



Impulse

VEM SACHSENWERK • VEM MOTORS • VEM MOTORS THURM • VEM TRANSRESCH • KEULAHÜTTE

Dear readers, dear VEM colleagues,



By standing together, our companies have come through the financial crisis of 2009/2010 without job cuts. The turnover was in part up to 44% below the level of 2008, however we were able to preserve your jobs with a combination of short-time working and company pay agreements. VEM Sachsenwerk and VEM motors Thurm have fared surprisingly well

despite the economic upheavals. We were even able to agree to pay increases of 3.5% in Dresden and 3.1% in Zwickau, along with substantial profit sharing. Keulahütte still has hurdles to overcome, but here, too, no employee has lost his or her job. Since the middle of the year, VEM motors in Wernigerode has also been back in calmer waters. After a painful phase of short-time working, we are now once more able to offer a pay increase and pro-rata profit sharing from January 2012.

2011 was very much a year of jubilees and special events. At the beginning of September, a sports festival was held in Piešťany to mark the 15th anniversary of the founding of VEM Slovakia. I certainly regret not being able to attend in person due to other appointments. The football tournament was won - deservedly - by Piešťany. At the end of that same month, a small circle of invited guests, including all works council chairmen, came together in the historical town hall in Wernigerode for a triple celebration: 125 years of electrical engineering in Dresden, 50 years of the VEM trademark association and the 10th anniversary of the VEM Technical Conferences. At the beginning of October, a new canteen was opened at Sachsenwerk in Dresden, and the whole workforce was invited to the company's celebration of "125 years of electrical engineering in Dresden". Highlights were performances by the children's and youth acrobatics group, and a laser show on the history of the VEM location. The party ended with a fantastic firework display. Our special thanks are due here to Sabine Michel and her team for a wonderful evening which will no doubt remain in our memories for a long time to come.

What will 2012 now bring? The VEM Group has in the meantime finalised its planning figures for the coming year. Turnover in the individual companies will improve slightly. This rise also takes into account price increases due to higher energy and material costs. The workforce is to be kept constant. At Keulahütte, in particular, we want to achieve the turnaround. The expertise bundled in our machine and manual moulding shops, together with our intention to pass on the exorbitantly increased energy costs, will lead us out of the red in 2012.

continued on page 7

The VEM trademark – from Germany out into the world

Trademark association celebrates its 50th anniversary

Manufactured in Germany, in use worldwide. Six words which sum up the success story of the VEM trademark. The trademark has been preserved and protected over the past 50 years by an association founded specifically for this purpose. On 26th September 2011, a festive event was held at the town hall in Wernigerode to celebrate the association's golden jubilee. The historical town hall had been chosen as a fittingly venerable backdrop for the addresses given by Lutz Schube, chairman of the trademark association, Freiherr von Rothkirch, executive manager of the VEM Group, and Prof. Wilfried Hofmann from the Dresden University of Technology. Their words forged a bridge to the present day and the future of the company. A retrospective on the history of electrical engineering was met with smiles by the assembled guests. At the World Exhibition in Paris in 1900, after all, a 500 hp generator was viewed "with admiration and a certain shudder". Today, VEM has still not reached the end of the development road with 7 MW wind turbine generators.

Just a few days ago, a new trademark made its first public appearance under the "banner with the three letters" at the SPS/IPC/DRIVES fair in Nürnberg. VEMoDRIVE stands for drive systems and thus for a product family which VEM will be promoting ever more strongly in the future.

Prof. Wilfried Hofmann from the Dresden University of Technology gave a festive address at the town hall in Wernigerode.



Photos: Wolfgang Koglin (2)

Successful jubilee event

Listen, discuss, ask questions, develop ideas – all that was the 10th Technical Conference

The trade public was content. VEM, as organiser of the jubilee Technical Conference, harvested praise for a successful event. A total of 25 presentations formed the framework for the two days at the HKK Hotel in Wernigerode on 27th and 28th September 2011.

Two subjects dominated the conference. With regard to low-

voltage motors, energy efficiency was the prime concern. The bar currently stands between IE2 and IE3, and several speakers gave their consideration to the imperative or meaningful road ahead. In this context, the whole branch is looking forward to the discussion which Prof. de Almeida has already announced for the 11th Technical Conference.

In the field of high-voltage motors, VEM is building up an ever stronger reputation as a supplier of system solutions - an important topic for Sachsenwerk in Dresden. Some 80 per cent of the company's one-off products are frequency-controlled machines. In future, VEM will be offering customers both components as a single supplier.

Read more on page 3.



Attentive listeners during the technical presentations.

FOR YOUR DIARY:

The 11th Technical Conference is to be held in Wernigerode on 25th and 26th September 2012.



Water or oil instead of air cooling

Page 2



Innovations from Keulahütte

Page 4/5



Instant availability of IE2 motors

Page 8

Water or oil to replace air

Liquid-cooled drives are compacter, quieter and more powerful than their air-cooled counterparts. They serve a broad range of applications.

Professional energy management for compact machines, plant lines and converters requires that power losses be dissipated where they arise. Air cooling, however, must be excluded wherever the waste heat would be perceived as a nuisance, or else adequate dissipation is simply not possible for space reasons. Water and oil are suitable media for liquid cooling.

