



Impulse

VEM SACHSENWERK

• VEM MOTORS

• VEM MOTORS THURM

• KEULAHÜTTE

Dear readers,



It has proved invaluable that we analysed our company situation back in October of the year before last, and that we thereby considered both its integration into the Merckle group and the chances and risks of a world financial crisis for the coming years.

This analysis was accompanied by the

scenarios for which we needed to prepare ourselves. But even our predictions of a decline in capacity utilisation were then far exceeded by reality. A slump in incoming orders by a total of 44 % across the different engineering sectors was inconceivable for me and all our managing directors in March 2008. We had reckoned with a 30 % drop in orders and made the necessary provisions in good time. The upheavals which hit the banks, the Merckle group and many other industrial sectors, and then finally the death of Dr. Adolf Merckle on 5th January 2009, were further heavy blows for us and our company, but still failed to leave us paralysed.

Immediate intensive negotiations with our banks, credit insurers, suppliers and customers were able to restore confidence, and drastic saving measures achieved liquidity reserves. The reorganisation of the group management and structure were motivation for our principal banks, who today view us as an independent unit operating separately from the overall Merckle group, and thus exempt us from the restrictions which the syndicate banks have imposed on the group as a whole.

Ludwig Merckle and Dr. Scheifele have successfully loosened the credit squeeze on the group. The value of the Heidelberger Cement shares has doubled since their low. Kässbohrer is not to be sold after all. Debts have been paid back. That also provides positive stimulus for the operative VEM group.

Having received the word of the economics minister and the minister-president, we had reckoned with a state government guarantee for the refinancing of loans for Keulahütte and VEM Thurm. After almost a year of wrangling and 30,000 € in fees, the guarantee was eventually refused. The state government is by all means willing to help industry. But a multitude of consultants, civil servants and parliamentary committees stand between the promise of a minister and an actual guarantee certificate. European law, federal law, state law and bank interests are to be taken into account. It is thus a system which manages to hinder itself and blocks any fast sovereign decisions. With this experience behind us, we now know that we can only count on self-help, with the support of our partner banks. And with the means which we have at

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Wind power of tomorrow

Sachsenwerk and Woodward-SEG cooperate to develop a new technical concept

As one of the leading manufacturers of wind turbine generators, VEM takes pride in the new innovative solutions with which it continues to drive growth trends in the wind energy sector. In cooperation with the company Woodward-SEG, VEM Sachsenwerk has now developed a technical concept for fast-running permanently excited synchronous generators. The prototype has been engineered for an apparent power of 2.7 MVA, but higher output classes remain feasible where customer demand arises. The generators are designed for operation with a full converter on wind turbines and are to be manufactured from 2010. The benefits of the new technology include:

- higher efficiency/power density of the generators
- higher energy yields in the partial-load range
- reduced maintenance (no sliprings)
- decoupling of the generator from the supply grid by way of the full converter - reduced system perturbation at the generator
- high resistance to aggressive media (sea air, salt)

Within the framework of this project, calculation software was also developed for the routine dimensioning of synchronous permanent-magnet machines from Sachsenwerk. This includes both new and extended program modules for the actual calculation and configuration of PM machines, as well as program code for the in-house processing of the calculated data. In this way, VEM is in a position to react to special customer demands at short notice in the future, too.

The use of offshore wind energy is set to become a key focus of the renewable energy debate in the coming years. This latest project has enabled both cooperation partners - Woodward-SEG as the converter supplier and VEM as the generator supplier - to establish the prerequisites for successful business with the leading turbine manufacturers. PM machines with full converter will in future account for a higher proportion of the newly installed wind power capacity.

The first test stand measurements are to be carried out on the new test stand facilities at Sachsenwerk in May 2010.



Photo: REpower Systems AG/Stephane Cornard

Wind turbines make an invaluable contribution to supplies of "clean" electricity.

Green light for energy efficiency

6th EEMODS Conference addresses the worldwide use of energy-saving motors

"Energy efficiency in motor-driven systems" is the motto of the EEMODS Conference, for which experts from many different countries gathered for the sixth time in Nantes, France, from 14th to 17th September 2009. The first meeting was organised as far back as 1996. VEM was again represented by managing director Jürgen Sander.

