



Impulse

VEM SACHSENWERK

• VEM MOTORS

• VEM MOTORS THURM

• KEULAHÜTTE

Dear readers, dear VEM colleagues,



We now hold the 2009 balance sheets in our hands for the VEM Holding, the subsidiary companies in Dresden, Wernigerode, Thurm, Krauschwitz, Pistany and Most, and our sales companies. As expected, the group was able to defy the global economic crisis and recorded a significant profit.

The business year 2010, however, will no doubt be

more difficult, especially for VEM motors in Wernigerode. At VEM motors Thurm and Keulahütte, by contrast, we have seen a pleasing development at the end of the first quarter. As something of a surprise, VEM Sachsenwerk is set to benefit from a revival in offshore business in the wind energy branch in 2011/12, alongside growth on the local transport and railways market, though it will still not reach the scope of success of previous years. Once the modernisation of machinery and factory installations has been completed at all our sites around the middle of the year, I will be sitting down with the managing directors to discuss the last remaining construction measures for the VEM Group in 2010.

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| HANNOVER FAIR 2010 |

Federal Chancellor Merkel visits VEM stand



Federal Chancellor Angela Merkel speaking with Jürgen Sander, managing director of VEM motors in Wernigerode (left) and Gerhard Freymuth, managing director of VEM Sachsenwerk in Dresden (right)

On her traditional tour of the exhibition at the opening of the Hannover Fair, Federal Chancellor Angela Merkel also visited the stand of the VEM Group for the first time. She was particularly interested to learn more about the world's largest wind turbine generator with its output of 6.5 MW.

Efficiency and innovation

9th Technical Conference in Wernigerode on 22nd and 23rd June 2010

This year's event will be the ninth time that the VEM Group has invited customers, partners, scientific institutes and indeed everyone with an interest in the latest developments in electrical engineering to a technical conference. With a stimulating agenda of 18 lectures and presentations, it is set to build upon the motto of the 2010 Hannover Fair, namely "Efficiency - Innovation - Sustainability", as well as the topics of the VEM panel discussions.

The first day is to revolve around technical advances in the electric drive technologies for industrial applications in offshore, marine and port systems. Manufacturers of both drive systems and machinery will be exchanging information on

their experiences, while experts for important automation solutions are to be joined by representatives of the professional associations to explain topical aspects and to answer questions.

The focus of the second day has been headed "Energy efficiency - Challenges for drive technology". The topicality of this subject is undisputed in the context of the EuP directive, which specifies a timescale for the graduated transition to energy-saving motors. Issues concerning the introduction and implementation of the European directive are thus guarantees for lively discussion. All in all, the participants can look forward to an exciting dialogue.



The first of the two conference days deals with the demands placed on drives for offshore, marine and port systems.

Strong partner for shipbuilding

Managing director Gerhard Freymuth spotlights a key topic of the 9th Technical Conference

Why was this topic chosen?

Shipbuilding currently finds itself in a rather unstable economic situation. For us at VEM, however, a period of recession is one reason more to promote activities which will strengthen our position with the international players in the shipbuilding industry. It is important to show that we are a strong partner. Our references are our warranties of competent performance in the branch.

Where do the greatest challenges lie?

VEM supplies its products to the specialised system designers who configure the electric drive systems and automation solutions for an overall vessel. Electric machines for use in shipbuilding must satisfy very complex requirements. That refers both to the typical marine environment and to aspects of passenger comfort, such as sound levels, vibration and

on-board power supply quality. The quality of the products remains firmly in the foreground. Another equally important challenge is the ability to provide comprehensive service, with fast and flexible response to all customer wishes.

What does shipbuilding mean for VEM?

With its crane, impregnation and test stand capacities, the VEM facility in Dresden is ideally equipped for the manufacturing of large machines. An experienced team of engineers uses the latest design and calculation methods, which already permit simulations to be performed at the earliest development stages. They can thus ensure compliance with the special reliability demands of the marine classifications even before the actual manufacturing starts. Our aim for the future is to offer motors and generators up to a total weight of 200 tonnes for the whole broad range of vessel types.



Pumps for swimming baths with the new PE1R series

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Focus on the new 5 MW test stand at VEM Sachsenwerk

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Topics for the 9th Technical Conference in Wernigerode

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PSM machines as energy-saving motors

The new motor series PE1R is now supplied in all frame sizes, reduces costs and spares the environment. Pump manufacturers are appreciative.