Liquid-cooled electric motors are designed with an enveloping jacket, enabling the cooling medium to circulate

around the whole stator housing. This optimised cooling arrangement enables the motors to deliver significantly higher performance than a motor with conventional surface ventilation. Heat dissipation is both targeted and simple. The elimination of a fan unit brings two advantages. Firstly, it facilitates compact motor design. At the same time, noise emissions from the motor are noticeably lower. Neither point should be underestimated as a factor influencing the purchase decisions of many customers.

Liquid-cooled drives are used in a diversity of applications in many branches of the economy and industry. Restricted installation spaces and high ambient temperatures are relevant aspects, as are high-precision machining, Ex zones with low flash points and the demands of clean rooms. The special motors manufactured by VEM are likewise essential for installation in transformer substations, where they contribute to safe power supplies for industry and private households.

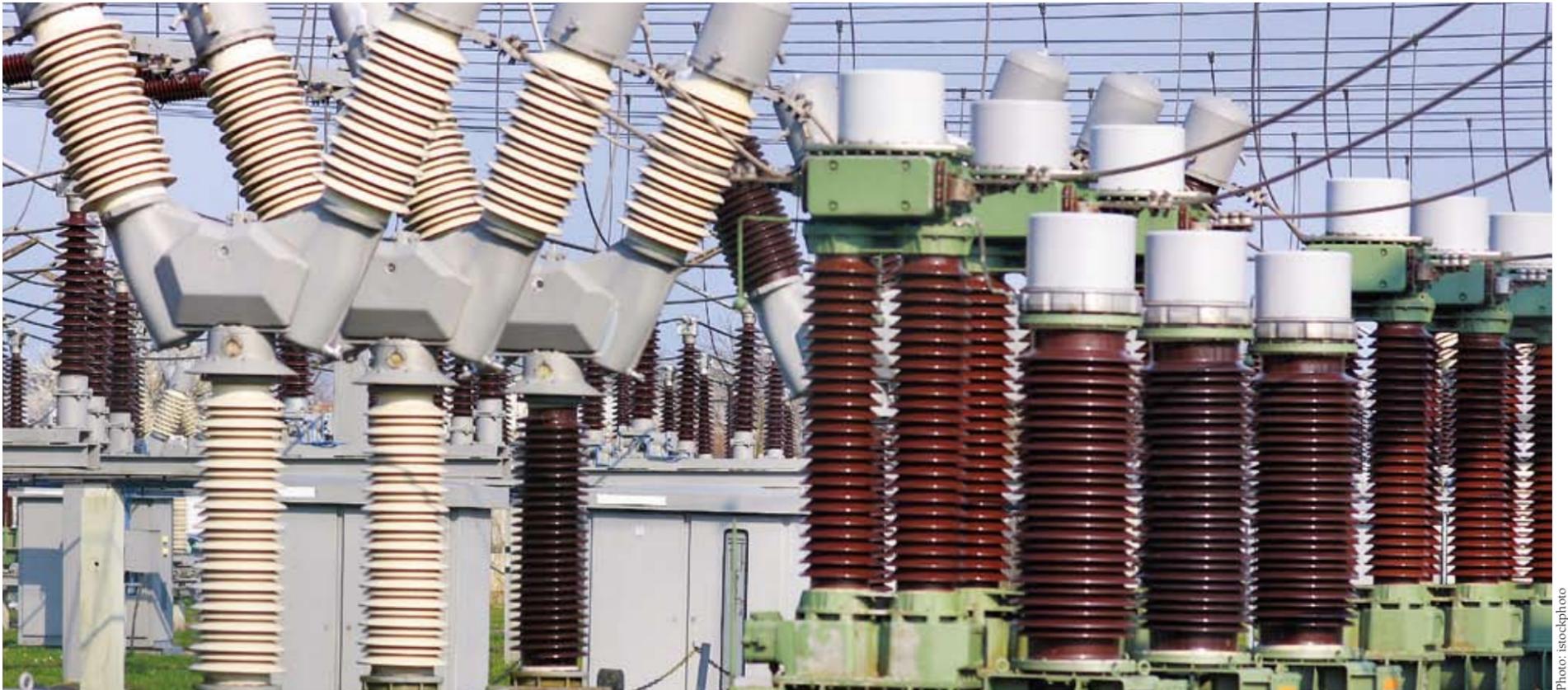


Photo: istockphoto

VEM special motors are used in transformer substations and there contribute to safe power supplies.

| ENGINEERING |

Water-cooled frequency converter for variable-speed drives

Water-cooled frequency converters are chosen wherever it is not possible or desirable to dissipate the power losses via the ambient air, as well as in harsh operating environments. They are also extremely quiet compared to air-cooled frequency converters.



A water-cooled frequency converter supplied by transesch Antriebssysteme for a test stand application with an output voltage of 690 V and an output current of 900 A.

VEM transesch Antriebssysteme Berlin supplies water-cooled frequency converters covering the output range from 200 to 5,600 kW for motor voltages from 380 V to 690 V, and outputs from 1,800 kW to 24 MW for medium-voltage motors from 2.3 to 6.6 kV. Such frequency converters are used with all types of variable-speed drive, e.g. pumps, fans, test stands, compressors, mixers, extruders and belt drives.

VEM pump drives operate reliably in the oil cooling systems of power grids

Electrical energy passes numerous transmission and distribution grids on its way from the power station to the consumer. The required voltage levels are achieved with the aid of tap changers in the transformer substations. Transformers all over the world operate with oil cooling systems, and VEM also supplies motors for the pump drives of such systems. The choice of material depends on the cooling medium used and is specified by the customer.