How did the conference characterise the situation for the motor manufacturers?

As the consumption of electrical energy has almost doubled over the past 20 years, we need faster and more effective ways to reduce CO₂ emissions. This is a prime objective for the European motor manufacturers, above all within the framework of CEMEP, the European umbrella organisation for the national associations of electric motor manufacturers. VEM illustrated the work and potential achievements of CEMEP at a plenary session. In 2008, the European manufacturers held the largest share of the world market for motors and drives with 43 %. That results from their position of technical leadership in respect of engineering, quality and energy efficiency.

What is promoting the more widespread use of energy-saving motors?

The process of standardisation, which the European manufacturers view as an important element in international competition. CEMEP already defined the energy efficiency classes EFF1 to EFF3 in the 1990s, and they serve as the basis for certification in many countries around the world. CEMEP also initiated a project aimed at guaranteeing a globally uniform implementation in the corresponding classifications for energy-saving motors. The outcome is the new IEC 34-30 standard with the classes IE1 to IE3.

There is similarly progress in the standardisation and comparability of the test methods to determine energy efficiency. One corresponding avenue was developed together with the universities in Darmstadt and Birmingham in 2005, on the basis of a CEMEP study for the IEC 34-2-31 standard.

Which positions did the European motor manufacturers adopt at the conference?

The EuP directive, which introduces binding energy efficiency

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Keulahütte casts parts for the German Railways

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Sachsenwerk supplies drives for offshore wind farm

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8th Technical Conference sends positive signals

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Keulahütte casts parts for the German Railways

Manufacturer-specific product qualification for wheel-set bearing housings to the highest quality standard



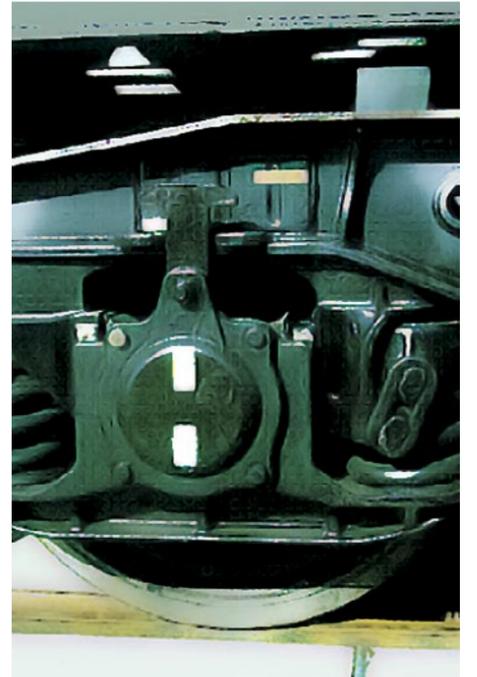
Wheel-set bearing housings for the German Railways (Deutsche Bahn AG) are now manufactured in Krauschwitz. The certificate of manufacturer-specific product qualification was handed over to the Keulahütte foundry on 14th July 2009. It is initially valid until July 2012. Thereafter, the qualification must be renewed.

After months of intensive preparations, the final supplier assessment by a team of auditors from Deutsche Bahn began on 19th May 2009. The specimen parts specified for materials testing in the course of the audit were subjected to thorough examination in the central laboratory in Leipzig, where the compliance with all parameter requirements was confirmed in a test report on 3rd June 2009. The approval of Deutsche Bahn also qualifies Keulahütte to supply wheel-set bearings to other European railways.

Wheel-set bearing housings are safety-relevant parts. After all, they represent the connection between the wheel axles and the bodywork. The housings currently manufactured in the Keulahütte factory weigh 85 kg and are designed for axle loads of 25 tonnes each.

