Ambitious
Venezuela’s plans on ending dependence on fertiliser imports

Environmentally friendly
Safeguarding sustainable growth through recycling

Advanced
Modernising Romania’s gas network
A compressor station in Romania shortly before completion by Ferrostaal.

Cover picture: delivering the CO₂ stripper for construction of an ammonia plant in Venezuela.
Dear Readers

In June I took up my post as Chief Executive Officer of Ferrostaal and I am delighted to be taking on this new challenge. My background has an intercultural flavour not dissimilar to that of many of my new Ferrostaal colleagues, given that I was born in Sweden and have gathered professional experience in Europe, America and Asia. During my career I have worked in several of the sectors in which Ferrostaal also operates. It gives me great pleasure to have the opportunity of using my experience to ensure more success for the company in the future.

Over the past weeks I have been able to gain a comprehensive insight into Ferrostaal. The company’s entrepreneurial approach has made it successful throughout the past 80 years. The company’s experience and expertise, the extensive knowledge of its employees, its global presence and high-quality products and services spanning various business areas are all factors that have made Ferrostaal a strong international partner for many decades. We are currently working on a strategy that will also set us up for continued success in the future.

Ferrostaal has been focusing for a long time now on the developing markets, which are showing good prospects and growth rates. In addition, we are concentrating on expanding the sectors where, despite the general economic crisis, demand is high. In order to ensure that we as a company are suitably positioned to withstand any possible future turbulent economic times, we have already extended our portfolio in the printing machinery business area and brought new partners on board. One of the core regions for our petrochemicals and power plant construction business areas is Latin America, where we are currently carrying out the turnkey implementation of several large industrial projects. Our success stems from our specialist expertise as well as our flexibility and skill at finding optimum solutions tailored to our customers. We have for example proved our project management capabilities in Romania, after completing a state-of-the-art compressor station in an extremely short time period for Petrom, the state-run oil and natural gas corporation.

We will continue to focus on maintaining a close relationship with all our customers and partners in the future to ensure that we can work together to successfully drive economic development forward in a wide range of countries worldwide. Our top priority in this endeavour is maintaining your trust in our capabilities, expertise and our integrity. For this reason, we are currently implementing a robust compliance organisation with processes that will support our zero-tolerance for non-compliant business practices.

I very much value the benefits of active personal contact with you all and look forward to the opportunity for a personal meeting to discuss the joint possibilities we have in the market. Please do not hesitate to get in touch with me and my colleagues directly. And now it just remains for me to hope you find our magazine an interesting read.

Best regards,
Jan Secher
Chief Executive Officer
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**“Uranus” christened**

In November 2009, the ocean-going tug “Uranus” was christened at the Mützelfeldtwerft shipyard in Cuxhaven. The ship is the eighth ocean-going tug which Ferrostaal has completed in a consortium with Mützelfeldtwerft. Joachim Ludwig, member of the Executive Board of Ferrostaal, was present at the christening. The Essen-based industrial service provider was responsible as the general contractor and the principal of the shipyard.

After a construction period of 18 months, the tug was handed over to the customer, the Hamburg shipping company Harms Bergung. Almost 2,100 tonnes of steel were used in constructing the ship, which is around 75 metres long. The “Uranus”, which has a displacement of 7,400 tonnes and achieves a tractive force of 285 tonnes, is employed for long towing journeys worldwide. It is particularly suitable for towing large ships and other floating objects. It is used by oil companies to position drilling platforms at sea. Thanks to a complex electronic system the ocean-going tug can maintain its position to an accuracy of one metre even in very difficult sea conditions. The sister ship of the “Uranus”, the “Orcus”, will be delivered in the summer of 2010.

**Foil rolling mills for production in Tetra-Pak® quality**

In January this year Ferrostaal, together with its long-standing partner Achenbach Buschhütten, signed an agreement covering delivery, monitoring of assembly, and commissioning of a foil rolling line for aluminium foils with a two-metre width to China. The order is worth a total of 36 million US dollars. The customer is the former state-owned Chinese enterprise Luoyang Wanji Aluminium Processing Co. Three rolling mills are scheduled to be completed by the end of 2011 which, as a line, can produce up to 2,000 metres of high-quality aluminium foil per minute. Neither kinks nor creases occur in the foil during production. This striking flatness is a unique selling point for the Achenbach rolling mills. The foil is a mere six micrometres thick (as a comparison: a human hair is twelve micrometres thick). Thanks to this high quality of material, the foil complies with the worldwide Tetra-Pak® standard. “This order is another important step in our long-standing cooperation with Achenbach,” said Joachim Ludwig, member of the Executive Board at Ferrostaal. “In the last ten years we have supplied around 20 of the German manufacturer’s rolling mills to China.”

Ferrostaal represents Achenbach products on the Chinese market. Last year the company also took over exclusive marketing rights in several countries in North and South America. As a specialist for aluminium, thin strip and foil rolling mills and also for rolling mill automation, the machine building company Achenbach Buschhütten is one of the world market leaders.

More information and contact:
www.ferrostaal.com/metalprocessing
Work resumes on the biodiesel plant in Amsterdam

In April 2007 Ferrostaal obtained an EPC contract from the Dutch J&S Bio Energy B.V. to build a biodiesel plant in Amsterdam harbour with an annual output capacity of 200,000 tonnes which corresponds to 600 tonnes per day. The total investment is to the tune of around 40 million euros (THE ECHO, August 2007). After nearly completing all the engineering and procurement aspects of the project, Ferrostaal was forced to interrupt work on it due to delays in obtaining the building permit. At the close of 2009, the building permit was approved and work at the construction site could be resumed. At the end of 2009 J&S changed their name to Mercuria and has since proceeded to carry out its biofuels operations under the brand name VESTA.

As the general contractor, Ferrostaal is responsible for turnkey delivery to Mercuria currently planned for June 2011. In April of the same year, test operations are to commence with performance trials to ensue some time thereafter. Scope of supply and services included all engineering, procurement, assembly and commissioning – not just for the processing plant used in production of biodiesel and crude glycerol but also for the storage tanks, re-cooling system and the power supply system. Besides this, the company is also in charge of training the operating staff. “The pile construction has already been completed and the foundation poured. In May, we commenced with the steel structures and rough construction work”, says Bernd Kunze, the person responsible for biodiesel activities at Ferrostaal.

The process of producing biodiesel fuels in this plant is based on the internationally recognised CD (continuous deglycerolisation) method, for which Ferrostaal holds the international licensing rights. This method excels thanks to the plant’s extremely high uptimes and the premium quality of the biodiesel output which exceeds levels stipulated by the European standard EN14214. Consequently, plants like these are being built all over the world with a total capacity of five million tonnes annually.

According to official press releases, the Mercuria Group is one of the five biggest independent energy trading companies in the world and offers a wide range of products reaching from crude oil and crude oil end products to natural gas, coal, vegetable fats/oils and biofuels all the way to trading in CO2 emission certificates. Mercuria’s total turnover amounted to 57 billion US dollars in 2009.
NEWS

New assembly lines for General Motors

Since 1999, Ferrostaal Automotive has provided services for General Motors Manufacturing Poland (GMMP) in Gliwice, Poland, and now operates an SILS (supply-in-line sequence) Centre at two locations. The two sites cover a total of 25,000 square metres, and 40 modules for the car models Astra III, Zafira and Astra IV are assembled here by some 260 employees and then supplied to the customer’s assembly line in line sequence.

Between 2008 and 2009, Ferrostaal Automotive successfully switched production of the Astra II to the new model Astra IV. “The challenge for our team was that we needed to comply with the new technical standards for the model, which made it necessary to completely replace some of the old lines and machines with new ones. This was done in close cooperation with our customer,” remembers Project Manager Waldemar Konieczny. In addition, an innovative production identification system was set up for which all the engineers from Gliwice were trained intensively. “We were under considerable pressure, because both time and the budget were limited, the crisis had already hit the automotive industry and nevertheless everything had to run perfectly. But we succeeded and the assembly lines are operating without any hitches,” says Mr Konieczny. Production of the new modules, such as the rear axle, spring struts, engine subframe and roof liner, was able to be started without interrupting ongoing operations. Hinnerk Pflüger, Managing Director of the SILS Centre in Gliwice, comments: “We completed the final adjustments in late 2009. The result was that we had succeeded in integrating what are currently the best and most modern technologies into our existing operations.”

Back in 2005, Ferrostaal Automotive was able to successfully overcome a great challenge for its Polish customer. This saw the second SILS Centre launched while operations were in progress and without any production downtimes. In only six months what was once a tank factory became an autonomous SILS Centre producing goods for GMMP.

Ferrostaal Automotive has been providing premium services for the automotive industry since 1983. Its range of services covers planning, management and control of commodity and information flows, just-in-time delivery, engineering, sequencing and assembly services, and IT management.

Commitment for earthquake victims in Chile

In the form of a relief operation, employees of Ferrostaal Chile showed their commitment to families who were victims of one of the strongest earthquakes measured since seismic records have been kept. An emergency committee consisting of 34 volunteer employees organised the transport of aid packages containing food and toiletries to the Region VI (Región Libertador O’Higgins), around 350 kilometres away from the epicentre of the most powerful seismic shocks and tsunami-like tidal waves, and distributed these packages in San Vicente de Tagua Tagua and adjacent towns to some 500 needy families. “The quake was not only a great shock to the country, but to us too. We had a lot of luck: our office remained virtually unscathed. It was all the more important for us to demonstrate our solidarity with the people who were affected and in need and to offer them our support,” says Roberto Hahn, Managing Director of Ferrostaal Chile.
Dr. Annette Schavan visits Talitha Kumi

In early 2010 the German Minister for Education and Research, Dr. Annette Schavan, visited the Talitha Kumi school in Beit Jala, Palestine, near Jerusalem. The school, which is sponsored by the Berliner Missionswerk, offers around 900 students of different faiths a high-quality education. During her visit the minister addressed the subjects of how the religious communities exist side by side, the democratisation of Palestine, and the solar heating system on the roof of the school building which Ferrostaal constructed in late 2009. The Essen-based company bore a large proportion of the total costs for the solar power plant which amounted to around 170,000 euros. The project was implemented as part of the solar roof programme of the German Energy Agency (dena) and was co-financed by the Federal Ministry of Economics and Technology (BMWi).