Photo: Sabine Hartenstein

VEM motor K200 80 in a special version for use in the oil filter systems of transformers for power grids



Photo: Maschinenfabrik Reinhausen

Through operation of the on-load tap changer in the transformer, the switching oil takes up water. Further contamination arises from arcing at the contacts. Both factors can significantly impair the operational reliability of tap changer and transformer. Consequently, it is essential to filter and dewater the oil. The motor is here used as a pump drive. It draws oil from the tap changer with each switching, forces it through a filter element, and returns the cleaned oil to the changer. Depending on the design, an on-load tap changer may incorporate its own oil filter systems and motors.

OPERATING CONDITIONS IN THE OIL FILTER SYSTEM

- Operating pressure: up to 5 bar
- Medium temperature: -25 °C to +115 °C (short-time exposure up to +130 °C)
- Medium: Insulating oils to IEC 60296



Photos: Wolfgang Koglin (20)

The demanding lecture programme was complemented by an evening excursion to Michaelstein Abbey with food and drinks, a guided tour and liturgical song.

An abundance of talking points

Students and universities also attended the 10th Technical Conference to present research results

Jürgen Sander, managing director of VEM motors, already addressed the future scope and means for regulation in electric motor manufacturing in his keynote presentation. "It is a question of defining the efficiency of an overall drive system, and of elaborating a readily understandable basis for future technologies," he said. "In doing so, we must involve and listen to the interests of the end users of such systems." Jürgen Sander identified one key requirement from the user perspective: Asynchronous motors must be safeguarded as inexpensive, but nevertheless effective solutions.

The technical depth of the 25 expert presentations was matched by a diversity of offers during the conference breaks, adding to the opportunities for individual discussion with colleagues, customers and partners. In the foyer, the guests were able to inspect VEM motors and products from partner companies at closer quarters. At the same time, a poster wall provided interesting reading matter. Three universities responsible for the training of young mechanical and electrical engineers - the Harz University of Applied Science and the Darmstadt and Dresden Universities of Technology - pre-

sented the portfolios of their various institutes. At a glance, the conference participants gained an overview of the latest research topics, from high-speed bearingless PM motors to charger stations for electric vehicles or high-efficiency combined windings. Students of the relevant departments are supported by VEM with grants and work placements, and a number of them were for the first time able to attend the Technical Conference. Their summary was unanimous: The two days were packed with far more know-how than even the busiest university schedule can offer.

Impressions from the 10th Technical Conference

"Over the ten years to date, I have watched the event evolve from a sales conference into an international drive technology forum. It adds momentum to ongoing developments and standardisation work. In wind energy, in particular, VEM is for me the most renowned company in the branch in Central Europe. It is now important to maintain this standard and to meet the price expectations of the market."



Werner Siepman,
sales expert for variable-speed drives

"I am currently writing my Bachelor dissertation on IE2 and IE3 motors. The presentations were thus extremely informative for me."

Anja Bergemann, student, Harz University of Applied Science



"The high technical level of the conference is widely recognised, and brings together the key players in research and industry. The abundance of contributions on controlled machines shows me that we are on the right road."



Gerhard Freymuth,
managing director, VEM Sachsenwerk



"We are discussing future trends, for example the concentration on asynchronous machines with outputs in excess of 10 MW at speeds around 130 rpm. The presentation on large machine design was very interesting. Insulation systems, particularly in connection with converter-fed operation, is another topic where we expect a great deal from VEM."

Reinhard Swoboda, SAM Electronics GmbH

"There are various technical and marketing policy forums, but the thematic mix here places the VEM Technical Conference ahead of the rest. As a global player, VEM has done the right thing by acquiring transresch, as it can now combine its products with control technologies."



Hans-Jürgen Steigleder, BASF SE



"The range of topics was this year wider than ever before. With regard to future trends, I believe that the high efficiency of synchronous motors will bring ever greater opportunities for VEM, also in the low-voltage sector."

Prof. Martin Doppelbauer, Karlsruhe Institute of Technology



"Here in Wernigerode, technicians and customers are able to meet face to face, something which is otherwise rather seldom the case. For the customers, it is also important that the Technical Conference can draw attention to questions which they have perhaps not considered in the past."

Thomas Richter,
head of the test stand at VEM Sachsenwerk

"It is extremely beneficial for the students that VEM motors offers work experience with a local company, that it supports students, offers insights and ties them to the branch. After all, VEM enjoys a remarkable standing on the world market, and its motors live up to the given promises."



Prof. Günter Bühler, VEM endowed chair at the Harz University of Applied Science



"At the Technical Conference, we are seeing how energy efficiency is a topic of immediate practical relevance, rather than merely discussing theoretical foundations. The reliability of the motors is equally important. One hour of roll train standstill, for example, means a loss of € 200,000."

Dr. Thomas Sadowski,
VEM transresch Antriebssysteme Berlin



"The exchanges and discussions during breaks are an important element of the Technical Conference. A guest list with participants from 18 countries also proves that this is not just a European event. The global perspective is decisive as a basis for advances on the international branch committees."

Jürgen Sander,
managing director, VEM motors

"I can go to the library to find out about the past. I came here to learn something about the future, and about companies which were still relatively unknown to me. I was not disappointed. If more students were aware of the career opportunities in the region, there would be no need for them to move to the west of the country."



Lukas Bornschein, student,
Harz University of Applied Science



"If planners already realise that both motor and converter can be acquired together from a single supplier, then the effect of a drive system can be increased further. I hope that the customers will be taking this message with them from the conference."

