



VEM SACHSENWERK

• VEM MOTORS

• VEM MOTORS THURM

• KEULAHÜTTE

Impulse

Dear readers,
dear VEM colleagues,



After the tragic sudden death of Adolf Merkle, and the shock this meant to all of us, we are now gradually returning to our daily business. And this daily business is characterised by a global financial crisis and an increasingly rapid economic decline. We already began to prepare ourselves for this situation a year

ago, and we believe that the chosen measures will enable us to ride out the storm in the best possible manner. To ensure continuity in strategy, management and policy implementation in both the VEM manufacturing companies and in the VEM holding, the Merkle family granted me general powers of attorney for these matters on 23rd January 2009. I am fully aware of the obligations this entails in the current situation facing the German economy.

The safeguarding of our locations, our core jobs and our market position, alongside sustained further development, are the prime objectives. From today's point of view, the conservative control mechanisms in place at the individual locations are already sufficient to enable us to reach these goals.

VEM Dresden can point to a comfortable portfolio of orders, will continue to work profitably, but could possibly stagnate. Necessary new investments will thus be analysed restrictively in the future. Currently ongoing investments will be realised, but more substantial new building plans will be placed on hold. Our trainee programmes are to be continued. From today's point of view, short-time working will not be necessary for at least the next 18 months.

VEM Wernigerode will similarly postpone or halt new investments. The new die-casting machine has now been started up. The training programmes for apprentices and engineers are to be continued. Short-time working has been prepared and will be used - without endangering productivity - where appropriate to safeguard the jobs of our employees.

VEM Zwickau will be lifting the covers on a modern machine tool complex in the coming weeks. Further new investments, however, need to be put back or halted. The training for apprentices, on the other hand, is to continue consistently. Precautionary preparations have been made for short-time working, and this instrument is ready to be used where necessary, without detracting from productivity.

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Well equipped for the fairs

VEM to demonstrate its capabilities at the Hanover Fair, ACHEMA and at WASSER BERLIN

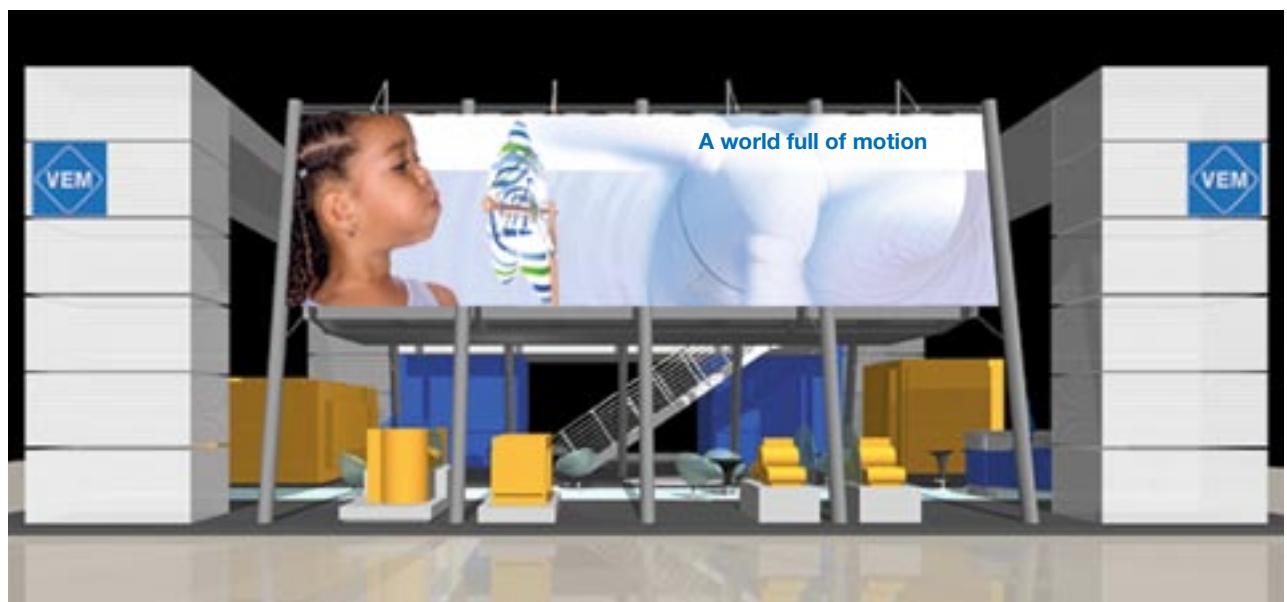
New and further developments of motors, generators and foundry products, and reliability as a supplier of drive technology and castings - those are the trumps which the VEM Group will be playing out at important international fairs this year. Especially at the Hanover Industrial Fair and at WASSER BERLIN, customers will be able to see for themselves that these promises remain as valid as ever in 2009.

The VEM companies have booked a larger stand in Hall 11 for this year's Hanover Fair from 20th to 24th April. The enlarged floor space of 234 sq.m. will enable us to prove that we are also in a position to prevail on an ever more demanding international market - with top-class special motors for steel and rolling mills, with a new generation of explosion-protected motors, with energy-efficient motors and with motors for ma-

rine applications. Within the framework of the new specialist exhibition WIND, VEM is travelling to Hanover with high-performance generators for wind turbines. Join us to talk about future technologies at one of our panel discussions, because the Hanover Fair is also an ideal venue for such meetings.

Keulahütte Krauschwitz will be attending the world's largest trade fair for the water and wastewater industry, WASSER BERLIN, with a current selection of its foundry products. Visitors can gain a first-hand impression of the company's capabilities, and will recognise that it has no reason to shy international comparisons (see also pages 5 and 6).

VEM will also be presenting an impressive selection of products for applications in the chemicals industry at ACHEMA 2009 in Frankfurt/Main from 11th to 15th May (see page 3).



VEM will be presenting its wares on a new stand at the Hanover Fair 2009 under the banner: "A world full of motion".

Guarantee for high reliability

Wind energy continues to benefit from the VEM product range

Wind energy as a source of power generation was also able to record high worldwide growth in 2008. With an export ratio of more than 80 per cent, the wind energy sector exemplifies the lead of German technologies on the world market and promotes also general economic progress in Germany. At the end of 2008, Germany boasted a total installed capacity of 23,902 MW.