Efficient energy use as a means to save resources and reduced CO₂ emissions for the benefit of the environment – those are two of the greatest challenges of our time. Modern, variable-speed electric drive systems, in particular, offer possibilities for noticeable reductions in energy consumption. With the new motor series PE1R, VEM has developed a motor generation which satisfies all the associated demands. It combines the permanent magnet technology with the proven design principles of the three-phase asynchronous series K21R/WE1R.

Motors of the PE1R series are used exclusively with frequency control. Compared to asynchronous motors, they stand out by way of their synchronous operation and significantly higher efficiency, which already exceeds the minimum threshold specified in the IEC standard 60034-30 for class IE3. The response under partial load is also better. Our graphic shows all the important properties at a glance:

PE1R SERIES	
Frame sizes	71 to 280
Output range	0.25 to 75 kW
	4 and 6-pole versions
Torque	1 to 700 Nm
Thermal class	155 (F/B)
Protection category	IP55

For any given frame size, a permanent magnet machine (PSM) achieves a higher output

than an asynchronous machine (ASM). As the rotor follows the rotating field exactly, it is possible, for example, to use PSM drives for conveyor systems with several synchronised drive elements. All designs and modifications of the standard motor series can be supplied.

The new series opens up a whole new spectrum of potential applications.

One example which comes to mind in the summer months is that of pumps for swimming pools, or likewise industrial water treatment plants. The annual running times of the pumps place high demands in respect of reliable operation, but our new per-



27 metres high and 150 metres long – the tower water slide is one of the top attractions of the “Tropical Islands” holiday world to the south of Berlin.

manent magnet synchronous motors are ideally suited for such applications. Many pump manufacturers thus rely on VEM motors, which have to date been supplied in many

frame sizes. The pump systems are equipped with frequency converters to permit operation with PSM motors.

| PARTNER |

Herborner Pumpenfabrik relies on PSM motors

With the incorporation of PSM motors from VEM, Herborner Pumpenfabrik has sounded the bell for a new era of energy efficiency in pump technology. As a manufacturer of centrifugal pumps for the most diverse water circulation, sewage treatment and industrial applications, the specialists in Herborn are now able to offer



Several VEM motors are in use on circulating pumps of the UNIBAD series in this swimming pool water treatment plant. Over 70 per cent of all swimming pools in Central Europe are equipped with pumps from Herborn.

their customers enormous energy savings. “The permanent magnet motors have a positive effect on the operating costs and on the CO₂ emissions of the pumps,” says Sascha Korupp, technical manager at Herborner Pumpenfabrik. “At the same time, the motors raise the efficiency and thus the output of our pumps by up to 13 per cent.” In fact, they already now comply with the motor efficiency specifications of the premium efficiency class IE3, which will not actually become legally binding until 2015. “It is also important for us that the VEM motors enable us to realise more compact designs. Asynchronous motors compliant with IE3 would be significantly larger,” Korupp continues. The better energy yield in operation in the partial load range is another advantage of the PSM design over conventional asynchronous motors.

Herborner Pumpenfabrik is pleased to be able to rely on these motors from VEM, as it enables it to meet its pledge of technology “Made in Germany”. Sascha Korupp: “We cannot work with standard motors off the shelf. To be able to offer ultimate quality, we place very high demands on the shafts and bearings, for example. All these demands are met admirably by VEM.”

Geared to maximum efficiency and availability

VEM and Woodward-SEG develop an optimised system for wind energy with VETACON

As one of the leading manufacturers of wind turbine generators, VEM Sachsenwerk is naturally committed to the development of innovative solutions and continued strengthening of the current growth trends in the wind energy sector. The new concept for fast-running permanent magnet synchronous generators is intended to complement the series of double-fed asynchronous generators. The globally increasing energy demand calls for new solutions, also in the field of renewable energies.