Jens Proske, VEM Sachsenwerk

High-performance sand cooler

New plant with improved temperature monitoring ensures constant quality in the manual moulding shop at Keulahütte

In September, a new, high-performance sand cooler was installed at Keulahütte to replace the existing, seventeen-year-old plant. Unlike the previously static continuous sand cooler, the new system from the company GAt in Aalen provides for full microprocessor control. The input and output temperatures are monitored permanently as control parameters for the cooling process. In extreme situations, an additional cooling stage can be activated.

Reconditioned sand used again

The furane resin moulds used in the manual moulding shop comprise quartz sand and an organic binder system. At the end of the casting process, the parts in the mould are cooled to a defined temperature before the moulding box is emptied. The still hot sand - typically 100 to 120 °C, close to the casting even up to 200 °C - is reconditioned and re-used.

One of the principal steps during reconditioning is further cooling of the sand, which is realised on the basis of counter-flow heat exchange. Water flowing through a system of tubes and cooling fins draws heat from the sand, and an evaporation cooler brings the water temperature down to a specified minimum, where necessary with the injection of fresh water.

The important aspect here is that optimum sand cooling reduces the amount of new sand which must be used, and less waste sand must then be sent for disposal. Through this contribution to sustainability in casting production, Keulahütte is at the same time lending active support to environmental protection.

Optimum temperature guaranteed

The optimum sand temperature for shaping of the moulds lies between 20 and 25 °C. Higher temperatures may lead to imperfections in the surface of the casting or to inhomogeneous

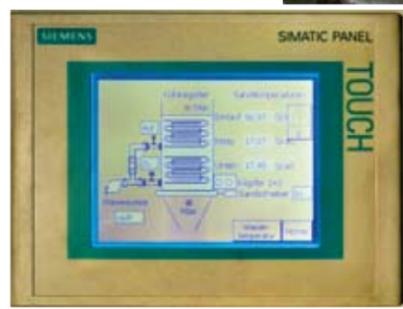
compacting of the sand in the mould. Dimensional accuracy is then impaired, and there is a risk of leaving sand inclusions in the product. The effectiveness of the cooling plant is dependent on the shake-out temperature of the castings, the temperature of the cooling water and the contact time in the cooler itself.

The static continuous sand cooler used to date was unable to guarantee the required optimum sand temperature under all circumstances. Even though the cooled sand was held in closed 150-tonne silos before moulding, the further cooling was often minimal, especially during the summer months, due to the poor thermal conductivity of the sand. As general contamination and incrustation was found to have further reduced the cooling effect over the past months, it became imperative to find a different solution.

Keulahütte identified the following key criteria to be met by a new cooler:

- Controlled cooling effect in accordance with the prevailing conditions
- Additional cooling stage to cope with extreme outside temperatures
- Increased productivity
- Easier maintenance

With the GAt sand cooler which has now been taken into operation, it is guaranteed that the sand temperature lies no more than 10 °C above that of the cooling water. That safeguards an optimum mould temperature. At the same time, the individual cooling registers are readily accessible for maintenance purposes, without requiring disassembly of the whole cooler.



The new sand cooler incorporates microprocessor-controlled temperature monitoring. Small photo: System display

Photos: Udo Müller

FITTINGS

PE gate valves with PU coatings for gas applications

Keulahütte manufactures gate valves with PE welding ends in diameters up to 300/315 mm. We already reported on such activities in an earlier issue of "Impulse". In the field of gas piping, in particular, this product represents an opportunity to extend the scope of fittings sales. The first delivery of such highly specialised gas fittings with PU coatings and PE ends for direct welding was sent on its way to a new customer in the gas trade in October.

Branch-specific properties

Characteristic for business in gas fittings is the increased attention paid to safety considerations by the users. Given the obvious hazards which accompany the explosive medium gas, that is only natural. At the same time, it is possible to identify fundamentally higher quality and price levels - both factors which are especially interesting for a Central European manufacturer like Keulahütte.

Analysis of the market has revealed that branch-specific factors must also be taken into account when it comes to coatings. For fittings with direct soil contact, one solution is a so-called "polyurethane thick coating". This corrosion protection system on elastomer basis, which can be recognised by its typical black colour, bundles a number of special properties. The insulation strength of the coating, for example, is verified for each fitting by way of a high-voltage puncture test at 20 kV. The coatings are furthermore extremely durable. The properties of the PU protective coating are defined in DIN 30677-2 "External corrosion protection of duty thermoset plastic coatings".



New underground hydrant WOSTOK for Russia and Ukraine

Fittings in Keulahütte quality simplify installation, use and maintenance

Development work on the new underground hydrants of the WOSTOK series has now been completed with successful certification in Russia and Ukraine. A first series in the three currently available sizes has already been delivered to Ukraine. One prerequisite for this delivery was the granting of official fire safety approval, which is now valid for the next five years. In direct cooperation with the relevant government fire safety inspectorates, tests were performed on certified laboratory stands in both Russia and Ukraine, parallel to production and quality assurance audits at Keulahütte itself.

The latest addition to the Keulahütte range of underground hydrants combines state-of-the-art functionality and operational reliability. Manufactured in proven Keulahütte quality, the products are tailored to specific Russian (GOST R53961-2010) and Ukrainian (GOST 8220-85) requirements.