Dr. Annette Schavan and Dr. Kholoud Daibes, Palestinian Minister for Tourism and a former pupil of Talitha Kumi, emphasised the importance of education in Palestine and of a good partnership between Germany and Palestine.

More about the sponsoring project at: www.solardach-palaestina.de

The earthquake on February 27, 2010, with a strength of 8.8 on the moment magnitude scale, devastated extensive stretches of coast in the VII and VIII Regions and plunged the country into a state of disaster. It resulted in more than 700 deaths and destroyed 1.5 million residences and most of the infrastructure in several of the country’s regions. According to estimates of the Chilean authorities, the total damage amounts to around 30 billion US dollars.
In February this year, the company founded a subsidiary in Trinidad and Tobago, with its headquarters located in the capital, Port of Spain. Ferrostaal Trinidad Ltd. provides a platform for developing projects in the Caribbean and in Central and South America in order to acquire more contracts and expand operations in the region. The subsidiary focuses on large plants for the Petrochemicals and Power business segments. Additionally, Ferrostaal is to further expand its Services division business, particularly in the area of machines.

Ferrostaal is currently constructing a 765-megawatt gas-steam power plant in La Brea for its customer Trinidad Generation Unlimited (TGU), the project’s investment volume amounting to around 800 million US dollars (THE ECHO December 2009). All foundations have now been laid, buildings completed, and mechanical assembly of the gas turbines, the exhaust gas stacks as well as the open-air switchgear is finished. Construction of the pipe bridges, heat recovery boiler, steam turbines and cabling for the power plant is in full swing. The first elements of the power plant will be put into operation towards the end of the year.

The Essen-based company just recently successfully completed another large project on Trinidad for its customer of many years’ standing, Methanol Holdings Trinidad (MHTL). This consisted of an AUM (ammonia, urea, melamine) complex with a total investment volume of around 1.6 billion US dollars (more information on this in the next edition of THE ECHO 2/2010).

Enhanced website presence

Ferrostaal has added six further country sites to its internet website. The countries Chile, Indonesia, Venezuela and the USA as well as the MENA region and Eastern Europe have all been added to the website and provide information on regional representations of the company. Information on local contact partners, business segments and customer references can be accessed online. The first country sites to be featured, those of the Ferrostaal subsidiaries in Australia and Brazil, were added last year.

More information on activities in Trinidad and Tobago available at: www.ferrostaal.co.tt
www.ferrostaal.com/aum

Australia: www.ferrostaal.com.au
Brazil: www.ferrostaal.com.br
Chile: www.ferrostaal.cl
Eastern Europe: www.ferrostaal.ru
Indonesia: www.ferrostaal.co.id
MENA: www.ipic-ferrostaal.ae
Thailand: www.ferrostaal.co.th
Trinidad and Tobago: www.ferrostaal.co.tt
USA: www.ferrostaal-usa.com
Venezuela: www.ferrostaal.com.ve
Air-conditioning system for lignite power plant

Since 2006 RWE Power has been constructing the most up-to-date lignite power plant at the Neurath location, near Grevenbroich, Germany. The location already has five plants which date from 1972 to 1976. They are currently being expanded with the addition of two state-of-the-art blocks featuring optimised equipment technology. For this project, Ferrostaal Air Technology is planning, delivering and installing all the heating, air-conditioning and ventilation systems in the lignite power plant. In addition, the company is responsible for the associated electrical engineering, measurement and control technology, and also for the control system. The latter collects all the technical data and thus enables all the air-conditioning processes to be controlled and monitored. The order, worth 25 million euros, was awarded to the company in 2006 by RWE Power; the main work will have been completed by late 2010.

"Although a complex large construction site naturally always presents a challenge, in technical terms the installation of the systems is going ahead without a problem," reports Project Manager Peter Rettler. "This is because our team forms the interface between various units involved in the construction work. Information regarding process technology and structural engineering, acoustics and fire protection comes together here. This information needs to be coordinated for the entire construction site, taken into account in the air-conditioning systems, and the systems must be parameterised accordingly." Coordination is one of the core competencies of Ferrostaal Air Technology and also played a decisive role in RWE Power awarding the company the contract.

When the construction work has been completed, the experienced engineering and assembly team will have installed over 120 subsystems in the new blocks which were procured from 80 suppliers throughout Europe. The heating, air-conditioning and ventilation systems have been optimised with regard to maintenance and energy. In conjunction with the high-quality technical documentation, they will guarantee long-term, problem-free operation of the power plant.

As a result of the new blocks, RWE will shut down older and less efficient plants at the neighbouring locations Frimmersdorf and Niederaussem. According to the company, this will mean that up to six million tonnes less carbon dioxide will be emitted each year.

Senior Site Manager Stefan Eichhorn in the air-conditioning centre of the main control room of the lignite power plant Neurath
Creating trust through transparency

Sustainable business relationships are based on integrity. Customers, suppliers and other partners must be confident that all of Ferrostaal’s business operations are “above board”. Executive Board member Dr. Andreas Pohlmann explains how the new compliance programme encompasses this set of values.
Dr. Pohlmann, in May you were appointed a new member of the Executive Board assuming responsibility for Compliance and Legal, as well as HR and Administration. The subject of compliance is nothing new for the company but it has now been accorded increased importance. An Executive Board is always responsible for compliance even if no actual Board function specifically devoted to this area exists. To maintain fair and demonstrably transparent relationships with our partners at all times, the Supervisory Board decided to create an Executive Board function for “Compliance”, charged with setting up and implementing a first-class compliance programme commensurate with a company of Ferrostaal’s size and scope of international business activities.

What action is required? What are your objectives?

The one crucial element here is to ensure that all Ferrostaal business is above-board business. Our company has a zero-tolerance policy towards corruption. We expect each and every employee to adopt this approach, with no exceptions. I would like to add certain essential elements to the current compliance programme. These include preventive measures and monitoring systems. Above all, screening of service providers is required and also a strong incentive system for compliance for managers and executives, who set the example to all employees. An incentive system acknowledges and reinforces positive behaviour.

We already have 150 rules and regulations for employees to follow. Do you want to change these? Will there be more of them?

It is very interesting to note that discussions about com-
pliance mostly focus on the amount of regulations put in place. In my view, it’s not about how many regulations we have. Everything depends on effectively implementing the regulations that exist within the organisation and, even more importantly, ensuring that the principles and values forming the basis of all regulations are actively incorporated into day-to-day company culture and conduct. Communication and training are vital here. It is essential to ensure that at the end of the day, employees adhere to the rules by their own conviction.

But doesn’t the whole topic get more complicated as the rules and instructions increase?
Well, we all drive our cars without constantly looking up road traffic regulations. We just know what they are. But do more complex rules take longer to learn?
The essence of an easy-to-understand and effective compliance programme basically rests on four questions, which all employees should ask themselves. Firstly: Are my actions in line with the interests of the company? Secondly: Do my actions conform to the core values of the company? Thirdly: Does my conduct fall within legal and ethical parameters? This is slightly more difficult because each country and culture is different. If any employees have problems answering these questions then the Compliance department is there to help them. And the most important question is the fourth one: Am I prepared to accept personal responsibility for my actions? In other words, would I be happy to read about my actions on the front pages of the international press? If the answer to all these questions is “Yes”, then I would say “Don’t worry, just do it” because if this is the case then the potential action cannot be that wrong. This is a very simple programme.

It sounds simple. But are all the guidelines always that unambiguous? Are the limits always clearly defined?
The company’s employees mostly know what they can and cannot do. But of course rules need explaining. Guidance in this respect is an important responsibility of the Compliance department. For example, if employees are unsure if they can invite a business partner to dinner or to a company event, they need some help here.

What would this look like?
I’m thinking of a scorecard system which enables employ-
ees to use a points system to make the majority of their decisions autonomously. A prerequisite here of course is that we have motivated, independent-minded employees who are not afraid of making decisions. Points would be awarded by the employee answering questions, for example regarding an invitation: these answers would then be evaluated. If a certain score is exceeded then the employee is instructed to inform the Compliance department. The system thereby enables decisions to be made independently while creating transparency and giving employees and customers a sense of security.

Would this enable you to ensure that all employees around the world always obey the rules?
No, I would not be able to do that. We all have to accept that even the best compliance programme is not going to preclude improper conduct by certain individuals. A company reflects society at large and unfortunately there are employees who flout the rules. But our compliance programme puts us in a position to be able to detect improper conduct and take appropriate action.

The OECD has been fighting corruption for the past 20 years, yet it still remains an issue. It seems to be a bit like tilting at windmills ...
But I know of no country that would allow corruption. I am already seeing improvements. Once we have fully set up our own structures sometime within the next year, I envisage that we will start seeking allies throughout the world to help fight against corruption – right in the very countries where corruption seems to be rife. Ferrostaal could derive immense benefit from the decades of experience acquired in those countries in order to persuade private and public organisations to sign anti-corruption declarations, similar to the methods of the World Economic Forum. My vision is of everybody straining every sinew to ensure that Ferrostaal is synonymous worldwide with anti-corruption.

Compliance underpinning sustainable business operation

Sustainability is of major importance for Ferrostaal. In order to safeguard sustainable growth, the company depends on efficient risk and compliance management. Any conduct in violation of laws or regulations constitutes a significant risk to the company’s sustainability. Contravening rules inevitably results in negative consequences such as severe financial penalties or trading bans. The associated damage to the company reputation is difficult to redress. There is a demotivating effect on those employees who do actually identify with the company’s values. There is a need to minimise all these negative effects. The objective of sustainable compliance is therefore to embed basic principles into the company which require all activities to conform firstly to statutory laws and regulations while also adhering to the company’s internal guidelines and values.
Systematic junior staff development at Ferrostaal

The basis for a sustainable personnel structure is a body of excellently qualified junior staff. With its young professional recruitment programmes, which are a top priority in the company, Ferrostaal offers a wide variety of possibilities for entry into the working world.

