



The latest news from the Rheinmetall group 3/2003

Das Profil Newsline



Prepared

Interview with Dr. Theile about the effects of the Prague summit on the German Bundeswehr and Rheinmetall DeTec AG (page 5-7).



Pretty active

KS Aluminium-Technologie AG is active on premium markets with its engine blocks built at the Neckarsulm plant (page 8 + 9).



21 vehicles

A contingent of 21 LIV (SO) vehicles is currently being delivered to the special operation forces of the German Bundeswehr (see page 13).

Rheinmetall AG's annual accounts conference

Into fiscal 2003 with full order books

Düsseldorf. Business performance a full success: having completed "all important phases" of the restructuring process (2000 – 2002), the financial accounts for 2002 which the executive board of Rheinmetall AG presented at the annual accounts conference on April 10, 2003 in Düsseldorf were extraordinarily positive. The improvement in operative earning power, the sustainable increase in cash flow, the drastic reduction of debt, an organic growth superior to the industrial average and very pleasing advances in produc-

tivity of again six percent – both the key business figures for 2002 and the successes already scored in the first months of 2003 are noteworthy. Moreover, the Düsseldorf-based group – which intends to enhance its value even further in coming years – has had a good start into the current business year. In the first quarter of 2003, sales rose by two percent to just under one billion euros. At around € 1.1 billion, order intake reached an all-time high and orders on hand totaling approx. € 4.5 billion were six percent up on the previous year.



The operating figures presented on April 10, 2003 and the targets achieved in the wake of Rheinmetall's reorientation between 2000 and 2002 speak for themselves. Summarizing developments, executive board chairman Klaus Eberhardt pointed out: "All essential parts of the restructuring process have been completed. Organic growth is above the in-

dustrial average. The operative earning power in the past years, and especially last year, has improved significantly. We have seen a drastic reduction in financial debt and the balance sheet structure has shown a clear improvement. Within a matter of only three years, we have managed to restore the freedom of action needed for the strategic advancement of Rheinmetall."

The Rheinmetall group has shown a positive development in the wake of

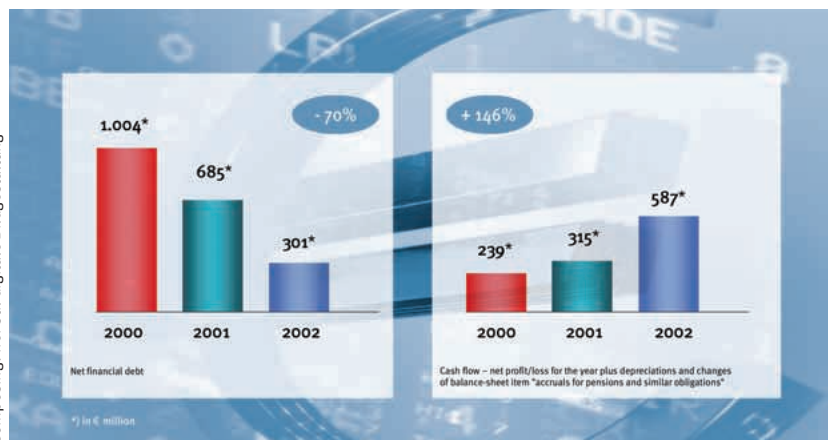
the Clear Directions Strategy launched in 2000 (this strategy involved the streamlining of the business portfolio and a clear focus of business on three core business sectors), a fact that is also underlined by the key business figures: Whereas sales "only" rose slightly from € 4.5 billion to € 4.6 billion between the end of 1999 and the end of 2002, the related organic growth has increased by six percent each year (in total, approx. € 800 million sales

(Continued on page 2)



Photo: DaimlerChrysler

SALT AND PEPPER: Famed as a stage for many speed records, this picture of the Great Salt Lake in Utah, USA, shows a formation of DaimlerChrysler's wide-ranging passenger and utility vehicle program. The image itself is part of the short advertising film entitled "Infinite Possibilities" shot by the Hollywood director Roland Emmerich, renowned for cineastic masterpieces like *The Patriot*, *Godzilla* and *Independence Day*. Incidentally: various of the vehicles featured here are equipped with exhaust gas return systems, pistons, engine blocks or permaglide components from Kolbenschmidt Pierburg.



Drastic reduction of debt: the net financial debt of the Rheinmetall group has dropped by no less than 70% since 2000; at the same time, cash flow has increased from € 239 million to € 587 million (up 146%).

Rheinmetall AG's annual accounts conference

Fiscal 2003 has started with full order books

(Continued from page 1)

growth). In the same period, divestments by Rheinmetall in order to streamline the portfolio amounted to € 1.1 billion (around 25 percent of the business volume of 1999) compared with M&A of only € 400 million. Eberhardt: "We have given our Clear Directions Strategy substance and have made considerable progress in the last three years."

Talking to representatives of the press, Eberhardt stated that the key indicators for group earnings are "fundamentally good", and that this has had a positive impact on the balance sheet structure. To sum up: with organic growth improved by six percent, EBIT (earnings before taxes and income) in 2002 rose from € 195 million to € 392 million, this being influenced by the disposal of Heimann Systems. Yet even without this extraordinary effect, the operating result rose by 11 percent to € 213 million; ROCE (return on capital employed) rose by 8.8 percent to 20.1 percent and cash flow increased from € 315 million to € 587 million. The net debt-equity ratio dropped from 17 to 8 percent. Equity capital grew by € 152 million to € 869 million (as at December 31, 2002).

Rheinmetall will now use the available resources (see article "Repurchases part of strategy") especially to

further enhance the economic performance of the entire group. Assuming that the economy remains stable, the executive board expects organic growth to be above five percent in the three business units Automotive, Electronics and Defence. In parallel, the share of exports currently totaling 61 percent is to be increased to 65 percent. As to earnings, the management aims to improve EBIT even further and to achieve a distinct improvement in the financial result. In addition to this, further reductions in financial debt and capital employed are being targeted.

Provisional figures for the first quarter of 2003 indicate that the group is well on the way to achieving its objectives. Sales – just under one billion euros – have risen by two percent compared to last year, and order intake has increased by as much as 19 percent to € 1.1 billion. Orders on hand are up six percent and therefore also distinctly higher than last year.

In the words of executive board chairman Eberhardt: "Our start into 2003 has been pretty good. Provided the economy remains stable, we (therefore) predict positive developments to continue in 2003. This applies not only to business growth but also to the balance sheet structure that will be marked by a further reduction in debt".

Results for the fiscal year 2002

Düsseldorf. As already announced (Newsline 2/2003), Rheinmetall AG generated sales of € 4,571 billion in fiscal 2002 (2001: € 4,603 billion). Adjusted for consolidation group changes, this is equivalent to an organic growth of six percent (development of sales in the individual business sectors: Automotive up 5%; Electronics up 12% and Defence up 4%). Order intake amounted to € 4,840 billion with orders on hand at the year-end totaling € 4,165 billion which was a new record (2001: € 4,113 billion)

EBIT in fiscal 2002 was largely influenced by successful changes to the Rheinmetall group's portfolio, more than doubling from € 195 million in 2001 to € 392 million. The EBIT margin rose accordingly from 4.2 percent to 8.6 percent. Adjusted for one-time expenses and income in connection with subsidiaries, real estate and restructuring efforts, EBIT for 2002 amounts to € 213 million compared with the like-for-like figure of € 192 million in 2001. The Rheinmetall group therefore managed to boost its operating result by more than 10 percent. At € 290 million, earnings before tax (EBT) were also well above the year-earlier figure of € 84 million. The equity ratio rose from 17 to 21 percent while net financial debts more than halved from € 685 million in 2001 to € 301 million in 2002. Cash flow increased by 86 percent to € 587 million (2001: € 315 million).

