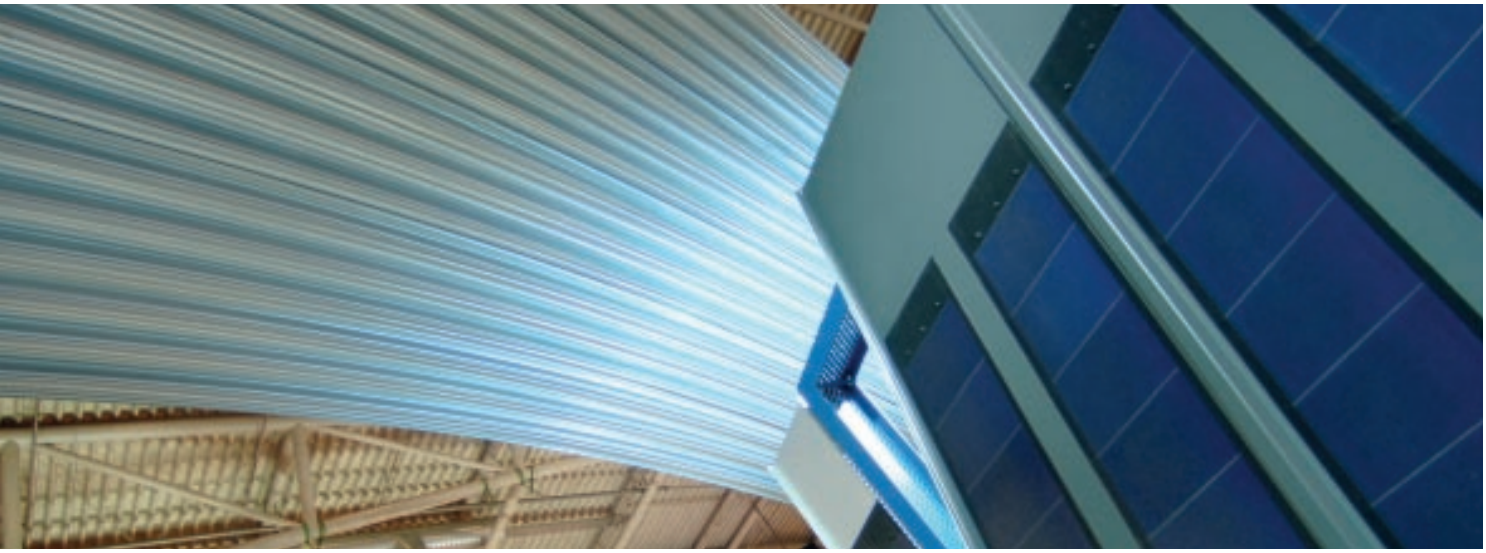
European construction industry

Building for the future with carbon steel

Building for the future is the key idea of the BAU 2009 trade show for the construction industry. This is also the guiding principle at ThyssenKrupp Steel. Steel can be used for modern, aesthetically pleasing and sustainable buildings. The latest developments achieved by the company will be on show from 12 to 17 January at a communal booth in Hall B3, booth 109 at the New Exhibition Center in Munich.





Raw material resources are scarce, energy prices were recently setting new records, while increasing graying of the population demands a flexible approach to living. The pressure on the construction industry is increasing worldwide. Building owners, architects, engineers and craftsmen need innovative and comprehensive solutions that meet the varied demands of modern and sustainable building. Therefore, the leading trade show in Europe for the construction industry is concentrating on the topics of “energy-efficient building”, “renovations and modernization” and “universal design”. Steel is of central importance as a material here: it is an essential construction material for Germany, the largest construction market in Europe. Exhibits and numerous events will provide answers to questions about the topic of future building. At the same time, quality, the range of offerings and the record success of 2007 are going to be maintained. Covering a total area of 180,000 square meters in 17 halls, more than 2,000 market leaders in the industry will be presenting their products and innovations. A good 209,000 industry visitors are expected from 145 countries, which should provide plenty of material for an intensive and informative exchange of views and ideas. For example, ThyssenKrupp Steel will be inviting guests to a communal booth. Together with ThyssenKrupp Bausysteme, Hoesch Bausysteme, the Color Profit Center, ThyssenKrupp DAVEX and ThyssenKrupp Nirosta, the company will be presenting products and services from the categories of facades, sheets, sandwich elements, wall and floor claddings. Steel highlights: the Hoesch arched roof, Hoesch Matrix® and the Hoesch Additive Floor®.

The customer event to be held on 15 January will be a special highlight. Dr. Jost A. Massenberg, Executive Board Member of ThyssenKrupp Steel, will be hosting the day, with Birgit von Bentzel in charge of the program. The guest speaker will be Markus Kuhnhenne of RWTH Aachen, who will be speaking about energy-efficient and sustainable building with steel. (You can read more about this on page 9.)

Daria Szygalski

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Sustainability – guiding principle for the building industry

Certification makes for enhanced planning reliability

Never before have building policy and the construction sector been so dependent on the principle of sustainable action as they are throughout the world today. The growing significance of the topic is also becoming visible for the public at large as result of the financial crisis. Sustainability is becoming a key strategic element for future-proof real estate business. Sound, integral planning can enable the building of energy-efficient, sustainable buildings with minimally higher construction costs.

The emphasis up into the 1980s was on environmental protection, but a new, considerably expanded strategy started to be adopted as from around 1990, namely that of "sustainable development". This was and is geared to seeing the long-term safeguarding of natural resources also as a core sphere of activity for trade and industry. The lifetime costs play an important role for investors in this respect, and financial service providers take a more thorough look at the "time" factor where real estate is involved: how long can and will a building remain competitive? How does it remain flexible in terms of use and open for energy innovations? What value does it represent in the event of demolition and replacement?

However, ensuring the effectiveness of the guiding principle of sustainability calls for sustainable construction to be made quantifiable and thus verifiable. A national procedure for the verification of sustainability is currently being tested on pilot projects, and a building largely of steel construction is among the buildings under scrutiny in this connection. Initial results of this German sustainability certification are to be reckoned with in early 2009.

Steel is one of today's most important materials, and a diversity of products, components and structures are dependent on its deployment in the interests of achieving the desired levels of efficiency and performance. When used properly, elements made from or used in conjunction with steel can play a role in constructing energy-efficient and sustainable buildings. Appropriate account should be taken in this respect of its advantages – such as, for example, the material's big recycling potential, the easy separability and reusability of components made from it, as well as the durability and intrinsic value of structural steel elements – when assessing sustainable building. In addition, modular systems of steel with high material efficiency can easily be adapted to the planned duration of usage.

A core topic in the discussions at present is that of significantly raising the energy efficiency of buildings, and the aspects of material and resource efficiency are increasingly gaining significance against a background of rising production costs and diminishing economic availability of raw materials. Forward-looking, sustainable building means optimizing ecological, economic and social qualities of buildings. Certification of sustainability as basis for the realistic evaluation of real estate makes for the requisite planning reliability for investors.

www.stb.rwth-aachen.de

Personal profile

Graduate engineer (Dipl.-Ing.) **Markus Kuhnhenne** has been research associate at RWTH Aachen University of Applied Sciences' Institute for Steel and Lightweight Construction since 2001, with the focus of his work on structural physics, energy efficiency and sustainable building. He heads several German and European R&D projects, and since 2005 is a member of the Federal Ministry of Transport, Building and Urban Affairs' "Round Table on Sustainable Building". He is specialist welding engineer and state-approved expert on noise and heat insulation, and also member of the European Steel Technology Platform. Mr. Kuhnhenne will be lecturing on the topic of sustainable building at the BAU 2009 trade show in Munich.

The industrial construction project pipeline is well filled

“The construction and steel industries are still too rooted in their traditional roles”

Prof. Dr. Hans-Peter Keitel has headed the Central Association of the German Construction Industry (HDB) as its president for three years, and January 2009 sees him succeeding Jürgen R. Thumann as president of the Federation of German Industries (BDI). In the following interview with compact, he talks about the financial and property crisis, the building industry’s economic situation, and price fluctuations. He sees excellent growth opportunities in the area of facade construction with steel, and regards the cooperation between the building and steel industries as promising and having potential.

Prof. Keitel, to what extent has the American finance and real estate crisis surprised you?

The financial crisis didn't start off as a real estate crisis but rather as a crisis in terms of real estate financing. Those who knew how a lot of residential property is financed there also knew that this was a house of cards waiting to collapse. But it goes without saying that the magnitude has certainly come as a surprise.

We are seeing the American construction industry with a significant downturn in house building, and activity in the sphere of commercial construction will fall off as well. The financing of building projects in the public sector is in a very large number of cases borne by private investors who, for example, build libraries, schools and hospitals. This money had already been gathered together before the crisis, and the projects in question will in all probability be carried out.

A further aspect of note is that there is a lot of catching up to do in terms of the infrastructure in the USA, especially in the spheres of transport and energy, and infrastructure programs have commenced in the interests of balancing out this situation. Initial signs indicate that the new government too will stick to this course of action.

And what is your assessment of the economic situation of Germany's construction industry?

The recessive trend across the economy as a whole has left initial marks in terms of construction demand, and growth in the area of new orders has slowed down significantly. However, commercial construction in particular will remain the German construction industry's engine in the coming months as well. Whether it's factory or workshop buildings, office or administrative buildings we're talking about, the project pipeline is well filled. We have figures for Germany which I could use till the end of next year to statistically substantiate a sound upswing, though my experience tells me that these forecasts will not be fulfilled. Instead, I anticipate that we shall at best be operating at the current level in 2009 – in other words no downturn but no great growth either.

The construction industry previously spoke out against an economic stimulation program, but has now given the program adopted by the federal government a positive rating. What are the reasons behind this change of heart?

As a rule, conventional economic stimulation programs run the risk of being restricted to individual measures and at these points have the effect of a flash in the pan but nevertheless cost far too much. The package now adopted by the German government above all serves to provide support for public and private investments. The investments in the federal travelway networks, the expansion of the CO_2 Building Renovation Program, the infrastructure program put in place by the German Development Corporation for structurally weak communities are activities that will have a stabilizing effect on the development of the German building economy – an important signal in terms of planning reliability in the construction industry.

Property developers are complaining about the rise in building costs.

Building costs today are around 5 percent above their level in 1995, which, calculated over a period of 13 years, is anything but exorbitant, especially when you take account of the VAT hike. This in principle means that today, in 2008, we are still building at 1995-prices.

The price increases that have taken place in past years are first and foremost attributable to the global explosion in terms of raw material and energy costs, which in turn have been reflected in higher prices for steel but also for cement. Besides, building prices had hit rock bottom, and a large number of property developers rashly believed in a continuation of the downward spiral. The building companies cannot in the end finance what others should actually be paying.

And what about the prices of raw materials?

The ups and downs in the markets make it hardly possible to forecast the prices of raw materials and energy, and thus those of building materials. Given a situation in which it's only possible to calculate on the basis of current market prices where steel is concerned, the building industry cannot be expected to stick to these prices for years on end.

How can the fluctuations in raw materials be adequately depicted in tenders in such a way as to preclude distortions of competition?

Assuming that everything that has to do with rising prices from the raw materials side is no longer negotiable, and taking these prices as basis, it is then no longer possible to absorb temporary price increases of between 40 and 100 percent – for example where steel, glass, aluminum or bitumen are concerned – in the margin. This means that the building contractor becomes a kind of insurance company for the developer, since he has to take account of all possible price developments when preparing his tender, in other words he calculates a risk premium into the building price which could, however, possibly impair his competitiveness. For years these risk estimates always came out well for the developers because the construction industry gave in, either due to price trends or the poor state of the economy.