Ferrostaal relies on the systematic promotion of young talent. Whether it is a trainee programme, combined study or an apprenticeship, the company provides first-class programmes to further job entrants in their professional careers and personal development. Ferrostaal’s investment in young people is also shown by the rise in the number of junior staff in the company in Germany since 2006. Awards prove that Ferrostaal is an attractive employer for talented junior staff. In 2008, for instance, the group won the MAN Best Practice Award for its unique international training programme, which allows all apprentices to spend three months abroad. In 2010, the Internet platform and job market praktika.de presented Ferrostaal with an award for the best internship programme in the category “Large Companies”. The company was also included in the list of Top Employers for Engineers for the second time.
International training
One way of joining Ferrostaal is through vocational training. As an international enterprise, Ferrostaal attaches great importance to its young apprentices improving their intercultural competencies and developing language skills. As Patrick van Triel, a wholesale and international trade apprentice, says, “Every apprentice gets an opportunity during their training to work for three months in one of Ferrostaal’s many organisations abroad. That is what makes the training here special.”

Ferrostaal also offers qualified school leavers an opportunity to combine their training with a course of study at the Duale Hochschule Baden-Württemberg (Dual University of Baden-Württemberg) in Mannheim, Germany, and to gain valuable job experience abroad. This course consists of three-month theoretical phases at the university and three-month practical periods in the company. The programme was introduced in 2007 and the first graduates will end their studies with a Bachelor’s Degree this autumn.

Entry and support during studies
Many students first find their way into the company by way of an internship. One of these is Anselm Berlit, who first completed an internship and was then accepted into the company’s own study support system. “Thanks to the study support, I have always kept in contact with Ferrostaal,” he says. This has paid off, as the 26-year-old has now been working in the Group headquarters in Essen since October 2009, first as an International Graduate Trainee and, since July, as Personal Assistant to the CFO (Chief Financial Officer). Study support provides a bridge between internship and the trainee programme. Participants remain in close contact with the company and have the possibility of a foreign internship in one of its more than 60 foreign companies worldwide. The aim is to keep qualified candidates in the company after their internship and to get them back on board when they have successfully completed their studies. As Mr Berlit says, “The study support system is a good instrument for attracting students to Ferrostaal and for keeping in touch with them during their studies. Thanks to the internship, I gained an insight into operational procedures and this was a great help in my studies.”

Career entry as a trainee
The trainee programme was launched in 2006 with the aim of preparing university graduates for management and specialist functions through “on the job” training. Important elements are the rotation through different units, the periods spent abroad and systematic further development measures. “After my studies I first did an internship at Ferrostaal and, since the beginning of April, I have been a trainee specialising in quality control. I decided on this way of starting my career because the programme is an excellent personal and professional preparation for my work later on,” explains 28-year-old Pawel Pietryga. Bernd Retzler, a trainee at Ferrostaal since October 2009, says, “The programme makes it possible for me to get to know the different parts of the company and, in this way, to establish a network of contacts which is extremely useful for me in my work.” Federica Pelzer, another trainee, declares, “What I particularly appreciate is the intensive supervision by my mentor, who gives me great support with planning my trainee programme and with the development of my future career.”
This year the company, with its rich history, is celebrating its anniversary, thus marking 80 years since its entry into the Essen Register of Companies as a public limited company in 1930. This Series edition focuses on the milestones defining an 80-year-old success story.

On 17 September 1930, Ferrostaal Aktiengesellschaft was entered into the Essen Register of Companies. Right from the beginning, the company set its sights on internationalisation, setting up subsidiaries and sales offices in Europe, North and South America as well as in Asia, and starting business activities in a large number of countries. Business operations focusing on light railways, road construction machines, diggers and cable cars were of great importance. In the form of a compensation contract, Ferrostaal supplied Iran with industrial goods and railway material in return for cotton, wool, mineral ores and grain. At the end of the 1930s, Ferrostaal boasted 331 employees.

During the Second World War, the company headquarters was completely destroyed during an air raid attack. Shortly afterwards, operating activities were resumed in temporary offices. The trading house established itself again on the domestic business scene (steel trading) and in the traditional markets of South America through business in light railways, compartment coaches, locomotives, steel rails, tank wagons, ships and bridges. The end of the 1940s saw a new headquarters built in Essen.

Tradition and change

This anniversary year allows Ferrostaal to cast a look back over its exciting and varied history. Originating from the Dutch company Ferrostaal N.V. and the German mining and metal works Gutehoffnungshütte Aktiengemeinschaft für Bergbau und Hüttenbetrieb (GHH), Ferrostaal’s 80-year-old history has seen it develop from a trading house into an industrial service provider in the international plant and machine business. With a worldwide
network, it has always managed to adapt to changing international conditions and to set itself up to secure operational success in global markets right up to the present day.

In 80 years, Ferrostaal has implemented large projects across a host of different industries and regions. In line with its Best Partner business model, the company has always brought customers and partners together and its tradition dictates that it stands for tailor-made solutions adapted to meet the requirements of its customers. The company structure as it is today has a diversified set-up, focusing on the renewables, power, petrochemicals and machinery business areas. The examples selected here represent many of the outstanding projects accomplished over eight decades – milestones from 80 years of Ferrostaal history.

In the 1950s, Ferrostaal was instrumental in the sustainable and innovative development of industries in the countries of Latin America, Africa, Asia and Eastern Europe and thereby aided the integration of these countries into the global economy. In 1953, the company’s employee count stood at 646. One of the group’s first major projects was the turnkey construction of a steelworks with a capacity of one million tonnes per year for Sociedad Mixta Siderurgia Argentina (Somisa) in San Nicolas, Argentina, in 1957. This marked the beginning of a collaboration with the customer Somisa lasting decades which saw the completion of important projects for extending the plant, such as three 200-tonne converters and a continuous casting unit.

In the 1960s, Ferrostaal acquired further large project orders for constructing plants for the steel-manufacturing industry in practically every country in Latin America, Africa and in Asia, all of which led to the company notching up its first billion-deutschmark sales figure. The company operated as a general contractor or as a consortium partner. In 1963, the group was commissioned for the first time as a general contractor by the Peruvian state-owned steel company Sociedad Siderurgica de Chimbote (Sogesa) to build a turnkey steelworks with an annual capacity of 350,000 tonnes including a furnace and the accompanying infrastructure (see picture above). The steelworks made a significant contribution to the economic development of Peru at that time.
1973 saw Ferrostaal receive an order to build a direct reduction plant in Cilegon, Indonesia (120 kilometres west of Jakarta). The customer was P.T. Krakatau Steel, still Indonesia’s largest steel producer today. At the time, this steelworks represented the country’s most ambitious industrial project up to that point. The iron and steel works boasted an annual capacity of 500,000 tonnes as a result of the direct reduction process, while the continuous casting plant’s output stood at 250,000 tonnes (see picture above). As the 1970s began, Ferrostaal’s sales reached two billion deutschmarks and the company had 800 employees on its books. In 1977, the company headquarters moved into the building where it currently resides.

1981 saw Ferrostaal acquire an order from Mexican steel company Siderurgica Lazaro Cardenas (Sicartsa) to build a large iron ore direct reduction plant with a two-million-tonne annual capacity. The plant constituted the second stage of Sicartsa’s plans to construct a plant complex to produce steel, including rolled steel. This project created the first large commercial plant to use the Hyl III process. In 1986, the parent company name GHH AV (Gutehoffnungshütte Aktienverein) was changed to MAN AG. One year later, Ferrostaal received a contract for major projects for the petrochemical industry in Venezuela and Chile. This resulted in the company establishing a new industrial division.
1990 marked the start of the Ferrostaal success story in Trinidad and Tobago's petrochemical business. 1993 saw the completion of the first methanol plant with an annual output capacity of over 500,000 tonnes for the Caribbean Methanol Company. Contracts for five more ammonia and methanol plants followed, with Ferrostaal providing investment in its role as general contractor. This placed Ferrostaal, along with its partners, among the world's largest methanol producers. From 1996, Ferrostaal began business operations in the automotive sector, producing modules for major customers such as General Motors and Ford.

In 2005 in Trinidad, construction of the M5000, the world's largest methanol plant, was completed. Two years later, the MO3000 methanol plant in Oman was put into operation. In 2007, the group received an order from Methanol Holdings Trinidad Limited (MHTL) for a plant complex designed to produce fertiliser and melamine in Trinidad and Tobago (see picture above). The complex features seven plants and represents the largest contract acquired in the company's history, worth 1.6 billion US dollars. Also in 2007, the company handed over responsibility for its international steel trading activities to Coutinho & Ferrostaal. Ferrostaal took over the Portuguese power station manufacturer Koch de Portugal, thereby extending its range of assembly skills. In 2009, the International Petroleum Investment Company (IPIC) in Abu Dhabi purchased a majority stake in Ferrostaal from MAN. With the construction of the solar thermal power plant Andasol 3, the Essen-based Group 2009 acquired its first major solar power contract.
Enhancing the Venezuelan power supply

In July 2008, Ferrostaal was awarded two large EPC orders with a total volume of 730 million euros for the turnkey construction of two gas-steam turbine power plants for ENELVEN (Energía Eléctrica de Venezuela). Originally, one plant was to be built in Tamare and the other in Bachaquero in Venezuela. The receipt of the Letter of Credit in December 2009 meant that the last requirements had been satisfied for the two orders to come into force.
As the general contractor, Ferrostaal, together with its subsidiaries Ferrostaal Lda, Ferrostaal Industrial Projects and Ferrostaal ProCon de Venezuela Engineering, is responsible for purchasing, construction, assembly and commissioning of the two combined cycle power plants, each of which will have an electrical output of around 500 megawatts.