The VEM Group has also contributed to this development with wind energy generators, auxiliary drives and foundry products. Sachsenwerk has established itself as one of the world's leading suppliers, especially for higher output ranges - both for double-fed slipring generators and modern synchronous generators.

Wind energy generators, in particular, benefit at both the design and manufacturing stages from the many decades of experience in electrical engineering which is concentrated at

VEM Sachsenwerk in Dresden. With a range of double-fed machines for wind turbines, VEM offers its customers individually tailored solutions. Close cooperation with the leading suppliers of frequency converters permits determination of an optimum solution for every system configuration. Customer-specific wind energy generators are counted among the technology leaders on the market and are helping to define the worldwide benchmarks for the wind turbine product generation.

The products supplied by the VEM Group for wind turbines include also low-voltage machines for lifts, heat exchangers and hydraulic systems, as well as yaw drive gearboxes. Machine-moulded components from Keulahütte Krauschwitz complement the scope of offers for this field of power generation on the basis of renewable energies.



Chemicals industry relies on products from VEM

Page 3



Generators for the wind energy branch from Sachsenwerk

Page 4



Keulahütte products for water and gas supplies

Page 5

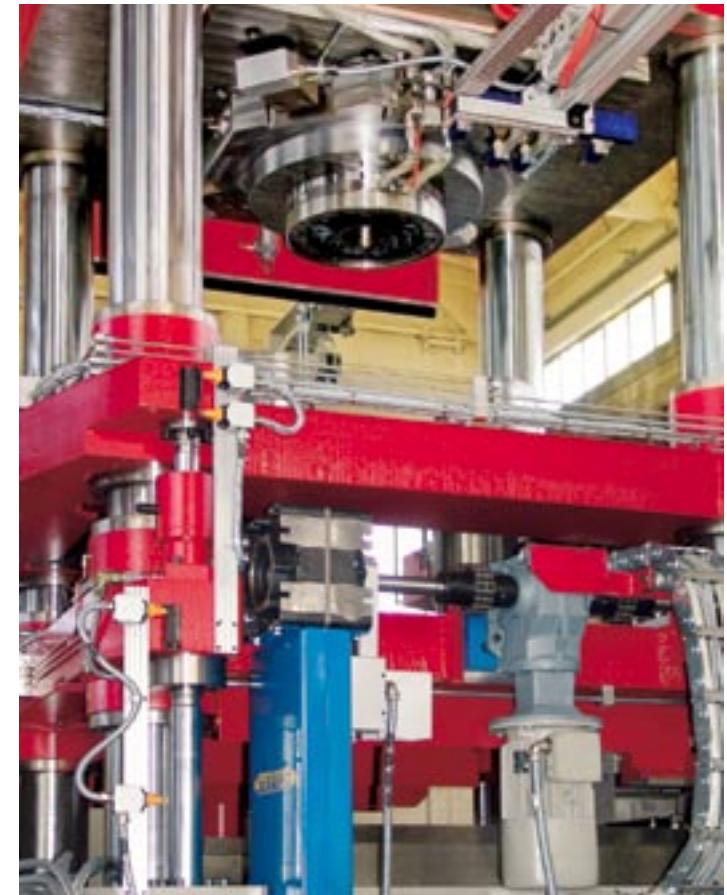
New die-casting machine goes into production

A modified technology for the manufacturing of squirrel-cage rotors enables VEM motors to extend its product range

March saw VEM motors put its new ROTORCAST LR 8000 die-casting machine into production in Wernigerode. The new machine is to be used in the manufacturing of squirrel-cage rotors for electric motors in frame sizes from 280 to 450. The die-casting complex was supplied by the Italian company T.C.S. molding S.p.A. from Caronno Pertusella, and its technical capabilities form the basis for fundamental technology modifications and a market-oriented extension of the VEM product range.

VEM motors has been seeking practicable solutions for the manufacturing of squirrel-cage rotors for greater shaft heights since 1998. The problem was to date the great mass of liquid aluminium which has to be pressed through the narrow rotor slots over distances of up to a metre. This must also be achieved without leaving cavities in the rotor cage. The technical concept presented by the Italian suppliers meets these demands. It is planned to operate the machine with aluminium masses up to 120 kg. The shafts are to be pressed into the die-cast rotor bodies immediately after the die-casting.

The new die-casting complex shortens the time required to manufacture large rotors, and at the same time improves the parameters of the end product. VEM motors has in this way laid the foundation for further extension of its output range for three-phase asynchronous motors up to 1,000 kW in the coming years.



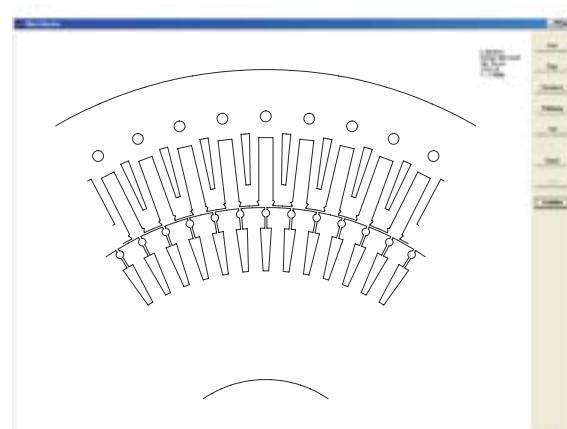
Photos: Thomas Gerlach

The hall in Wernigerode was fully refurbished before setting up the new ROTORCAST LR 8000 die-casting machine. Media supplies were renewed and a foundation with a load-bearing capacity of 120 t was laid. Parallel to the machine installation, the rotor bodies produced during trial runs at the supplier's factory were subjected to thorough testing.

New calculation program for asynchronous machines

All design programs now satisfy the highest scientific-technical standards

A new program package has been developed to calculate the operating parameters of asynchronous machines with 3-, 5- and 2 x 3-phase windings. It can be used for the dimensioning of motor and generator machines with squirrel-cage or slipring rotor (with/without rotor feed).



Following the updating of the synchronous machine and exciter programs, this has completed a fundamental revision of all the design programs used for electromagnetic calculations at Sachsenwerk and has raised them to a high scientific-technical level. With the aid of these programs, the permissible design limits are attained reliably and with acceptable outlay - taking into account all customer demands. This serves to secure the future competitiveness of our products.