In cooperation with Woodward-SEG, VEM Sachsenwerk has now helped to develop VETACON, an optimised system for enhanced efficiency in wind energy applications. The new solution is geared to satisfying the complex demands of

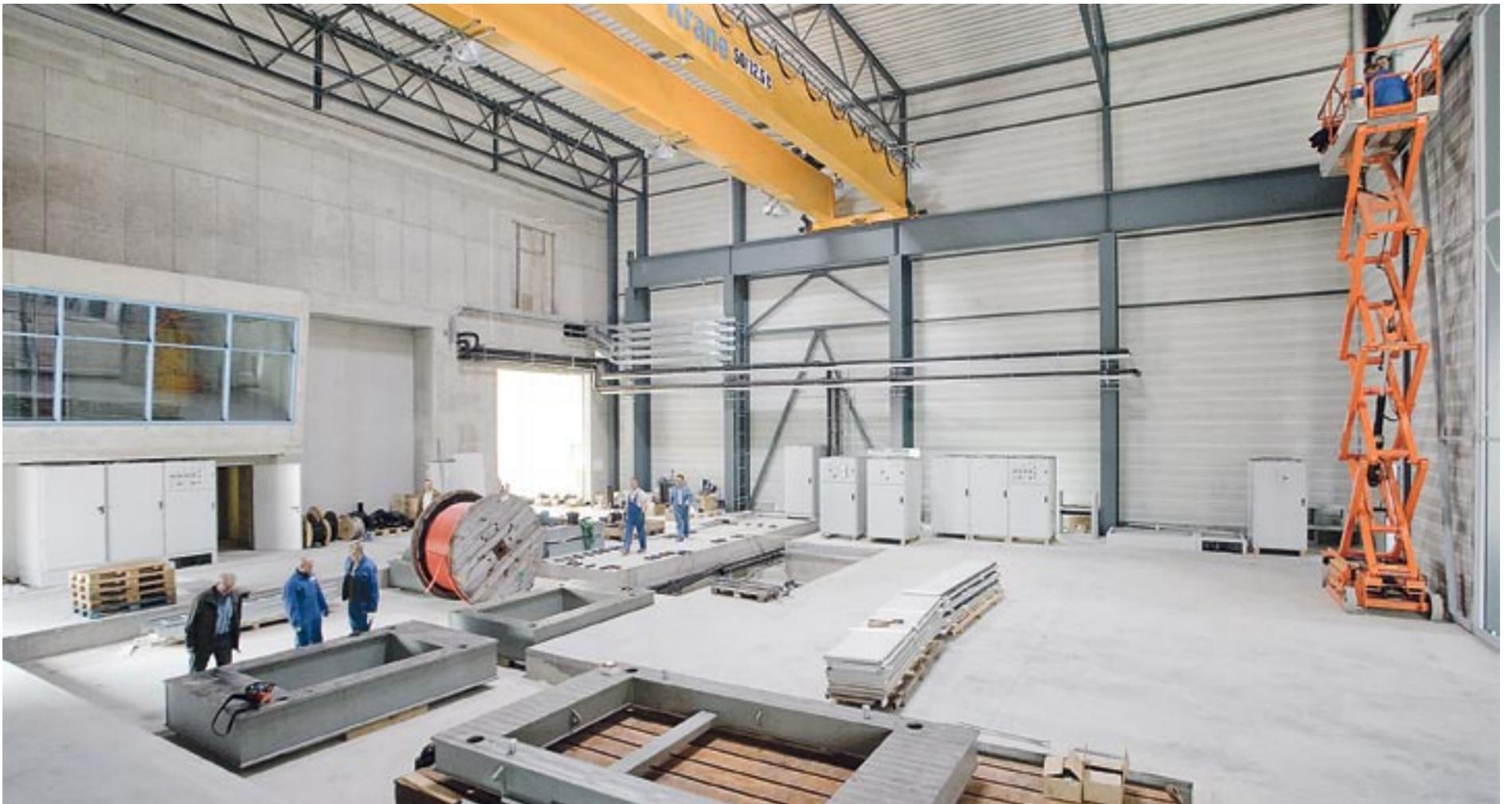
both turbine and grid operators. Addressing the key components for reliable operation of a wind turbine, VETACON combines the benefits of a permanent magnet synchronous machine and full converter in a highly efficient system. Both system components

were developed and tested with a view to optimum matching. The permanent magnet synchronous generators are characterised overall by their branch-specific design and construction. The corrosion-protected arrangement of the magnets guarantees long-term operating reliability and stable machine parameters. This contributes significantly to a high level of machine availability in operation. An extensive vertical range of manufacture serves to ensure sustained product quality. The permanent magnet synchronous generators thus meet even the highest demands encountered in both onshore and offshore installations.

| SYSTEM BENEFITS |

- Gearbox and generator decoupled from the grid
- Higher energy yields in the partial load range
- Active drive train damping
- Modular design for redundant configurations from the output series
- Active power factor control
- Compatible with existing designs and outputs
- Minimal maintenance, hybrid bearing optional
- System concept for both onshore and offshore installations
- High resistance to environmental influences

VEM Sachsenwerk counts 4,800 machines installed in the field, including projects in some of the remotest regions of the world, as here in Inner Mongolia.