In mid-March of this year, in response to the customer’s request, it was decided that the power plant which was to be constructed in Tamare should be built in Bachaquero. One gas-steam turbine power plant is scheduled to be completed by July 2012, the other by the end of 2012. The two power plants are largely identical in design and will be constructed by the same team just a few months apart. The experience gathered in the first power plant and the synergy effects will enable the second to be completed and commissioned more quickly. Before the agreement came into force in late 2009, Ferrostaal had already performed important preparatory work in the fields of engineering and purchasing, construction site installation, drainage and levelling at the Bachaquero location on the basis of Early Works Agreements. After the agreements had come into force, our staff pressed ahead with work on the construction site. Piling began in March and work on the foundations in May. The first large plant components, such as the gas turbines and pipework, are due to be installed in autumn.

**Two times 300 megawatts in 2011**

Due to the tightness of their power resources, in March of this year the customer expressed a wish to be able to generate electricity ahead of schedule. "Naturally, we are going
to accommodate the request of our long-standing customer ENELVEN,” says Lothar Somborn, Head of the Power Industry business unit at Ferrostaal. “We will do everything we possibly can to ensure that by April 2011 we achieve the first ignition of two gas turbines of the first power plant, which will generate 300 megawatts, and to provide another 300 megawatts with two gas turbines in the second power plant by June 2011. This will enable the customer to feed a total of 600 megawatts into the Venezuelan power grid. Naturally that’s a great challenge,” explains the manager.

But as an international plant constructor, Ferrostaal is also used to working successfully under great time pressure and difficult conditions. In this project it is particularly important to take the strict import regulations in Venezuela, the high risk of strikes and bottlenecks in the supply of raw materials and building materials into consideration at the planning stage. Here, too – as so often – the local representatives of Ferrostaal, who are thoroughly familiar with the conditions in the country, provide an advantage. But the interaction and efficient coordination between the partners and also the suppliers and customer are particularly important for the construction of the two plants. Luis Lamas, the project manager, comments: “This is our core competence. We are used to moulding different partners into a team. And we have to do this if we want to build high-quality plants successfully within the given timeframe and budget. Each project consists of more than 4,000 individual activities which need to be managed and coordinated sensibly. Trust, partner-like cooperation and openness to criticism are necessary for the parties involved to work efficiently with each other.”

Greater security of supply
For the Venezuelan government, the two new power plants represent an important step in its plan to modernise the power supply and expand capacities. In addition, one aim is to reduce the dependence on hydroelectric power because the country has for some time suffered from severe drought, which is blamed in part on the weather phenomenon El Niño. Currently, three hydroelectric power plants on the Guri reservoir generate around three quarters of Venezuela’s electricity. But because the water level there has sunk alarmingly owing to the long-term absence of rain, power and water have recently repeatedly had to be rationed. “In total, the government is investing more than 1.7 million US dollars in the two power plants at the Bachaquero location in order to improve the power supply. In doing so, it is aiming to support the oil industry, but also to guarantee the power supply for more than 120,000 fami-
ilies in the region,” comments ENELVEN Vice-President Edgar Torres.

Increasing the power production capacities is therefore of great significance for oil production – the country’s most important asset – and reflects the approximately five percent increase in demand for electricity in the country. Af-

ter all, the Bachaquero location, on the eastern shore of Lake Maracaibo in Zulia state, is an important centre for the oil and gas industry in Venezuela. Another advantage for the region is that over 1,000 Venezuelans will be employed during the construction period.
Ferrostaal is working together with the California-based technology partner eSolar to expand its activities in the area of solar thermal power plants. Starting in February this year, the company has been cooperating with this manufacturer of modular and scalable solar tower technology to develop and implement turnkey solar power plants.

According to the cooperation agreement regulating future joint projects, eSolar will provide the technology and receivers for the solar field, while Ferrostaal will operate as general contractor and be responsible for the design, material procurement and construction (EPC) of turnkey plants and power plant blocks as well as project financing.

Expanding expertise in the area of solar technology
Solar energy is one of Ferrostaal’s core businesses. The company has been expanding its solar business operations and together with strong partners has been focusing its efforts on three main areas: solar thermal power plants, solar cooling and the use of solar process heat for seawater desalination plants. By teaming up with eSolar, Ferrostaal is now able to market a new extremely efficient variant of the solar thermal power station, in addition to parabolic trough technology and the Fresnel-based plants. “This enables us to expand our project offering, in particularly attractive sun-rich countries like Spain, South Africa and the United Arab Emirates, and will also help secure us a place in exclusive markets”, says Tom Koopmann, who together with Dr. Rainer Kistner is in charge of the Solar Energy business unit. “Thanks to our many years of engineering expertise, we are
in a position to maximise the extremely high efficiency of the solar tower farms. After all, as an experienced general contractor in plant construction with know-how in areas such as project development, management and financing we are able to realise projects at the highest level.”

**Concentration on a single tower**

Solar tower technology is based on a modular system comprising reflector collectors and tower segments with an output capacity of five megawatts each. Thousands of single reflectors tracking the sun’s progress are able to concentrate the sun’s radiation on the receivers installed on the solar towers. They in turn heat up the water which is converted into steam that drives a turbine. The steam turbine in conjunction with a generator produces current. High-end software engineering performs the controlling operations on reflector components that take up one to two square metres so that every single ray of sunlight is optimally exploited. Only then is there the capacity to fulfil the need for reliable and competitive solar energy. Thanks to pinpoint focussing, the tower technology is able to achieve an extremely high concentration of energy and even reach working temperatures of over 1,000 degrees Celsius. Under these conditions, solar thermal heat can efficiently generate electricity in the thermal power plant process located downstream. However, in order to keep the technological risk of the first commercial plants as low as possible, the current engineering approach taken by eSolar is to limit the working temperatures to approximately 440 degrees Celsius. But that means that the technical potential of the solar tower is by no means fully utilised. In the coming years, advances in receiver and process technologies are expected which will make the deployment of such plants much more efficient and also cost effective. The biggest advantage of the eSolar technology is in the standardisation of their individual components. This permits industrial, serial production of large numbers of parts, making it possible to build plants quickly, flexibly and at minimum cost. Reflector collectors can be assembled quickly and easily on the ground. Low maintenance is another added benefit which is due to the plant’s high degree of automation.

**Comparison of solar thermal power plant technologies**

- **Reflecting concentrator surface**
- **Tracking mechanism**
- **Receiver/absorber**

In the case of solar parabolic trough technology, mirrors use optical focus techniques to concentrate solar radiation on a central receiver tube. This tube contains a heat-conducting medium circulating in it that is heated up for later use in various industrial processes. This technology has been in successful use now for 20 years.

- **Solar radiation**
- **Secondary reflector**
- **Primary Fresnel reflectors**

Fresnel technology employs several flat mirrors that are rotated in such a manner that they are able to focus sunlight onto a fixed absorber located above the reflector or mirror field. The absorber consists of a secondary reflector with an absorber tube located in its centre. Inside this is water that is heated up directly and evaporises. This technology has already been tested successfully in pilot power plants.

- **Solar light**
- **Solarium with absorber**
- **Heliostats**

Solar tower technology features the automatic positioning of reflectors (heliostats). They are aligned so that sunlight is reflected on the central absorber (receiver). Due to the concentration of solar radiation, very high temperatures are generated at the tip of the tower. The thermal conducting medium (comprised of molten salt, steam, air) becomes heated and can subsequently be supplied to a thermal power process to generate electricity.
Using modules for tailored adaptations
Thanks to the modular approach, these power plants can be expanded at will. One module has a capacity of 2.5 megawatts and consists of one tower, one receiver as well as approximately 12,000 reflectors. This requires a surface area of around ten hectares. Despite a high degree of standardisation, these power plants can be adapted to comply with specific local requirements. The deployment of solar power plants is not restricted to flat surfaces. Hilly terrain is also fundamentally well suited for this technology, thus opening up possibilities for site development throughout the world.

In August 2009 eSolar put the first large-scale solar tower power plant comprising two modules into operation in California. The site has 24,000 reflectors and two solar towers installed covering a surface area of 20 hectares. The “Sierra Sun Tower” has an output capacity of five megawatts and supplies electricity to more than 4,000 homes in Antelope Valley, California. Ferrostaal and eSolar are currently teaming up on a solar project in South Africa.

<table>
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<th>Parabolic Trough</th>
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<th>Parabolic Trough (Solar Cooling)</th>
<th>Solar Tower</th>
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<tr>
<td>25.1%</td>
<td>42.8%</td>
<td>20.1%</td>
<td>Exclusive Partnership</td>
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Ferrostaal investment participations and cooperations in the area of solar energy
In August 2009, Ferrostaal, together with Flagsol, Solar Millennium and the Spanish firm Duro Felguera, received the order for construction of the parabolic collector power plant Andasol 3. Together with its partners, Ferrostaal is providing the EPC services, with an order volume of over 300 million euros. The construction work at the site near Guadix in the southern Spanish province of Granada is now at an advanced stage.

By the end of 2009, the earthworks had been completed, the foundations for the collectors had been laid and the points for the anchoring bolts in the foundations had been measured out. An unusually hard and wet winter brought a temporary halt to the construction work. To make up for this delay, additional workers were employed, meaning that, since April 2010, about 350 employees have been working at full speed on the site. The 210,000 parabolic mirrors are almost completely installed on the 200 hectare solar field (equal to the size of Monaco). Half of the field has been completed mechanically, while piping work is still going on in the other half. The underground construction for the 50 megawatt steam turbine, the generator, the steam condenser and the administrative and control building is well under way.

Work on the foundations and insulation of the two large salt tanks, each 15 metres high with a diameter of 40 metres, is at a very advanced stage. These tanks will contain the plant’s thermal salt reservoir. “By passing the molten salt from the salt reservoir through the heat exchanger together with a heat-carrying oil, the plant can also produce power at night,” explains Dr. Rainer Kistner, Head of the Solar Energy business unit. “This works as follows: In the heat exchanger the oil gives up its heat to the molten salt. Then, with this liquid salt, heated to almost 400 degrees Celsius, the oil can be heated again as required using the same heat exchanger. This, in turn, is used to generate steam which drives the turbine.” The thermal reservoir contains approximately 30,000 tonnes of salt and its capacity is sufficient for 7.5 hours of full load operation. The eight heat exchangers which are still missing will be installed on the steel structure between the two salt tanks at a height of about 20 metres. The filling of the heat transfer oil in late autumn of 2010 and the melting of the crystalline salt in early 2011 will be important milestones for the project.