Newsline

Newsline is a summary of the most important news articles published in "Das Profil", the company newspaper of the Rheinmetall group

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Photos : Michael Remmert

HIGH-RANKING VISITORS FROM BASQUE PROVINCES: Production capabilities at Carbureibar S.A. in the Basque Provinces, one of Pierburg's major locations abroad since 1976, include exhaust gas return valves and secondary air systems for pollutant reduction. The economic performance of the company with around 300 employees has shown a positive development over the years, with sales increasing by more than 900 percent in the last decade. Hardly surprising therefore that the president of the Basque government, S.E. Juan José Ibarretxe (2nd r.), stopped off to visit the Rheinmetall group during his recent trip to North Rhine-Westphalia. Discussions with members of Rheinmetall including the chairman of the executive board Klaus Eberhardt (r.) were followed by a tour of Pierburg GmbH in Neuss, accompanied by Rheinmetall board member Dr. Gerd Kleinert (3rd r.) as the executive board chairman of Kolbenschmidt Pierburg AG. Ibarretxe who had traveled to North Rhine-Westphalia with a delegation of high-ranking government officials and the Basque government minister for commerce and industry Josu Jon Imaz praised the achievements and good partnership between the Düsseldorf-based group and the Basque Provinces.

This is part of a broad business policy." Answering questions from journalists relating to the recent transactions aimed at tying Rheinmetall's subsidiaries even more closely to the group, executive board chairman Klaus Eberhardt adds: „Including this year, we will have purchased minority stakes worth about half a billion euros since 1999. This has been done so that we have full control over developments in our own company.”

In fact, Rheinmetall AG has actively promoted the repurchase of minorities both this year and in 2002. As reported

the group aims to acquire all the shares in Aditron AG (Electronics sector) by way of a squeeze-out and to pay-off the affected stockholders. Rheinmetall currently holds around 97.67 of the capital stock of Aditron AG.

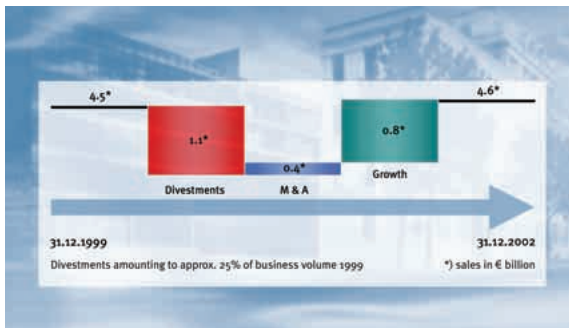
cent in 2002 to 93 percent. With effect from 1 January 2003, Rheinmetall AG also took over the 50 percent stake held by the Brussel-based joint venture partner Zenitel in EMG EuroMarine Electronics GmbH (Hamburg).

Repurchases part of strategy

Similarly a voluntary public purchase bid will be made to the free stockholders of Kolbenschmidt Pierburg AG; Rheinmetall currently holds 81.5 percent of the capital stock of the Automotive sector's lead company.

The executive board of Rheinmetall AG has pointed out that any actions still to be taken or already completed in connection with the purchase of minority stakes reflect a broad business strategy which also aims to make decision structures simpler – and clearer – within the group.

Eberhardt: “We would be well advised to believe in our own company. Any investment into our companies that we know and of whose profitability and growth potential we are convinced is a good investment into the future...This is why we believe that, for the time being, it will be better to invest in our own companies rather than to risk investing in other businesses.” According to Rheinmetall's executive board chairman, the objective is to establish clear decision structures for the group, to reduce the group's complexity and to improve access to cash flow.



Growth: Although sales have actually “only” risen from € 4.5 billion to around € 4.6 billion since 1999/2000, the related organic growth has been relatively high, amounting to about six per cent per annum (in total approx. € 800 million) since M&A of approx. € 0.4 billion compared with substantial divestments of € 1.1 billion.

Pierburg development team designs new coolant pump

Major coup scored with new system

Dortmund. Listening to Albert Genster talk about wet-runner motors, canned motors and rotating mechanical seals, there is no doubt this is one of his favorite subjects. Genster is fascinated by what others may consider incomprehensible techno-speak. After all, these technical terms have involved five years of intricate work, endless calculations and simulations at the computer as well as innumerable measurements in the lab. The outcome of all this work is the world's first electrically driven coolant pump. Working for the Pumps division of Pierburg, Genster and the eleven members of the Dortmund-based development team have brought the pump to market maturity.

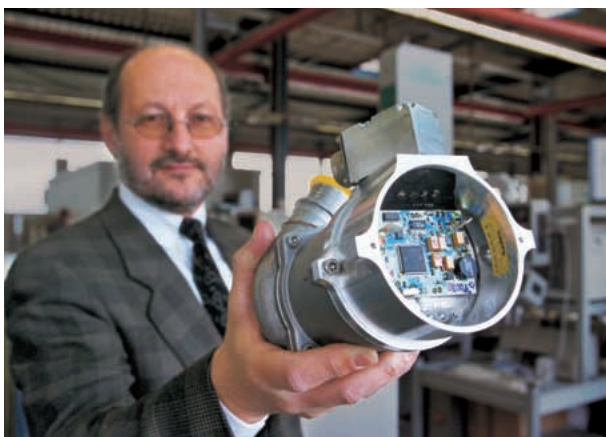
The new pump with the product name CWA 200 (standing for power rating of 200 watts) does without the normal carbon brush that is prone to wear. Instead, the coolant module has a microchip that ensures that the current flow in the collector is interrupted regularly, thus allowing the rotational movement of the motor. Moreover, Genster and his team have developed the pump as a wet-runner motor, i.e. the rotor runs in water so that the entire pump is sealed hermetically. This has made conventional rotating mechanical seals – which also perform the rotational movements and are therefore susceptible to wear – superfluous.

Besides reduced wear, the new pump has various advantages over conventional coolant pumps that are driven via toothed belts. For example, the electrical performance can be tailored exactly to the coolant requirements of the motor. This means that the pump will operate with low power after a cold start in the morning; the engine will then reach its operating temperature more quickly, the heating will start in-

side the car and keep car passengers warm. If, however, the car is driving uphill, the pump will cool the engine as it gets "hotter". The environmental advantages of this concept are obvious: tests have shown that up to half a liter of fuel can be saved for every 100 km driven.

It took quite a while to perfect the system that is now available. Genster and his team already started working on the electrical coolant pump at Wilo GmbH (a heating pump specialist located in Dortmund) five years ago. Kolbenschmidt Pierburg found the promising results so interesting that it took over these special activities from Wilo in the year 2000.