During each machining cycle of 1.5 minutes, two parts are produced simultaneously by way of an air-impact compacting process in uniform moulding boxes with dimensions of 1250 x 1000 x 350/350 mm. Magnesium treatment of the liquid iron immediately prior to casting achieves the prescribed material specification EN-GJS-400-18 LT. This is a ferritic cast iron with spheroidal graphite, which displays outstanding tenacity properties at temperatures far below 0 °C, while at the same time maintaining an acceptable level of strength of over 400 MPa. The material properties are verified not by way of separately cast specimens, but by removing samples from precisely defined areas of the part itself. Each series casting is tested and accepted individually. In-process ultrasound and magnetic power testing help to ensure compliance with the railways' ultimate quality standards.

Series maturity was confirmed with the first delivery of approx. 2,000 housings. For 2010, Keulahütte is now looking forward to both orders for significantly greater quantities of the present castings and an expansion of the range to include further types.



Wheel-set bearing housings in their installed state

| FÜRST PÜCKLER EDITION |

Historical lamps for the market square

The market square in Bad Muskau, a small town on the German-Polish border whose famous park is inscribed as UNESCO world cultural heritage, is to gain a fresh appearance. A total of 24 historical street lamps are currently being cast at Keulahütte. The market square ensemble is to be completed with 22 benches arranged stylishly under elegant pergolas. They, too, are to be produced by Keulahütte.

Architectural castings enjoy a long tradition at Keulahütte. Old catalogues and other documents provide evidence of a widespread use of castings in architectural settings around the turn of the 20th century. The craft skills of the workforce and the experience gathered to date have now nurtured the decision to concentrate the previously rather sporadic activities and to establish individual architectural castings of the so-called "Fürst Pückler Edition" as an independent product line.

The combination of tradition and modern technologies such as zinc-plating and plastic coatings for cast surfaces guarantees a level of quality which is convincing more and more customers. Bridges - wholly or partly in cast iron -, railings, historical windows, pillars, bollards in both historical and modern styles, candelabras and benches are to be admired in many locations around Germany. Through such projects, the Keulahütte specialists provide regular proof that foundry-work is indeed a highly demanding craft.



Cast-iron street lamps of this type, which belong to the Keulahütte range of customer castings, are currently being produced for Bad Muskau

Recultivation of factory landfill

Reafforested area blends into the landscape of the local wildlife park

After almost thirty years of use, the factory landfill for the disposal of used sand from the Keulahütte foundry has been recultivated in exemplary fashion since the summer of 2009. One aspect of the comprehensive recultivation project was the search for a long-term disposal alternative conforming to the requirements of the relevant waste codes but still as close as possible to the company site. Despite the considerable extra expenditure involved, this problem was eventually solved together with the Regional Waste Disposal Network for Lower Silesia/Upper Lusatia (RAVON). When the last measures are completed in the coming weeks, the reafforested area of the earlier landfill will blend seamlessly into the landscape of the Keula wildlife park.

The landfill two kilometres south-west of the VEM premises was also in the past always invisible to customers,

employees and visitors. But for the foundry operations at Keulahütte, it was a vital prerequisite. After all, an average 0.6 tonnes of old sand remains for every tonne of iron and steel cast in Germany. At Keulahütte, this ratio is even less favourable, as the product portfolio is characterised by thin-walled rather than heavy castings. Another negative factor is the large amount of sand required for the cores to produce high-volume cavities. The combined result is that Keulahütte must dispose of 0.8 tonnes of used sand per tonne of casting.

While the majority of the quartz sand used in the hand moulding shop can be mechanically reconditioned and thus used over and over again, there is still no industrial-scale solution for the recycling of the mixed sands from machine moulding.

European trade association for cast piping systems

Keulahütte supports the new FGR - EADIPS, which is to begin its work in January

The "FGR quality mark" has identified high-quality cast-iron piping and pipe fittings in Germany for many decades. The three letters stand for "Fachgemeinschaft Guss-Rohrsysteme", a trade association of companies manufacturing piping, fittings and accessories in ductile cast iron. The work of the association to promote safety and quality is highly respected in many European countries.

It was not least against this background that the FGR members developed the idea of a new European cast-iron piping association. It is now to begin its work in the new year under the name FGR - EADIPS (European Association for Ductile Pipe Systems). Ten European manufacturers, among them Keulahütte Krauschwitz, are expected to become founding members. In addition, a number of associate members will also be supporting the philosophy of cast-iron piping systems.