Do the building industry's price fluctuation clauses occasionally applied in the public sector make for greater planning reliability?

They constitute the first step in this direction. However, they do not apply for all public contracts but only for the sphere of government-placed orders. They are limited in time and based on what is known as a "market price" which is merely determined via a statistical index and takes no account of the actual supply price. They are also subject to an excessive deductible.

The construction industry would like to see a clause that is easier to apply and spreads the risks more fairly. What we have to do is continue this discussion further and, in doing so, perhaps

take a look beyond our borders. After all, price fluctuation clauses aren't by any means a rarity in countries other than Germany. Germany, on the other hand, is extremely hesitant – at least in the sphere of building orders and contracts. The fact is that price fluctuation clauses are a proven means of making the considerable fluctuations in the prices of building materials that we have been experiencing for some years more calculable again and thus minimizing risk surcharges.

Our aim is to achieve a situation in which all materials with highly volatile prices – and which thus make it impossible to undertake advance costing to cover a period of several years – are made subject to a fluctuation-orientated basis. That would also separate the materials from wages and social security contributions – the latter can approximately estimated.

How has the use of steel in building activities changed?

As regard steels, we on the one hand have concrete reinforcing steel, which is not produced in Germany at all anymore. The other area of use is that of structural steelwork, where steel is employed in different ways at the international level. In the USA, for example, virtually all high-rise buildings are erected as steel-structured constructions, while in Germany it is only seldom that buildings with steel structures are built – for example the Commerzbank building in Frankfurt am Main and, of course, ThyssenKrupp's administrative building in Düsseldorf. Incidentally, steel is used in the building of bridges or the construction of highly stressed and architecturally sophisticated elements in building construction. The biggest leap forward, so to speak, has been made in the use of steel in facade construction; high-tech products are being employed, and ThyssenKrupp heads the field there. I also see the biggest growth market in this area of activity.

Are there also possibilities for cooperation between the steel sector and building companies?

Yes, a lot. Indeed, I see our cooperation as just beginning. Up to now, building companies take a look at the products on offer and then continue using them, but it could be different too. I see the close cooperation between the steel producers and the automotive industry as a model to follow; a lot of people give a lot of thought to which products can be used according to which requirements, and the result is custom-tailored solutions such as in the sphere of tailored blanks. The construction and steel industries have a long way to go in terms of the mutual exchange of views and ideas, because the fact is that our two sectors are still too rooted in their traditional roles.

"Green building" and sustainable building are increasingly gaining importance for the construction industry. What role is steel playing in this trend?

A big role, and, here too, I can only say it again – let's do it together! "Green building" doesn't mean roof gardens. When a facade today accounts for around one third of a building's cost then what we're talking about is a sophisticated construction for environmentally friendly building, because this is where almost the entire energy consumption is decided.

And this brings us back to materials science, which is of such extreme importance for the building economy and for a corporation like ThyssenKrupp.

Now for the topic of showcase projects: no general contractor has yet been found for the construction of the new European Central Bank premises in Frankfurt am Main. Wouldn't this project also be a missed opportunity for the German construction industry?

No, we're not into building memorials, nor are we sculptors. If the architects feel they have to find their fulfillment somewhere or other – well that's just great. We are in business to realize buildings for money and also with entrepreneurial success. And then we say what that costs, which risks we will assume and which ones we won't. The principle remains the same: they can have any noted building company as general contractor – provided that the invitation to tender is based on acceptable contractual conditions.

What does that mean in concrete terms?

That the project in question cannot be built for the expected price and to the conditions laid down for the assumption of risk. What we need on the contractual side are reasonable conditions for the contractor, who can then pass them on to the other trades involved. Five years ago it might have been possible to find a building contractor willing to do the work under these contractual conditions, but we know today that agreeing to unacceptable contractual conditions leads to the ruin of building firms. Some clients and developers will only learn over time that oppressive contractual conditions are just not on anymore.

Is the building industry so free of vanity that it doesn't want to erect a memorial to itself?

As far as I know, there is only one building where the building company is referred to on a plaque, namely the Commerzbank headquarters in Frankfurt. It was built by HOCHTIEF. People usually say that a particular building was built by Sir Norman Foster or another famous architect, but the fact is that none of them do any of the building at all, they do the designing. I admire good, successful architects but, while civil engineers are in many cases not creative enough, architects often lack experience of the production side of things. We have to get away from the mentality that the marvelous and creative aspects have already been taken care of and all that's needed now is the person who's going to concrete it in place. The building industry has lived off this image for a while, but, consequently, the fact is that our work was simply not given the credit it deserves, because we can do a lot more than that. With this in mind, we're now canvassing for our know-how to be really called upon as well – after all, we can put up buildings that are sustainable and of lasting value – and help save money too.

The construction industry is complaining about a lack of skilled workers and engineers. Is this situation not the sector's own fault because it failed to train enough while relying too heavily on workers from other countries?

We offer more traineeships than we can fill. Some young people coming from high and junior high school and looking for the chance of being taken on as trainees simply do not meet the entry-level requirements. Add to this an annual shortfall of 3,000 trainees on the civil and construction engineering side. However, we are seeing the numbers of new students rising again. All in all, we're suffering the consequences of the justifiably stringent requirements that the courses of mathematics, science and engineering studies entail. In other words, what we need are teachers and schools that awake interest in these subjects at an earlier stage.

Should the world of industry perhaps do more as well?

It already is – and doing so with success. One example in this respect is ThyssenKrupp's Ideas Park: the company is doing a great job in arousing interest among children and young people for technology, as I was able to see for myself when I visited the event in Stuttgart in May.

Am I right in saying that your statements indicate that you see the developments in the building industry as positive?

During the past two or three years you won't have heard anyone say that we're afraid of the future. We are facing challenges, but we are meeting them head-on and overcoming them. We're better than many in the world. Here in Germany we have immensely high technical standards, and it's no coincidence that we hold interests in foreign companies and are involved in projects on building sites in other countries. That has a positive influence on our image here and in the outside world.

After three years as president of the Central Association of the German Construction Industry, you are set to succeed Jürgen R. Thumann at the head of the Federation of German Industries. What do you define as the task of a federation?

A federation is not there to act as amplifier for the individual interests of companies or their representatives. Ideally, the federation covers the sum of individual views. Different companies can always have diverging interests, and it is simply not possible for the BDI to represent what the chemical, energy, steel, building and or automobile industries individually think. There was, for example, the big discussion on energy policy, in which the opinions of a large number of companies in the manufacturing sector differed from those of the energy supply companies. In such cases it only helps if the federation develops its own position in the interests of the entire body of members it represents.

And how do you see the role of an industry lead body in relation to the political world?

What an individual federation cannot not expect of an industry lead body is what an industry lead body cannot expect from the political world either – namely the assertion of own interests with no consideration for others. A federation is not responsible for heedless lobbyism, but instead has to responsibly exercise its role in the interests of the social market economy and put individual interests into an overall context.

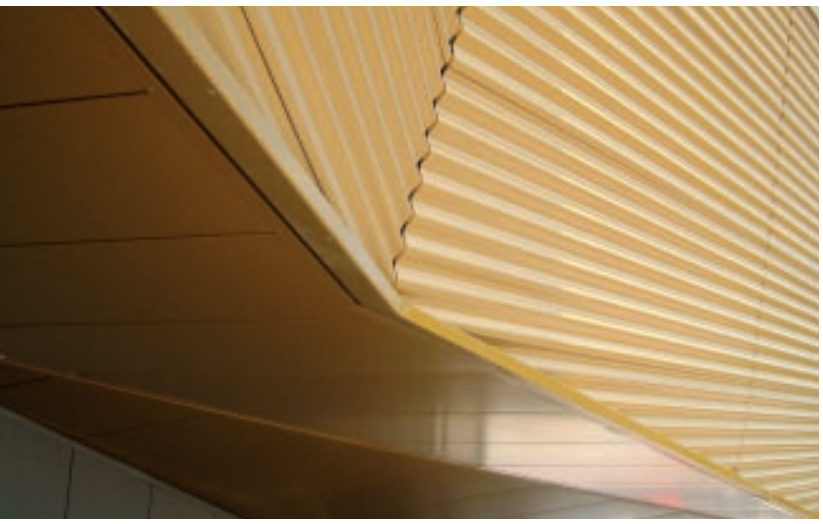
Prof. Dr. Keitel was interviewed by Dr. Bettina Wiess, business journalist

Personal profile

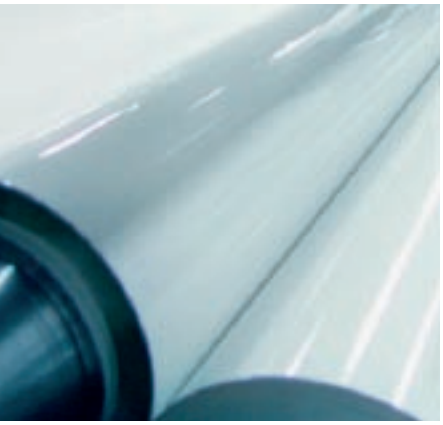
Born in 1947, **Prof. Dr. Hans-Peter Keitel** studied civil engineering and economics at the universities of Stuttgart and Munich. The period 1975 – 1987 saw him occupy various managerial positions in Germany and abroad with Lahmeyer International of Frankfurt am Main. He joined leading German construction company HOCHTIEF Aktiengesellschaft of Essen in 1988, and went on to become its CEO from 1992 till the end of March 2007. Keitel has headed the Central Association of the German Construction Industry (HDB) as its president since June 2005, and January 2009 sees him succeeding Jürgen R. Thumann as president of the Federation of German Industries (BDI).

Construction sector: Strong group, strong brands

Wide range of products from one company



The Competence Center Color/Construction is bringing the Color Profit Center and the Construction Element group under joint management: This means the production of construction elements will be seamlessly integrated into the value chain. Above all, the direct link to the preliminary material stage in Duisburg…



…as well as to hot-dip or coil-coated thin sheets from the Color Profit Center in the Siegerland region…

"The Competence Center Color/Construction is focusing more and more on its target markets," says managing director Reinhard Täger, describing the success of the reorganization. "We are closing ranks with our customers to take part in the upswing and growth in the European construction industry."

Construction Group info

About 200,000 metric tons of steel produced by ThyssenKrupp Steel is processed by the Construction Group into high-quality products for the construction business. The group achieves sales of about 440 million euros and production of about 18 million square meters of single and double-sheet construction elements every year. It employs around 900 people at sites in Germany, Austria, France and Belgium, as well as in the Eastern Europe region.

…guarantees the highest quality and development potential, short travel distances and just-in-time deliveries for intelligent construction products such as the Hoesch Matrix® shown here. The modern facade system will be on show at the BAU 2009 in Munich.

Left Creative facade elements such as the Hoesch isowelle® will be presented at the BAU 2009 show.

Center When it comes to modern fire protection for roofs and walls, Hoesch isorock® sandwich elements are just the job.

Right Hoesch isodach integral® offers the intelligent solution for the perfect roof.

Reinhard Täger is on the Management Board of the Competence Center Color/Construction, and therefore responsible for the Color Profit Center and the Construction Group.