The development team was then tasked with bringing the pump to market maturity. Explaining the demands on the project, Albert Genster points out: "The biggest challenge was to increase the efficiency, performance and reliability while at the same time reducing weight and saving costs."



Perfect system: "60 percent of the development cost invested in our new coolant pump related to the sophisticated electronics", explains Pierburg's specialist Albert Genster.



Composing: frei-stil digitale Bildgestaltung

Silk stockings in lieu of torn V-belts are no longer needed with Pierburg's new electrical coolant pump. The pump from the automotive specialist is operated by its own electrical motor, independent of the vehicle's engine, saves fuel, reduces wear and is environmentally friendly.

The development of the world's first electrically driven coolant pump has entailed a lot of time and work. The Universities of Essen and Dresden were involved in the work – and flow, velocity and magnetic flux calculations were so complicated that, "computers started their computations on a Friday afternoon only to be finished on a Monday morning", says Genster.

The work has certainly been worth the effort. "We have scored a big coup with the system", claims the 54 year-old development expert from Pierburg. Carmakers are extremely interested in our development. AMG, the car refiner, already uses the pump to cool the charge air of the supercharger in the Mercedes C30 CDI AMG. Development of an electrical coolant pump for another renowned German carmaker is fully underway.

Kolbenschmidt Pierburg could open the door to the future with its new product. Experts are already working feverishly on so called "beltless" engines. Should cars with fuel cell drive prove to be successful in future (Newsline 5/2002), electrically driven coolants pumps would be an absolute necessity (to cool the fuel cell and drive). **Sebastian Reimann**

Discussions about the current policy of Nato (North Atlantic Treaty Organisation) are far from being easy nowadays. Never before was the debate about the future of the alliance more controversial. When the North Atlantic Treaty was signed on April 4, 1949 in Washington, the principal task of the alliance was to defend its member states against threats from the former Eastern Block. Now the confrontation with the Eastern Block has ceased to exist, and the security situation is entirely different.

Although the main aim of the North Atlantic Alliance is still to safeguard the freedom and security of all its members by political and military means, the threats have changed. The Balkan wars in the 1990s, the effects of September 11, 2001 and the attacks on Bali and Djerba (Tunisia) have shown that the tasks and goals of Nato will have to be completely re-defined. To tackle the challenges of the 21st century, the 19 member states and the

seven future partners of the alliance passed far-reaching resolutions on future military capabilities at their Nato summit in Prague in the fall of 2002 (November 21/22, 2002).

The Prague agenda focused on five essential aspects:

- ★ Nato's extension to the east,
- ★ Fight against terrorism,
- ★ Protection against weapons of mass destruction,
- ★ Initiative to improve military capabilities,
- ★ Streamlining organizational structures.

"Newsline" spoke to Dr. Burkhard Theile, head of the department "Strategic Business Development and Technology" of Rheinmetall DeTec AG, about the effects of the Prague summit on the German Bundeswehr and Rheinmetall DeTec AG as Europe's leading supplier for land forces systems.

"Newsline" interview with defence strategy expert Dr. Burkhard Theile

Well prepared to tackle challenges

Newsline: Which effects will the reforms decided at the Prague summit have on the development of the armed forces and the future of the defence industry?

Theile: *The declaration by the heads of state and government at the Prague summit will advance the transformation of the armed forces. Additionally, the role of the arms industry has been redefined by the resolutions of the North Atlantic alliance.*

Newsline: To what extent will the structures of the German armed forces and allied forces change? What exactly is meant by transformation?

Theile: *Force transformation affects also Germany and means a transition to an operational network of air, ground and naval forces, which can be deployed quickly. Forces of different nations must be able to fight jointly in multinational units with ground, naval and airborne elements.*

Newsline: What are the reasons for this change?

Theile: *The transformation has been triggered by new challenges for the armed forces, as agreed upon at the summit in Prague. Germany's*

armed forces already fulfill commitments outside the borders of the alliance, classic national defence presents less of a challenge in view of the fact that apart from Switzerland all territorial neighbors are Nato partners. In these days, Germany has 9000 soldiers assigned to multinational missions of Nato abroad, that is the second highest quantity, only the USA have more troops on foreign assignments within the alliance. Instead of conventional large armies, mobile forces equipped with modern systems and equipment will be needed in future.

Newsline: Could you give us an example of the "army of the future"?

Theile: *The best example is the Nato Response Force agreed at the Prague summit. This planned multinational intervention force consisting of air, naval and ground units will quickly deploy in areas of crisis or armed conflict worldwide.*

Newsline: Does this mean that the military forces of the old and new Nato members will have to develop new capabilities and adjust their structures and concepts accordingly to meet these military challenges?

Theile: *Exactly. Through their Prague Capabilities Commitment, individual alliance partners have taken on special commitments to improve their capabilities*
(Continued on page 6)



Photo: Danetzki + Weidner

One of the requirements of the Prague Capabilities Commitment is to provide improved reconnaissance and analysis capabilities. With the NBC reconnaissance vehicle Fuchs from Rheinmetall Landsysteme GmbH, Germany is spearheading capabilities where the reconnaissance of nuclear and chemical hazards is concerned.



“Newsline” interview with defence strategy expert Dr. Burkhard Theile

Well prepared to tackle . . .

(Continued from page 5)

ities in specific areas. Jointly, the armed forces of the individual nations are to complement one another in an ideal manner in order to be able to counter dangers like terrorism or weapons of mass destruction more effectively. This declared commitment is based on the concept of combining and networking military capabilities.

Newsline: Meaning exactly what?

Theile: Network-based defence means a transition from a platform to a capability oriented approach, i.e. system-based operational units. Platform-oriented means that an individual system, e.g. a battle tank, has to be superior to the enemy's tank in terms of speed, fire power or protection. The system concept envisages a combination of different platforms – for example, tanks, unmanned reconnaissance air vehicles and individual soldiers – to form a functional system. Using communication and information technology, the system-oriented unit can operate following the principle: see first, determine the situation, act and establish superiority by decisive action. Full situational awareness is the prerequisite for success.

Newsline: Does this mean that a networked system of small, highly mobile sensor and weapon carriers is theoretically as powerful as a main battle tank?

Theile: Yes, the current military planning assumes such a capability. To meet the security challenges of the 21st century, armed forces will have to join in system units. Information and communication technologies play a vital role for the armed forces.

Newsline: What effect will this development have on the strategic planning of the Rheinmetall DeTec group?

Theile: Individual platforms will have a very long service life. The customer will require system improvements, plat-



Dr. Burkhard Theile

form upgrades and upgrades of subsystems. Additionally, based on the capabilities requirements, individual Nato members will develop similar military requirements for their forces.

Newsline: How is Rheinmetall's Defence sector adjusting to these processes?

Theile: Fundamentally, the Rheinmetall DeTec group is already well positioned to handle these new requirements. The group has system capabilities in a wide field of activities: ranging from armored vehicle systems to air defence and reconnaissance systems. Moreover, capabilities regarding the networking of different systems have been developed.

Newsline: Could you give an example?

Theile: The Battle Management System of Oerlikon Contraves combines air defence systems that used to be operated independently. The networking increases the system's efficiency significantly.