The new FGR is to represent the economic, technical and scientific interests of its members - above all in negotiations with European and national authorities and institutions such as CEN, DVGW, ÖVGW and SVGW.

The requirements for granting of the "FGR quality mark" correspond to those of all relevant European standards and

guidelines. The member companies also agree to additional independent auditing by accredited test institutes. The customers can thus be guaranteed maximum safety and quality, and even local technical service across the European market.

In future, the branch association will be representing not only the general interests of the cast-iron piping manufacturers, but also those of companies supplying cast pipe fittings. Its public relations work is to communicate the philosophy

that cast-iron pipe systems offer simple, reliable, economical and high-quality solutions for all applications involving the transport of drinking water, industrial process water and wastewater.

One especially important aspect of the public relations effort will be the cooperation with political bodies and the public sector. It is vital for the branch to establish a corresponding lobby, for example to secure a share of the additional government spending to aid construction and civil engineering in times of crisis like those we are experiencing at present. The collaboration with colleges and universities is similarly to be strengthened. Young hydraulic engineers are to be given opportunities to experience the merits of cast-iron pipe systems already during their studies.

FACHGEMEINSCHAFT GUSS-ROHRSYSTEME

FGR

European Association for Ductile Iron Pipe Systems EADIPS





Special equipment on land and at sea

Whether double-walled supertanker, the largest sailing boat, the fastest car ferry, the strongest salvage tug or mega-yacht – the VEM Group supplies special machines and drives of the most varied kinds for marine applications and for port and crane installations. Its thruster and propulsion drives boast outputs of up to 22 MW in order to meet the demands placed

on an autonomous power supply. The product portfolio ranges from shaft and diesel generators, via pod drives and synchronous generators with outputs up to 60 MW, to low-voltage machines and auxiliary drives. Motors and generators weighing up to 200 tonnes are manufactured in accordance with the latest classification rules for all vessel types.

A ship which is gaining ground

Hopper dredger equipped with drives and generators from VEM

The “Vasco da Gama” is one of the largest hopper dredgers in the world. It was built for the hydraulic engineering specialists of the Jan de Nul Group by the Nordseewerke in Emden, Germany. VEM supplied pump and fan drives, shaft and on-board generators, and stern and bow-thruster drives in a variety of sizes.

Built in the format of a supertanker, the dredger is used to claim new land from the sea, to enable new port installations, container and tanker terminals, refineries and other industries

to be set up. It is currently operating in Singapore, where it is helping to establish 1,400 hectares of new building land for the booming economic location. Some 200 million tonnes of sand are to be deposited along the coast. This sand is initially drawn from the sea bed and pumped into the dredger’s tanks via a suction pipe. The “Vasco da Gama” has three options available for deposition: Opening of the hull flaps, a pipeline docked to the vessel, or direct ejection via a water cannon installed at the bows.



Photo: TKMS Blohm + Voss Nordseewerke GmbH

The Vasco da Gama “gaining ground” in the Persian Gulf off Abu Dhabi

| ENGINEERING |

New member of AIDA fleet



Photo: Karin Wagner

The scope of delivery also includes 4 stern thruster motors per vessel.

The forthcoming launch of the AIDA IV, which will then be officially named “AIDAblu”, by German cruise liner operator AIDA Cruises in February 2010 is set to add another chapter to the VEM success story in electrical equipment for passenger liners. The new cruise liner is 252 metres long and will be offering its passengers recreation and relaxation on a total of 14 decks.