The benefits for the user, alongside the demanded reliability, include:

- Significantly simplified installation and maintenance thanks to a double shut-off
- Long service life
- Protection against frost damage
- Proven Keulahütte design solutions ensure compliance with drinking-water quality demands
- Carefully selected, high-quality materials and coatings.

The WOSTOK series adds a further in-demand product family to the range of high-quality fittings bearing the Keulahütte trademark, not only for the water supply industries in Russia and Ukraine, but also for customers in the other CIS states.



Two views of the underground hydrant WOSTOK. A first series has already been delivered to Ukraine.

German foundry industry – Number five in the world

Vehicle and machine engineering the principal customers for iron and steel castings

Cast parts are used around the world in just about every branch of industry. The reasons are manifold. It is not only the diversity of possible materials, but also the fact that molten metals can be formed into practically any geometric form. No other manufacturing process offers comparable design freedoms.

The materials for castings are traditionally divided into two groups - ferrous and non-ferrous metals. In the ferrous castings sector, there are currently 269 iron and steel foundries in Germany, with a total of 44,000 employees. Keulähütte in Krauschwitz, as a classic mid-size foundry

with associated machine shops, is one of them. In the peak years 2007 and 2008, the branch produced 4.8 million tonnes of castings.

Around 55 per cent of the iron and steel castings are used in vehicle engineering, with a further 25 to 30 per cent being ordered by machine builders.

Crisis has been overcome

After a crisis-induced 33 per cent slump in foundry production in 2009, the German foundries expect to sell approx. 4.6 million tonnes of iron and steel castings in 2011, which represents a return to the level of 2006. This puts the German industry in fifth place in the world rankings, and thus well ahead of fellow EU member states France and Italy.

Good expectations for 2011

The share of non-ferrous production is also not to be neglected. German foundries supplied 700,000 tonnes of non-ferrous castings in 2009 and 2010. With an expected increase to approx. 900,000 tonnes

in 2011, production will here, too, be back up to the level of 2006. The main products in this segment in Germany are aluminium and aluminium alloys.

The next issue of "Impulse" will be looking in more detail at the development of foundry industry in Central Germany.

Deutsche Gießerei-Industrie Nr. 5 weltweit (2010)



With an expected production volume of approx. 4.6 million tonnes of iron and steel castings in 2011, the German foundries claim fifth place in the world, well ahead of fellow EU member states France and Italy.

Deutsche Gießerei-Industrie - Eisen-, Stahl- und Temperguß

In Mio. t



www.keulahuettekrauschwitz.de

Quelle: BDG

The peak years 2007/2008 were followed by a temporary slump in foundry production. The forecasts for 2011, however, are very positive.

Certification – Door opener and foundation for business

Keulähütte holds national and international approvals and works exclusively with certified partners

Keulähütte in Krauschwitz already recognised the importance and necessity of certification to ISO 9001 in the early 1990s. TÜV Rheinland performed the initial certification audit in 1994.

In the present-day business world, this certification can be considered the imperative foundation for all relationships. Keulähütte, for example, has worked exclusively with certified partners for several years now. Another important approval for a materials supplier is the confirmation of compliance with the pressure equipment directive 97/23/EC.

With these basic approvals already in hand, Keulähütte has successfully obtained a diversity of DVGW certificates for the drinking water sector and CE approvals for the gas sector over the past years. These documents are each applicable for specific products, e.g. hydrants, valves or fittings. All such products are cast in accordance with the standard specifications of the "European Association for Ductile Iron Pipe Systems", and then treated with an integral epoxy coating meeting the quality and test criteria of the "Quality Association for Heavy Duty Corrosion Protection". Keulähütte has been an active member of both organisations for the past 15 years.

Supplier to mechanical engineering

Constant market expansion has required Keulähütte to obtain further national and international approvals. The company already holds certificates for its products from Austria, France, the Czech Republic and Switzerland, and recently completed the auditing procedures of further certification offices for Russia, Ukraine and the Netherlands.

Keulähütte is in the meantime establishing an ever stronger reputation as a supplier of castings to the mechanical engineering sector. In this context, approval has been received from the German Railways for the casting and machining of

wheel-set bearing housings. TÜV Rheinland has also confirmed Keulähütte as a specialist welding company, and the marine certification societies Det Norske Veritas and Lloyd's Register have both documented the conformance of company

procedures with the stringent demands of the shipbuilding industry.

That the various materials produced at Keulähütte possess approval in accordance with the technical rules AD 2000 Merkblatt W 0/TRD 100 is indispensable in this branch.

OUR CERTIFICATION



German Technical Association for Gas and Water



Quality Association for Heavy Duty Corrosion Protection



Norme française (quality mark of the French standardisation institute AFNOR)



TÜV Rheinland



Det Norske Veritas



CE marking



Austrian Association for Gas and Water



Lloyd's Register (marine classification society)



European Association for Ductile Iron Pipe Systems

Time for revitalisation

Briquetting press drives modernised with subsynchronous converter cascades

Briquetting press drives in use at Vattenfall Europe Mining AG have been treated to low-cost modernisation by VEM transresch Antriebssysteme Berlin, under a contract signed with the Proplan engineering office. The subsynchronous converter cascade (SCC) which transresch has developed for this application serves primarily as a switchable starting frequency converter for a group of press drives. Optionally, the SCC is available to control one drive in the group in each case for the operating modes "Speed control" and "Mould setting", which can be performed much more precisely at low speeds. In this way, the outdated rotor resistors of the individual drives can be eliminated.