The programs run on a Windows-based user interface. The input data of all calculated machines are acquired centrally for all employees involved with calculations. At the same time, the data can be searched and analysed statistically to identify characteristic design and administration properties.

Starting from the geometry data of the active core and the windings, the parameters for static operation are determined and the start times, temperature rise on starting and the synchronous and asynchronous harmonic torques are calculated. The calculation results refer to the fundamental field and all practically significant harmonic fields.

Where does the future lie for drive technology?

The heading chosen for the 8th Technical Conference of the VEM Group is "Future drive technology?" The two-day event is to spotlight new challenges and development trends in electrical power and drive technology. VEM in this way offers researchers, engineers and practical users a forum at which electric motor manufacturers and international specialists can discuss the latest research results and developments.

I 8th TECHNICAL CONFERENCE I

Dates: 29th and 30th September 2009

Venue:

Congress Centre
HKK Hotel Wernigerode
Pfarrstrasse 41, 38855 Wernigerode

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I EDITORIAL I

continued from page 1:

Keulahütte has expanded its hand moulding facilities at just the right time. The capacity of the new hand moulding shop is well utilised. Seasonal factors mean that the foundry for standard castings is currently working only a single shift. We expect improving orders in the 2nd quarter, however, and this will require a return to two-shift operation. Further investments have been deferred. Here, too, the training programmes for apprentices and engineers are to be continued. From today's point of view, the introduction of short-time working will not be necessary.

VEM Most and **VEM Piešťany** are also affected by the reduced capacity utilisation in Wernigerode and Zwickau. Where possible, orders from VEM Dresden are to be assigned to these suppliers. The management will be placing a reduced volume of orders with these locations, but will

continue to address the full product range in order to preserve the specialist know-how which has been built up over recent years.

On the overall commercial level, VEM is to seek refinancing in a small number of cases where interest payments and charges are unnecessarily high. In general, our open monthly information policy is now paying off. Banks and credit insurers have confidence in the VEM management and continue to accompany our transactions. Our cash discount policy is to be maintained at all facilities. Where profit-sharing agreements have been concluded, the corresponding sums will be paid out to the employees. Non-essential assets are to be sold where they are also not expected to be required for operations in the longer term. To establish further liquidity reserves, stock levels are to be reduced once more at all locations, predominantly in Dresden. We will not be selling any of the member companies of the VEM group. Acquisitions of companies which could

be meaningful to complement our product range are not planned for the foreseeable future.

The companies are to remain in the hands of the Merkle family and we will continue to take care of our core workforces. I give you my word on that. However difficult the times may be, we will be developing innovative solutions together with the individual managing directors, to ensure the successful continuation of our company group.

It is important to us that the VEM employees and their families are able to rely on their jobs and income in the coming difficult and possibly barren years.

I look forward to further trustworthy and stimulating cooperation with you all in the coming years. With such a workforce, I am optimistic that any decline can only be followed by an even greater upswing.

Yours, Freiherr von Rothkirch

Helping chemicals industry to drive innovation

The companies of the German chemicals industry have earned themselves a very good international reputation. Measured by the turnover with chemical products, Germany occupies the leading position in Europe and lies in fourth place worldwide. German chemical companies are present in practically all parts of the world. Such an international presence naturally demands strong relationships with both customers and suppliers.

Chemicals is one of the largest sectors of processing industry. As a supplier of many intermediate products, it also establishes important foundations for the development of products in other branches of industry. These include, for example, plastics and paints for the automotive industry or synthetic fibres for the textile industry, as well as pharmaceutical products and cleaning agents.

The increasing demand for products of the chemicals industry has over the past years led to the German chemical companies investing considerable sums in the expansion of their production capacities. Investments in electric drive technologies have naturally flanked this development. The very high demands regarding the proper functioning and reliability of equipment in the chemicals industry calls for motors and drives which remain available at all times. Furthermore, they must display a high level of operational reliability, must be energy-efficient, and must offer safe protection in environments subject to explosive gas and vapour-air mixtures. With a complete range of low-voltage and high-voltage motors, covering all categories of explosion protection, the VEM Group possesses the prerequisites for successful cooperation with the chemicals industry.

| LDPE PLANTS |

VEM Sachsenwerk supplies motors for high-pressure equipment

Burkhardt Compression AG, the world's leading manufacturer of hyper compressors, has awarded a contract for two hyper motors for high-pressure gas compression in potentially explosive environments to VEM Sachsenwerk. Their output ratings are 24 and 25 MW, respectively. The order includes also two booster/primary motors with outputs of 5.5 and 8.4 MW. The machines are configured for a voltage of 11 kV and are to be delivered for the LDPE plants Quapco in Qatar and Polinter in Venezuela in 2010. The associated power electronics and controllers are to be provided by Siemens Drive Technologies.

The machines have been designed for the protection class "pressurised enclosure". Before start-up, the housing is flushed with inert gas. During operation, subsequently, the inert gas enables a defined overpressure to be maintained inside the machine, so that no explosive atmosphere is able to enter. The machine design provides for convenient flushing and minimal air leaks.

The suitability of the machines is to be verified by an independent inspection body and will be certified with an EC declaration of conformity in accordance with the ATEX directive.

Chemicals industry chooses VEM

Ex-rated low-voltage motors are characterised by their high availability and reliability



Photo: Chemiepark Marl

American subsidiary ISP Marl GmbH supplies intermediate products on the basis of acetylene. With an annual production volume of 19,000 tonnes of tetrahydrofuran and 100,000 tonnes of 1,4-butandiol, the company is one of the world's largest sources of these intermediate products.

Many manufacturers around the world equip their chemical plants with explosion-protected low-voltage motors from VEM. A natural gas liquefaction plant, for example, incorporates VEM motors for protection class Ex nA non-sparking. Ex motors with similar protection have also been supplied for a petrochemical complex in Southeast Asia since 2005. Ex e motors have been supplied for use in Austria. Motors with various categories of protection have been sold to Asia over a period of several years for the production of plastics, intermediate chemicals for paints and foams. At the same time, there have been numerous deliveries to the German-based chemical complexes, which have acquired motors in all protection classes, including Ex de. In Germany alone, the branch has deployed more than 80,000 explosion-protected motors with outputs between 0.1 and 1 MW. To date, between 5 and 7 % of the motors installed are controlled via

a frequency converter. Energy efficiency, however, is a major concern of the chemicals industry, and the proportion of variable-speed drives is thus increasing constantly. At the same time, there is demand for energy-saving motors which satisfy the requirements of the future IEC classification IE 2.