Newsline: And Rheinmetall's Defence sector offers many platforms which can be integrated into systems...

Theile: Yes, these include, amongst others, the Wiesel variants as well as unmanned air vehicles of STN Atlas Elektronik. Besides, the group also has a wide array of subsystems and components. For instance, there are sensors which support reconnaissance operations, vehicle command systems, self-protection systems and remotely-operated manipulator vehicles for ordnance disposal operations.

Newsline: Is the group well equipped to tackle future challenges?

Theile: Based on our wide-ranging capabilities the present military re-



Photo: Danetzki+Weidner

Tailored exactly to the requirements of the special forces of the Bundeswehr and its allies: the new Wolf Light Infantry Vehicle for Personnel Carrier (LIV PC) and for Special Operations (LIV SO) from Rheinmetall Landsysteme.

quirements, particularly for land systems, can be materialized by the group's systems and subsystems, with new business opportunities. Moreover, Rheinmetall DeTec will continue to expand its technological base.

Newsline: Which capabilities does this involve?

Theile: Our research and development activities will focus on e.g. robotics, Battle Management, and command and control systems. Moreover, the field of non-lethal weapons is becoming increasingly important (see Newsline 2/2003). Last but not least, the group is cooperating closely with the Bundeswehr on new concept studies and technologies. For example, processes making it possible to identify biological substances from greater distances have been further-developed in cooperation with the Bundeswehr research institute for the protection of the armed forces.

Claudia Wessolly

The most important resolutions reached by the heads of state and government at the Nato summit in Prague were as follows:

★ **Extension toward the east:** seven new members – Bulgaria, Romania, Slovakia, Slovenia, Estonia, Latvia and Lithuania – were invited to enter negotiations to join the alliance. This has signaled a further step toward consolidating Europe as a joint security zone. In future, Nato will have 26 members.

★ **The fight against terrorism.** The September 11 attacks on New York and Washington and the declaration of collective self-defence in accordance with Article 5* of the Washington Treaty have shown that terrorism has become a very serious international security problem. In view of this threat, Nato has determined that the fight against terrorism is a task of the entire alliance. Additionally, the propagation of nuclear, biological, radiological and chemical weapons of mass destruction is to be prevented. The members of the alliance also defined defence against cyber attacks (attacks on information infrastructures) and long-range missiles as a new task.

★ **Protection against weapons of mass destruction:** regarding the threat posed by weapons of mass destruction, the Prague summit focused on two crucial issues: Which instruments can Nato develop in order to prevent the propagation of weapons of mass destruction and carrier equipment? Which actions must Nato take to protect its armed forces and civilians against attacks with weapons of mass destruction? The resolutions reached in Prague range from the development of improved detection and analysis capabilities to the creation of joint databases and more extensive training in the defence of nuclear, biological, chemical and radiological weapons. The 19 allies (and seven future members) all

came to the understanding that the protection capabilities against weapons of mass destruction will have to be combined and extended – meaning not only military capabilities and reconnaissance equipment but also the protection of the civilian population.

★ **Initiative to improve military capabilities.** Individual members of the alliance adopted defined, specific commitments in order to improve their capabilities e.g. in these areas: defence against chemical, biological, radiological and nuclear weapons; reconnaissance, surveillance and target ac-

can quickly deploy to undertake the full range of military missions in areas of military conflict or crisis across the world. NRF will be a very modern force charged with performing not only peacekeeping operations but also military missions. It will give the alliance an effective military instrument consisting of ground, air and naval units rotating in assignments for six months and commanded by the Combined Joint Task Force Headquarters. The size of the force will be determined by the mission but would notionally consist of air assets and command and control capa-

Prague summit: Resolutions

quisition; command and communication systems; strategic air and sea transport; in-flight refuelling and the transportability of mission support and logistic units.

Rather than attempting to sustain interoperability across the combat spectrum, the goal is to focus on creating niches of excellence of the national forces. Germany has, for instance, committed itself to lease C-17 transport aircraft as an interim measure and to improve its maritime mine countermeasure capabilities. Germany is also leading a consortium of nations aimed at pooling air-

bilities to support up to 20 combat sorties per day. The units will train prior to their assignments to ensure they are capable of fighting together on seven to 30 days notice anywhere in the world.

★ **Streamlining organizational structures:** In future, Nato will have a new, more flexible and mission-oriented command structure with two commands at the highest military-strategic level: one for operations (Alliance Command for Operations) with its headquarters in Belgium/Europe and one for functional transformation of the alliance forces (Alliance Command for Transformation) headquartered in Norfolk/USA. Previously, two Nato commanders divided responsibility for operations, between Europe and the Atlantic. In the new structure, the strategic commander for operations will be responsible for preparation and conduct of all operations, including defence of the Nato territory concerned.

Finally – and this is also part of Nato's internal reforms – the efficiency of military command structures will be improved, i.e. the number of regional headquarters will be reduced and replaced by smaller, rapidly deployable command centers. Additionally, the number of committees will be reduced by one third and the organization of meetings at ministerial level as well as meetings of the North Atlantic Council will be streamlined.

* Article 5 is the basis for the Nato alliance, specifying that the attack against one member of the alliance is considered to be an attack against all members of the alliance. The other members of the alliance will take the necessary actions – including military actions, where applicable – to protect the member state concerned.



The KZO unmanned reconnaissance air vehicle from STN Atlas Elektronik, Bremen, is a reconnaissance and localization system of the latest generation.

lift resources and capabilities. These also include in-flight refuelling capabilities.

The approx. 21,000 strong Nato Response Force (NRF) also reflects the new strategic orientation of the alliance. Consisting of air, maritime and ground units, NRF will be a force that, by 2006 at the latest (first stage of mission capability by October 2004),

The resources now available to the Aditron group following the sale of Heimann Systems will be used to bring forward the internationalization of Aditron's Automotive and Industrial Electronics business. Reinhard Sitzmann, together with Dr. Michael Roesnick executive board member of the Electronics lead company Aditron AG, and chairman of the management board of Hirschmann Electronics GmbH & Co. KG, has outlined the strategic perspectives in an in-

terview with the Rheinmetall company newspaper "Newsline". 54 year-old Sitzmann believes that the members of the Aditron group command an excellent position on the market – an assessment that is also underpinned by the very pleasing development of business in 2002: after all, the Rheinmetall Electronics sector boosted its sales by around 12 % to € 802 million (provisional figure), meaning that Rheinmetall's smallest unit achieved the biggest rise in sales compared to 2001.

Newsline interview with Reinhard Sitzmann, executive board member of Aditron

“Momentum” for further growth

Newsline: The sale of Heimann Systems to the Smiths Group in the fall of 2002 came as a surprise to many observers – also inside Rheinmetall. Why shed such a gem?

Sitzmann: My colleague Dr. Michael Roesnick and I were faced with a classic business decision. The attacks of September 11, 2001 had significantly changed the situation on the world market for security technology. The need for capital spending had risen drastically and the huge demand called for new dimensions of the business.

Newsline: Meaning that.....

Newsline: Could you outline the perspective for Aditron following the sale of Heimann Systems.