The SCC is a variable-speed three-phase drive solution which has been in widespread use for several decades, above all for larger pump and fan drives. Nowadays, falling prices have led to new drives for such use being equipped almost exclusively with frequency converters. Existing SCC drives, on the other hand, can be modernised at particularly favourable cost on the basis of digital frequency converter technology, retaining the installed motors and, where appropriate, the energy recovery transformers.

In some cases - as in the example of briquetting presses - the retrofitting of SCC control may prove a cost-effective alternative for previously uncontrolled drives with slip-ring motors or drives with speed setting by way of rotor resistors, as the permissible motor torque at start-up can be limited to around 50 %. An order has been received for the conversion of a further press in 2013.

Nominal output	P_{N^*}	520 kW
Stator voltage	U_{N^*}	6,000 V
Rotor voltage	U_{20^*}	1,360 V
Rotor current	I_{2n^*}	340 A
Nominal speed	n_{N^*}	428 rpm
Max. speed in cascade operation	$\eta_{max,SCC}$	420 rpm
Min. speed in cascade operation	$\eta_{min,SCC}$	214 rpm
Special feature:		Profibus-capable encoder (at 575 V transformer voltage)



Photo: Vattenfall Europe Mining AG

Since modernisation of the drives, the briquetting presses in the refining section at Vattenfall Europe Mining AG in Schwarze Pumpe/Spremberg have been controlled through an ultramodern converter cascade (SCC) from VEM transresch Antriebssysteme Berlin.

Machining centre to meet IE2 and IE3 demands

Investment confirms VEM motors as a manufacturer of special motors

A new MAG nbh-630 machining centre is to be taken into service at VEM motors in Wernigerode by the end of the year. The investment became necessary in connection with the company's strategic alignment as a manufacturer of special motors. Some 80% of the current components are

already special designs. The introduction of new extended housings for shaft heights 112 and 132, which is required to meet the stipulated minimum efficiency standards IE2/IE3, means that machining on the existing centres is not possible. The new equipment allows complete machining with all deviations from the standard in respect of housing design or terminal boxes.

Thanks to the generous workspace and travels, it is also possible to handle parts for shaft height 250. VEM has thus acquired both a back-up option and possibilities to balance the capacity utilisation on its existing machines. As a number of previously necessary machining steps are eliminated, intermediate transport and storage is likewise no longer required. That shortens throughput times and further increases overall capacity.



The new MAG nbh-630 machining centre is to be taken into service at VEM motors by the end of the year.

| INTERNATIONAL |

New price list with immediate effect

A new price list for low-voltage three-phase motors from VEM is available with immediate effect.

Minimum energy performance standards have been applicable since Commission Regulation (EC) 640/2009 came into force on 16th June 2011, as a result of which manufacturers are obliged to produce only motors which satisfy at least efficiency class IE2. Exceptions apply for motors which are not addressed by the aforementioned regulation. Such cases are exclusively special motors.

The price list covers IEC squirrel-cage motors, permanent-magnet synchronous motors, asynchronous generators and slip-ring motors. Modifications to cage motors which must or may be specified in accordance with Regulation 640/2009 are also listed. This includes:

- Squirrel-cage motors, self-ventilated or forced ventilation for frequency converter-fed operation
- Squirrel-cage motors for marine applications
- Squirrel-cage motors, explosion-protected, protection type "e" (increased safety)
- Squirrel-cage motors for use in mechanical smoke and heat extraction systems
- Squirrel-cage motors, water-cooled.

At the same time, the price list incorporates motors which meet the requirements for efficiency classes IE3 and IE4 in accordance with the draft standard IEC 60034-30 Ed. 2.0.

The price list can be requested by sending an e-mail to emw-dokumentation@vem-group.com

| SHIPBUILDING |

Princess Cruises sails the seas with VEM



Photo: Karin Wagner

A propeller drive is prepared for shipping

In the meantime, the fleet comprises sixteen radiant "Princesses". And further cruise liners of the same series are under construction in the yards of the largest Italian shipbuilder Fincantieri-Cantieri Navali Italiani S. p. A.

VEM is providing drive units for this fleet on behalf of the renowned system supplier SAM Electronics GmbH, a specialist for electric drive technologies and automation solutions for the shipbuilding industry. Two propulsion motors with an output of 18 MW each, four auxiliary generators (2x21 MVA/2x18 MVA) to feed the on-board power supply system and the main drives, and six 2.5 MW thruster motors have already been delivered by Sachsenwerk. The same scope of machinery will be on its way to Italy for the next vessel in 2012.

Threesome eager for action

After completing vocational training at VEM motors, three young employees moved on to college in search of further challenges

Demanding tasks and a good working atmosphere help to reduce employee fluctuation. That also applies at VEM - with the result that the average age of the workforce is increasing. "It is thus important to look after our qualified younger employees and to establish a basis for jobs with long-term responsibility," says Jürgen Sander, managing director of VEM motors GmbH in Wernigerode.

The careers of Andreas Rudolph, Florian Strümpel and Marco Perplies illustrate how that functions. The three friends joined the company as trainee machinists in 2002. "We were very satisfied with the in-house training facilities," Andreas Rudolph recalls. "And it was strong motivation that good results raised the chances of being offered a permanent job." At the end of their training, all three were taken on in Wernigerode in 2006.