The test institutes PTB in Braunschweig and IBExU in Freiberg have certified all these VEM motors, which are thus approved for the European Union and the CENELEC member countries.

They comply furthermore with the specifications of the industrial energy and power generation association VIK and the automation users association NAMUR. That applies equally for Ex e motors for the output range 4.6 to 132 kW which are designed for converter-fed operation. Certification is also being prepared for the CIS member states (GOST-Ex quality certificate and RTN/Rostechnadzor).

Brake motors in Ex versions up to 7.5 kW

VEM motors extends its product range with ATEX machines in ExII2D and ExII3G

VEM motors Thurm has been offering brake motors in an ExII3G version with Mayr brake since the beginning of the year. The motors represent a combination of ExII3G three-phase asynchronous motor and a certified Mayr brake of the ROBA-stop-M series for ATEX in the classification ExII3G ExnAIIT3. They are designed for operating mode S4-40 % and can be used as either stopping or holding brakes. A PTC thermistor is provided in the motor winding to protect the motor and brake. The brake is always controlled with a separate DC voltage. If a rectifier is necessary, the user must arrange for this to be installed outside the explosion hazard area.

The company has already been producing ATEX brake motors in ExII2D with Mayr brake for the past two years. The corresponding amendment to the EC prototype certificate DMT 00 ATEX E 012 X has been confirmed by the certification office EXAM Bochum. The motors are a combination of certified ExII2D three-phase asynchronous motor and non-certified modified Mayr brake of the ROBA-stop-M series. A PTC140 thermistor is provided in the motor winding to protect the motor and brake. A rectifier mounted in the terminal box provides the necessary DC voltage.



Brake motor in an ExII2D ExtDA21 version

Photo: BASF Schwarzheide



Schwarzheide is one of the most modern BASF locations in the world.

Photo: Sabine Hartenstein

Sachsenwerk to deliver 5,000th wind generator

VEM machines have proved themselves in worldwide use in both onshore and offshore wind farms



Photo: Lutz Weidler

In 2008 alone, Sachsenwerk supplied wind turbine generators with a total capacity of 1,600 MW.

| PRODUCT SPECTRUM |

Products for wind power generation

- Asynchronous squirrel-cage machines
- Double-fed asynchronous machines
- Synchronous generators (electrical or permanent excitation)
- Synchronous machines in low-speed versions for solutions without or with single-stage gearbox – upon request

Output range	1 to 6 MW
Voltage range	690 V to 12 kV
Frequency	50/60 Hz, or for converter operation
Cooling	Air/water, air/air

The 5,000th wind turbine generator will be leaving Sachsenwerk this year. Already in 2008, VEM supplied installations with a total capacity of 1,600 MW, and continued to demonstrate its performance capabilities as a supplier to one of the most successful growth markets. Whether in the North Sea or the Irish Sea, whether in the dry and cold Gobi Desert in China or in subtropical regions of Japan – wind turbine machines from Sachsenwerk are proving themselves in worldwide use.

Offshore turbines stand at least 40 kilometres from the coast and must thus operate extremely reliably. Only an absolute minimum of maintenance is acceptable.

Such customer expectations are fulfilled by VEM generators – thanks to the company's longstanding experience in the offshore business and with the aid of ideally trained and certified personnel. The Arklow wind farm, which was set up off the Irish coast in 2004, is just one of our reference projects. With seven generators and a total capacity of 25.2 MW, it was the first installation to satisfy all offshore criteria. For the offshore wind farms Talisman in Scotland, Thornton Bank in Belgium and Alpha Ventus off the German coast, alone, VEM has supplied generators with a total capacity of 100 MW.

With modern calculation programs

As one of the leading manufacturers for both the onshore and offshore segments, especially for the higher output ranges, Sachsenwerk is also able to serve the latest trend in the branch, namely the replacement of 1.5 MW turbines with 3 MW installations. The same applies to the 60 Hz frequency range, for example for the growth market of the future in the USA. Already today, there are over 1,000 VEM generators sup-

plying energy in the USA. A highly capable service network enables VEM to guarantee corresponding maintenance and inspections.

Sachsenwerk has in the meantime built and delivered the first permanent-field machine without gearbox in cooperation with one of the renowned German manufacturers. Close contacts are maintained to the design departments of all the major wind turbine manufacturers, and VEM is integrated into many project development teams.

Benefits and technical parameters

Aside from the general principles of a wind turbine system, the generators stand out through their high power/space ratio, based on electromagnetic optimisation and a reduced installation volume. Further technical benefits include:

- Use of the VPI technology to ensure the consistently high insulation strength of the former-wound coils
- Suitability of the rotor winding of double-fed generators for medium voltages and special design for high rates of voltage rise
- Main sliprings and sliprings for earthing systems all designed in stainless steel. VEM wind turbine generators can thus be installed without problems in all near-shore and offshore locations.

The use of modern calculation programs permits generators to be designed for:

- optimum efficiency, also in the partial load range, and quiet machine operation

- special location conditions (weak grids, reactive power, e.on and other grid codes)
- the load and bearing lifetime design requirements specified by certification bodies such as Germanisch Lloyd, Risö or TÜV
- matching to a given nacelle design with the aid of a 3D CAD system

At the same time, VEM's distinctive vertical range of manufacture permits fast and flexible response to individual customer wishes.

Photo: René Gaens
Terminal assembly for wind turbine generators



Machine-moulded castings from Keulahütte

Processing both classic and special materials

Well over 100,000 machine-moulded castings with piece weights between 15 and 88 kg are manufactured at Keulahütte for the brake systems of wind turbines. They are incorporated predominantly into the particularly safety-relevant rotor and yaw brakes. The materials used range from classic ductile casting materials such as EN-GJS-400-15, EN-GJS-500-7 and EN-GJS-600-3 to the special material EN-GJS-400-18LT. The disk brakes serve to decelerate the rotor motion or else to hold the turbine nacelle in position. Braking forces of up to 430 kN are effective.