Assembly work on the test stand is progressing rapidly to ensure that the completion deadline is met.

Tested – and awarded top marks

With its new 5 MW test stand, VEM Sachsenwerk GmbH fears no comparison with the engineering giants when it comes to testing

A new converter- and motor-generator-fed test stand for large machines is to be taken into service at Sachsenwerk at the end of the year. It is accommodated in a newly erected building, together with an assembly department. With an electrical testing power of 5 MW, the test stand is one of the most modern systems of its kind in Germany. Once commissioned, it will enable VEM to react even better to customer wishes, and to a large extent permits the direct testing of electric machines up to medium frame sizes. “VEM Impulse” would like to introduce three specialists whose work duties are inseparably linked with the erection and operation of the test stand.



Lutz Einert (66), project manager, VEM Sachsenwerk GmbH:

The start signal for planning work was given in 2006. As with all important projects, it was amended and developed further during the preparation phase - evolving from a simple test stand into an independent large-scale project. In the current times of economic crisis, it is thanks to the responsible approach of our management and directors that the project was not halted or postponed until some indefinite date.

There were many reasons for the decision to erect a new test stand. The most important: We have doubled our testing power capabilities. In addition, the new motor-generator set en-

ables us to test our products very flexibly at the most varied voltages and frequencies. That is particularly important for the many dedicated machines which we build to individual customer specifications in various frequency ranges.

Once the system becomes operational, we will be able to overhaul the existing test stand dating from 1964 without interrupting production. Thanks to its two 100-tonne cranes, the original system will continue to do us good service for large special machines. And the fact that we can operate the new test stand fully independently of the old one makes for a real capacity expansion.

One aspect of our project which I find especially pleasing, irrespective of whether others consider it less important, is the appearance of the machine hall. I am not talking about any fancy decoration. Everything is very functional, but at the same time serves to prove that industrial buildings can also be attractive to the eye. With such an experienced planner and architect as Manfred Schломann, we found just the right man for the job. The grounds around the new building have also been incorporated into the design. But they are to be looked after last, of course.

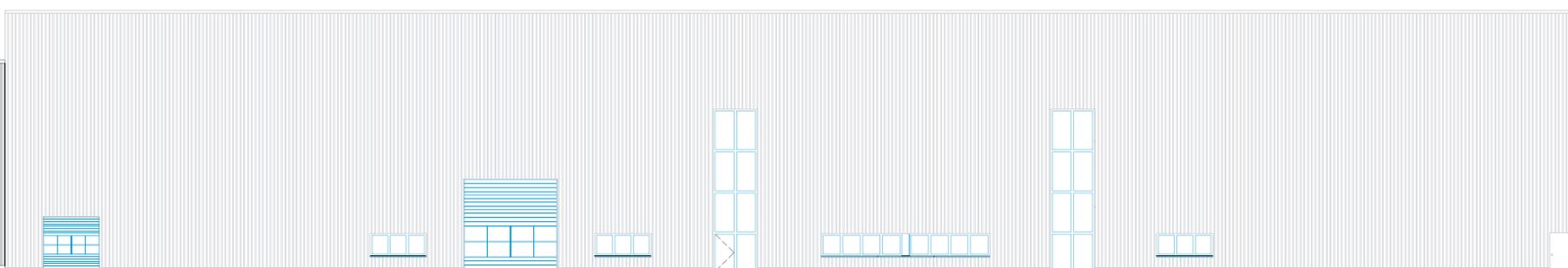
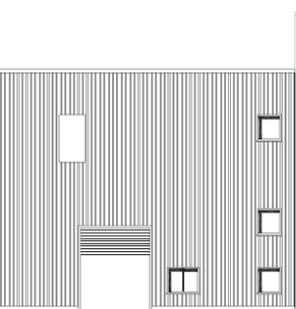
For myself, the management of this project has been a fantastic culmination to my career. I have always worked at Sachsenwerk, and there are many things here which bear my mark. When I retire at the end of the year, I will be leaving something lasting. It is a good feeling to know that the test stand is set up to handle all the future demands of our production.