Andasol 3 is due to go into commercial operation in the summer of 2011 with an output of 50 megawatts and will then supply about 200,000 people with environmentally friendly power.

More information at: www.ferrostaal.com/andasol3
PROJECTS
Expansion of the petrochemical industry in Venezuela

Since 2007, expansion of the petrochemical industry and intensive utilisation of natural gas reserves have been on the political programme of the Venezuelan government. Ferrostaal has been carrying out projects in Venezuela for nearly 60 years and making a lasting contribution to the country’s industrial development.
Fertilisers for Venezuela

In June 2007, the state-owned customer Petroquímica de Venezuela (PEQUIVEN) awarded international firms, including the Ferrostaal Group, orders for the construction of a petrochemical plant for fertiliser production. The total investment volume for the whole complex is about one billion euros. The Ferrostaal Group’s share covers the turnkey construction of the ammonia plant in the complex.
The petrochemical plant for the manufacture of fertilisers is being constructed in Venezuela, in the state of Carabobo, or, to be more exact, in the small town of Morón on the Caribbean coast. There is already an old fertiliser factory operated by PEQUIVEN on the site and this is to be replaced by the new, modern and efficient plant. The Ferrostaal Group is responsible for the ammonia plant, the Japanese Toyo Group for the connected urea plant and the Venezuelan firm Y&V Ingeniería y Construcciones for the ancillary installations. Ferrostaal is the commercial coordinator of this group (THE ECHO December 2007). The assembly work for the ammonia plant is carried out by MCM Construcciones y Montajes, a 100-percent Ferrostaal subsidiary.

The ammonia plant will produce 1,800 metric tonnes of ammonia per day and the urea plant, 2,200 metric tonnes of fertiliser granulate. “The model for the ammonia plant is a plant in Trinidad and Tobago, the construction of which was completed by Ferrostaal in August 2004,” says Adalbert Graff, Head of the Petrochemical Industry business unit at Ferrostaal. “Thanks to the identical design and our decades of success in the construction of petrochemical complexes, we have been able to hold our own successfully in international competition. The impressive performance of the plant on Trinidad also helped to convince the customer.”

Fast construction progress in spite of setbacks
The assembly progressed in leaps and bounds. By March 2010, 87 percent of the entire petrochemical complex had
been completed. Large components for the ammonia plant, such as the synthesis converter and the CO₂ stripper, were installed at the end of 2009. For the transport of these components to the site, a sea-ramp had to be specially built off Morón because although the road between the actual destination port in Puerto Cabello and the site was well constructed, it was nevertheless unsuitable for these huge loads (more on page 36). By April 2010, the main items of equipment, including stripper, CO₂ absorber, chiller, all converters and the steel construction and pipe bridges had been almost completely installed. “In spite of heavy rains and interruptions to the work because of local power supply problems, as things stand, we shall be able to commission the ammonia plant punctually, within the budget and to the required quality in April 2011,” says Klaus Scherzer, Site Manager in Morón. As Site Manager, Mr Scherzer is responsible for the completion of the plant and for compliance with HSE standards on the site.

At present, the MCM team is working flat out, installing the pipelines, the electrical system and the measurement and control technology. “About 900 people are making sure that, day by day, the ammonia plant gets nearer to completion,” says Mr Scherzer. “There are currently about 2,500 employees working on the whole complex site, most of these being local employees.” The next steps will be the preparation of the training units (simulator, classroom and host plant training) for PEQUIVEN’s operating and maintenance personnel and the commissioning activities. The latter will start in mid-2010 and will last about ten months until the provisional acceptance.
Completion of the urea plant is planned for May 2011. The whole petrochemical complex for the production of fertilisers is then due to be handed over to PEQUIVEN in June 2011.

Growing demand for fertilisers
The long-term aim of the Venezuelan government is to develop the country into one of the leading fertiliser producers in Latin America. According to the International Fertiliser Industry Association, the demand for fertilisers in Latin America from 2010 will grow annually by 2.7 percent and, over the next five years, a 15 percent share in the growth of world fertiliser consumption is predicted for this region. The petrochemical complex in Morón, however, is primarily intended to help make Venezuelan agriculture independent of fertiliser imports.

The rising demand for foodstuffs and animal feed is leading to a continual increase in the use of fertilisers in agriculture. The faster the population grows, the greater the demand for food and, correspondingly, the more has to be grown. Rising prosperity in many countries is also leading to increased consumption of meat by large sections of the population, so animal feed plants have to be grown intensively. In comparison with the production of vegetable food, ten times as much animal feed has to be grown for meat production. On top of this, there is a trend which has become more noticeable in recent years: It is estimated that as much as 27 percent of the fertilisers produced worldwide for plant cultivation in 2010 will be used for the production of biofuels.

More information about Ferrostaal in Venezuela:
www.ferrostaal.com.ve

The petrochemical complex for the production of fertilisers is due to be handed over to the customer in June 2011.
Every large industrial plant includes oversize and heavyweight components – and Morón, in Venezuela, is no exception. During the tender phase for construction of an ammonia plant for the state-owned customer PEQUIVEN, however, a major problem arose. Some components to be transported from the destination port to the construction site would be much too bulky for the road along the coast. Was the whole project to fall at this hurdle? Read how the Ferrostaal engineers overcame this problem.
Only 35 kilometres of road separate the Caribbean port of Puerto Cabello from the point on the coast where a petrochemical complex for the manufacture of fertiliser is being constructed in Morón. This port is the project’s gateway to the world, as it is where the imported plant materials and equipment are landed. For the construction of the ammonia plant alone, ten over-dimensional cargos (ODC) are proposed. For this purpose, the well-developed coastal road connecting the docks and the site has to be examined in detail. Will the cargo convoy get through the gaps? Is the road wide enough at all points? Are the components too heavy? Initial fears are confirmed by the study of the route – the road is out of the question for at least two of the ODCs. There is no way a 450-tonne synthesis converter and a 72-metre-long CO2 stripper can be transported along the road. But the components have to get to the ammonia plant under construction punctually and undamaged in order to be installed in line with the time schedule.

Off to new shores
The painstaking analysis confirms it: The transportation will have to be carried out by sea. The calculations by the Ferrostaal engineers show that the shipment can only be delivered on time using the sea route from the port of Puerto Cabello to the site, about eleven nautical miles away. But the team first has to create the right conditions on the coast near Morón to enable the components to be landed. For this purpose, a subcontractor is appointed to build a massive stone transport ramp into the sea directly in front of the site. Studies show that the ramp must have a total length of 130 metres and a width of ten metres, so that the head of the ramp can reach a minimum water depth of 2.2 metres. This is because of the shallow water, a typical feature of the Caribbean. And even with a ramp this long, a shallow draught barge has to be found to make it possible for the heavy components to be landed on the ramp using the Ro-Ro (roll-on/roll-off) system.
Unexpectedly, the partner originally planned for construction of the ramp is no longer available. Then, in September 2008, Ferrostaal appoints an experienced, but small, local building firm. Eleven months pass from the initial planning and procurement of the environmental and construction permit to the completion at the end of August 2009.

The perils of the sea

The project team is confronted by changing depth conditions off the ramp. A wandering sandbank threatens to prevent the docking of the barge. The team has to monitor the depth conditions off the head of the ramp through continuous measuring. Local divers assist in these activities and examine the seabed for obstructions in the navigation channel.

Meanwhile, another challenge reveals itself: the search for a suitable, self-propelled, ocean-going barge. This has to meet the requirement for a shallow draught and have the necessary load capacity. Either a Venezuelan or a foreign barge has to be found. The latter, however, would need a permit for sailing from one port to another in Venezuelan waters, and this could be very time-consuming. In their search for a suitable barge, the Ferrostaal team checks all the possibilities in South America – from the Amazon in Brazil to the Orinoco in Venezuela. The choice is not great and all the barges in question are already in use. Finally, they charter a suitable vessel from Panama, but its bow ramp has to be widened by three metres to load the widest piece of equipment. The local team has managed, just in time, to get the permits from the port authority for use of the ramp. But these are only temporary – the ramp will have to be removed again before the project is completed.
Heavy parts from Europe
In October 2009 the moment has finally arrived: The 450-tonne synthesis converter and the huge CO₂ stripper are at last collected by the barge from their temporary storage in the port of Puerto Cabello. They had been transported from Europe to the port of Puerto Cabello on a big-lift vessel specially chartered for this purpose. The dimensions are impressive: the converter measures 32 metres in length and, including low-loader, is 8.5 metres wide. The CO₂ stripper meanwhile is 72 metres long and, including low-loader, 6.5 metres wide. During the loading of the barge, which looks flimsy in comparison with the ocean-going vessel, the project team holds their breath. But everything goes smoothly. Both the construction of the ramp and the heavy transport are supervised by an experienced captain.

High waves and a strong current make landing on the ramp more difficult. Will everything go well? Or will the barge have to return to the port without unloading? The problem is solved by using a tug for stabilisation: The barge can dock. Special trailers now carry the equipment components at walking pace to their final assembly site. The action goes as planned and the heavy transports reach the site safely. But the team can breathe again – the timing is perfect. This transport operation had to be carried out in close coordination with the assembly sequence and the individual assembly items in order to avoid considerable delays and additional costs. Months in advance, a 1,200-tonne crane had been specially leased for a short timeframe to place the oversized components in position.