Keulahütte also produces more than 1,400 machine-moulded drive housings in EN-GJS-400-15 for wind turbine yaw drive modules each year. These compact, high-strength castings accommodate gearboxes characterised by their very high efficiency, long service life and simple maintenance. Diverse castings from the hand moulding shop, for example star-type setting cams, complement the assortment of castings supplied from Krauschwitz for wind turbines.

(Read more on page 5.)

Auxiliary drives for wind turbines

Yaw drives with brake motors from VEM motors Thurm bring the nacelles into optimum position



Photo: Reiner Löbe

As a full-line supplier of rotating-phase machines, VEM similarly manufactures auxiliary drives for the wind energy branch.

VEM low-voltage machines are distinguished by their extraordinary operational reliability, long service life and high efficiency. Flexible modification options promote the universal application of such drives and have recently enabled them to gain a firm foothold in the wind energy branch. Precision drives with high reduction ratios are used, for example, where particular demands are to be met with regard to torque and running speed. The VEM factory in Zwickau has already been supplying three-phase asynchronous brake motors for such high-performance step-down applications for a number of years. As yaw control drives for wind turbines, they serve to rotate the nacelle to the opti-

mum position and then hold it there during operation. A perfect set-up enables accurate tracking of even the slightest change in wind direction. The exacting demands placed on these brake motors include special breakdown and starting torques. A built-on twin-disk brake functions as a holding brake.

This year alone, VEM motors Thurm is supplying 3,000 brake motors to one of the world's major manufacturers of precision cycloidal gearboxes. They are used as setting drives. Four drives turn the nacelle of a wind turbine with a gearbox speed of 0.5 rpm. Wind farms with such brake motors are to be found in Europe and Canada. An offshore version of the motors has also been installed in the USA.

Further motors are supplied for the lifts, heat exchangers and hydraulic systems of wind turbines. Through these auxiliary drives, too, the wind energy branch benefits from the particular expertise of the VEM Group.

Less area, but now used more efficiently

Five-year programme of restructuring measures brought to conclusion at Keulahütte



Today's Keulahütte site is shown here by the red outline. The shaded areas are areas which are no longer used.

The new hand moulding shop at Keulahütte started up its production on 3rd December 2008. The official opening ceremony was attended by the Saxon State Economics Minister, Thomas Jurk.

This date at the same time marked the conclusion of a major restructuring of the company. A period of five years had seen various investments in buildings and new machinery and equipment. The most visible outcome: The area in use at the site has been reduced by 32 % through the demolishing of abandoned production halls. All the foundry departments are now concentrated in the southern part of the site, while machining department and the storage for finished products are located directly by the new site entrance at the northern end.

The overall concept has established the prerequisites for future growth. Despite the significantly smaller area, there is still more than adequate place for expansion investments – both for the foundry and for the machining department.

The auxiliary measures accompanying the restructuring process proved especially comprehensive. This has included complete renewal of the underground piping networks for water and wastewater, as well as modified solutions for energy supplies. Support departments such as the pattern shop, the materials laboratory, maintenance workshops and the compressed air station were moved out of the old buildings and given a new home in the new section.

The problems which arose in the past from the long distances between production halls and the workers' showers and changing rooms have also been solved. New facilities for a total of 350 employees have been provided in the administration building.

The focus of the remaining measures will be a new building for the cleaning room, which is planned for 2010/2011.

As the site restructuring at Keulahütte meant relocating the works entrance, the company address has also changed. Keulahütte is now to be found at Geschwister-Scholl-Strasse 15.



Keulahütte also supplies customers outside Europe.

Complemented product range

Pressure pipe fittings for water and gas supplies

Keulahütte is currently working on becoming one of the few European suppliers to offer a full range of pressure pipe fittings. Already in 2008, 31 % of the turnover in Europe was attributable to such products. The portfolio comprises almost 1,800 patterns pursuant to the EN 545 standard – not counting the many variants to be derived from different pressure levels, socket versions and coating options. Investments to the tune of almost € 6 million have been realised over the past 18 years. Keulahütte started out in 1990 with 26 products defined by the then applicable DIN 28600 standard.

Patterns are presently being prepared for the series N DN 80 with 2" threaded bore, FFK DN 125 11° and 22°, and N DN 125. These four types will be available from the second quarter of 2009. The pattern drafts for another ten product series are already on the drawing boards.

The products for specific nominal pressures are being extended continuously. Fittings with nominal diameters 65 and 125, for example, are at the planning and realisation stage. Keulahütte will thus be able to present a complete product range in the foreseeable future.

Alongside the improved manufacturing facilities, the storage and logistics processes have also been adapted with sophisticated sequences catering to all the demands of the German and European markets. On this basis, it is no doubt only a small further step to Keulahütte establishing itself with a full product range for water and gas supplies also outside Europe.



Facelift for overground hydrant

"Function meets style – Eurodrant 08" was the slogan with which the series production of a freshly styled overground hydrant for a nominal diameter of 100 mm began in the fourth quarter of last year. Preparations are also well advanced for an 80 mm version, which will be available from April 2009. The pillar base is fully compatible with the previous 94 and Eurodrant series. This permits continued use of the previous types and economical replacement of the top sections. Upon request, two-colour designs and the individual incorporation of municipal coats-of-arms are equally possible. The Eurodrant 08 complies with the latest test standard VP 325.

Modern design solutions for all required diameters, cover depths and valve variants reflect the diversity of available hydrants. A double coating with epoxy resin and polyester powder, in particular, lends overground hydrants not only effective corrosion protection, but also a long-lasting colour finish. Improved flow properties and the minimal pressure loss are testimony to an optimised internal contour.

What exactly are custom castings?