VEM has supplied various auxiliary drives with outputs between 0.37 and 160 kW, as well as two bow thruster drives with an output of 2.3 MW each and 15.5 MW propeller motors. Four high-performance VEM diesel generators also deliver 12.5 MW each to cover the electrical energy demand of the ship and its passengers.

| IMPRINT |

Publisher:
VEM-Firmenverbund/VEM-Gruppe

Responsible editor:
Sabine Michel
Public Relations
Pirnaer Landstraße 176
D-01257 Dresden, Germany
☎ +49-(0)351-208-1001
michel@vem-group.com

Contributing editors:
Sabine Hartenstein ☎ +49-(0)375-427-320
Lutz Schube ☎ +49-(0)3943-68-3305
Karin Wagner ☎ +49-(0)351-208-3291
Bernd Waßmus ☎ +49-(0)3943-68-3169
Karin Hanig ☎ +49-(0)351-85367-16
(Kommunikation Schnell)

Layout and design:
Kommunikation Schnell GmbH, Dresden

Editorial deadline:
13th November 2009

Print:
Druckerei Vettters GmbH & Co. KG

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Lifting platform assists construction of offshore wind farms

Sachsenwerk supplies 1100 kW propeller drives

The company BARD Engineering GmbH is using its own special lifting platform “Wind Lift I” to facilitate construction and operation of the “BARD Offshore 1” wind farm. Four of the propeller drives with an output of 1100 kW each were supplied by Sachsenwerk.

“Wind Lift I” is able to pick up a complete foundation or wind turbine with its tower, nacelle and rotor blades. Alongside the crane, there is also a heavy-duty ram for the foundation piles on board. The working platform remains stable as a rock even at wave heights over three metres and in force-seven winds.

The crane is designed for loads up to 500 tonnes with a jib length of 31 metres. It can thus raise loads to a height of more than 121 metres above the water level. The platform incorporates a helicopter deck for personnel transfer and offers accommodation for up to 50 people. With its draught of just 3.5 metres, it can even be used for the handling of heavy loads in port areas.

Four propeller drives for the special lifting platform “Wind Lift 1” were supplied by Sachsenwerk.



Photo: BARD Engineering GmbH

Positive signal in times of crisis

A wealth of technical information and an outlook on the future characterise the 8th Technical Conference

Joint deliberations on chances, ideas and strategies to find ways out of the crisis - flanking an agenda of top-flight lectures and presentations, this was a central concern of the 8th Technical Conference of the VEM Group. "Exchanges on the development and integration of new ideas are particularly important at the moment," emphasised Jürgen Sander, managing director of VEM motors. And he was far from alone with this opinion. More than 220 drive experts from 14 countries provided for a new record attendance at this annual branch meeting in Wernigerode on 29th and 30th September.

A total of 18 lectures gave the invited speakers an opportunity to present the latest developments, research results and new solution approaches to tackle the pending challenges in drive technology. One central topic was the implementation of the

EuP directive and the graduated introduction of energy-saving motors which is scheduled to begin in June 2011 - with far-reaching consequences and an urgent need for clarification for both manufacturers and users. Another important subject was that of permanent-magnet synchronous motors, which many experts view as the drives of the future - particularly in the context of energy efficiency. But also for many other questions in electrical engineering, the programme opened the door to a wealth of information and know-how from theory and practice.

"We want to look ahead in these difficult times" - that is how Jürgen Sander put the discussions in a nutshell. And the same could apply to the conference itself. The dates for the 9th conference have already been fixed. Next year's meeting is to be held not in September, but instead in June.



Photos: Wolfgang Koglin

A visit to the castle in Wernigerode was the evening's highlight.

| 9th TECHNICAL CONFERENCE 2010 |

Core theme: Offshore, marine and port systems
Attention: New dates: **22nd/23rd June 2010**
Venue: Kultur- und Kongresshotel Wernigerode



Standards committee meets in Zwickau

The forthcoming introduction of energy efficiency class IE2 was the main discussion topic for a two-day meeting of motor experts from all over Germany. The DKE/UK 311.1 committee members came to VEM motors Thurm in Zwickau for their 65th session on 7th October. Michael Gruner represents the VEM Group as a motor manufacturer in the

technical commission. The committee is responsible for the elaboration of standards for the field of "Rotating electrical machines". Its work covers not only standards concerning ratings and operating modes, but also specifications for the dimensions of rotating electrical machines.