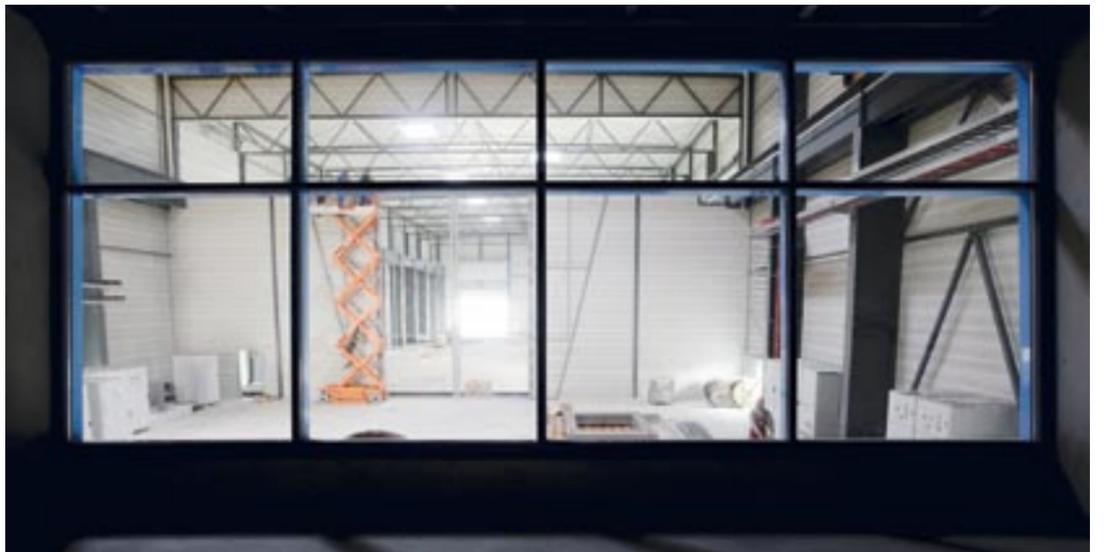
View into one of the switch cabinets.

THE TEST STAND IN FACTS AND FIGURES

- Completion of erection: October 2010
- Planned commissioning: December 2010
- Machine room: approx. 476 sq.m.
- Test stand: approx. 576 sq.m.
- Assembly hall: approx. 1,440 sq.m.
- Installations: Control room, modern acceptance room, voltage ranges from 690 V to 15 kV, frequency range up to approx. 75 Hz, connection to 20 kV system directly on the test stand, 5 MW load tests for 50/60 Hz machines in 4-pole to 14-pole variants, two 50-tonne cranes, five post-mounted swing-jib cranes, two rail tracks with possibility for expansion to four tracks
- Link to the previous assembly hall (Hall 401): Two enclosed crossings



**Testing power and load options as dependent on speed
(applicable for 50/60 Hz and S1 duty cycle)**



View of the test stand from the customer room. In future, customers and acceptance engineers will be able to follow the course of the testing directly.

The diagram shows the possible testing power.



Connecting cables for the test stand.



Thomas Richter (35), head of test stand, VEM Sachsenwerk GmbH:

I have been working as an engineer on the Sachsenwerk test stand since graduating from university and took on responsibility for the department in 2005. We have almost daily contact to customers from all over the world, and we work very closely with the marine classification societies, for example. During acceptance testing on the test stand, the customer can convince himself that he is receiving exactly what was ordered. Soon, we will be able to offer the customers much better conditions than in the past. There will be a separate entrance into a visitors' room alongside the control room. From there, they can follow the course of the testing in comfort.

The generous new hall also promises our assembly department more space and improved working conditions. After all, we are not erecting just a test stand, but also an assembly hall for machines with a total weight of up to 50 tonnes. The assembly section for motors and generators will occupy about two-thirds of the floor space of the new building. Our company finds itself in a very strong position in the field of high-output wind turbine generators, for example. With new orders for 6 MW generators for offshore turbines, we have some interesting tasks ahead of us. Our production is expanding, and we are equipped to meet the challenges with the new test stand. It goes without saying, however, that we can still use the existing test stand and the large and special machines in the existing bays.

In the meantime, the building shell is standing and we have moved on to the hall installations. With such a demanding project, there are new decisions to be taken almost every day, and so I am glad that Lutz Einert agreed to take on project management. He already looked after the erection of the medium machine test stand. He knows what we need and what is important, always knows exactly where we stand, and is not afraid to make decisions. He knows the company like the back of his hand. That kind of experience is simply priceless.