Keulahütte records one-third of its turnover with the new business field "custom castings"

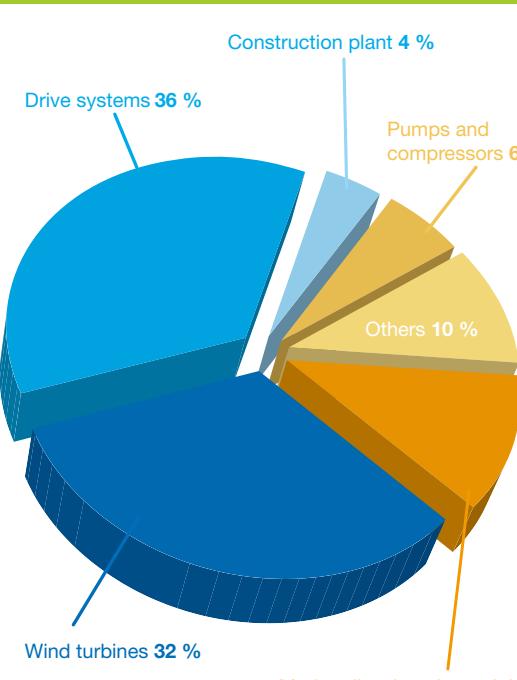
There are certain questions which Keulahütte is asked time and again: What is to be understood by custom castings? Whom are they produced for and why? Is Keulahütte moving away from its traditional fields of business in pressure pipe fittings, hydrants and castings for water and gas supplies?

The latter question can be answered straightforwardly with a very definite "NO". On the contrary, the long-standing product ranges are actually being extended. The recently completed five-year restructuring programme has here laid clear foundations.

Custom castings, by contrast, are castings produced to a customer drawing. They are supplied to order on the basis of an individual specification. The customer can either provide the necessary patterns himself, or else entrust also pattern-making to Keulahütte. The scope of such orders varies from single pieces to medium-length series.

With such custom castings, Keulahütte has opened up an important new field of business with convincing impact for turnover figures. As the diagram alongside shows, 61 % of last year's turnover was achieved with classic water supply products, and 36 % with custom castings. Characteristic for the product group of custom castings are products for wind turbines, drive systems, pumps and compressors, construction plant and marine diesel engines.

Over 124,000 castings with piece weights between 5 kg and almost 3 tonnes left the foundry in 2008. Keulahütte serves a total of 346 customers, of whom 50 have ordered castings for mechanical engineering applications.



Keulahütte presentations at the branch fair WASSER BERLIN

Bitter pill: Exhibitors unhappy over the organiser's decision to shorten the interval between fairs

The leading European trade fair for the water and wastewater branch, WASSER BERLIN, is welcoming visitors to the Berlin exhibition centre once more from 30th March to 3rd April 2009. According to the organisers, this year's fair is expected to set new records. Well over 500 exhibitors from 23 countries had already indicated their attendance up to the official deadline for registrations. That represents a plus of 26 per cent compared to the last fair in 2006. Floor space totalling 49,000 sq.m. has been set aside for the exhibitors to demonstrate their latest innovations.

Keulahütte will be greeting its fair visitors on Stand 211 in Hall 4.2. Continuing a well-loved tradition, they are also invited to an after-work Lusatian Evening on the stand at 6 p.m. on Wednesday, 1st April. Original Lusatian specialities are planned to delight the palate, and "cast-iron" prizes are the attraction of a special

draw. Despite the generally positive anticipation, many exhibitors have also been expressing their disapproval of the organiser's future plans, which are considered inappropriate in the current difficult economic situation. The IFAT in Munich already shortened the interval between fairs from three to two years at the end of 2008, and now WASSER BERLIN is to follow suit.

In future, it will also be held every two years, instead of every three years as to date. The result is that the two trade fairs will now alternate each year. But for many exhibitors, participation at such an important trade fair every year is difficult to reconcile with their general strategy, and visitors could well think similarly. It would of course be a disaster for both organisers if the exhibitors are in future only able to concentrate on one event or the other.



The Keulahütte stand for the trade fair WASSER BERLIN.

New complex for shaft manufacturing

Ideal prerequisites for special product versions at VEM motors Thurm

Sophisticated shaft machining with ultimate flexibility and to the highest quality standards is made possible by a new ultramodern machining complex at VEM motors Thurm. It is to commence production any time now and comprises an end machining centre and two lathes. The machines are designed for batch sizes from 100 workpieces. On this basis, the end machining for the shafts has been equipped with a separable self-loading system, enabling the machine to be loaded by hand for one-off production, if necessary. Further significant benefits for customers requiring special product versions are drastically shortened set-up times and the ability to use the most varied tools, for example turning, recessing and thread

tools for external threads. Fast operator learning curves, the elimination of long set-up times to ensure dimensional accuracy after tool changes, and the clean and quiet operation with a fully encapsulated workspace are among the positive effects for VEM.

The machine has been tooled for face milling, centre drilling, boring and thread tapping. The finished length of the shafts is achieved by face milling the two ends of the shaft at the same time.

Subsequently, the centre holes, bores and threads are machined before the shaft is passed on to the lathes for final turning.

Thomas Schuster setting up the end machining centre from LARU LANG



Photo below:
Machined rotor shafts with a variety of centre bores and drill hole patterns



Photos: Sabine Hartenstein

| PEOPLE |

New manager in quality control

Wolfgang Wiedemann (52) assumed responsibility for quality control at VEM motors in October 2008. He is succeeding Hartmut Badstübner, who has taken his well-deserved retirement. Wolfgang Wiedemann began his career as a trainee in Wernigerode, and since obtaining an engineering degree has already worked in numerous positions in the quality department.

| FRIENDSHIP SOCIETY |

Bilateral meeting of economic representatives in Abu Dhabi

A joint meeting of members of the Emirati-German Friendship Society (EGFS) took place in Abu Dhabi at the end of last year. Founded in 2007, the objective of the friendship society is to promote and deepen the relationships between Germany and the United Arab Emirates in the fields of culture, education, science and the economy.

The meeting of economic representatives in Abu Dhabi was attended also by the honorary EGFS chairmen, former federal chancellor Gerhard Schröder and Sheikh Hamdan bin Zayed Al Nahyan. The agenda was geared above all to a widening of the current economic cooperation. Jürgen Sander, managing director of VEM motors GmbH, was a member of the visiting delegation.

"The Emirates have been developing stably with impressive growth rates for many years. Despite the current difficulties for the global economy, the region continues to pursue ambitious goals. This offers some interesting opportunities for cooperation," said Jürgen Sander, highlighting the special value of the Emirati-German Friendship Society.

VEM motors has already been active in the Middle East region for quite some time. Together with regional partners, the company is working to further develop its position on these interesting export markets. This naturally includes activities in the United Arab Emirates, where oil and gas revenues are being invested increasingly in the expansion of manufacturing industry.