Review: ThyssenKrupp Steel reorganized its construction activities in October 2007. Since then, the Color Profit Center and the Construction Group have been under joint management, by the Competence Center Color/Construction. "This means the production of construction elements fits seamlessly into the value chain," explains Reinhard Täger. "The range includes everything from hot-dip or coil-coated carbon flat steel from the Color Profit Center through to the intelligent construction products of the Construction Group." By this, he is thinking of sandwich elements with polyurethane and polyisocyanurate foams or mineral wool through to single sheet construction elements in an extremely wide range of variants. "Our highly varied product range includes – to name but a few – Hoesch isowelle®, ems-isolier® cold-storage warehouse panels and Hoesch® trapezoidal sheets as well as Isocab® wall panels and Hoesch Sectiotec® for applications in the area of roofs, walls, floors, gates and doors."

"The portfolio of the Construction Group is unique in Europe. It is above all the direct link to the primary material stage in the Color Profit Center that guarantees the highest quality and development potential, short travel distances and just-in-time deliveries," emphasizes Reinhard Täger. Every customer, whether ThyssenKrupp Bausysteme, Hoesch Bausysteme or Isocab, can get in touch with the contact in Sales that they are used to talking to, to discuss the complete product range of the entire group. "All areas have pushed ahead significantly with their development. Already today, we can offer consulting and system solutions for an extremely wide range of market segments in the tried-and-tested market for sandwich elements and trapezoidal sheets, as well as for international power plant construction."

Furthermore, the focus is directed towards several high-quality technical products and applications which are based on the core expertise of the Construction Group and were developed there: Hoesch Matrix® and Hoesch Additive Floor® from ThyssenKrupp Bausysteme, Hoesch arched roof, Hoesch siding facade panels from Hoesch Bausysteme as well as cooling cells from Isocab. "Selling the products is not enough, however," says Reinhard Täger, "each of the companies provides product and market expertise corresponding to its core competences in the Group. This means our customers can obtain the most extensive range of products in Europe from their personal contact, together with equally competent advice."

Christiane Hoch-Baumann

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Unique and standard

The eye-catching facades of Vienna's new urban villas

Ville Verdi, a new architectural project, is making its impact on Vienna. The five housing association buildings are setting previously unparalleled standards in terms of everyday aesthetics, economy and ecology. The unique features have been made possible by, amongst other things, a facade system from ThyssenKrupp Steel.

"Vienna is different," cry the posters on the city's main arteries. Viennese waltzes, Sachertorte cake and the Prater park come to mind spontaneously. "There's also another, non-commercial Vienna: the social housing projects," remembers Simon Rümmele of Hoesch Bausysteme, thinking about the supreme discipline, architecture. His showpiece: Ville Verdi. "It's located in the 11th district to the south-east of the city, in the immediate vicinity of the gasometer, a protected industrial monument," he explains, showing the green villas. "To be more precise, this involves five slanted residential buildings with a natural green steel facade." To be even more precise, they are Hoesch corrugated sheets with the unmistakable **Reflections**Cinc® surface, a high-quality coating which gives a harmonious effect to the buildings when seen either up close or from a distance. Simon Rümmele is also proud of the black Hoesch siding elements above the windows. They have been provided with an innovative matt coating effect specially for Ville Verdi.

Optically, the dwellings are successful and real eye-catchers. However, Paul Steurer from the construction management of Gesiba Gemeinnützigen Siedlungs- und Bauaktiengesellschaft (the housing association responsible for the buildings) points out their inner values: "We have succeeded in building successful, innovative, generously sized and cost-effective homes." The useful surface covering 14,174 square meters is divided into 170 dwelling units with an average floor space of about 78 square meters, commanding a rent of about 6 euros per square meter. In addition, there are spacious verandas on the south elevations, terraces, rooms for storing bicycles, launderettes, saunas and fitness rooms, as well as hobby and children's playrooms. "In this way, we can even compete with sophisticated residential construction," he thinks.

That is because, "We are creating a living area that is contemporary but not off-the-shelf," explains Dr. Michael Ludwig, the councilor responsible for housing and urban renovation in Vienna. "These are solutions for many varieties of lifestyle and family units, which are aesthetically pleasing at the same time." Almost one third of Vienna's citizens live in municipal housing projects. There are no slums, you cannot judge someone's social status just by their address.

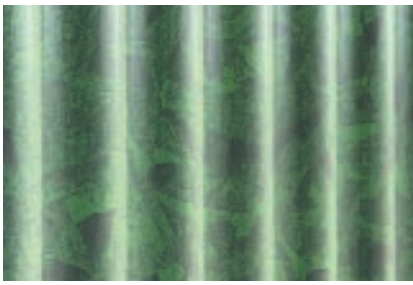
"It's traditional," he says knowingly. "Creating high-quality living areas is almost a historical obligation for us." Austria's capital set the standard for social building construction long ago with the Karl-Max-Hof built between 1927 and 1930, and one of the most famous communal buildings in the metropolis on the Danube. The story has been moved on. Ville Verdi satisfies numerous aspects of modern, sustainable and exacting architecture. "The first challenge facing us was to give the residential buildings a strong identity since they were being erected close to the very striking gasometer," points out Albert Wimmer, the architect. "This explains the slightly sloping attitude and the colored facade. As a result, the villas float ambivalently between seeing and being seen, while the facade gleams with a natural green." This gives a greater presence and makes it easier for the inhabitants to identify with their building. Paul Steurer and Michael Ludwig nod. After all, the successful structures are very popular with their first tenants, who do not feel that they are living in a typical housing association building by any means.

"The second challenge was to implement sustainability and lifecycle in an economical way," continues Albert Wimmer. "We deliberately decided against a typical, rendered facade." After all, the corrugated sheet from Hoesch Bausysteme offers numerous advantages: a high degree of prefabrication coupled with waste-free pre-assembly in the factory, just-in-time delivery, and fast and simple installation. Furthermore, the construction material is environmentally friendly, because it can be recycled. "In addition, the facade is rear-ventilated – which makes it the best building method from the standpoint of structural physics. The required rear-ventilation cross section is achieved by having a 20 to 40 mm gap between the insulation and the corrugated sheet," explains Simon Rümmele. "This means the building does not overheat, and there is no structural damage caused by vapor condensation. In addition, the coating has a stable coloring and is especially durable, meaning that the facade is practically maintenance-free." And: the system already fulfils the ambitious low-energy standard and can be expanded even as far as the passive house standard.

All of this not only convinced the architect, but also the Gesiba housing association and the Vienna city authorities. However, several other ThyssenKrupp companies contributed to the successful completion of the project: "All in all, it's an entirely ThyssenKrupp project," says Simon Rümmele, "from consulting through to delivery." As well as Hoesch Bausysteme, the ThyssenKrupp Steel Color Profit Center should be mentioned because it coated the surface of the sheets, as well as ThyssenKrupp Serv Austria and ThyssenKrupp Systembau Austria which provided the scaffolding and installation. Collective praise was indeed forthcoming: "Highly professional and expert cooperation." The Gesiba housing association and the architect, Albert Wimmer, have already been able to appreciate this in several projects. Speaking with experience, they all look to the future – and are confident that this high level of quality will set a trend in Vienna and elsewhere.

Daria Szygalski

www.hoesch.at



The secret of the grooves at Ville Verdi is an innovative facade system: the Hoesch corrugated sheet with a high-quality **Reflections**Cinc® surface.

Paul Steurer from the Gesiba housing association's construction management, appreciates the professionalism of all ThyssenKrupp companies. He is already planning to use the facades in other buildings.

Simon Rümmele, Hoesch Bausysteme, was also able to convince the architect, Albert Wimmer (left) to use a steel facade.

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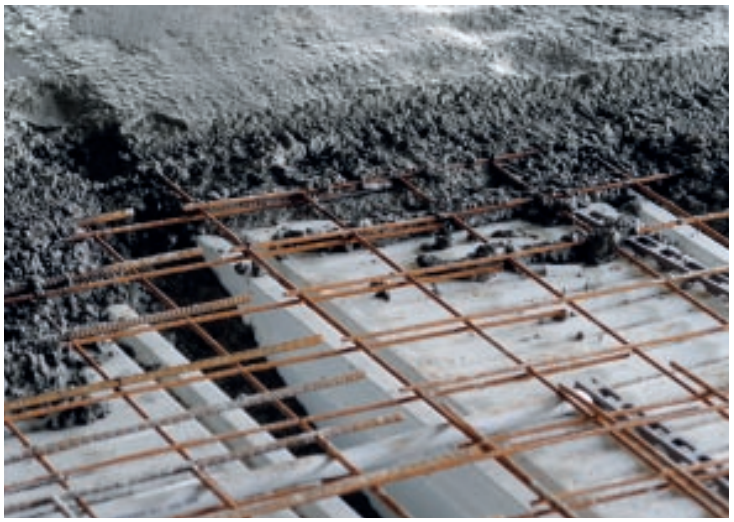
Not just for multi-storey car parks: Hoesch Additive Floor®

"The system is simple and ingenious"

The trapezoidal sheets for the Hoesch Additive Floor® are made from a profiled coil and coated on both sides with polyester.



There are numerous advantages to the additive floor system. Not only is it less expensive than conventional structures, but Fernando Kochems also appreciates the ability to construct the floor without support during the concreting phase, amongst other factors.

"A bit of steel fabrication, laying the sheet metal, putting on the concrete and that's it," says Fernando Kochems, executive director of MAN Ferrostaal Bausystem, listing the preconceptions about multi-story car park construction. "But it isn't that simple." Parking garages are going up at the biggest airport in North-Rhine Westphalia at breathtaking speed. One of these is the new car hire center. It is shooting out of the ground between the terminal and P5. Andreas Ross, the Sales Director for floor systems at ThyssenKrupp Bausyteme, nods his approval and confirms: "About 17 years ago, the world was still different, at least when it came to building multi-story parking garages." Fernando Kochems remembers: "At the time, reinforced concrete structures were common. However, we tried our first use of the totally new additive floor system from ThyssenKrupp Bausysteme in conjunction with a steel composite construction.

Andreas Ross had developed the system, Fernando Kochems believed in it and used it. "We were glad to have found a company that was sufficiently competent to recognize the advantages of our new system, and was also bold enough to use it," says Andreas Ross, expressing his appreciation for Fernando Kochems – both these men are linked by a spirit of partnership. That was 1991, a parking garage in Cologne. The client gave positive feedback. However, the breakthrough needed even more time. "We undertook intensive studies," explains Andreas Ross. And after about two years came the success that had been hoped for. "We have MAN Ferrostaal Bausystem to thank for that."

A multi-story parking garage was then built at the Cologne/Bonn airport in 1996 – designed by no less a character than Helmut Jahn, the US architect with German roots. "We managed to think along the same lines as Helmut Jahn very effectively. And he was thrilled when we presented the modern system to him," remembers Fernando Kochems. "As a result, he abandoned the original and rather conservative parking garage design and decided to use Hoesch Additive Floor®." Since then, everyone has been talking about the system.

Both Andreas Ross and Fernando Kochems know that Hoesch Additive Floor® offers convincing properties: "The system is simple and ingenious. And it can be used for more than parking garage construction, but also for building floors in buildings." Andreas Ross explains the background: "I wanted to

A new car hire center is being built at Düsseldorf airport. The eight-story parking garage with refueling station, washing facility and offices is being built by MAN Ferrostaal Bausystem. The company from Bad Honnef is using the additive floor system from ThyssenKrupp Bausysteme.

By working together, MAN Ferrostaal and ThyssenKrupp Steel have made great progress in parking garage construction. Andreas Ross (right), Sales Director for floor systems at ThyssenKrupp Bausysteme, developed the additive floor system; Fernando Kochems, Executive Director of MAN Ferrostaal Bausystem, believed in the advantages and has used it successfully. Now they are working together at the car hire center of Düsseldorf airport.