Sitzmann: First of all, let me point out that the Electronics sector still has a lot of potential even after the sale of Heimann. Hirschmann Electronics and Preh both hold an excellent position on the market and both companies have shown strong growth figures in the automotive electronics sector.

Newsline: Something that is more than underlined by numerous, prestigious orders in the recent past.

Newsline: How do things stand with the Industrial Electronics business?

Sitzmann: The general unhealthy economic climate has naturally also had an impact on the market for industrial electronics. Hardly any of the companies have been left unscathed in the past year. Nonetheless, the industrial electronics sector offers considerable potential for the Aditron group, especially as we have managed to assert ourselves a lot better than the majority of other businesses in this field.

Newsline: Could you be little more specific?

Sitzmann: Industrial data communication via Ethernet is just one example: Hirschmann Electronics plays a leading role here and has won numerous major projects in the recent past, ranging from the networking of robotic welding machines for car production to network solutions for wind farms and systems for airports, and to the networking of transportation systems. Other areas of Hirschmann and Preh have also completed important reference projects – meaning that industrial electronics will very definitely continue to be an important area of work for Aditron.

Newsline: In the automotive supplier business, Hirschmann and Preh are particularly dependent on the European automobile industry, specifically the German premium manufacturers DaimlerChrysler, BMW and Audi.

Sitzmann: The word “dependent” suggests a certain danger and is therefore not entirely correct for our market segment. On account of their innovative range of products and the increasing amount of electronic features integrated in all premium models, these carmakers offer consider-

(Continued on page 11)



Designed for industrial applications: network units (switch, hub and transceiver) of the Industrial Line family from Hirschmann Electronics and Co. KG.

Sitzmann: ...the only option open to us was to massively step up our commitment in the security engineering sector or to withdraw from this market segment. Having given both these options very serious consideration, we opted for the latter. We will now use the resources available to us to bring forward the international expansion of our business units Automotive Electronics and Industrial Electronics.

Sitzmann: True. Significant orders for the premium segment of the automobile industry – like the advanced electronic systems and equipment supplied for the Maybach, the E-Class of Mercedes-Benz, the BMW 7-series or the Audi A8 – have confirmed that we are in the top league of technological competence, and have also established the prerequisites for sustainable and profitable growth.

Newsline interview with Reinhard Sitzmann

“Momentum” for . . .



Photo: DaimlerChrysler

The new Maybach from Daimler-Chrysler is equipped with advanced systems from the two Aditron subsidiaries Hirschmann and Preh.

(Continued from page 10)

able growth potential which we will use – despite the slackness of the automotive market.

Newsline: So the focus on the premium segment “made in Germany” isn’t too strong?

Sitzmann: No! Of course, this group of customers is very attractive for us, but our business has several mainstays. Alongside the mentioned premium segment, we also have orders covering very large quantities for German carmakers like VW and other European customers like, for instance, P.S.A. (Peugeot/Citroën).

Newsline: Although Ettlingen-based PAT, the third member of Aditron, is a legally independent business, it is no longer operated as an independent company but as a product unit of Hirschmann Electronics. What was the reason for this and what perspective does this group have?

Sitzmann: PAT is well positioned on the market for mobile plant electronics; however, on account of the situation on the market and the economy, PAT – as the world market leader for crane control systems – has had problems in the last two years. We intend to further develop this business field and to use existing synergies between PAT and Hirschmann more extensively in future.

Newsline: Before taking on your present position at Hirschmann, you were chairman of the PAT board of management so that.....

Sitzmann: I naturally know both companies very well. There are many points of contact between PAT and Hirschmann, and not just where purchasing, commercial and sales functions are concerned but also in the field of technology. The close association between Hirschmann and PAT makes sense and will help to further streamline management structures. Simultaneously, joint market penetration abroad – e.g. in the USA, Asia and Europe – will be clearly improved. Both companies already have export shares of around 78 % (PAT group) and 57.5 % (Hirschmann Electronics), respectively. Considering that, where Hirschmann is concerned, a large proportion of cars produced in Germany is exported (indirect export share), the export share of total business is naturally much higher.

Newsline: What about the synergies between Hirschmann and Preh?

Sitzmann: Obviously, synergies exist between Hirschmann Electronics and Preh. Nonetheless, we are deliberately focussing on the existing, specific strengths of both businesses without wanting to artificially create organizational or technical commonalities. Nonetheless, the group as a whole is much stronger than the sum of its individual members: we combine the advantages of flexible medium-sized businesses with the financial power of a large corporate group, and have joined forces to internationalize business, e.g. on the American market.

Newsline: Which specific market trends on the automotive electronics market can you use more extensively in future?

Sitzmann: For a start, Hirschmann and Preh are both benefiting from the mentioned trend toward electronic equipment and systems in vehicles. This also means that the demand for connectors and line sets will rise for new vehicle functions and comfort fea-

tures. Hirschmann which specializes in automotive connector technology is already using this development very successfully.

Newsline: Mobile Communication Technology (MCT) is another keyword in this context.

Sitzmann: Yes, that is correct. Hirschmann is concentrating its hardware and software development on integrated antenna systems used largely for cars of the middle and top category of European carmakers. This is also reflected by the relatively high R&D share for MCT, amounting to 7.2% in 2002 and 8.1% this year. Since the demand for communication in the car is growing, the trend is now toward the consistent use of integrated antenna systems “top-down” to include even small cars.

Newsline: And the related situation at Preh?

Sitzmann: The perspective offered by the automotive electronics sector is equally good for this Aditron subsidiary. Experts at Preh realized very early on that the design of the car interior and the offer of comfort functions would play an increasingly important role to allow individual carmakers to distinguish their vehicles from those of others. This trend has been given sufficient consideration by developing high-quality control and driver assistance systems which are well accepted on the market.

Newsline: Are there comparable trends in the field of industrial electronics?

Sitzmann: Indeed, there are! The development of industrial data communication is one such example. The early focus on Industrial Ethernet has paid off for Hirschmann. We have developed our products for the special demands of industrial utilization. Real-time capability, high availability, quick automatic re-configuration after malfunctions, safety of data transmission, redundancy and high demands on the electronic environment like EMC (electromagnetic compatibility), temperature and vibration-strength are important factors in this connection.



Reinhard Sitzmann

Ambitious knowledge management project in the Rheinmetall group

A value-enhancing resource

Düsseldorf. In all realms of life, knowledge is changing at an ever increasing pace. Knowledge that may be up-to-date today can very well be out-of-date tomorrow or the day after. To counteract this phenomenon and based on positive experience gained with two similar projects already being carried out at Rheinmetall DeTec AG and STN Atlas Elektronik GmbH, the executive board of Rheinmetall AG launched its ambitious Knowledge Management (KM) project in September 2002. The underlying objective of this project is to apply the KM initiative – and the resulting experience and useful effects – already started in the group’s Defence sector some time ago to the entire Rheinmetall group. This is also why the Ratingen-based company is leading the group-wide implementation of the KM project.