I must admit that I cannot wait for the day when we can finally put the new test stand into operation. We will then be on a par with the major players in the engineering industry when it comes to testing facilities. And as there are no doubt few other systems with such capabilities in Germany, we would be happy to test also machines built elsewhere.



Manfred Schломann (57), architect and civil engineer with general planning contractor "stransky projektmanagement":

We have already been working together with VEM for around ten years. Several buildings on the Sachsenwerk site and at Keulahütte in Krauschwitz stem from our drawing boards. In the case of the new test stand, our office is the responsible general planning contractor for the architecture, structural engineering and site management. We are VEM's direct partner for all external contacts. Anyone who has ever built themselves, will know just how much easier that makes life for the owner of the project.

I am on the building site at least twice a week, but I have a direct line, so to speak, to Lutz Einert. We are on the phone practically every day to discuss whatever questions arise, and we understand each other almost blindly. The good cooperation with him and the VEM management has been decisive in enabling us to realise the whole project as planned and in accordance with the latest demands and know-how.

With our plans, we have had to bring together three aspects: The architecture, the wishes expressed by Sachsenwerk and the requirements of Siemens, who equipped the test stand. At the beginning, we received a list of all the installations which were vital to the new test stand. We then planned a modern building to international standards to accommodate the specified equipment. The hall incorporates an air-conditioned customer lounge, an observation platform for the guests with an unobstructed view of the product, separate sanitary facilities and a kitchenette.

The demands naturally included also meticulous compliance with all fire and noise protection standards and with the strict safety standards for both employees and visitors. Many tasks ran parallel, for example site preparation and at the same time creation and finalisation of the plans. But that was all part of our promise to take the customer's special wishes into account even during the construction phase.

When the global economic crisis broke out and we had still not turned the first sod, I was doubtful for a moment. Not about the project as such, but rather about whether it would be completed according to the original schedule. But the company said: "We are building now for the future." That deserves our every respect.

| IMPRINT |

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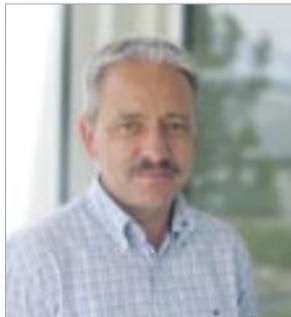
Challenges for drive technology

Two days – Two themes: Agenda for the 9th Technical Conference

Topics connected with offshore, marine and port system applications dominate the first day of the 9th Technical Conference in Wernigerode on 22nd and 23rd June 2010. Gerhard Freymuth, managing director of VEM Sachsenwerk GmbH, will be welcoming the participants with his opening address at 9.45 a.m. The second day is devoted to “Energy efficiency – Challenges for drive technology”. The keynote presentation for this complex is to be

given by Jürgen Sander, managing director of VEM motors GmbH, starting at 8.50 a.m. The conference venue is once more the Kultur- und Kongresshotel Wernigerode. To whet your appetite, we have here gathered brief previews of a few of the presentation manuscripts which had already been submitted up to our editorial deadline.

Design of propeller drive motors



Dipl.-Ing. Christoph Baunacke,
VEM Sachsenwerk GmbH:

The full title of the presentation is actually: “Design of propeller drive motors with regard to the drive concept of the ship and the rules of the classification societies”. Electric drive systems are playing an increasingly significant role for the drives of marine vessels of all kinds. The 45-

year-long tradition in the building of propeller motors at VEM Sachsenwerk has to date produced a diversity of manufactured variants. Alongside a general overview, selected examples serve to illustrate the planning, designing and manufacturing of electric motors for use as propeller drives.

Frequency-controlled electric drives for windlasses and towing winches

Dr. Alexander Nürnberg,
Uetersener Maschinenfabrik GmbH & Co. KG:

To date, almost all large windlasses and towing winches have been designed with hydraulic drives, despite the fact that this requires triple conversion of the primary energy – primary-electrical/electrical-hydraulic/hydraulic-mechanical. An electric drive renders the intermediate hydraulic phase superfluous. This achieves a significant efficiency improvement and reduces the outlay for installation aboard seagoing tugs. The braking power which is demanded of the winches in operation, and must thus be absorbed by the electrical system, is one of the major challenges for system configuration.

The example of the anchor-handling tug “Uranus”, which is owned by Harms Offshore, is taken to show how the demands can be met.