The new car hire center is not only eight stories high, but will also house a refueling station, a washing facility and offices on the ground floor. It is due to be completed in early 2009.

find an application in other market segments for the profile that had originally been used for roofs in halls." He and his team researched the issue for several years.

"After all, we had developed the Hoesch Additive Floor®," he continues, "and we were therefore able to offer numerous new advantages."

The trapezoidal sheet is made from a coil coated with polyester on both sides, and it produces a very light system that weighs up to 40% less than a concrete floor. It is a sustainable product and permits short construction times as well as offering an attractive system price, considerable durability and aesthetic appeal. "In principle, any color is possible," assures Andreas Ross, "even rainbows." Fernando Kochems is also full of praise: "For example, it is possible to build without supports during the concreting phase," he explains, "and this makes it possible to have an unobstructed building sequence on the freshly concreted floor." The Hoesch Additive Floor® is so innovative that it has received its very own construction certificate in Germany. "We are also working on certification for the European Union, incidentally," explains Andreas Ross. A good thing.

"We wanted only the best for the car hire center in Düsseldorf," observes Fernando Kochems. "After all, it isn't your usual parking garage." For instance, there is a metro tunnel underneath the building and a refueling station with underground tanks is being built. There will also be a washing facility. "This means the ground floor is higher than normal with a height of 4.5 meters," he explains, "and the ground floor construction has a fire resistance duration of up to 90 minutes for safety reasons." As does the Hoesch Additive Floor®. In total, ThyssenKrupp Bausysteme is supplying about 75,000 square meters of white, 1.25 mm thick additive floor elements to Düsseldorf. "Everything just-in-time," says Fernando Kochems, appreciating the advantages of working with a reliable manufacturer. "ThyssenKrupp Bausysteme is not only a first-class supplier of flat carbon steel, but also a reliable system partner." From early 2009, travelers at the airport will be able to gain an impression of the successful cooperation themselves, when the innovative car park with its modern Hoesch Additive Floor® will be opened.

Daria Szygalski

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PLADUR® Relief

Familiar product with new look and feel

Steel with the appearance of wood, ice crystals or stone: the ThyssenKrupp Steel Color Profit Center is thinking the future of steel. At present, the coating specialists of Germany's biggest steel producer are developing an innovative surface which makes steel not only look different, but also gives it quite a different feel than before – PLADUR® Relief.

It goes without saying that the construction industry is one of the target customers for this innovative product. PLADUR® Relief is particularly suitable for roofs, walls and facades. Furthermore, it is possible to think of a large number of designs – a combination of color, topography and luster – for a wide range of applications. For example, the new product could be used for manufacturing garage doors with a surface like wood or other materials. Steel cupboards or lockers are given a new look with innovative surfaces, as are the housings of household and electrical appliances.

PLADUR® Relief is manufactured using the coil coating process. Steel strip forms the basis and is provided with long-term corrosion protection via a zinc, zinc-aluminum or zinc-magnesium coating. Special effect paints are applied to the steel strip during the subsequent coil coating. The characteristic surface structures are achieved by a special application technique when the coats are put on, and by the interplay between the paints.

When developing new surface designs, the Color Profit Center works closely with its customers from the most important industrial sectors. Depending on order volume, they can also have their own individual coating produced and thus ensure that their end products stand out and have a unique selling point. On the market, in any case, there is already great interest in the new product from ThyssenKrupp Steel. The Color Profit Center has already produced and delivered the first orders made using the PLADUR® Relief product range, which featured the "Ice Crystal" look.

Bernd Overmaat

www.thyssenkrupp-steel.com/color

Stone, wood, ice crystals – in future, coated steel will make almost every surface sensation possible. The new PLADUR® Relief coating was developed with the Color Profit Center and not only looks different, but also has quite a different feel than before.

Info PLADUR®

Various painted and foil-coated flat steel products as well as combinations of paint and foil are offered under the name PLADUR®. There are no limits on the coloring and surface structure. For example, PLADUR® structured white, silver metallic and PLADUR® M are available. The M here stands for metal look, and makes it possible to achieve the look of different metals such as aluminum, stainless steel, copper or titanium.

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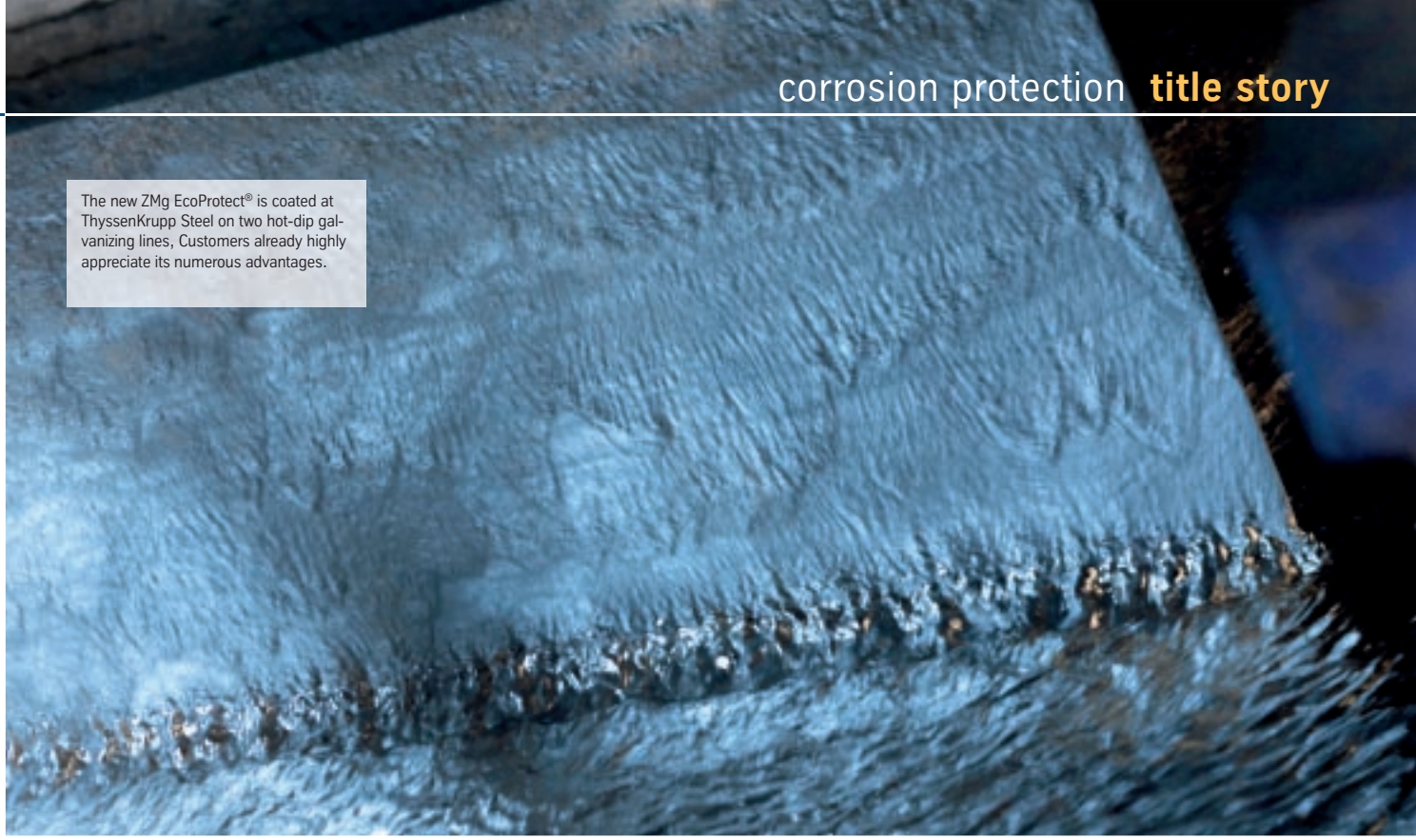

The new ZMg EcoProtect® is coated at ThyssenKrupp Steel on two hot-dip galvanizing lines, Customers already highly appreciate its numerous advantages.

ZMg EcoProtect® for industrial building

Innovation with the great benefit of corrosion protection

Building for the future now has a new basic material at its disposal, and with it additional advantages: ZMg EcoProtect® from ThyssenKrupp Steel offers high corrosion protection with half the coating thickness, and at the same time an environmentally friendly use of resources. Its broad range of applications covers all aspects of industrial construction.

ZMg EcoProtect® is a new development in hot-dip processing. ThyssenKrupp Steel and the DOC Dortmunder Oberflächen-Centrum are responsible for the successful and innovative zinc/magnesium coating. ZMg EcoProtect® is characterized by improved resistance against corrosion at cut edges and surfaces. “The excellent corrosion properties make it possible to halve the thickness of the coating whilst retaining at least the same level of protection,” explains Dr. Erich Nabbefeld-Arnold of the Color Profit Center, pointing out the advantages. “This innovation is also a very good carrier material for organically strip-coated products and an excellent substrate for coil coating applications.”

ZMg EcoProtect® can be supplied with strip thicknesses from 0.4 to 3 mm and strip widths from 600 to 1,650 mm. For example, it is used in trapezoidal sheets and sandwich elements from ThyssenKrupp Bausysteme. “Magnesium alloy additives with zinc always improve the anti-corrosion properties of the coatings,” he admits.

“However, products that are currently available not only have high magnesium contents but also a comparatively high level of aluminum which restricts the forming, joining and painting properties, and with it the number of applications.” The secret of ZMg EcoProtect® lies in this small difference.
“It is to do with the molten zinc with about one percent magnesium. In addition, the product can be treated with chemical passivization or sealing, which further increases the anti-corrosion properties. The very good paintability also makes it an outstanding addition to our product group of PLADUR® organic coil-coated flat products.”

We’ve been working since early 2006 to move up from laboratory scale to industrial production. The material has been characterized with the help of a wide range of investigation methods. Today, PLADUR® based on ZMg EcoProtect® is approved for use in buildings in Germany. “Our innovation has already scored points in numerous projects,” enthuses Erich Nabbefeld-Arnold. “The feedback has been very positive, both because of the excellent corrosion resistance as well as the ease of processing.”

Daria Szygalski

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NewsFlash

Brazil: J. Rüttgers visits new building project

At the end of October, the State Premier of North-Rhine Westphalia, Jürgen Rüttgers, visited the construction site of the integrated steel mill of ThyssenKrupp Steel at Santa Cruz, near to Rio de Janeiro in Brazil. Jürgen Rüttgers praised the commitment of the German steel company in making an "important investment that would also safeguard jobs in North-Rhine Westphalia and strengthen the region as an industrial center." The Brazilian site of ThyssenKrupp Steel represents an investment of about 4.5 billion euros, will have an annual capacity of 5 million tons and is expected to enter service at the end of 2009. The plant in Santa Cruz will supply about three million tons of slabs to the processing plant that is currently under construction in the US state of Alabama, whilst the remaining two million tons will be processed at the plants in Germany. In the medium term, ThyssenKrupp Steel is planning to increase its supply volume from a current 14 million tons to 20 million as part of its global growth strategy.