Under the leadership of Ingo Hecke, head of human resources at Rheinmetall AG, a group-wide steering committee was therefore established last year. This committee also includes the industrial relations directors of the three corporate sectors Automotive, Electronics and Defence. In appointing such high-ranking executives to the committee, the group holding has maintained a direct link with the executive board, thereby not only ensuring its support but also reflecting the significance of the project. Additionally, a core team of seven specialists from the corporate sectors has been appointed to implement the targets and tasks set.

In deciding to implement the project throughout the Rheinmetall group, the initiators of the KM project have underlined the growing significance of knowledge as a value-enhancing resource coupled with the aim of improving the productivity and performance of a group operating in an increasingly globalized market environment. In the words of senior executive officer Ingo Hecke: “Knowledge management isn’t an option, it is an absolute necessity! It simply means that we will manage knowledge group-



Ingo Hecke



Markus Bentele

wide and make consistent use of it in future.”

The IT-platforms – or portals – that will be used for this purpose will all be designated GATE², for example, the portal to Rheinmetall AG will be called GATE²rheinmetall. The aim of these pilot-portals is to allow information, cooperation and communication throughout the group and across its individual companies, to collect the (expert) knowledge of employees in all areas of the group and provide a network for the knowledge and persons having the knowledge. This will allow individuals to participate very directly in the knowledge of others. From next year onwards, in a second step when the pilot phase has been completed, a uniform knowledge management will be introduced throughout the Rheinmetall group. Discussions about the related group-wide works agreement have already started with the Rheinmetall works council.



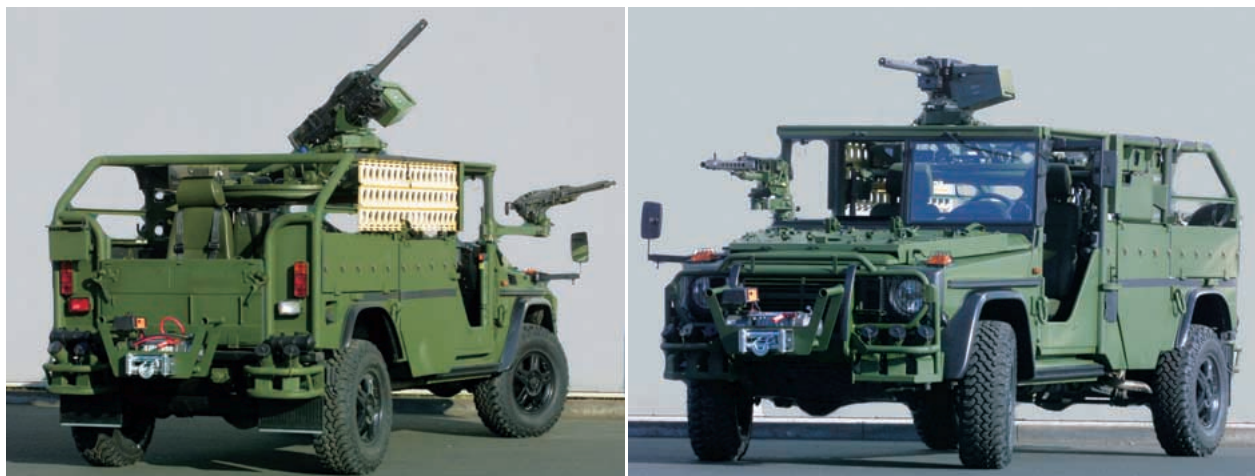
Cartoon: Dirk Meissner

GATE²rheinmetall: Used efficiently, knowledge management is a value-enhancing resource which employs advanced network structures and software systems.

We are confronted not only with increasing amounts of information but also with the fact that information becomes obsolete increasingly quickly – this is a problem which all realms of society and all institutions face. Remarking on the changes that are taking place, Hecke says: “The path we are on is taking us away from an economy of goods and toward an economy of information. In the medium to long term, knowledge will therefore be the determining competitive resource for all companies. As a technology group, Rheinmetall is highly dependent on knowledge. Today, we face the following situation: ever more sophisticated, smarter and networked products and services are being developed at ever shorter intervals. In a sense, knowledge has become a genuinely productive force that is gaining importance as the fourth production factor alongside the three classical factors of the economy, i.e. labor, capital and property.”

Markus Bentele, the KM project manager, adds that the experience already gained in the group will naturally be useful for the initiative that has now been launched: “Of course it has been helpful that we didn’t have to start

(Continued on page 13)



DELIVERY: One of the highlights at this year's IDEX in Abu Dhabi was the unveiling by Rheinmetall Landsysteme of the Bundeswehr's new "Light Infantry Vehicle for Special Operations LIV (SO)", that was presented to the public for the first time. A contingent of 21 vehicles is currently being delivered to the special operations forces of the German Bundeswehr. The new LIV (SO) constitutes a significant addition to the wide range of ground forces equipment already available from Rheinmetall DeTec, one of Europe's leading suppliers of defence systems. Given the new emphasis on highly mobile equipment for crisis reaction missions and special operations forces, the new vehicle is especially relevant. Transportable by CH 53 helicopter, this all-terrain vehicle packs an impressive punch and is ready for action virtually as soon it hits the ground. Based on the DaimlerChrysler Wolf 270 CDI all-terrain vehicle, the LIV (SO) was developed particularly for the special operations forces of the German Bundeswehr, its allies and other friendly nations. It can carry a four-man crew, including the driver. The vehicle's excellent off-road performance and a host of special features – like smoke grenade dispensers in the bumpers and tires that function even when punctured – ensure that SOF teams are able to operate and remain mobile even under extreme conditions.

Ambitious knowledge management project in Rheinmetall group

A value-enhancing resource

(Continued from page 12)

from scratch but have been able to benefit from the experience that Rheinmetall DeTec has gained with its „gatezdetec“ knowledge portal“, explains the 38 year-old expert who is in charge of the knowledge management activity at Rheinmetall AG. "The knowledge of our staff is often not used sufficiently, simply because there is no systematic exchange of information and knowledge. This can, for instance, mean that colleagues working in two different departments may not know that they are working on comparable problems which one of the two may already have resolved."

It stands to reason that a company can be at a clear disadvantage if it does not manage and make available to all its staff the knowledge and experience of its individual employees. Hecke: "Every company has employees who have collected a huge amount of knowledge and experience, people who are rated as experts in terms of the knowledge and experience they have. When such persons retire, they take their entire know-how with them. If this knowl-

edge has not been documented or, at minimum, passed on to others, it will be lost for good! This can put the success of the company and therefore also its jobs at risk!"

To prevent this from happening at Rheinmetall, the group portals of the three corporate sectors are to become the common information, communication and knowledge platform for all members of the respective sector and the entire group. To warrant uniform knowledge management, individual knowledge-related applications, the design and menu guidance will be the same for all portals.

The applications will include four central modules that will probably consist of news, forum, team rooms and profiles. Bentele explains: "A team room will, for instance, be a virtual room in which employees working on a joint task can meet. It will have a calendar to plan dates, will have a module to describe and manage tasks and a file service for files used jointly. This instrument will give team members the opportunity to organize the exchange of information and knowledge in an ex-

tremely efficient manner – especially, in cases where employees are geographically far apart. A feature containing current topics will give users the latest news about the company or other group members, the "news" section will give the latest news and "Newsline-Online" will contain the planned Internet and Intranet issue of the Rheinmetall company newspaper."