Second generation of energy-saving motors

VEM to present the first motors of efficiency class IE2 at the Hanover Fair 2009 – Part 3 of our series on energy efficiency

The worldwide development of energy-saving motors has over the past years led to a multitude of different country-specific regulations, legislation and standards. It is correspondingly difficult to make a comparative evaluation of the individual products. Depending on the intended place of installation, various regional or country-specific rules must be observed, and the test guidelines will generally also differ. At the same time, attention must be paid to the future demands which will ensue from implementation of the EuP directive 2005/32/EC "Ecodesign requirements for energy-using products". The European manufacturers are seeking to concentrate the whole process of global activities in the premium classes and have taken the initiative with a proposal of their own for a premium class. Alongside the actual classifications of efficiency, this process calls also for binding calculation methods with which to determine levels of efficiency.

The process is under way and is today already approaching a conclusion with the ongoing technical standardisation procedures at the IEC:

- Standard methods for determining efficiency (IEC 60034-2-1:2007 and DIN EN 60034-2-1:2008)
- Efficiency limit values for asynchronous machines (IEC 60034-30)
- Guide for the selection and application of energy-efficient motors, including variable-speed applications (IEC TS 60034-31, Ed. 1).

Special versions also covered

On the basis of the EuP motor study and the new standard for efficiency classification (IEC 60034-30), an international understanding has been reached on extension of the applicability to cover outputs up to 375 kW for 2-, 4- and 6-pole motors. The following motor versions are thus taken into account for the new efficiency classifications:

- Three-phase asynchronous motors for mains operation (50 Hz, 60 Hz)
- Rated outputs between 0.75 and 375 kW, continuous duty S1
- 2-, 4- and 6-pole versions
- Rated voltages up to 1,000 V
- Protection IP4x and higher.

The future scope of applicability is also to include special versions of standard motors, for example geared motors, brake motors, or motors with forced ventilation, backstop, incremental encoder, special seals, etc. The efficiency class of the basic motor is always to be specified in the case of a special version. The classification of motors for use in explosive atmospheres (EN 60079-0 and EN 61241-0) will similarly be possible. These stipulations go far beyond the previous Voluntary Agreement. It is assumed that the IEC 60034-30 standard will become binding from mid-2009.

One important aspect is that the calculation methods have also been rearranged. With IEC 60034-2-1:2007, the previous segregated-loss method with a constant 0.5 % stray loss component – relative to the power consumption – is replaced by a general determination of stray losses for asynchronous motors from 1.1 kW.

The following procedures are permissible:
≤ 1.1 kW unchanged direct measurement,
measuring uncertainty "low"

Motors in IE1, IE2 and IE3 versions

1.1 kW to 150 kW segregated-loss method and (as in the USA, IEEE112) determination of stray losses by the residual-loss method, measuring uncertainty "low". This method will also be used for the output range up to 375 kW on the same lines as IEEE112.

Motors in IE1 versions

Determination of stray losses by the eh-star method, measuring uncertainty "medium" (not used at VEM)

The method used is to be specified in the documentation. Efficiency ratings calculated with the residual-loss method are lower than those obtained by previous methods, and so the limit values have been adapted to take the modified calculation methods into account. The classification is to be added to the rating plate in place of the EFF marking. Motor rating plates will show both the efficiency classification and a rated efficiency value.

IE x - Rated efficiency %, example: IE 2-91.0 %

CE		VEM motors GmbH	IE2 - 91,0%
D 38655 Wernigerode		Made in Germany	
DIN EN 60034-1			
3 ~Mot.Nr./Nº		153663 / 0001 HW	
Typ/Type		IE2-WE1R 160 MX2	
15 kW cos ϕ 0.92			
Δ/Y 400/690 V 26.0 / 15.0 A			
2935 min-1/r.p.m. 50 Hz			
Th.Kl./Th.cl. 155 (F) IP 55		140 kg	
IM B35			
Fett/Grease ASONIC GHY 72			
DE 6310 C3 DIN625 cm³			
NE 6309 C3 DIN625 cm³			
h			

The specification of the test method according to EN 60034-2-1:2007 is to be included in the enclosed installation, operating and maintenance instructions. Parallel to the classification, EU bodies have been working for some time on implementa-

From this moment onwards, it will no longer be permissible to market IE1 motors within the EU.

Increasing costs for the manufacturers

The manufacturers point to disproportionate investment outlay and costs for the development and testing of new motors, for implementation of the new standards in the manufacturing process, for the purchasing and use of new production equipment and for the increased input of materials. Depending on the output range served, the costs for motors of efficiency class IE2 will be 15 to 20 % higher than for IE1. The transition to efficiency class IE3 will then increase the costs by a further 15 to 20 %.

With the introduction of motors of minimum efficiency classes IE2 and IE3, the specifications contained in EN 50347 regarding shaft heights and foot dimensions cannot be observed unconditionally.

Energy-saving motors, above all with efficiency classification IE3, are thus not suitable for applications with frequent, highly dynamic speed changes (start/stop operation, S3, S4, etc.).



Energy-saving motors compliant with the CEMEP Voluntary Agreement

A product catalogue presenting energy-efficient VEM drives for pumps, fans and compressors. German manufacturers of energy-efficient products are supported by the Federal Government and partners by way of an export initiative (see also logo on this page).

tion of the EuP directive 2005/32/EC "Ecodesign requirements for energy-using products". This directive specifies demands with regard to ecological product design and is aimed at reducing CO₂ emissions. It addresses primarily powered products for the consumer sector, but does also mention electric drive systems.

The EuP directive was published in the EU bulletin on 22nd July 2005 and was to be implemented in the individual member states by 11th August 2007. This requirement was met in Germany with the Energy-Using Products Act (EBPG) which came into force on 7th March 2008. Implementation of the draft legislation has been entrusted to the Federal Ministry for Economics and Technology, which is currently working actively on regulatory statutes.

The aim is to introduce legally binding minimum efficiency performance requirements for

- IE2 from 2011 and for

- IE3 (from output > 7.5 kW) from 2015.

Through attachment of the CE symbol, the manufacturers guarantee to the customer that the specified efficiency rating is correct and that the product complies with the efficiency classification specified on the rating plate.