Exceptional problems led to exceptional solutions. A distance of just 35 kilometres could have seriously threatened the punctual construction of the ammonia plant. The spectacular shipment manoeuvre was a significant milestone in the handling of the project. Its successful conclusion represented an emotional high point for all those involved.
Strategies for the future in the printing machinery business

The global economic crisis led in 2009 to a fall in orders by 41 percent for manufacturers of printing machines, says the VDMA, the German Engineering Federation. The sector had never previously experienced such a drastic slump. On top of this, Ferrostaal was confronted in February of last year with the surprise termination by manroland of its representation contract for printing machines. However, these circumstances have been used by the industrial service provider as an opportunity to establish itself completely anew in this sector, which accounted for about seven percent of its worldwide sales in 2009.
The unit, under Executive Board member Joachim Ludwig, has re-equipped itself for a successful future. It now has a wider product range, enhanced services throughout the printing process and new representations in the machine segments for sheet and roll-fed printing as well as digital printing. In the printing sector, in addition to Ryobi and Manugraph, for example, the firm now also represents the manufacturers TKS, Komori and HP in selected markets.

Ferrostaal has departed even further here from simple sales business, transforming itself into a system integrator and a single source supplier of complete solutions. After-sales services such as repair, maintenance and supply of consumables, printing plates and chemicals are now included in its service package. As Mr Ludwig says, “In future, these services will account for a large share of EBIT in this business segment. Our strategy has been to reduce our dependence on one supplier and one product and to open up new areas of business in the core markets. In this process, we have entered cooperations for different customer requirements, regions and markets with vendors who supply extremely good products in their market segments. This strategy will succeed because it stems from the actual needs of the printing houses.”

A sector under pressure
The crisis and increasing competition are forcing the sector to improve its flexibility and productivity. In order to maintain their previous market position, both printing machine manufacturers and printing houses are compelled to open up new sources of sales and income. Long-term competitive advantages for both products and services can only be achieved with a portfolio tailored to the needs of the buyer. The corporate structure and culture of printing houses, however, is traditionally not very commercialised and the variety of products and range of services offered is therefore restricted. So it can be beneficial for printing houses to collaborate closely with firms like Ferrostaal which are accustomed to supplying solutions and services for customers. In close collaboration with the printing houses, Ferrostaal applies itself to real problems faced by
the printing houses and their customers. Ferrostaal not only undertakes the financing and general consultancy, but takes over specific problem jobs from the printing houses, advising on acquisition and optimisation of the workflow or determining the requirement for consumables.

**Production in integrated environments**

A well-balanced workflow is the backbone of every production operation, and this applies particularly in the graphics industry. The aim is effective order planning, quick machine set-up and the automation of recurring processes. Modern workflows are based on manufacturer-independent standards and will in future integrate all sections of the printing firm. So, especially with its broader set-up and as a manufacturer-independent service provider for all the machines involved in the printing process, from prepress to post-production, Ferrostaal is a ground-breaking partner for the printing industry. It can give sound advice on machinery investments, for most of the questions on this subject today already relate to the workflow. In this way, it can integrate machines from different manufacturers to create an optimum system meeting the requirements of its customers. The Ferrostaal service package also includes tailor-made financing concepts on the basis of supplier credits in common currencies such as the euro, the US dollar, the yen, the Swiss franc and the British pound.

In some regions, the firm has made such impressive progress with its implementation of the new concept that it can again face the future with optimism. Markus Haefeli, CEO of the subsidiary Ferrostaal Australia Pty Ltd, which concentrates on business in the printing sector in Australia and New Zealand, believes it is now well equipped not just to raise sales, but to raise it well above the previous level.
In close coordination with its customers

The way Ferrostaal companies are repositioning themselves in different countries and continents is shown by the example of Australia.

Between September 2009 and March 2010, Ferrostaal Pty Ltd restructured itself. It now represents Komori Press, Fuji, Canon and Osako in the Australian and New Zealand markets and also offers comprehensive services for the printing industry. As its CEO, Markus Haefeli (top r. in photo) says, “Since we lost the manroland representation, we have had a very Japanese bias in our representations. We have taken over the representation of Komori in our markets from CPI, an Australian firm. Komori is the second-largest producer of sheet-fed printing machines and was our first choice. We are very glad that this wish could finally be fulfilled. As we also took over Komori’s workforce, we were immediately in a position to offer our customers excellent expertise and comprehensive services from our own engineers.”

As modern printing houses also have to offer digital printing, Ferrostaal’s Australian subsidiary has also added this segment to its portfolio. Mr Haefeli does not believe that digital printing will replace offset, but sees digital printing becoming increasingly important and accounting for a significant share of printing house profits. Mr Haefeli is aware that the market has undergone a complete transformation. “The margins that can be earned today by both printing houses and suppliers have changed fundamentally. We have to collaborate more closely, working together on solutions for the future. We at Ferrostaal must therefore listen carefully to what our customers require, what problems they face and where they need support,” says the 48-year-old executive. In the past months, he has proved that these are not empty words. The Swiss-born CEO conducted intensive discussions with more than 30 printing houses at the end of last year and then oriented his portfolio to the requirements of the customers. “We are familiar with the needs of printers and we know how we can meet them,” says Mr Haefeli.

In addition to the sale of printing machinery, the firm offers comprehensive services for the integration of machines. Well-trained employees also give advice on many questions facing printing houses, such as the creation of business models and business plans, market entry strategies and pricing. “These services have been very well received by our customers,” comments Mr Haefeli. One example illustrates this: his employees have also developed software linked to the workflow of the printing houses’ customers. A virtual store makes it possible to deliver consumables to printing house customers directly as they need them. “Workflow is critically relevant and will continue to grow in importance in the future. That is why, in close collaboration with our customers, we are developing solutions for optimisation of the workflow. That is what distinguishes us from the competition,” adds Mr Haefeli. He is optimistic that, with the new business complementing the previous portfolio, he can grow to become the largest supplier to the Australian printing industry. How quickly he will achieve this remains to be seen. But one thing is certain. He has grasped the opportunity offered by the crisis, and Ferrostaal Australia is already growing. This spring, more offices were opened in Adelaide and Wellington and new employees were hired.

You can find out more about our products and services in Australia at: www.ferrostaal.com.au
Ferrostaal's portfolio in the printing machine sector varies in different countries and regions. The example of Australia shows the variety of suppliers in each region, making tailor-made solutions possible for every customer.
SERVICES
Expansion of environmental activities

Waste materials are raw materials. The possibilities of using them again have led to the establishment of a new branch of industry which Ferrostaal has recently entered with its Services division.
Waste – a secondary raw material

It is not only Europe and North America who have been gripped by resources fever. The subject is also high on the agenda in other countries. Through more efficient processes and the increased application of recycling, in which raw materials are recovered and used as so-called secondary raw materials, many millions of tonnes of primary raw materials and CO₂ emissions can be saved. This also brings social and economic benefits. Environmental and recycling technologies create new jobs, promoting small and medium-sized business structures and independence from primary raw materials.
Ferrostaal has expanded its environmental activities and is not only active in plant construction, building solar power and biodiesel plants, but also, recently, in the services sector with machines for recycling and environmental technology. As an independent partner of industry, it represents well-known suppliers in the sector, offering everything from a single source, from financing through to consultancy, the integration of machines to form system lines as well as maintenance and repair solutions.

The portfolio is very varied: odour elimination in sewage plants, treatment of industrial effluents, recycling of electrical, electronic and metal scrap, refrigeration units, car tyres and plastics as well as sorting plants for the treatment of domestic refuse. The firm has its focus mainly on the markets in which it has its strength, namely Latin America, Asia and the MENA region. As Joachim Ludwig, member of Ferrostaal’s Executive Board, says, “Many European countries are established markets for environmental technology and recycling plants, so these markets have already reached a high degree of saturation. We prefer to direct our attention to the developing markets, as they will have more need and more demand for these technologies in future. There are excellent and innovative solutions available from manufacturers in Western Europe and these technologies offer financially feasible entry concepts, particularly for developing and emerging countries which is why we want to position ourselves there in good time with our range of products and services. We also know the potential customers from our decades of local activity.”

**First successes**

This March, the contract for the first recycling plant for the treatment of cable scrap went to Gulf Star Metals in Ajman in the United Arab Emirates. The plant, made by the Danish manufacturer ELDAN, can process 2.5 tonnes of cable per hour and enables separated materials to be reutilised. The machines, which are currently being installed, will go into operation shortly. “It is a great advantage for the customer that we are always available locally for consultation, so we can provide them with advice and assistance from the financing stage through to commissioning and after-sales service,” says Dr. Thomas Kaup, who is responsible for establishing the new area of activity at Ferrostaal. Another success has also been recorded for sales of environmental technology in Australia, where, at the end of last year, the customer Alkimos Water Corporation purchased an odour elimination unit for a sewage plant through the Ferrostaal subsidiary IPS Australia.

**Example of cable recycling**

Because of their non-ferric metal content, old cables are an important source of raw materials. The composition of different types of cable has continually changed over the years. Alongside copper, aluminium, lead, steel and precious metals like gold, silver and platinum, which can go into new products as raw materials without loss of quality, there are countless variations of insulating material. These range from PE and rubber to various types of PVC and cross-linked synthetic polymers which can also be used for new products in the plastics industry. Old PVC cables, for example, can be used to make PVC floor coverings for cafés and supermarkets and guide barriers for road traffic.
Ecological and health risks

Even if some of the forecasts do not match the reality, the rapid economic upturn in countries like Brazil, China, India, Qatar and Mexico is leading to rising standards of living. While wage levels in the emerging countries are still well below those in industrialised nations, the demand for consumer goods is rising steadily – and, as a result, so is the refuse. It is clear that this development is not only bringing a rise in social and economic opportunity, but also increased ecological and health risks. In many emerging countries, refuse disposal is not environmentally sound. Toxic substances from uncontrolled refuse dumps contaminate the groundwater and the improper burning of refuse in the open air endangers humans and the environment. So, in the medium term, even the emerging countries will have no alternative to reducing their refuse, incorporating ecological standards in their legislation and monitoring their observance. “We have seen a tightening of environmental guidelines over the last few years, especially in Chile and Brazil. Awareness is growing among influential circles and this will ensure that there is a correspondingly increased demand for environmental technologies,” says Mr Kaup.