Supplier of the Year for General Motors

"The fact that we have received the Supplier of the Year award from General Motors today is down to your hard work." With these words, ThyssenKrupp Steel Executive Board member Dr. Ulrich Jaroni praised around 150 employees at electrolytic strip-coating plant 3 in Dortmund in mid-September. This was the fifth time that the automotive group had given the Supplier of the Year award to ThyssenKrupp Steel. The award is given for criteria such as cooperation, quality, service, technology and, of course, price for cold strip, plastic-coated thin sheet and tailored blanks. GM Purchasing Director Tomasz Zwyrtek emphasized: "Every employee can be justly proud of this award. Each of them has worked hard for it." As a top supplier, ThyssenKrupp Steel also plays an important role in shaping the future of General Motors. Rudolf Schönenberg, Production Director in Dortmund, agrees with this: "We are going to do everything to be the best of the best in the future as well."

IISI is now called World Steel Association

The International Iron and Steel Institute (IISI) changed its name to the World Steel Association at its 42nd annual conference in Washington, in order to better express its role and objectives: the Brussels-based institute represents 18 of the 20 biggest steel concerns in the world, including six of the ten biggest Chinese steel producers. Lakshmi Mittal (Arcelor Mittal) was elected the new board chairman, for a term of one year. He is the successor of Ku-Taek Lee (Posco).

One VisitorCenter, four sites

Today, ThyssenKrupp Steel is positioning itself with one VisitorCenter and the associated visitor centers at all four production sites in North-Rhine Westphalia. The VisitorCenter in Duisburg will additionally coordinate the sites in Dortmund, Bochum and Eichen. "We receive all the requests," explains Petra Hille, head of the VisitorCenter, "and coordinate the wishes of the guests at the respective location. For example, we can offer a wide range of tours including steel production, rolling and finishing processes as well as all the processing stages." The objective is to explain steel manufacture, products and innovations in more detail to customers, business associates and the general public. The number one objective is to interest young people in joining the company by organizing visits from schools and universities. On average, 20,000 people a year get to know ThyssenKrupp Steel live and up close.

30 million euros to reduce particulates

ThyssenKrupp Steel is investing about 30 million euros in reducing particulate pollution in the north of Duisburg. By mid 2011, the sintering plant at the Schwelgern plant unit will be fitted with additional filters for dust and dust-containing off-gases – a voluntary measure for environmental protection in order to comply with emissions limits set by the European Union for north Duisburg. The plant produces about twelve million tons of sinter every year. Already now, a filter surface totaling 150,000 square meters cleans about 100 billion cubic meters of gas every year.

ThyssenKrupp chief receives innovation prize

The inaugural "Innovation Prize of North-Rhine Westphalia" has been awarded to the ThyssenKrupp CEO Dr. Ekkehard Schulz, in recognition of his life's work. "It is a particular pleasure for me to receive a prize from the Innovation Minister of North-Rhine Westphalia, whose objective is to create a climate in which innovation will be openly received. Prosperity needs employment – employment needs innovations – innovations need education and enthusiasm. They only function when all social forces interact. And: It takes clever people to bring forth innovations. We have too few of them in Germany and in NRW as well. For me, counteracting the lack of young people joining technical professions is an important, if not the most important, task facing us in the future," explained Ekkehard Schulz in his acceptance speech before 500 prominent guests from business, science, politics and culture.

ThyssenKrupp Steel and Dortmund University of Applied Sciences

Architectural training aiming for steel

At Dortmund University of Applied Sciences, ThyssenKrupp Steel AG is cooperating with the Architecture and Metal Construction department and research area. This was made possible by the company through sponsoring a professorship. Professor Dr. Helmut Hachul is the holder of this new post at the university, with the task of teaching future architects specifically about building with steel. In addition, the scientist is researching the potential of steel as an energy-efficient module in the building shell. Just like other university cooperations, this recent association is intended to bridge the gap between research, academia and practical applications – with success.

At present, it is possible to see the architectural draft of an office building at the main administration of ThyssenKrupp Steel. The modern building made from steel and glass is being built in Calvert, Alabama/USA at the new production site of ThyssenKrupp Steel and ThyssenKrupp Stainless, where it is intended to house the 300-strong factory control and administration staff. The work is being carried out by local architects and construction engineers. However, the planning is based on work by Peter El-Dessouki – which was the subject of his diploma paper written in cooperation with ThyssenKrupp Steel. The diploma student completed his examinations under Professor Dr. Helmut Hachul at Dortmund UAS – in the new Architecture and Metal Construction department. The task: To design the building in Calvert and complete the technical planning – with steel and glass.

The result was a convincing solution. "Therefore, this is being implemented on the ground to a large extent. It expresses our specifications in terms of aesthetics, use and sustainability very well. And it solves the problem of the US building standards which necessitated considerable research from Germany," says Klaus Kottkamp, head of Corporate Architecture at ThyssenKrupp Steel and responsible in the company for mentoring Peter El-Dessouki during his diploma research. Klaus Kottkamp's department belongs to the Marketing team coordination department managed by Rolf-Jürgen Neumann. Peter El-Dessouki got top marks for his design:
The 29 year old achieved a score of 1.0 in his exams, and has been employed at ThyssenKrupp Steel since September – in Corporate Architecture.

This procedure provides an example for what is now coming from the cooperation forged between ThyssenKrupp Steel and the university – "A win-win situation for everyone involved from research, academia and practice" emphasizes the head of Marketing Rolf-Jürgen Neumann. The objective of various cooperations: specific knowledge transfer between the partners in order to work together to optimize teaching and research for new substances, as well as developing practical applications.
By now, the students appreciate ThyssenKrupp Steel as an attractive employer with its bandwidth in terms of steel. These synergy effects are also aided by the endowed metal construction professorship at Dortmund UAS, the foundation stone of which was laid in 2005 by the cooperation contract.

Building with metal, in particular steel – after all, the material has been used for many years in the construction sector – specifically in supporting structures.

"However, steel is being discovered not only in classic industrial construction but increasingly for building shells of commercial premises – this is the domain of architects who are concerned with function, form, look and environment in their designs," says Rolf-Jürgen Neumann. Steel, specifically the semi-finished product of surface-coated thin sheet, can be used extremely effectively as a facade and roof material. "However, this assumes that the material is incorporated skillfully and at the right time in the design, technology and construction," explains the engineer Klaus Kottkamp. Knowledge about the benefits and possibilities of steel is therefore to be communicated to architects – which is the purpose of the endowment – systematically and intensively whilst they are still studying. Dortmund UAS now offers this in the metal construction department, the first such in any architectural college.

ThyssenKrupp Steel has endowed the professorship for five years. Following this, the Dortmund academics will continue the whole thing under their own responsibility. Rolf-Jürgen Neumann: "It goes without saying that there will then be other joint projects, because both the material steel and the demands in architecture are always developing further." After all, the use of steel in the building shell not only opens up new areas of freedom for architects, but also provides attractive sales options for material manufacturers both in new builds and renovations. The marketing strategist Rolf-Jürgen Neumann was the initiator of the endowed professorship, and explains why: "Over the next ten years, particular attention is going to be paid to this area, and it has a high strategic importance for ThyssenKrupp Steel. In future, for example, the sustainability of building with steel will increase just as rapidly as the energy-efficient and ecological demands on commercial and industrial buildings.

Prof. Dr. Helmut Hachul was appointed in 2006 to provide the expertise. The 41 year old architect is a graduate of RWTH Aachen University of Applied Sciences, where he was doing work in his vocation for lightweight construction with steel before his appointment. Professor Hachul is now concentrating on the structural and technological possibilities of facades. "With the objective of developing new support structures made from thin sheet and transferring new technologies into architecture," says the university teacher. In new-build projects, he has the same concerns as in existing industrial, commercial and warehouse halls as well as office buildings. Helmut Hachul: "It's great to see how car makers are manufacturing innovative bodies based on developments in steel. The material can be used for creating commercial buildings that are just as architecturally appealing, functional and sustainable." In the past, the semi-finished product thin sheet was regarded by architects as being rather simplistic, but in fact it can be used for very demanding constructions as shown by the Blobmaster – a roof structure and research project conducted by Helmut Hachul. Fine sheet elements have been skillfully folded and bolted together to make a five meter tall semicircle. "These folded elements can form a building shell. The screwed connections need to be optimized. We're working on it." Metal construction is really exciting, because the good formability of the material allows free and detailed forms, which also are light whilst offering great stability. Helmut Hachul: "There is a great deal of untapped potential for use in architecture here. The task of my department is to teach students this technical knowledge, promote creative processes accordingly and work out both innovative and economical applications with the talented resources at my disposal."

This means academia and research are targeting metal construction. "Now it is the center of study, it has an independent area within which the design finesses of metal construction and creative aspects such as color can be dealt with specifically." This means modern color is a topic for budding metal construction

Professor Dr. Helmut Hachul is the new professor for architecture and metal construction at Dortmund University of Applied Sciences – an endowment made by ThyssenKrupp Steel. Helmut Hachul is increasing students' awareness for steel and its manifold possibilities – as a building shell for commercial buildings that is as fashionable as it is functional. A perfect example: the new office building of ThyssenKrupp Steel in Alabama, USA, shown here as a model – a modern building of glass and steel...

creators, so that factories will harmonize better in the landscape. ThyssenKrupp Steel is the locomotive behind this development.

At the moment, the "architects" at Dortmund UAS are starting a very special research project (see box). In addition, the sponsor ThyssenKrupp Steel will be offering a prize from the winter semester onwards. This award will be for the best project and diploma papers in steel and metal construction, in order to promote and reward innovative use of thin steel sheets and new, sustainable ideas in the context of metal construction. There are two award categories. 1. Innovative metal structures – intelligent new approaches for building sections and structures, whether as a progressive support structure or a modular construction system for interior design or renovation and modernization. 2. Facades and colors. This is concerned with clever ideas in aesthetics and design of building shells made from metal, as well as innovative approaches to improvements in energy recovery and savings. Prize money in each category: 3,000 euros; the prize will be awarded in spring 2009. Promoting design talents is something that ThyssenKrupp Steel regards as highly important.

Steel and sun – Soon with a second function as an energy supplier?

Indusolar is the name of the latest research project of the architecture department at Dortmund UAS. If steel is going to be used more and more to give buildings an aesthetic exterior, it should also offer added value. Energy efficiency is greatly prized, therefore the target of Indusolar is to develop a solar-thermal large surface collector for industry and commercial buildings. "The large surface collector has been developed on the basis of existing cold-rolled and surface-coated metal constructions, and is used as a facade surface and hall roof," explains Professor Helmut Hachul of the Dortmund UAS. The solar thermal energy obtained from sunshine in this way can be used for heating water, as process heat or cold and for cooling in summer. Helmut Hachul: "This is a totally new approach in lightweight steel construction. The building shell and collector form one unit that can be linked together with collector technology and energy utilization." Helmut Hachul, together with Professor Armin Rogall, is responsible for the research project. Armin Rogall teaches construction material technology and building construction, and is an expert in building heating and cooling using complete systems. Indusolar helps to reduce CO_2 emissions, therefore it has been recognized as a sustainable development in the energy sector and is being promoted by the German Federal Ministry for Education and Research. One of the industry partners: the DOC Dortmunder OberflächenCentrum. The ThyssenKrupp Steel subsidiary is working together with the Color Profit Center to develop energy-efficient coatings that are applied together with the paint, and produced as strip-coated thin sheet using the coil coating process.

Peter El-Dessouki is one of the talents that has already been unearthed – one of a total of four graduates from the architectural course at Dortmund UAS who have been recruited so far. Peter El-Dessouki is working on the design and technical planning of new building projects for the Group – modern and innovative in shape and coloring just like his design in Alabama. Steel as a building material plays a decisive role in corporate architecture within the Group – "Fully in line with aesthetic usage," says Peter El-Dessouki, "with the focus on creativity and sustainability, not just on function." It is an exciting task for him – with added value for the Group. Head of Marketing Rolf-Jürgen Neumann: "The new buildings we are designing in-house are also our calling cards for modern commercial buildings made from steel. We are communicating our ideas not only throughout Europe but also now to America and Asia. We have a global position in innovative building with steel."