It is not least for this reason that CEMEP, as the representative of the European manufacturers, rejects the introduction of legally binding minimum efficiency specifications for motors of efficiency class IE3. It proposes instead the marketing of IE3 motors on the basis of a voluntary agreement with a corresponding system of monitoring. The manufacturers would prefer to recommend users the substantially more effective system approach of variable-speed drives as a means to reduce energy consumption. The use of such drives would achieve more significant progress in the saving of energy and the reducing of harmful emissions.

VEM motors will initially be offering the market standard motors with efficiency classifications IE1 and IE2 to IEC 60034-30, corresponding to the previous efficiency classes EFF2 and EFF1. They are to be presented for the first time at this year's Hanover Fair.

Premium motors are in preparation and are to enter production as special versions towards the end of the year.

Priority at VEM is given to redesigning of the IE2 series. To date an optional series, it is intended to replace the current K21R series as the main series by 2011.

The first IE classification will be seen at the 2009 Hanover Fair. IE1 and IE2 series can be supplied from the beginning of May.



Top favourite sought and found

Mandes Mehnert and Barbara Gerisch: Change at the helm of the accounts office at VEM motors Thurm

Barbara Gerisch already loved mathematics as a child. It was thus no surprise when she decided to study data processing and later joined Elektromotorenwerk Thurm as a programmer in 1969. Her passion for figures, her precision and absolute reliability did not go unnoticed. She was asked whether she would like to switch to accounting. Barbara Gerisch agreed and immediately set about mastering this new field of duties. Parallel to her work, she also obtained a degree in engineering economics on a correspondence course.

Barbara Gerisch has been in charge of accounts at VEM motors Thurm since 1990. Whether annual balance sheets and profit-and-loss statements, documents for management decisions, punctually settled invoices or a filing system in which everything is to be found from the past ten years – the company can rely 100 % on the work of the four employees in the accounts office. “I hate wasting time or money, I have no understanding for half-measures, and I like to bring everything to an exact conclusion” – that is Barbara Gerisch’s maxim.

It was thus logical that she should start to think about a successor well in advance as

her retirement approached. “I looked for a top favourite, and I have found that person in Mandes Mehnert,” she says. They had already worked together on many occasions.

As a tax advisor and auditor, Mandes Mehnert has been checking the company’s books for several years now. Barbara Gerisch: “I got to know him as a person who quickly recognises also the wider context, a person who looks beyond the immediate confines of his tasks and is in touch with practical business.” She asked him, whether he would be interested in taking over her job. Mandes Mehnert did not have to think that over for long. “I knew from my own experience that the accounts office was perfectly organised, and I looked forward to moving into an industrial enterprise,” he says.

When Barbara Gerisch leaves the company in April, she and Mandes Mehnert will have shared a desk for a year. Sufficient time for a smooth hand-over. The colleagues will no doubt miss her. But without this article, the customers would probably not even realise that she had left. And precisely that is the way she wants it to be.



Photo: Sabine Hartenstein

When Barbara Gerisch leaves the company in April and passes responsibility for the accounts office to Mandes Mehnert, she knows that the work is in the best of hands.

| NEWS |

Reorganisation of the Moscow office

The Moscow office of VEM motors now operates under a new name. It was registered as an accredited representation on 3rd December 2008, and VEM received the official company documents for “OOO VEM motors Russia” on 21st January 2009. At the same time, the long-standing representation has won the services of a very competent new member of staff. It will thus be able to further expand its customer contacts in the CIS in the future and can respond more quickly to customer enquiries. Both flexibility and customer proximity will benefit from the increased number of technical contact partners.

Attracting new generations of specialists

In January, the “Career Start” fair in Dresden, the largest careers fair in Germany, was for VEM Sachsenwerk an ideal opportunity to attract new generations of specialists for the company. VEM trainees joined the team on the fair stand and presented both their work and the company’s products. Instructor Mathias Teichmann was very satisfied with the event: “We also expect a high standard from our applicants, because it is through successfully qualified trainees that we can best secure the future performance capabilities of our company group.”

English language camp

True to the motto “Yes, we can”, staff and engineers from the customer service and test stand departments attended a joint one-week intensive English course in January. Group training sessions and individual presentations required the participants to call up their whole English knowledge. The trainers, native speakers with an engineering background, provided the necessary coaching in grammar and vocabulary. For VEM Sachsenwerk, the language camp was the latest element in a comprehensive programme of further training for its technical personnel. A diversity of VEM machine documentation was used to simulate installations, commissioning and troubleshooting. All the participants thus also received a broad insight into the service activities of VEM.

Focus on HERMES AWARD 2009

VEM enters explosion-protected low-voltage motors at the Hanover Fair

VEM is bidding for this year’s HERMES AWARD 2009 with a series of explosion-protected low-voltage motors for the increased-safety category “e”. Deutsche Messe awards this international technology prize to products and solutions which are presented to the public for the first time at the Hanover Fair and which are there judged to be particularly innovative.

The motor series was developed for special converter-fed use in frame sizes 132 to 315 on the basis of the latest EN 60079-0/EN 60079-7 generation of standards. One prerequisite was the test and certification process offered to

manufacturers and operators at favourable cost by PTB Braunschweig. It is thus also possible to exploit the energy-specific benefits of frequency converters in areas subject to explosion hazards.

Four-pole versions for outputs of 4.6 to 55 kW are already available. The output range 75 to 132 kW is to follow from mid-2009. Through the combination with frequency converters, these new motors are set to contribute to improved energy efficiency in the most varied branches of industry, for example in chemicals.

Laser cutting machine started up



Photo: Katrin Wiedemann

The TruLaser5040 laser cutting machine boasts an output of 5,000 W and can handle plate thicknesses up to 25 mm.

Since the beginning of the year, VEM Sachsenwerk has been processing large-format sheet-metal and plates in dimensions of 4000 x 2000 mm on a new laser cutting machine. This permits both reduced pallet changing and infeed times, and increased traversing and cutting speeds. The manufacturing time for la-

ser-cut parts has been shortened by around one-third. The new TruLaser5040 laser cutting machine with an output of 5,000 W complements the existing system with a working area of 3000 x 1500 mm. It handles plate thicknesses up to 25 mm at a cutting speed of 40 m/min.

| IMPRINT |

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