| PEOPLE |

Ideal character for day-to-day business

A tangled fishing net, which had damaged one of the two pod drives, forced the cruise liner "Seven Seas Voyager" to make an unscheduled stop in Genoa in April. The operator was only able to grant a very tight window for the repair. "But our technicians even managed to finish the work before time," says Anett Arndt. As head of the customer service department at VEM Sachsenwerk, she sees it as an obligation to guarantee customers such immediate response and absolute satisfaction when it comes to service work, installations, warranty and repairs. She can also rely on the expert competence, responsiveness and flexibility of a 20-man team. Her respect for their work is summed up admirably in an explanation she once gave to her children: "The technicians pick up their toolbox and suitcase, fly half-way around the world and then work on their own and under great pressure to repair a machine which costs as much as a house."

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cy classes for Europe from 2011, is a step in the right direction. But it needs support from the governments. The costs for the new developments are currently being borne solely by the manufacturers. We need to create incentives to encourage the manufacturers and users of energy-saving motors to push developments forward. In this context, we could learn from experience gained elsewhere, e.g. in the USA. I am thinking of subsidy programmes or tax relief options.

Where do you see further need for action?

The process must be managed and controlled. That means, above all, clear rules on the handling of the minimum efficiency classes, provisions for the motors in stores, the interactions between manufacturers, wholesalers and final customers, and

The potential savings:

Example: 4 kW, 3,000 rpm, 4,000 operating hours/year

Efficiency class IEC 60034-30	Standard Efficiency IE1	High Efficiency IE2
Type	IE1-K21R 112 M2	IE2-WE1R 112 MX2
Output P B	4 kW	
Efficiency	84.9 %	87.5 %
Energy saving	559.99 kWh/year	
Energy saving [12 ct/kWh]	67.20 €/year	



An energy savings calculator can be found on our website at www.vem-group.com.

the elaboration of uniform designations and labels. Adherence to the technical parameters requires investment and modifications to previous motors. To safeguard the new quality of energy efficiency on the German and European markets, we must therefore specify how we are going to deal with the "black sheep" who refuse to observe the agreements. Here, again, we could tap international experience, e.g. the monitoring systems in the USA. We also expect the support of the European Commission.

Anett Arndt enjoys gliding during her spare time. This passion is also reflected in the pictures she paints as a hobby artist.



Photo: Romy Arndt

Anett Arndt, who holds a degree in mechanical engineering, joined VEM in Dresden in March 2008. She was put in charge of customer service just five months ago, and can thus still view many things with the eye of an outsider. In many ways, it is helpful not to have been previously involved with every last detail. "I love organising things, implementing logistics and planning processes," she says. Precisely the character traits needed in day-to-day customer service. With her deputy Bernd Stieding, who coordinates the service calls, and chief engineer Thorsten Heinert, she has excellent partners at her side.

Strict, honest and open, is how Anett Arndt describes her leadership style. The topic "after-sales management" is underlined heavily on her to-do list. And anyone who knows her single-minded determination will be convinced that both company and customers can look forward to benefits when she is finished.

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our disposal to reduce costs, maintain our productivity and win new customers.

By way of self-criticism, we must also admit that our own system - like the Saxon state guarantee system - is sometimes too slow and inflexible. It is not acceptable that, following the decision to implement short-time working in the individual factories in accordance with the volume of incoming orders, it took months before the defined percentage values - relative to the overall workforce - were finally achieved. In Wernigerode, in particular, the inertia was too great. In the smaller factories Krauschwitz, Thurm, Most and Piestany, the reactions were in part very fast and cost-efficient. Wernigerode and Dresden are now heading in the right direction.

I expect the economic crisis to stagnate at its present level - and that until 2011/2012. We must thus prepare ourselves accordingly. From the point of view of cash flow and earnings, I can say for all the VEM companies that we will come out of 2009/2010 with a few dents, but nevertheless intact main systems. We must still be ready to master some greater challenges: The elections are now over, and we can already see how the first attempts are being made to mislead us.

I thank you all for your confidence and commitment to the joint mastering of a difficult future. May I already now wish you a peaceful Christmas ahead and a successful new year.

Yours,
Freiherr von Rothkirch