Ulrike Wirtz, freelance journalist

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…planned and designed by Peter El-Dessouki, a new employee of the steel concern in Corporate Architecture. The design was Peter El-Dessouki's diploma subject. He completed the diploma at Dortmund UAS under Professor Helmut Hachul. "The design is going to be implemented to a large extent in Alabama," emphasizes Klaus Kottkamp, head of Corporate Architecture (right). Rolf-Jürgen Neumann, head of Marketing (left), initiated the endowed professorship at Dortmund UAS.

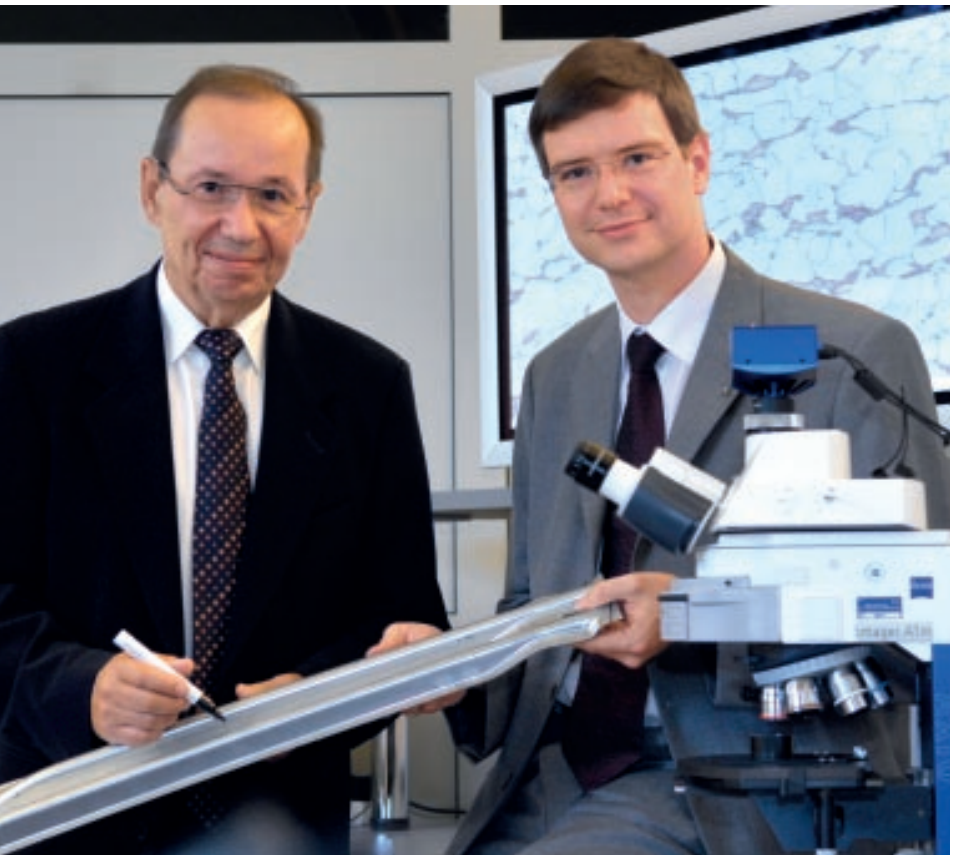
Further development of dual-phase steel

New material for automobiles

ThyssenKrupp Steel has further developed dual-phase (DP) steel from the family of multi-phase steels, and thereby offers additional advantages to the automotive industry: The new offering includes strengths from 500 to more than 1,000 megapascals (MPa). In addition, DP 500 can also be used as automotive skin panels.

Development focused and still focuses on the customer: "We support them with intelligent ideas for current and future requirements," explains Günter Stich, the outgoing team leader at the ThyssenKrupp Steel Center of Materials Excellence, and his successor Dr. Roland Sebald. By this, they mean the keywords of lightweight construction and crash safety. "A current example is the enormous increase in fuel prices," observes Roland Sebald, "one way of reducing consumption is to reduce the weight of the body and other vehicle components. That's lightweight construction." He reaches for a sample piece and bends it. Günter Stich takes the piece from him and observes, "component strength must not decline. After all, the car must be safe as well. That's why the continuing reductions in sheet thickness are being offset by higher and higher strengths." In addition, it is possible to save even more weight by using DP 500 as a skin panel. "This represents a further great potential for savings," emphasizes Günter Stich.

Teamwork: Günter Stich, the departing team leader at the Center of Materials Excellence of ThyssenKrupp Steel, and his successor, Dr. Roland Sebald, worked together for about one year on the further development of dual-phase steels that are frequently used in the automotive industry.



Lightweight construction has a bright future: According to the Steel Information Center, demand for materials for lightweight construction has risen by 300% since 2002. ThyssenKrupp Steel is keeping pace with this trend by developing steels with higher and higher strengths. Roland Sebald explains: "Now we have developed our range, the customer can use a new strength class, namely DP 1.000." Günter Stick adds: "In this, we have not only been able to develop a new generation of dual-phase steel, but we can also now offer our customers a complete range of materials with a uniform concept."

An additional benefit: current material developments are following the material release process that was defined in 2007 by the steel industry and German automobile manufacturers in a joint committee involving the VDEh and VDA. "Therefore, customers benefit from an extensive exchange of information and data, so that a synchronized development process is possible," observes Roland Sebald.

DP 500, 600 and 800 are already in volume production in order to meet demand. "And DP 1.000 will soon be available as well," says Günter Stich with certainty. "But that will be under Dr. Sebald's management."

Daria Szygalski

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Ore and coal

The black and red gold for steel production

Black gold, red gold – coal (left) and ore at ThyssenKrupp Steel in Duisburg waiting to be used in the steel mill's furnaces. Both raw materials have increased in price significantly over recent years.

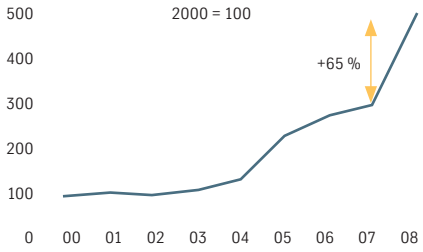
Producing one metric ton of crude steel takes about two tons of ingredients, including iron ore, scrap, coal, coke and oil, alloying agents as well as additives. Global crude steel production has increased by on average seven percent annually since the turn of the millennium, at the same time demand for the ingredients used in steel production has increased. Developing countries such as China and India are the main drivers of this development. In addition, they have placed export restrictions and some prohibitions on coal and iron ore, in order to be able to use the ever scarcer raw materials in their own countries. This is resulting in increasing scarcities on the world market.

About 70% of the ore extracted globally comes from only three big mining companies, which consequently have a very strong market position. In spite of significant expansion projects by various mining conglomerates, the supply of raw material cannot always keep up with high demand. In addition, climatic influences can lead to bottlenecks: For example, heavy rainfall in Australia in 2008 created problems with the supply of coking coal. Numerous mines were flooded.

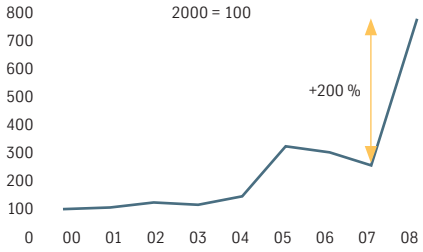
As a result, the prices of iron ore and coking coal as well as coke have increased many times over during recent years. Since the start of 2008, steel producers have not only had to cope with price rises of 65% for fine ore and even 200% for coking coal, but also significantly higher sea freight costs. The price of scrap has also almost doubled since the start of the year due to high demand. (You can read more about this on page 30). Model calculations by the German Steel Federation show that raw material and energy costs currently account for about 80% of the manufacturing costs for steel – ten years ago these were running at 65%. In view of the dramatic increase in costs for the ingredients and services required for steel manufacture, it is understandable that global steel prices have also increased. Despite everything, they have on average remained 60% behind the most recent price rise for raw materials.

Katharina Mette

Fine ore (Index based on US-$, FOB)



Coking coal (Index based on US$, FOB)



Since the start of the millennium, the prices for fine ore and coking coal have increased by several hundred percent.
Source: German Steel Federation

www.stahl-online.de/medien_lounge/Hintergrundmaterial/BroschuereRohstoffmaerkte.pdf

On board the Berge Stahl

From the ore mine to the blast furnace

A look at the biggest ore freighter in the world which carries the red gold from Brazil to Europe: the giant of the world's oceans is 342 meters long and a good 64 meters wide, with a draft of 23 meters when laden. This photo shows the Berge Stahl tied up at the quayside of the Ertsoverslagbedrijf Europoort at Rotterdam docks.

A look down onto the ten loading hatches of the Berge Stahl: unloading with three imposing grab cranes, each bucket of which transports about 40 tons of ore out of the ship's hull, takes about 100 hours and is precisely coordinated.

Only a small part of the enormous engine room of the Berge Stahl can be seen here. A 14.5 meter tall MAN B&W L90MCE diesel engine with an output of 20,300 kilowatts drives the ship.

The largest iron ore deposits in the world, estimated at 17 billion tons, are located in Brazil's Amazon region, in the Serra dos Carajás. The red gold is extracted here in an enormous opencast mining operation. A highly prized raw material that is an important ingredient in steel production.

Every day at ThyssenKrupp Steel in Duisburg, about 48,000 metric tons of ore are delivered and two thirds of this comes from Brazil. A significant proportion of the red gold is carried by the largest bulk freighter in the world, the MS Berge Stahl, from the maritime terminal at Ponta da Madeira to Europoort/Rotterdam in the Netherlands. The freighter flying the Norwegian flag has already completed the Atlantic crossing a good 200 times – it completes at least ten such journeys every year. The simply unimaginable quantity of around 71 million tons of ore have therefore been transported for ThyssenKrupp Steel since the ship was launched in 1986, and brought to the Krupp Mannesmann steelworks in Europe. On every crossing, the Berge Stahl carries 360,000 tons of ore – enough to produce 400,000 car bodies, for example.

A sea journey of this kind represents a masterful feat of logistics: after a loading time of about 36 hours in the Brazilian port, the 342 meter long ship sets out to sea. The international crew is only 24 strong, most of them are from India, the Philippines and Poland. Departing from the port itself requires skillful seamanship: the Berge Stahl with a width of 63.5 meters is only able to reach the open sea at high tide by following a narrow channel – otherwise, with its draft of a good 23 meters, there would be a risk of grounding on the sea bottom. Fully laden, the crossing to Rotterdam takes about fourteen days. A 14.5 meter tall MAN B&W L90MCE diesel engine with an output of 20,300 kilowatts drives the ship via a five-blade propeller with a nine meter diameter. The ship starts to drop speed on its approach to Rotterdam even before passing Cherbourg, and pilots take over the helm 60 kilometers out from the port. Three tugs from the Rotterdam Port Authority then accompany the challenging entrance to the port at the mouth of the river Maas. The specially created harbor channel at Europoort is 24 meters deep, and there is only a time window of about 20 minutes for the ship to enter the port at high tide. This calls for absolute precision: the distance from the keel to the dock basin bottom is often only one meter when fully laden.