Ship propulsion units designed as asynchronous motors with high power and fed by soft starters



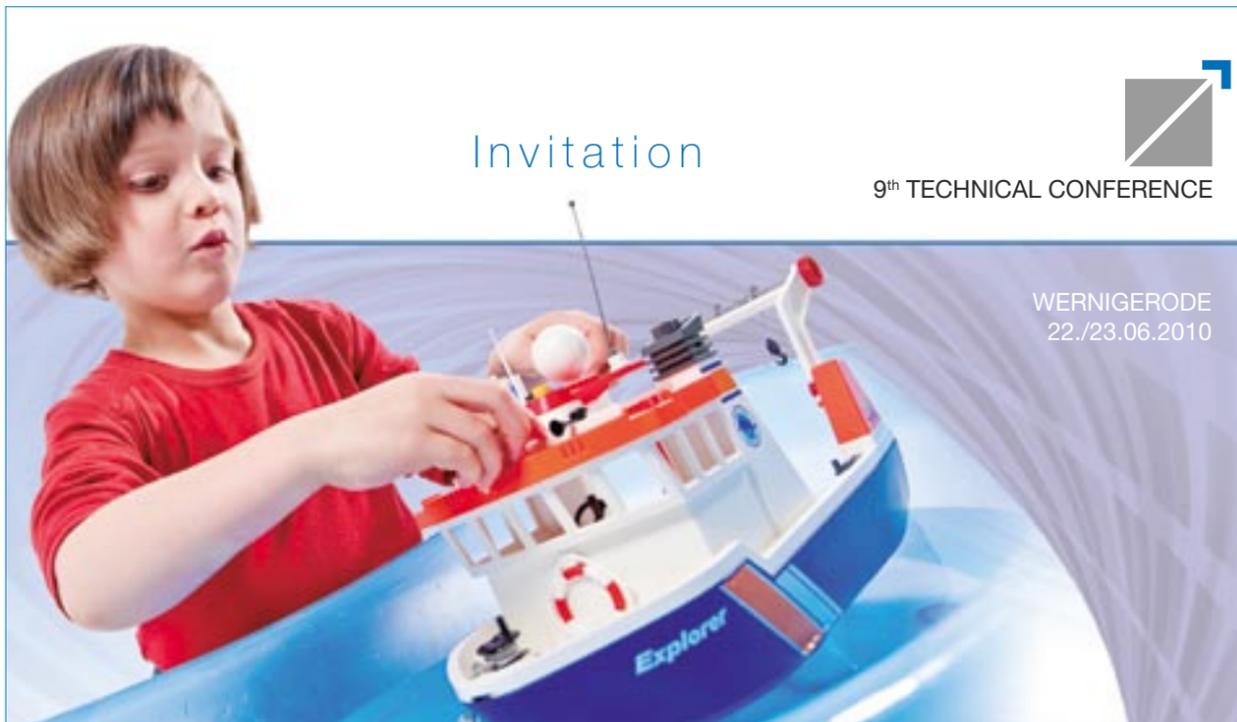
Dipl.-Ing. Ulrich Winter,
VEM Sachsenwerk GmbH:

In recent years, Flensburger Schiffbau-Gesellschaft has delivered three ships of the BC Ferries Super C class. These ships were each a special case for the staff of VEM Sachsenwerk on account of their on-board power supply and drive concepts. VEM provided four generators and

two propulsion units for each ship. The outputs of the propulsion units, at 11,000 kW each, were typical values. The high capacity factor and the operation without converter for a guaranteed stable supply, on the other hand, were something rather special.

Some 3,500 starts per year are handled by so-called “soft starters”. One characteristic of these starters is that, alongside the lowering of the feed voltage and the associated quadratic drop in the torque, the motor is subjected to considerable harmonics from the phase control. This places additional thermal stress on the short-circuit bars.

Comprehensive analyses were performed to be able to calculate the loads for the squirrel-cage winding. As an outcome of these studies, Sachsenwerk introduced new high-strength short-circuit bar alloys. Measuring sensors were also incorporated into the rotors for the first time, permitting permanent monitoring of the temperature. These measures proved very successful during the trials with the first ship. Measurement



series indicated that the rotor winding loads were not unacceptably high even in case of frequent starting. A basis had been established for reliable operation even under extreme conditions.