It was only a few weeks before the search for new challenges began, driven by the knowledge that better qualification is the key to broader career openings. They decided to attend an engineering college alongside their normal work. It was clear from the beginning that they would have to make sacrifices, and in retrospect they can tell you precisely how hard the three-and-a-half years were. Leisure time was simply not part of the schedule. "But it was nevertheless a great time, and the company gave us plenty

of support," says Marco Perplies. "They paid half of the training costs and we were also allowed 12 days training leave." Another fact served to make learning easier for the three students. "We were able to study together every day. It was a great help that the company arranged for us to work the same shifts."

The examinations which they passed with flying colours in November 2009 grant them the status of an engineer. With this new qualification in their pocket, they have in the meantime taken on demanding tasks in their individual departments. Marco Perplies has quickly come to terms with the SAP software in purchasing. He negotiates prices with suppliers and concludes contracts. "I am aware that I am representing the company, and I am proud to be part of that company," he says. His baptism of fire came when a supplier suddenly dropped out due to a serious breakdown. Marco Perplies responded immediately to find a replacement and was thus able to avert the threatened interruption in production. For Florian Strümpel, the programming of CNC machines is daily business. At the same time, he contributes to the elaboration of technology documentation. And Andreas Rudolph has now been working as a designer for well over a year.

When managing director Jürgen Sander describes the achievements of such employees, he is visibly pleased. "The courses



Photo: Wolfgang Koglin

The signs are set for a successful career at VEM motors for Andreas Rudolph, Florian Strümpel and Marco Perplies (left to right). After their vocational training as machinists, they attended college together and are now entrusted with responsible tasks.

demand a lot of effort," he confirms. "But the three gave their best throughout, and the company also did everything it could to promote a new generation of highly quali-

fied employees." Given the current forecasts of 10 per cent growth in sales and project business in the engineering sector, that is a decisive investment in the future.

Giant plant for open-cast coal mining

Bucket-wheel excavators for Eastern Europe are overhauled with VEM drives



Photo: BEA Technische Dienste Lausitz GmbH

This bucket-wheel excavator is one of five reconstructed by BEA Technische Dienste Lausitz for the Polish open-cast mine Belchatów.

The plant used in open-cast mining often requires thorough maintenance between assignments, with new drives for individual components or even new motors for the whole excavator. For the general overhauling of just one SRs 2000 bucket-wheel excavator, VEM is supplying over 30 motors to Eastern Europe - from crusher and auxiliary bucket-wheel drives, via traction, rotary, lifting and slewing motors, to motors for the sprinkler

system. The main customer for motors for such excavators is BEA Technische Dienste Lausitz GmbH.

The overhauled plant is often used in the mining of hard coal in Eastern Europe. Kazakhstan, for example, possesses the largest accessible coal reserves in Central Asia. Over 50% of the world's hard coal is fired in power stations. And the forecasters are agreed that coal will continue to play an indispensable role in the international energy mix.

continued from page 1

Investments have been reduced to gain reserves for unexpected, politically triggered circumstances. And they are sure to come, because breached contracts, the suppression of deviating opinions in parliament (Mr. Profal), further Euro bail-outs, the surrendering of national sovereignty to the "Brussels Politburo" and the betrayal of fundamental national interests will lower the standard of living in the leading countries of Europe, albeit without offering rescue to the less successful. Following the principle of communicating vessels, Brussels will manage to bring all nations down to the same low, planned-economy standards. But is that not the situation we finally overcame not so long ago? Nevertheless, I wish you a peaceful Advent and heartening Christmas season.

Yours, Freiherr von Rothkirch

New hall for Czech VEM subsidiary

Production and working conditions to be improved by Christmas



Photo: Michael Koblik

Project manager Dieter Schindler from Zwickau (right) and works manager Radek Valta buried a capsule with contemporary documents.

The festive laying of a foundation stone on 19th September 2011 marked the start of construction for a new production hall at VEM Tschechien. Completion is scheduled in time for Christmas 2011.

A new building was necessary to provide more generous production space at the location. At the same time, working conditions for the employees will be improved significantly.

With floor space amounting to 840 square metres, the new production hall (20 x 42 m) will concentrate the whole winding and insertion process under one roof. An annex enables transport of the windings between the machine winding centre and the adjacent workshops, without having to leave the building as at present. The same applies for the loading of the finished components.

The construction contract was awarded to the company Goldbeck, with whom VEM has already worked very successfully on early projects.

We supply complete drives

Introducing Frank Bernhardt, head of sales and marketing at VEM transresch Antriebssysteme Berlin

No, Frank Bernhardt is not superstitious. And his 13th year in Berlin has certainly given no cause to doubt his good fortune. He also describes his wife, daughter and the two cats at home as a stroke of luck. After all, they give him the necessary backing for his far-from-simple job. For the past three years, he has been head of sales and marketing at transresch Antriebssysteme Berlin. Having grown up in Bernburg in Saxony-Anhalt, Frank Bernhardt studied mechanical engineering at the Dresden University of Technology and began his career with a major French company in Bielefeld.

"Through the acquisition by VEM, we are for the first time able to approach the market as a system supplier with its own products. In the past, we usually provided 'only' the solution, whereas today we can design and deliver a product or system component of our own. That is a quantum leap in terms of quality, and naturally also a big challenge for us."

As transresch no longer realises value creation primarily in the form of engineering, and can instead offer mature combinations of high-quality VEM drives and its own control technologies, its market position has

been strengthened accordingly.