What is more, the economic development in emerging markets is adding to the demand for resources. China alone today consumes 26 percent of the iron ore extracted worldwide, 37 percent of global cotton production and 47 percent...
of the cement. Even though the technical standards in production have been raised and resources are being used more efficiently, the general trend of increasing consumption cannot be halted. This means that recycling will also become economically attractive in the emerging countries if the processed materials can be used directly in domestic industry. This saves energy and CO₂ emissions, as the extraction of primary raw materials consumes considerably more energy than the production of secondary raw materials. Transport distances are also reduced for the raw materials used.

Increased risk of malaria from old tyres

Used tyres can cause major problems in less developed countries. They often originate as exports from developed countries and not only pollute the environment, but also represent an enormous health risk. On dumps in countries with a warmer climate, water collects in the tyres during the rainy season, offering ideal breeding conditions for mosquitoes, which spread diseases such as malaria and dengue fever. Tyre recycling is a simple measure for effective minimisation of these health risks. Even just shredding the tyres would alleviate the problem, as the water could then run off.
Advantages of recycling

- Reduction of the volume of waste
- Recovery of secondary materials reduces cost increases and scarcity of primary raw materials
- Saving of resources and sustained management, so that there are still enough raw materials for generations to come
- Reduction of damage to the countryside, thanks to the reduced mining of primary raw materials
- Energy saving through multiple use of secondary raw materials in comparison with the extraction of primary raw materials
- Reduction of CO₂ emissions
- Avoidance of harmful air pollution caused by uncontrolled burning
- Avoidance of harmful contamination of soil and water from landfill sites
- Prevention of diseases

Materials recovered from waste recycling can also be used in many types of infrastructure work carried out more intensively in the aspiring economies. Tyre granulate, for example, can be used to make surfaces for sports fields and playgrounds or barrier substances for acoustic insulation. So-called silent asphalt is made by adding rubber powder to bitumen.

Economically worthwhile

The reutilisation of some materials pays for itself without any state subsidy or special legal provisions. This includes the recycling of aluminium, for example. Aluminium is a metal whose properties are not adversely affected after use in a product, so that it can be reutilised any number of times without loss of quality. The high value of the metal is maintained and provides a sufficient economic incentive at the end of its utilisation phase actually to collect, process, smelt and use it again in the same or a comparable way. The same applies to other metals such as lead, copper and steel.

Anyone interested in more information can contact any of the Ferrostaal companies at over 60 locations worldwide.
A brief history of recycling

Recycling is not new: Since ancient times, metals (mainly precious metals) have been remelted to make new products. Rag pickers and dealers took care of the collection, sorting and redirection of wastes. This organisation largely disappeared in the Middle Ages. Before industrialisation, refuse mainly consisted of human and animal excrement, food wastes, shards of clay and glass and, probably, the ash from fireplaces. The “throwaway society” of the industrial age did not exist because of a lack of goods. Articles made of glass or metal were reutilised as a matter of course. With industrialisation, the volume and composition of refuse also changed. When, after the two World Wars, people in the industrialised countries gained more and more prosperity and could even afford luxury goods with expensive packaging, their economies faced an acute refuse emergency: a normal household which, 150 years ago, had got by with about 150 articles, now used more than 20,000 items. In the Federal Republic of Germany in the 1970s, 4.7 kilograms of domestic refuse was produced per person per week. On top of this came waste from industrial production. So the collection of wastes and valuable materials began to be better organised and, with the help of legislation, the idea of recycling was implemented industrially. Protection of the environment and the elimination of waste were declared areas of official responsibility and, over the decades, ministries for protection of the environment have been established in all industrial countries and the reutilisation of industrial waste products placed on the political agenda.
Reaching for the heights with latest technology

After nearly five years of planning, consultation and construction, the time had come. In October 2009, in Krasnodar in the south of Russia, the Central Bank of the Russian Federation inaugurated a modern warehouse complex delivered by Ferrostaal. Thanks to state-of-the-art technology and its own rail connection, the local bank administration can now supply the regional banks with money.
High-bay warehouses are used where turnover volumes are high or where sensitive goods have to be stored. The heart of a high-bay warehouse with an upstream order assembly and dispatch department is a remotely controlled automated storage/retrieval system (AS/RS). Running on a rail, this can serve racks to the right and to the left that have a minimum height of twelve metres up to a maximum of 50 metres. It is usually controlled fully automatically by a warehouse management system (WMS). Goods intended for storage – from shoe boxes to engines – have uniform dimensions or are stored in uniform loading units, such as pallets or containers, after being checked for a specified maximum weight.

In April 2008, Ferrostaal received the order for the complex in Krasnodar in southern Russia. At its heart is an automated high-bay warehouse, installed in an area similar to a vault and equipped with appropriate security technology, delivered and commissioned by Ferrostaal, working with its main supplier MLOG Logistics. It now serves as a cash centre for the storage of banknotes and coins. Notes withdrawn from circulation are also destroyed on the premises.

The combined know-how of an intercultural team was the key to success for this project: The Ossetian, Russian, Dutch and German team was able to ensure its smooth realisation, in spite of complex customs and licensing procedures.

**Fully automated handling**

The high-bay warehouse comprises two stories with a floor area measuring 38 by eleven metres. Three 15-metre-high bay storage/retrieval systems organise 1,620 coin containers and pallets of banknote boxes. A sophisticated warehouse management system, integrated in the bank’s own higher-level computer network, ensures that the correct element is moved in or out of storage.

“A particular challenge during the installation work was positioning the 15-metre-high columns for the bay feeders. These had to be lowered into the central vault area through a hole in the roof,” explains Jesco Oser, Head of Ferrostaal in Russia. “To do this, we had to order special cranes from Moscow, capable of lifting the heavy load.” For each bay feeder, Ferrostaal prepared a full machine passport in order to fulfill the lifting and conveying engineering requirements of the Russian supervisory authority Gostechnadzor.

**Technology in demand**

The high-bay warehouse in Krasnodar is the second that Ferrostaal, together with MLOG Logistics, has constructed in Russia for the Central Bank of Russia. The first warehouse was completed in St. Petersburg in 1999 and, from 2010 to 2011, this is now being upgraded to state-of-the-art standards by Ferrostaal and MLOG Logistics. “Parallel to this work, we are also following up further warehouse projects with two Russian wholesalers for office and household requisites. They intend to decide on the award of the contract in the course of the year,” says Mr Oser.
COUNTRIES AND PEOPLE
For the sister company
OMV in Romania

Ferrostaal takes advantage of the holdings of its majority shareholder, International Petroleum Investment Company (IPIC) from Abu Dhabi, to do additional business with other companies. One example of the international integration of the group is the construction of a compressor station in Bulbuceni, Romania.
In November 2009, Ferrostaal received an EPCC order (Engineering, Procurement, Construction, Commissioning) worth about 65 million euros for the construction of a modern compressor station in Bulbuceni, a village about 200 kilometres west of Bucharest. This compressor station plays an important role in the renewal of the Romanian gas network.
In Bulbuceni, Romania, Ferrostaal has constructed a compressor station for its customer Petrom, the former state-controlled mineral oil and natural gas concern in which OMV has a 51 percent holding. This is part of the modernisation of the gas feed into the transport system of Transgaz, the national, state-controlled gas transport firm. By the end of May, the first unit had been completed according to plan, followed one week later by the second and the third and last unit. This means the plant was completed in a contract period of only 16 months, including the preliminary early works. As Petrom Manager Leopold Kroupa says, “This was an ambitious time schedule, as the construction time for plants of this type is usually 24 months. We are very pleased with the progress of the project. Even by Austrian standards, the construction was successfully carried out at extraordinary speed. It is remarkable that this worked so well in Romania.”

The tight schedule was threatened by an extremely hard winter with temperatures falling to minus 27 degrees Celsius. The foundation work was being carried out at this time. “Before the piles could be concreted, the earth and the material had to be warmed up,” says Ferrostaal Project
Manager Hans Schmitt. “The ground level slugcatcher is a special feature, incidentally. This is normally underground, where it is used for reduction of the liquid fractions remaining in the gas,” he adds, “But the high safety standard specified by Petrom made it necessary to build it above ground.”

Ferrostaal received the order for construction of the compressor station in November 2009. At first, during the early works, for which the firm had been contracted in February of the same year, Petrom tested the collaboration. Then, in November, came the conversion into a lump sum turnkey contract for the compressor station. This was to replace a plant in the immediate vicinity. The station was designed to raise the pressure of gas from an ethane recovery plant in Turburea and a gas drying plant in Bulbuceni to between 35 and 45 bar, so that it could then be fed into the transnational network in Bulbuceni.

**Highly significant**
The compressor station is an important milestone in the renewal of the Romanian gas network and is now the most modern in the country. It is constructed to the highest safety standards, reduces the formerly high noise nuisance for local residents and is much less prone to failure. The old compressor station was very out of date, so had to be replaced by a modern station as soon as possible. For several weeks now, the Ferrostaal team has been training the Petrom employees in the operation and maintenance (O&M) of the new plant.

Petrom intends, in the years to come, to continue investing in the modernisation of its oil and gas plants. Ferrostaal Project Manager Schmitt hopes that the impressive accomplishments have convinced the customer and that the company can now count on follow-up orders.