But before all of this is actually achieved and employees can benefit from the group-wide knowledge management, the program will have to succeed in the upcoming pilot phase. The initiators and project members are convinced that the project will be a success. To quote Ingo Hecke once more: "Overall, both the group and its employees will benefit from the project. Knowledge management – understood as a complex management instrument – offers our group the chance to manage knowledge as a target-oriented value-enhancing resource for the future. Employees will be given an instrument with which they can readily access the information and knowledge needed for their specific tasks."

Support for “Sahara” project of Swiss ornithological station Sempach

Superfledermaus tracks migrants

Sempach/Zurich. The Swiss ornithological station located at Sempach is using Superfledermaus radar units of Oerlikon Contraves (OC) as precision equipment. Equipped with a new logarithmic amplifier and a PC-based registration station, these radar units which date back to the 1960’s are now being applied to study the movement of migrant birds.

Every year, about five billion birds migrate from Europe to Africa and back again. The biggest obstacle to be overcome by these birds is the world’s largest desert, the Sahara. It is not known how many birds actually manage to cross the 2000 kilometers of sand and stone desert.

The Swiss ornithological station at Sempach wants to find out more about the exact movement of birds and has therefore launched its Sahara project. Pilot projects conducted in the fall of 2001 and spring of 2002 revealed the most suitable locations in the Sahara. Two permanent radar stations of the type

Superfledermaus, as well as a mobile radar station consisting of a Superfledermaus radar unit and a directional unit will be used for the main parts of the project this spring and fall.

The aim of the project is to establish the behavior of migrants. Researchers hope to find answers to these questions: How many birds cross the Sahara? Where do they feed en route? Do they cross the desert in non-stop flight or do they rest during the daytime? Which flight conditions do the birds encounter when crossing the desert?

The project methods to be employed have been developed by the Swiss ornithological station Sempach over the last years. The most important technical instruments are the Superfledermaus units from Oerlikon Contraves placed at the disposal of the ornithological station by the Swiss Army. The

Swiss company is also providing ongoing logistic support, spare parts and measuring instruments. The station will receive another two Superfledermaus systems shortly.

An expert working under contract to the ornithological station is converting the equipment and installing new software in line with the needs of the project. The systems are among the best registration facilities available for migration research in the world. Thanks to the new software (including mathe-

Research carried out in the last twenty years has delivered a good overview of the migration of bird populations in Western Europe and the Mediterranean region. Most of the birds migrate at night, although the Alps and Mediterranean are obstacles. The influence of meteorological conditions is particularly interesting, with winds playing an extremely important role. Migrants rise to air layers with the most favorable tailwinds. They avoid rain and select altitudes in which the wind is blowing in

flight direction. This saves time and energy. Birds that do not glide avoid turbulences and usually fly at night.

The extensive project has been planned and prepared by a team headed by Dr. Bruno Bruderer. Two permanent stations are to be installed for the main project – one on the coast and one in the deserts of Central Mauritania. These radar stations will continuously deliver data on the movement of the birds and therefore

make it possible to monitor their movements in time and space at the two strategic points throughout the project. Resting migrants will be observed and ringed at both locations. Weather data will be registered every four hours.

A team with a mobile radar station and an infrared camera will move further eastward into the desert together with a further team of field observers and ornithologists who place rings on the migrants. The latter team will examine how the migrant density, the bird species and their resting habits change en route from the coast to the extreme desert areas in the east and find out whether local water areas or oases influence the movement of the birds.

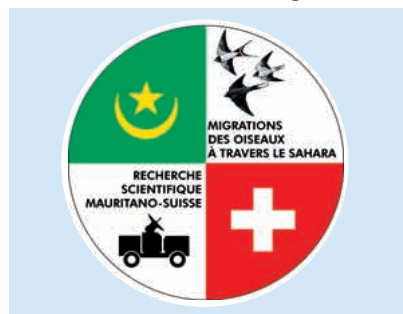
In all phases of the project, it is planned to collaborate closely with experts in Mauritania and various European research groups.



Photo: Hansjörg Blattner

Tracking migrants: in the comprehensive project launched by the Swiss ornithological station Sempach, the Superfledermaus radar system of Zurich-based Oerlikon Contraves (OC) will be used to trace the movement of birds across the desert and along the coast of Mauritania. The system is being equipped with new logarithmic amplifiers and PC-based registration systems.

tical tools), real-time bird data can be extracted from the radar signals. Individual birds can be tracked at distances of up to 4.5 km with the radars, supplying information on the direction, speed and altitude of flight as well as wing-stroke patterns of monitored birds. The ornithological insti-



tute is also carrying out observations of and investigations into the energy and water balance of the birds.

IDEX 2003: “Best Outdoor Design” award for Defence presentation

“Good talks and a lot of interest”

Abu Dhabi/Ratingen. This year’s defence exhibition IDEX in Abu Dhabi (United Arab Emirates) was overshadowed by the Iraq war which started on March 20, 2003, and therefore on the second-to-last day of the exhibition. In view of this situation and the comparatively difficult attendant circumstances, it is hardly surprising that the number of visitors to the most important defence exhibition in the Middle East (the IDEX takes place every two years) dropped by around 30 percent compared to 2001. The Rheinmetall DeTec group, a regular participant in the exhibition, presented a particularly interesting exhibition design at this year’s IDEX: shaped and colored like a sand dune, the unusual outdoor stand that was situated in a prominent location won not only a lot of praise from visitors and the organizers of the exhibition but was also distinguished with the Best Outdoor Design prize.

Team leader Andreas Haller from Oerlikon Contraves AG, Zurich, who is responsible for this region, is generally positive about the outcome of the exhibition: “The exhibits we chose were definitely the right ones. Delegations from the armed forces of various states in the region, including the minister of defence and chief-of-staff of the UAE, paid us a visit and showed strong interest in our products. We mastered a difficult situation well and the talks we held were good.”

Although many neighboring Arab states had scaled down their delegations in time and size due to the military situation, the quality of customer talks did not suffer according to sales expert Norbert Frank of Rheinmetall DeTec AG. Andreas Haller adds: “One aspect that was especially important in view of the excellent and long-standing ties with our customers in the region was that we did not back out of the exhibition and remained there until the very last day despite the critical security situation.”

Importance was attached to the safety of the group’s employees. Rheinmetall’s exhibition management was in close contact with the group management in Düsseldorf and the German embassy in Abu Dhabi and everything possible was done to minimize

the potential risk to the employees in situ. Although the German Foreign Office in Berlin did not consider the Emirates to pose a risk, members of the exhibition team were free to leave Abu Dhabi whenever they wanted to, although nobody actually made use of this option.

As expected, the new reconnaissance and combat vehicle of Rheinmetall Landsysteme GmbH for the German Bundeswehr met with considerable interest. Other exhibits from the Ratingen-based group included products from the field of air defence and battle management systems – both represented by Oerlikon Contraves. Officials from the armed forces of the Emirates and other Arab states showed interest not only in

the upgrade options for existing Skyguard systems but also in system concepts allowing the electronic networking of various air defence units to create a battle management system. The new 35mm naval gun Millennium (with 35/1000 Ahead ammunition) was a further eyecatcher at the IDEX.