Following this spectacular maneuver, the Berge Stahl is tied up alongside the quay of the bulk cargo transshipment facility of Ertsoverslagbedrijf EECV. Then the unloading starts: the five separate holds of the ship are unloaded in a precisely defined sequence through ten hatches in order to maintain the stability of the freighter. At the same time, the weight is compensated by pumping about 180,000 tons of ballast water into special chambers – incidentally, this water has to be exchanged halfway through the crossing in order to comply with international shipping regulations for the protection of maritime ecosystems.

The precisely coordinated unloading process takes about 100 hours. Up to three enormous grab cranes, each bucket of which unloads about 50 tons of ore from the ship's hull, unload the ship round the clock: the principle here is "time is money". After all, the high costs of chartering and the harbor fees mean that every minute has to be used to the full.

Following this, the fine and lump ores shimmering with all the earth colors from orange through brown and black, are transported to their storage areas by conveyor belts. Belt weighers measure the weight of the load before bucket wheel excavators put the ore into storage according to its grade. Furthermore, a fully automatic sampling system takes representative samples for analysis. Up to three million tons of ore in more than 30 different grades can be held in the storage areas of EECV on behalf of the steel producers ThyssenKrupp Steel and the Krupp Mannesmann steelworks in Duisburg.

From Europoort/Rotterdam, the ore sets off on the last section of its long journey: using seven company-owned and three rented pushing boats as well as a total of around 100 barges, ThyssenKrupp Veerhaven ensures that the valuable raw material will be available on call and on schedule for the blast furnaces: the barge trains that ply the river Rhine nonstop transport the ore to Duisburg. On arrival, they are unloaded and the iron ore is put onto enormous mixing beds where it is prepared for the smelting process. In the meantime, the Berge Stahl, the largest ore freighter in the world, will already be well on its way back to Brazil. It only takes twelve days for the trip from Rotterdam back to South America because of the somewhat lighter weight.

Katharina Mette

A large proportion or the ore smelted in the Duisburg blast furnaces comes from the Carajás mine operated by the Vale mining company in Brazil. The stepped sides of the opencast mine – which is up to 200 meters deep – reveal how excavators are gradually removing the ore from the earth.

Scrap value

Ideal product for the recycling system

Every year, the enormous quantity of almost 2.2 million tons of scrap is processed at ThyssenKrupp Steel in Duisburg. More than half of this comes from in-house production. It makes up about 20% of the steel.

What a load of scrap! The word indicates something of little value. Something that is scrap is at the end of its service life. In fact, however, scrap is almost perfect when you consider its recycling ability. Scrap can be turned back into high-quality steel without any loss of material and with relatively little energy use.

Scrap has always been part of a recycling system even before the word sustainability had been invented. Iron Age smiths were already making consistent use of old metal: nothing was thrown away. After all, smelting saved the considerable work involved in obtaining the scarce ore and expensive charcoal which would otherwise have been required. Therefore, it is no wonder that no archaeologist has yet been able to find an ancient scrap yard.

Scarcely a kilo of iron metal goes unrecycled even in industrial production. A whole third of global annual steel production, currently about 1.3 billion metric tons, is from scrap. Why not more? "Although scrap is an ideal product for a recycling system and is almost completely reused, it is not possible to meet the requirement with this alone," explains Dr. Ingo Batzel, head of Raw Material Purchasing at ThyssenKrupp Steel. For one thing, the demand for steel is rising year on year – in boom regions, double-digit growth rates have been recorded over recent years. For another thing, steel is predominantly used in long-lasting products. "A steel bridge, a tanker, a large machine may take up to half a century before it ends up as scrap." If at all. Steel structures such as the Eiffel Tower, the Müngsten Railway Bridge or the main station in Dresden will certainly remain in use for many generations to come. This means enormous quantities of steel will not be available for recycling in the foreseeable future. This makes it clear how important crude iron production using ore and coke will remain well into the future.

"Only thanks to integrated steel mills is it actually possible to meet the enormous demand for steel," says Dr. Carl-Heinz Schütz, head of the Crude Steel Production department at ThyssenKrupp Steel. "We obtain crude iron by smelting ore and coke in the blast furnace. This is followed by steel production in the oxygen steelworks. It is only at this stage that we add scrap." Astonishingly, the waste metal in this case not only functions as a raw material but also improves quality. Some scrap contains valuable alloy metals, and is then used for special steel grades. Above all, however, the cold scrap ensures that the hot molten metal is cooled during the refining process – when oxygen is blown in. This means the process temperature can be controlled using scrap – with the result that the steel reaches the required temperature for pouring in the continuous casting plants.

Every year, the enormous quantity of almost 2.2 million tons of scrap is processed at ThyssenKrupp Steel in Duisburg. It makes up about 20% of the steel. More than half of this scrap is made up of residues from in-house production. This "house scrap" results from continuous casting, for example, or coil cutting. The remainder of the scrap used, just about half the quantity, is bought in. "Our scrap purchases are quality-controlled. We need reliable, pre-sorted grades," explains Udo Völkel, Purchasing Manager for the scrap. "Significant contamination or unwanted alloy proportions would have a negative effect on the production process."

This means all scrap – from old washing machines to a railway bridge ready for demolition – is prepared by traders, sorted according to quality and supplied as a defined grade. The industry uses circular product flows wherever possible. They know where the scrap comes from, and where it will be reused. For example, specific flows are returned to ThyssenKrupp Steel from the steel processing industry. "With product responsibility and sustainability in mind, we have also undertaken to take back tinplate scrap. Furthermore, scrap is currently a secondary raw material in great demand worldwide. Germany is actually exporting more than it imports. This applies above all to electric steelworks which smelt steel in arc furnaces where scrap is the only raw material. In contrast to integrated steelworks, they can only use iron ore following extensive pre-treatment to make what is referred to as direct reduced iron (DRI). Therefore, they produce their steel completely from scrap.

Demand always influences the price. In the second quarter of 2008, scrap suddenly more than doubled in price. "Scrap is a highly volatile raw material," explains Ingo Batzel. "The global steel boom ramped up raw material prices, i.e. scrap prices, by a disproportionate extent and put massive pressure on steel prices." The situation has stabilized significantly in the meantime. ThyssenKrupp Steel in any case takes a relaxed view with regard to scrap. Carl-Heinz Schütz: "In contrast to electric steel mills, we are flexible as far as production is concerned. After all, we could produce steel even without scrap. But of course we like to use scrap because of the efficiency it offers.

Wolfgang Kessler

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

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The never-ending story

Old makes new

Steel, is a never-ending story. A cycle from new to old which never dries up. From steel to scrap. From scrap to steel. Between these, there is a whole range of production processes and products. Where does this cycle start? For example, right in the middle – in Germany's idyllic Westerwald.

Here, on a green-field site close to the small village of Atzelgift, is where Craco operates. This medium-sized company is a specialist, a market leader in its sector. Its specialty: made-to-measure machine components from steel with high wear-resistance properties. Produced in small batches or as individual items for particularly demanding requirements. What makes Craco successful is its specialist expertise. Not only with regard to customer requirements, but also the unusual material. This is because XAR® steel, a ThyssenKrupp Steel product, is extremely resistant to wear and therefore very difficult to machine. "A drill from your DIY shop," smiles Sales Director Frank Burbach, "couldn't even scratch this steel."

However, it is not just the resilience that is a problem. Whenever this material is cut, bent, drilled or machined, there is always a risk of changing its positive characteristics detrimentally. This is due, for example, to the heat involved in any machining process. This could lead to structural changes in the material. Therefore: "The cooling has got to be right. The heavy plates which are up to 100 mm thick, for example, are cut under water." Where are components like this required? "A lot of what we produce," says Frank Burbach, "is used for protecting recycling systems." For example, Craco makes products such as rotors or armor plating for shredders made from highly wear-resistant steel. However, the company's range also includes stone crushers, demolition excavators and similar machines that use brute force. Only such a highly resistant material can put a brake on the extreme wear caused by abrasion and impact. Frank Burbach: "The parts suffer enormously. Sometimes, they only last a couple of weeks. Our products help to extend the service life of wearing parts significantly and up to five times in any event. The expensive systems are protected, service lives extended, downtimes cut. This quickly pays off for the users."

The merciless nature of practical applications are illustrated at TSR Recycling, the largest German company of this kind. Here in Mannheim, as well as in Brandenburg, the giants of the German recycling machine fleet are in operation. These are enormous shredders in which consumer scrap – from smashed up cars to discarded irons – disappear without interruption. In their interior, steel hits on steel, with a clanging, drumming or shrieking primeval force. After all, there is a giant rotating roller with moving hammers that beats everything into little pieces. And what was once an object appreciated by its owner is now made available as secondary raw material.

A colossal machine of this kind has 6,000 h.p. It can process up to 300 tons per hour. It is obvious that operators of such machines set great store by long service lives. After all, the recycled materials must be returned to the production cycle as quickly as possible. "There is still a lot to do before we can make the scrap available," explains Markus Barg, CEO of TSR. "The decisive thing is to separate the various constituents.

Steel scrap makes up the major proportion, of course. It can be removed by magnets. However, it is also necessary to sort out everything else of value such as metals like copper, chrome or nickel. A lot of this is done by hand."

In 2007, total German scrap consumption reached almost 24 million tons, and some scrap is even exported. The dimensions involved can be seen at one of the largest scrap storage sites in Europe. The scrap island – part of Duisburg port – is as large as 30 soccer fields. TSR also has its site here where scrap is delivered, processed, sorted according to quality, stored and sold on. ThyssenKrupp Steel is one of the main consumers. After all, the steel converters at the Duisburg site smelt about 6,000 tons of scrap every day.

Incidentally, there is no sign in the steel of its previous lifecycles – it would take experts in the laboratory to find signs of what it was once used for, and maybe not even then. Practically speaking, scrap does steel good. One of the functions it performs during production is to control the process temperature of the molten metal. In this way, the structure of the steel can be defined, further steps for quality control can follow on. "With highly wear-resistant steel, the combination between a specially adapted alloy concept and the hardening technology is decisive. We have decades of experience in manufacturing these steel grades. For our XAR®, the steel has got to be cooled down from about 900 degrees Celsius within a short time," says Dr. Marco Pfeiffer from the Heavy Plate Profit Center at ThyssenKrupp Steel, explaining the requirements. "Different properties such as the highest possible abrasion resistance, hardening through to the core of the plate, weldability and a sufficient amount of toughness are unified in one product in this way." These are just the properties needed for a steel that can recycle steel, but will not itself be ready for the scrapheap.