**Joint venture with the Christof Group**
For the acquisition and handling of future oil and gas projects in the country, Ferrostaal and the Austrian Christof Group have founded a joint venture (70/30 percent), Ferrostaal Christof Romania. The competencies of the two companies complement each other perfectly. “We are good at EPC, while Christof’s forte is installation and maintenance,” says Schmitt. Potential customers, apart from Petrom, could also be Rompetrol, Lukoil or Transgaz.
Compressor stations and international high pressure networks

After its extraction, natural gas is cleansed of undesired accompanying components in treatment plants. Transport from the natural gas field to the end user then takes place at a number of different pressure stages. The pressure in gas pipelines differs according to transport and distribution. Compressor stations ensure that the gas is transported to the destination country at a pressure of between 70 and 80 bar, often over thousands of kilometres, through mostly underground pipelines. These long-distance overland transport pipelines are made of steel, have a diameter of about 1.4 metres and are generally laid about a metre below the surface. There is a series of compressor stations every 150 to 200 kilometres in order to maintain the required pressure in the transport system. The European natural gas transport network has a total length of about 190,000 kilometres. It extends from Northern to Southern Europe and from the Atlantic to Siberia.
COUNTRIES AND PEOPLE

Economic growth (GDP in real %)

<table>
<thead>
<tr>
<th>Year</th>
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<th>2007</th>
<th>2008</th>
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GDP per capita (in euros)

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Inflation rate (in %, annual average)

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<td>2.2</td>
<td>2.5</td>
<td>3.4</td>
<td>3.2</td>
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Budget balance (% of GDP)

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<th>2008</th>
<th>2009</th>
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<tbody>
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<td></td>
<td>-7.1</td>
<td>-7.1</td>
<td>-7.1</td>
<td>-7.1</td>
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</table>

Sources: Germany Trade & Invest, November 2009; German Ministry of Foreign Affairs, March 2010
Romania – a country on the move

Many people associate Romania with poverty and backwardness. And the idea of something dark and nebulous is not limited to Dracula fans. Since 1989, Bucharest’s politics have been determined by the coming and going of social democratic and conservative governments and by the fight against mismanagement and poverty. Romania’s image alternates between basket case and boom state. For years, in the west, horror stories have been prevalent about high crime rates, problems with the treatment of minorities, the suffering of children on the streets of Bucharest and in the country’s orphanages and people trafficking organisations that smuggle whole Roma clans over the Carpathians. In fact, the reality in this multi-ethnic state looks very different. After years of isolation, Romania joined NATO in 2004, acquired membership of the EU in 2007 and now presents itself as a country with a unique cultural and natural heritage. The crime rate is no higher than that of its western neighbours, its policy towards minorities is commendable and Romanian citizens coming into the west do so legally and are well educated. According to Bill Gates, nearly a fifth of his Microsoft computer specialists are of Romanian origin. Everyday life, however, is still marked by deprivation, especially outside the large cities, which is why, since 1945, this Carpathian state has been a country of emigration. Many areas are fascinating for their unspoiled nature but can only be reached with difficulty. There are huge problems with the infrastructure: investments in its development are therefore urgently needed. In a country three times as large as Austria, for example, there are still only 321 kilometres of motorway.

Latest economic development

After a number of years of impressive gross domestic product growth (most recently at 7.1 percent in 2008), Romania has been directly hit by the economic and financial crisis. In 2009, the economy experienced negative growth of 7.1 percent. The last time negative growth had been recorded was in 1999 (–1.1 percent). In 2010, a return to slow positive growth of one to 1.5 percent is anticipated. The inflation rate in 2009 was 4.7 percent, with the National Bank therefore missing its inflation target of 3.5 percent. The same target has been set for 2010 and this appears, at present, to be realistic. Romania has recorded a sharp rise in unemployment, from 4.4 percent in December 2008 to 8.3 percent in February 2010. As a result of the job losses due this year in the state sector, the figure is likely to rise further, with negative effects to be expected on private consumption. In May 2009, in order to prop up its economy, the country obtained an extensive finance package from the IMF; the EU, the World Bank and the European Bank for Reconstruction and Development. Romania is aiming to introduce the euro in 2015. In 2012, the country, with its population of 22 million, plans to reach the required preparatory stage for introducing the euro and to join the European exchange rate mechanism (ERM-II).

Romania – basic data

<table>
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<tr>
<td>Population:</td>
<td>22.25 million (July 2008)</td>
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<tr>
<td>Capital:</td>
<td>Bucharest (1.9 million inhabitants)</td>
</tr>
<tr>
<td>National language:</td>
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</tr>
<tr>
<td>Business languages:</td>
<td>Romanian, German, English, French</td>
</tr>
<tr>
<td>Currency:</td>
<td>Leu, 1 Leu = 100 Bani; Exchange rate 1 euro = 4.1981 Lei (November 2009)</td>
</tr>
<tr>
<td>Form of government:</td>
<td>Republic</td>
</tr>
<tr>
<td>Head of State:</td>
<td>President Traian Basescu</td>
</tr>
<tr>
<td>Head of Government:</td>
<td>Prime Minister Emil Boc</td>
</tr>
</tbody>
</table>

Sources: Germany Trade & Invest, November 2009; German Ministry of Foreign Affairs, March 2010
For many companies, Romania used to be a blank area on the map. This has changed since the state joined the European Union in 2007. Especially for the oil and gas business, lucrative project opportunities are opening up in this country on the Black Sea coast. If they hope to establish themselves successfully and for the long term in the Romanian market, business people from abroad should pay attention to a number of special intercultural points.
The greeting in Romania is formal: Men are offered a handshake, while women are normally greeted with a kiss on the hand. Among the younger generation, which is now more oriented to a western style, the kiss on the hand is considered old-fashioned. Introduce yourself with your first and last names. The form of address is “Doamna” (Ms) or “Domnul” (Mr) with the last name. Titles are considered very important, so you should always use them when addressing someone. You should speak formally with your opposite number – addressing someone by their first name is only normal among friends. When greeting someone, it is polite to maintain direct eye contact.

Before Romanians enter a business relationship, they want to get to know their potential business partners. Whenever possible, personal meetings should be chosen in preference to telephone or e-mail communication. Once a basic trust is established, projects can often be advanced more quickly. Avoid coming directly to business, particularly at the first meeting, as this is considered discourteous. The best way to create a friendly atmosphere is to start by talking about uncontroversial matters. Favourite subjects for small talk are books, films, art and travel, as well as the family and hobbies. Political topics should not be discussed.

For a business meeting, you should plan ample time, as negotiations are not always conducted in a goal-oriented fashion. When you are talking to younger business partners, however, it is possible to come to the point more quickly than with older people. As the timetable is often not adhered to, it is a good idea to make a written record of the progress of negotiations and to have this confirmed in writing by your Romanian business partners. As a result of hierarchical thinking and considerable bureaucracy, decision making can be very drawn out. Negotiators often have positions and roles dictated to them by their superiors and have no authority to make decisions. Several meetings may therefore be necessary for the same point of negotiation. Be patient, for if you apply pressure to your Romanian opposite number, you risk losing the business.

Foreign business partners are expected to arrive punctually for meetings. The meeting may nevertheless start late and also extend beyond the appointed time. The Romanian side would find it very impolite if you insisted on adjourning a conference merely because you wanted to keep another appointment. One only leaves a meeting in Romania when the meeting has actually finished, regardless of other missed appointments.

Romanians are courteous and friendly to their business partners. Communication, however, is often indirect and subtle. They choose their words with care and forethought because they do not want to embarrass their opposite number. You should also avoid a direct style. If you want to know something, you should work your way cautiously towards the information.

The business meal is highly valued as a means of deepening the relationship with a business contact. Drinking together does not play such a major role in Romania as in Russia or the Czech Republic. Regardless of the time of day, however, a glass of Tuica, a traditional plum brandy, may be offered. If you do not wish to drink it, you can politely decline.

Manners are particularly important in Romania. Opening the passenger door, helping someone into their coat or opening the door for someone and letting them go first are all musts in Romania. Good manners and formality are also reflected in the dress code. Elegant clothing is used in Romania to underline one’s own position. Women should wear dresses, ladies’ suits or trouser suits. Colours and cuts should be fashionable but modest. For men, day-to-day business demands a conventional suit and tie in restrained colours. Quality, particularly in the case of shoes, is valued as an indication of solid financial circumstances.
## APPENDIX

### International trade fairs from August to December 2010

**Interplast**  
International Trade Fair for the Plastics Industry  
Brazil, Joinville  
08/23–08/27/2010  
**Africa Print 2010**  
Trade Fair for the Printing Industry  
South Africa, Johannesburg  
09/08–09/10/2010  
**MSV Brno 2010**  
International Mechanical Engineering Trade Fair  
Czech Republic, Brno  
09/13–09/17/2010  
**Grafinca**  
International Trade Fair for the Printing and Advertising Industry  
Peru, Lima  
09/16–09/19/2010  
**InnoTrans 2010**  
International Trade Fair for Traffic Technology  
Germany, Berlin  
09/21–09/24/2010  
**Stuzubi**  
Training and Careers Fair  
Germany, Düsseldorf  
09/25/2010  
**Expo Sucata**  
Trade Fair for South America’s Recycling Industry  
Brazil, São Paulo  
09/28–09/30/2010  
**The Green Expo 2010**  
Mexico, Mexico City  
09/28–09/30/2010  
**CeMAT Russia**  
Trade Fair for Intralogistics  
Russia, Moscow  
09/28–10/01/2010  
**Agroprodmash**  
International Trade Show for Food Processing  
Russia, Moscow  
10/11–10/15/2010  
**Argentina Gráfica**  
International Trade Show for the Graphical Industry  
Argentina, Buenos Aires  
10/18–10/23/2010  
**Sklad. Transport. Logistika’ 2010**  
International Trade Fair for Logistics, Transportation, Automation and Mechanisation of Storage and Handling Operations  
Russia, Moscow  
10/25–10/28/2010  
**Business Day**  
Germany, Münster  
10/26/2010  
**ADIPEC 2010**  
International Mineral Oil Trade Fair  
UAE, Abu Dhabi  
11/01–11/04/2010  
**Bonding University Fair**  
Germany  
Berlin, 11/02–11/03/2010  
Aachen, 11/29–12/01/2010  
Hamburg, 12/07–12/08/2010  
**CAITME 2010**  
International Central Asian Textile Machinery Trade Fair  
Uzbekistan, Tashkent  
11/02–11/04/2010  
**MWCS 2010**  
Metalworking and CNC Machine Tool Show  
China, Shanghai  
11/09–11/13/2010  
**Azubi & Studientage**  
Trade fair for professional education and study  
Germany, Essen  
11/12–11/13/2010  
**OGT**  
Trade Conference for Oil and Gas  
Turkmenistan, Ashgabat  
11/16–11/18/2010  
**Exponaval**  
International Marine Show and Conference for Latin America  
Chile, Valparaíso  
11/30–12/03/2010  
**University Fair Industry & Engineers Day**  
Germany, Siegen  
*Date not yet fixed*
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