STN Atlas Elektronik presented its defence electronics expertise, including its battlefield simulation capabilities, and reconnaissance and detection systems. The naval systems division of STN Atlas had deliberately chosen not to show its exhibits outdoors but to feature its presentations in the “German Road” and hence in the immediate vicinity of the German maritime industry.



Meeting point at the IDEX 2003: Abu Dhabi, the capital of the United Arab Emirates. By tradition, one of the exhibitors at the most important defence systems exhibition in the Middle East is the Rheinmetall DeTec group whose design concept attracted a lot of attention this year.

The Weapons and Ammunition division of Rheinmetall DeTec including the companies Buck Neue Technologien and Nico Pyrotechnik attracted a lot of attention with its Rh 40 BB artillery ammunition that was presented to the public for the very first time. During demonstration firing at the end of last year, this long-range ammunition covered a range of 40 km. This new development from the company meets demand of international customers for enhanced range ammunition for the self-propelled howitzer PzH 2000. Further subjects of interest from W&M included ongoing developments in connection with 105mm ammunition and the upgrade concept for the self-propelled howitzer of the type M 109.

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Schach: (Reisbrett, Knochen 1792) Vor etwa 14000 Jahren bereits in Indien beliebt, kam das hierarchische Brettspiel, das eine archaische Schlacht simuliert, um 1000 nach Europa. Auch hier galten die 64 Felder als kleine Königreiche, um die von den wirklichen Herrschern gern als Strategie-Übung gespielt wurde. Das zweite je in Englisch (von William Coston) gedruckte Buch erschien 1474 und hieß »The Game and Playe of Chiefe«. Schilder sind die Spaltstärke und die Reichweite der Figuren gewachsen, ihre Züge und Taktiken wurden viel komplexer, jedoch noch heute verweisen die englischen Figurennamen auf den aristokratisch-militärischen Hintergrund des Spiels: König, Königin, Bischof (mit Mitra, anstelle von »Läufer«), Ritter, Burg (der »Turn« ist ihr Bergfried) und Soldat (Pawn=Fußsoldat vom lateinischen pedo, »oni«). 1872, als die Figuren noch Weiß und Rot, statt Schwarz waren, schrieb Lewis Carroll »Alice hinter den Spiegeln«, in dem Alice als weißer Bauer die rote Königin schlägt, die gegenüber Grundlinie erreicht und selbst zur Queen (Dame) wird.



Chess: (Travelling board, bone 1792) Known some 14000 years ago in India, this hierarchical game, imitating an archaic battle, came to Europe around 1000 AD. Here, too, the 64 squares were regarded as little kingdoms, which were the aristocratic players' prior for a successful exercise in strategy. The second book ever printed in English, by William Coston 1474, was »The Game and Playe of Chiefe«. Since those days the power and range of the chessmen has grown and their moves and tactics have become more complex, but still the English names for the figures clearly reflect the game's monarchic and military background: king, queen, bishop (here were many sword-wielding medieval bishops), knight, castle and pawn (footsoldier, from the Latin pedo, »oni«). In 1872, when the pieces were still usually white and red, instead of black, Lewis Carroll wrote »Through the Looking-Glass«: Alice as a pawn reaches the opposite baseline (8' square), beats the red queen and becomes a Queen herself.

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Windrose: (Buchdruckform aus Kupfer, London 20. Jh.) 1302 erfindet Flavio Gioja aus Amalfi die Windrose für den Kompaß, Navigationshilfen seiner Zeit. 1252 ein Verzeichnis von Sternorten, 1325 der Jakobstab zur Positionsbestimmung der Gestirne. Doch noch lange erlitten ganze Flotten Schiffbruch, weil sie nicht genau wußten, wo sie sich befanden. 1757 konstruierte der britische Offizier John Campbell den Sextanten, mit dem man in klaren Nächten längs der Großkreise (Längsgrade und Äquator) segeln konnte. Erst nachdem 1714 das englische Parlament 20.000 L Preisgeld ausgesetzt hatte, gelang es John Harrison nach 40 Jahren Arbeit 1761, den ersten seetauglichen Chronometer zur exakten Bestimmung der Längsgrade fertigzustellen. Heutige satellitengestützte Verfahren messen geographische Positionen mit der Genauigkeit von einem Meter.



Compass Card: (Copper printing block, London 20°c) In 1302 Flavio Gioja added a card with all the bearings to the compass as one of the important navigational improvements introduced around that time: 1252 a table of stellar locations and 1325 the Jacob's staff to determine the positions of the stars. But still whole fleets were wrecked even in home waters because they did not know exactly where they were. In 1757 the British naval officer John Campbell designed the sextant, which made nocturnal sailing along the lines of longitude possible; but not until the English parliament offered the enormous reward of £ 20,000 in 1714 did John Harrison in 1761, after working for over 40 years, finish his marine chronometer to measure longitude reliably. Today's navigational aids, like GPS, establish position with extreme exactitude to within 1 metre.

2003 AUGUST



Waldohreule: *Asio Otus*

Zwei charakteristische Schmuckfedern geben dieser 36 cm großen Kauzale ihren Namen; doch ihre Ohren sitzen seitlich versetzt im Kopf, sodaß sie mit den unterschiedlich einstrahlenden Schallwellen ihre Beute genau lokalisieren kann. Neben Geräuschen sammeln die strahlenförmigen Gesichtsfedern des dämmerungsaktiven Bauboogels auch Licht, während das weiche Gefieder einen lautlosen Flug ermöglicht. Bei Gefahr legt die Eule ihre Federn eng an und nimmt eine warnende Pfahlstellung ein. Ihre »Ohren« waren das Vorbild der ägyptischen Hieroglyphe *Malac* (Eule) und des später davon abgeleiteten lateinischen Buchstaben *M*. Als Emblem der Schutzgöttin *Athena*, *Pallas Athena*, genießt die Eule seit alters her den Nimbus der Weisheit, wegen ihrer Laute aber auch den Ruf des Unheimlichen. **Long-eared Owl:** *Asio Otus*
This 36-cm-large member of the screech-owl family owes its somewhat misleading name to the two feathers projecting upwards from its head, but its ears are set asymmetrically in its head, so that it can locate its prey by the different arrival times of the sound waves coming from it.
Besides noises the broad facial disc gathers light, allowing this predator to hunt in the twilight, while it owes its silent flight to its soft plumage. Scenting danger, the owl gathers its feathers about it and freezes into a camouflaging pulp-position. Its »ears« inspired the Egyptian hieroglyph *Malac* (owl) and the Latin letter *M* derived from it.
As the emblem of *Athena's* patron goddess, *Pallas Athena*, the owl has long enjoyed the nimbus of wisdom, while its ghostly call often causes it to be seen as a harbinger of uncanny and sinister events.

THE EVOLUTION OF DEFENCE
BY ACHIM FREDERIC KIEL
FOR RHEINMETALL DETEC

THE EVOLUTION OF DEFENCE – the motto of Rheinmetall Detec's calendar for 2003. Along with the long-eared owl and the compass card, the calendar sheet for the month of August shows a game of chess, a board game simulating an archaic battle.