Frank Bernhardt: "The constellation has been welcomed wherever we are active. An order from the Asian chemical industry has been the first successful outcome of our new situation." And we can take his word for it, because he is constantly travelling the world, speaks English and a little Italian. The next targets: He wants to establish

VEM on the corresponding markets in Russia and Saudi Arabia, where he sees great potential and the first positive signs. Poland and Turkey are similarly on the agenda. "To add further weight to our activities, we will be rethinking our sales and marketing structures. Some areas are to be strengthened in the future, and we will also be defining new focuses." That includes careful consideration of the branches in which the market share of VEM systems can best be expanded, for example German plant engineering, the mining and cement industries and shipbuilding.



Photo: Wolfgang Koglin

Frank Bernhardt (49) has been head of sales and marketing at VEM transresch Antriebssysteme Berlin for three years. He is married and has one daughter.

VEM extends basic IE2 range

	P [kW]	n [rpm]	η [%]	I (400 V) [A]
IE2-WD1R 80 K2	0.75	2840	78.0	1.72
IE2-WD1R 80 G2	1.1	2850	80.5	2.46
IE2-WD1R 90 S2	1.5	2850	82.0	3.05
IE2-WD1R 90 L2	2.2	2870	83.2	4.70
IE2-WD1R 100 L2	3.0	2880	85.0	6.15
IE2-WD1R 112 M2	4.0	2910	87.9	8.10
IE2-WD1R 112 MX2	5.5	2910	87.8	11.3
IE2-WD1R 80 G4	0.75	1410	79.6	1.89
IE2-WD1R 90 S4	1.1	1435	81.4	2.56
IE2-WD1R 90 L4	1.5	1425	82.8	3.55
IE2-WD1R 100 L4	2.2	1435	84.3	5.10
IE2-WD1R 100 LX4	3.0	1450	85.7	6.65
IE2-WD1R 112 MX	4.0	1440	86.6	8.65
IE2-WD1R 90 S6	0.75	945	75.9	2.06
IE2-WD1R 90 L6	1.1	950	78.1	3.05
IE2-WD1R 100 L6	1.5	950	79.8	3.80
IE2-WD1R 112 MX6	2.2	955	81.8	5.20

The complete series is available with immediate effect in aluminium die-cast versions for 50 Hz at rated voltage and for rated voltage range A.

Aluminium housings offer the customer special benefits. The lower weight, extensive modification possibilities and diverse mounting options for additional components provide for universal applicability. Many of the modifications known to date from our proven grey-cast series can be transferred. Grey-cast end shields on both the D and ND sides are the prerequisite for reliable, robust bearings.

Instant availability of energy-saving motors

36-hour delivery within Germany for IE2 and IE3 motors

The demand for energy-saving motors with the high-efficiency rating IE2 has surged since the first stage of the minimum efficiency regulation came into effect. To be able to satisfy customer wishes at short notice, VEM motors has set up stores with corresponding stocks of motors.

The stock motor programme covers motors of the series IE2-W21R/WE1R/WE2R in frame sizes 80 to 250, in 2, 4 and 6-pole versions for outputs from 0.75 kW to 55.0 kW. Appropriate modification capacities enable motors to be supplied as foot-mounted or flanged variants.

Energy-saving motors of the premium efficiency class IE3 are similarly available at short notice. Motors of the series IE3-W41R can be supplied from stock in frame sizes 112 to 250, in 2, 4 and 6-pole versions for outputs from 2.2 to 55.0 kW. Here, too, foot-mounted and/or flanged variants can be supplied without undue delay.

For outputs 0.75 to 2.2 kW (2 and 4-pole) and 1.5 kW (6-pole), please contact VEM for the latest availability information.

Within Germany, all stock motors are shipped within the framework of our 36-hour delivery concept.

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INTERNATIONAL

Fairs in Eastern Europe

The Metallurgy Donetsk Fair for the metal and metal-working industry takes place in Ukraine, one of the world's largest steel producers and exporters. Many machines and plants on the Ukrainian market are scheduled for replacement in the near future. The attendance at this leading trade fair in September 2011 was for VEM an opportunity to demonstrate its efficient motors and drive solutions directly to the potential customers.

In Gdansk, Poland, VEM was the largest exhibitor on a joint Saxon stand at TRAKO 2011. The Polish transport engineering exhibition is an important gathering for the industry in Central and Eastern Europe. VEM supplies traction machines for the Warsaw tram system. Trade fair visitors were attracted not least by the products on show, for example a geared motor unit for low-floor trams and low-floor traction motors, and permitted VEM to strengthen its business contacts to the Polish rail transport industry.

INVESTMENT

New assembly hall at Sachsenwerk

The new hall with floor space totalling 1,440 square metres was inaugurated at VEM Sachsenwerk in Dresden in September. Assembly engineers have since been working on the completion of compact large machines and high-output wind turbine generators. Two 50-tonne gantry cranes and five post-mounted swing-jib cranes make that work easier.

The hall also accommodates the 6 MW large machine test stand. Two enclosed passages provide a covered link to the previous assembly hall.



Photo: Karin Wagner

View into the new assembly hall, which also accommodates the 6 MW large machine test stand

MODERNISATION

Torch control modernised

The installation of new equipment has prepared the sheet metal section in the annealing shop at VEM motors in Wernigerode for whatever challenges the future may bring. All the 71 existing torch controllers have been replaced with new units. The modernised control system permits even more efficient processing of the sheet metal, conveying the required magnetic properties while at the same time ensuring mutual insulation. This process must be accomplished at temperatures around 760 °C.

The order for modernisation of the torch control was awarded to the local company Dr. Ecklebe GmbH.