Wolfgang Kessler

www.craco.com
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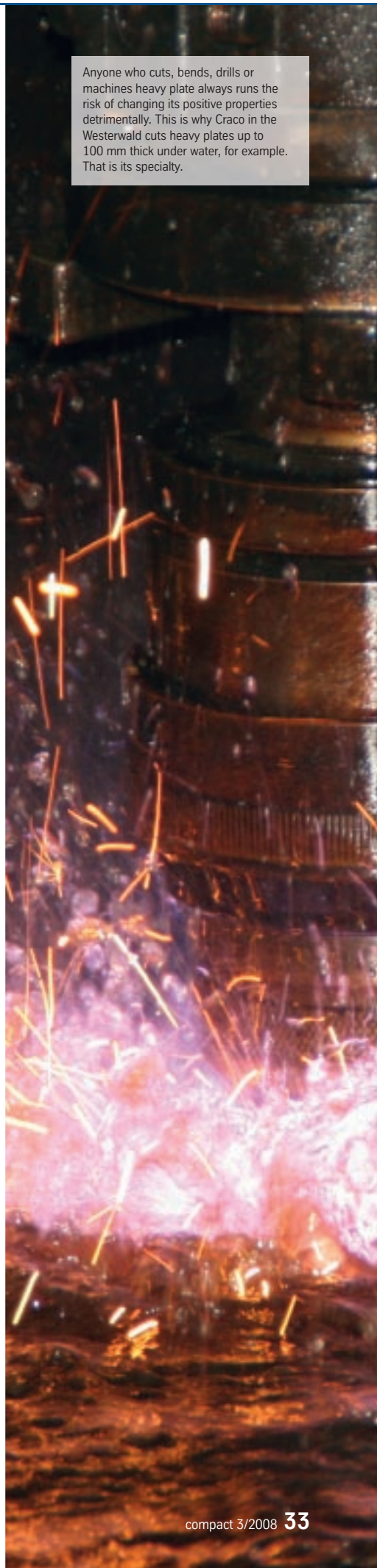
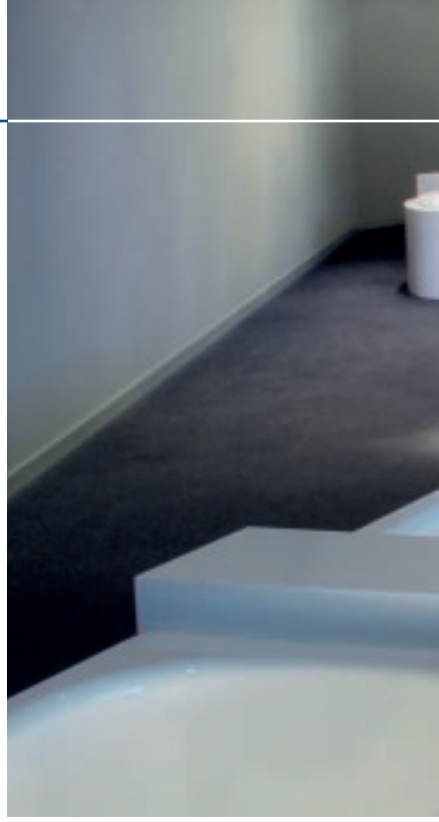
Made-to-measure engineering components from highly wear-resistant heavy plate made by ThyssenKrupp Steel – these are products made by Craco that are often used for protecting recycling systems. Produced in small batches or as individual items for particularly demanding requirements.



Anyone who cuts, bends, drills or machines heavy plate always runs the risk of changing its positive properties detrimentally. This is why Craco in the Westerwald cuts heavy plates up to 100 mm thick under water, for example. That is its specialty.



Kaldewei bathtubs and shower trays

The breakthrough came with the non-welded tub

Franz Kaldewei is the European market leader for bathtubs and shower trays. The company based in Ahlen relies on enameled steel to achieve high quality, durability and function. Which is why the company has been working successfully with ThyssenKrupp Steel for decades.

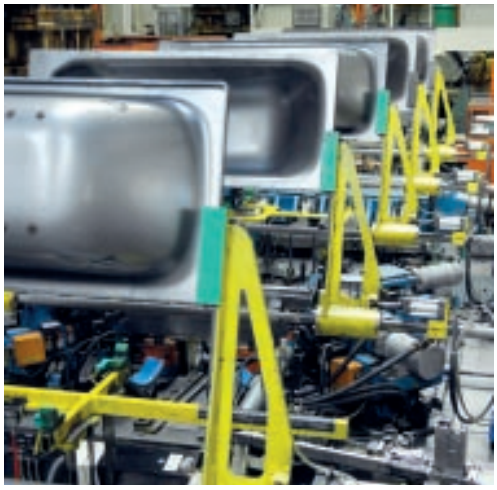
Franz Kaldewei and ThyssenKrupp Steel have been cooperating successfully for decades. To continue setting new trends for bathtubs and shower trays (from left) Roger Hannig, Customer Service IDS team leader at ThyssenKrupp Steel, Martin Koch, press spokesman at Franz Kaldewei, Carsten Jansen, customer service adviser at ThyssenKrupp Steel and Norbert Breuer, Purchasing Group Leader at Franz Kaldewei have been working together on innovative shapes and materials for new designs.

"People who regularly take a bath together maintain good relations," explains Martin Koch, the press spokesman of Kaldewei, referring to one of the results of a study into bathing culture which he has undertaken together with the Rheingold market research institute. However, another insight is more important: "The bathroom is no longer simply a utilitarian place," he elaborates. "All over the world, times are becoming more hectic and the bathroom is used as a private oasis for relaxation and withdrawal. This also applies to the over 50s."

This is the trend and the direction followed by Kaldewei, because the Ahlen-based company has a long tradition of innovation. The family firm with 700 employees in Germany is currently the European market leader for bathtubs and shower trays. "For decades, the name Kaldewei has stood for high quality tubs and trays," says Martin Koch, also referring to results of the study. However, the success story started with the company founded by Franz Kaldewei in 1918 to produce raw materials for the enamel industry such as frying pans, milk jugs and washtubs. The tubs would set the agenda: in 1928, his son Heinrich started developing the first steel bathtub. "At the time, bathtubs were welded together from several parts," explains Martin Koch. "30 years later, we first succeeded in producing a bathtub without welds." This heralded a revolution in bathtub production: "Within just under a decade, we almost completely displaced cast iron bathtubs which had dominated the market up till then."

They are also in fashion in terms of material: "Of course, there are cheaper bathtubs and shower trays on the market. These are made of acrylic, which is a plastic," says Norbert Breuer, Purchasing Group Leader at Kaldewei. "However, ours are made from enameled steel 3.5 mm thick, and can be supplied with an easy-care surface if required – the pearlescent finish." Optimum stability, high quality, 30 year service life. This is appreciated not only by hotel chains, but also by many private households. In Germany, in Europe and throughout the world.

The basis for this is a particularly high-quality steel. "And also a reliable and innovative steel supplier," says Norbert Breuer speaking from many years of experience. This is what they have found at ThyssenKrupp Steel. "We've been cooperating with the guys from Duisburg for decades now." For example, ThyssenKrupp Steel supplies cold-rolled and non-coated thin sheet in the form of blanks. "Kaldewei's requirements are exacting," confirms Carsten Jansen, customer adviser IDS at ThyssenKrupp Steel, "because the material is required to have contradictory properties. On the one hand, it has to permit very high amounts of deformation, whilst remaining stable on the other hand. Furthermore, a special surface composition is demanded so that the double enamel coating will adhere for a long time." It is above all the demanding design – a further secret of Kaldewei's success – that demands particular forming properties. "We have about 280 models that are split into different segments for specific target groups: Avantgarde, Ambiente and Advantage," adds Martin Koch. "The highly renowned design studios, Sottsass Associati and



Kaldewei relies on high quality and has developed technologies and processes for production itself. For example, the company has several press lines in which the sheet metal is pressed into shape.

All tubs and trays pass through the furnace. Steel and enamel fuse together at 863 degrees Celsius.

Following the furnace comes the coating: the tubs and trays from Kaldewei have a double enamel coating for a particularly high-quality surface.

Phoenix Design that we work with make sure that we have modern aesthetics and function." This has also delivered numerous design prizes. However, a great deal of development work goes into the varied and complex shapes: "It is particularly the new shapes with corners that represent a challenge for the material," says Roger Hannig, customer service team leader IDS at ThyssenKrupp Steel. "Therefore, we work very closely together."

The companies have even moved closer together during the past decade. "Thanks to our proximity," by which Norbert Breuer means the distance of about 60 miles, "they are very flexible and can come out to us as soon as we need them. Short distances are important particularly when it comes to developing alternative materials." This means the employees of both companies meet one another regularly. "We need mutual understanding and knowledge about one another's products," emphasizes Norbert Breuer.

Despite all the modern features, Kaldewei remains loyal to its production site: "We sell our products all over the world," says Martin Koch, "but we are staying in Ahlen. Our committed workforce and our in-house machine developments are important reasons for our success." After all, taking a bath is more than bodily hygiene, it is food for the soul. And that needs quality.

Daria Szygalski

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Agenda

BAU 2009
12-17 January 2009, Munich
Europe's leading trade fair for architecture, materials and systems takes place every two years and attracts market leaders in the industry for a unique performance show, making it the most important event in the European building trade. This time too, innovative solutions will be presented for industrial and building construction as well as residential buildings and interior outfitting. The range of features is structured according to building materials as well as product and topic areas. There will also be numerous attractive supporting events to round off what the show has to offer.

Upakovka
27-30 January 2009, Moscow
Russia's leading show for packaging technology is continuing to grow. More than 350 exhibitors will meet at the Moscow exhibition center, SAO Expocentr Krasnaja Presnja, in order to show off their innovations in the areas of packaging and confectionary machines, packing and packaging tools as well as logistics over a net surface area of 8,000 square meters. In total, companies from more than 20 countries will be exhibiting – including Germany, France, the UK, Italy and Turkey.

9th International CAR Symposium
27-28 January 2009, Bochum
"Students and graduates meet the automotive industry" – this is the slogan for the first recruiting event specifically for the automotive industry at the RuhrCongress Bochum. More than 60 companies, automobile manufacturers, suppliers and service providers will be giving insights into career concepts, application pathways and personnel policy. As well as the major OEM partners and suppliers, numerous medium-sized companies will also be using the recruiting show to attract employees. For students and graduates, the recruiting day is the ideal option for planning their entry into the automotive industry and forging practical contacts. Participants will include students and job-starters from various car-related specialties. Amongst other guests, engineering, business studies and information technology students will be attending.

BouwBeurs 2009
09-14 February 2009, Utrecht
"Building in balance" is the slogan for the International Building Show. The building industry is subject to permanent change – and this makes it particularly important to find a healthy balance. The show is responding to this trend and the need for a balanced relationship between a healthy living environment and sustainable development: building in harmony with the environment, achieving an optimum energy balance that takes account of all links in the building chain. The BouwBeurs with its approx. 1,000 exhibitors will attempt to answer questions relating to sustainability, site safety, fire protection, energy balance and many more besides relating to the building industry.

R+T
10-14 February 2009, Stuttgart
The international trade show for roller blinds, gates and sun protection is now being held for the 18th time. The world's leading trade show in this sphere will provide visitors with an extensive overview of the products and services available from globally leading suppliers. As well as the traditional emphasis of the show, additional areas are becoming increasingly important. Specialists' increasing interest in topics such as large gates, gratings and windows, special doors and conservatories has required the exhibition areas to be extended significantly. And these are only a few of the many trends which the R+T 2009 is already gearing up for.

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Echo

The financial crisis is forcing the steel industry to cut its forecasts
"The financial crisis has hit the steel industry," says Hans Jürgen Kerkhoff, President of the German Steel Federation. In view of this, the industry association has cut its production forecast in Germany from 48.5 to 47.5 million tons of crude steel. Kerkhoff revealed he was optimistic about the medium-term prospects for the steel industry. "There is no reason for excessive pessimism."

Die Welt, 08.11.2008

State government honors ThyssenKrupp boss
Ekkehard Schulz received the new NRW Innovation Prize for his life's work. (…) The Federal State therefore honored an outstanding scientist and business personality; Schulz has been a driving force for innovation. "Innovations in turn have provided economic growth, jobs and a wealthy society," said North Rhine-Westphalia's science minister, Andreas Pinkwart. (…) Schulz has made an important contribution to creating ground-breaking strategic partnerships in the future domain of modern materials in NRW, (…) and the new ICAMS material research institute at the Ruhr University of Bochum is a shining example of this.

Rheinische Post, 18. 11. 08