The operating configuration with soft starter, squirrel-cage motor and adjustable propellers (load reduction to 20 per cent) enables us to realise an economical, but nevertheless very robust system with only negligible effects on the on-board power supply during starting. The advantage compared to motors with frequency converter can be seen in the better cost-efficiency and the reliability of the soft starter. Compared to motors with a starting transformer or separate starting motor, the drive concept described here stands out by way of the lower current load placed on the supply system to be fed.

Azimuth drives for ships with electric propulsion

Prof. Dr.-Ing. Gerhard Jensen,
SCHOTTEL GmbH:

This presentation aims to explain the fundamental advantages of electric drives for certain types of ship.

Different technical solutions for electric azimuth drives are introduced, and the problems of system integration are discussed from the viewpoint of the propulsion system manufacturer.



Determination of efficiency for explosion-protected electric machines



Dr.-Ing. Christian Lehrmann,
Physikalisch-Technische
Bundesanstalt (PTB)
Braunschweig:

Given increasing energy prices, dwindling resources and the EU specifications for energy-driven products, which for the future prescribe output-dependent minimum efficiency ratings for induction machines brought into circulation in the European Union (EC Regulation 640/2009), determination of the efficiency of electric machines is set to gain further in importance. Explosion-protected machines are currently exempted from these requirements, but there is already a trend among the operators of such machines to de-

mand minimum efficiency levels also in this market segment. It can be expected that these trends will become even stronger in the future. Against this background, exact and reproducible methods to determine efficiency by way of measurement will play an ever greater role.

This presentation aims to illustrate the different approaches to determination of the efficiency of electric machines in accordance with EN 60034-2-1, as well as the measuring uncertainties to be taken into account. The approach of efficiency determination by way of the residual losses is discussed as an example.

International efficiency requirements for industrial motors

Dr.-Ing. Martin Doppelbauer,
head of development
and electric machine design,
SEW Eurodrive GmbH & Co
KG:

This presentation provides an overview of current activities and the developments expected on the international market for industrial motors in the coming 10 years.

Now that all the major industrial nations have adopted regulations specifying the minimum efficiency of electric motors, representatives of the branch are openly discussing proposals for a new round of even stricter demands. In the USA, a revised definition of “premium efficiency” is already about to come into effect. Further initiatives are aimed at extending the applicability to include smaller and single-phase motors. Canada is planning to follow suit with similar regulations shortly, and China is currently working on a revision of its efficiency standards. Initial drafts indicate a departure from purely local thresholds in favour of the IE tables specified in IEC 60034-30.

In Europe, rules have been laid down for the period up to 2017. Two new standardisation mandates are now to be finalised by the end of this year as a basis for the further steps. Drive systems, i.e. combinations of motor and converter, are to be covered for the first time. Corresponding activities have commenced under the auspices of the IEC committees TC2/WG28 and TC22. In addition, the EU is demanding consideration of an extended range of outputs and motor types. The idea of higher efficiency classes (IE4 and even IE5) have also been placed on the table.

It is still unclear how Australia and Japan will proceed, but these countries, too, seem to be orienting their decisions on the IEC standards, while at the same time planning to tighten the regulations further.



Tail wind for turbines

Ralf Hanauer is the responsible head of wind energy sales at VEM Sachsenwerk



Photo: Sabine Michel

Ralf Hanauer (49) lives in the Saxon Switzerland and has a grown-up son. In his leisure time, he especially enjoys motorcycle tours.

The manufacturers of wind turbines have benefited from a strong tail wind for a number of years. Not least because the European Union has adopted binding schedules for the expansion of renewable energies. "That is also a valuable opportunity for Sachsenwerk," says sales manager Ralf Hanauer, who has been responsible for customer relations in the wind energy sector since April 2009. His prime objective is to secure and further develop the market shares held by VEM in this dynamical future-oriented segment.

Ralf Hanauer is by no means a new face at Sachsenwerk in Dresden. He completed his apprenticeship as an electrical machine engineer here at the end of the 1970s, and was later given charge of technical sales after graduating in electrical engineering. From 1991 onwards, he spent a total of 18 years on the move in sales and marketing for two major machine manufacturers. But now, he has once more returned to Dresden, to the company in which he learned the trade.

Ralf Hanauer is used to viewing things from a wider perspective, and possesses a talent for adapting international developments to fit specific local circumstances.

The European Union is planning to cover 20 per cent of the total energy demand from renewable sources by 2020. Wind energy is set to

secure a large share of the cake, and VEM is well prepared for the global market with its range of wind turbine generators. Business is no longer booming the way it did in the growth heydays of the wind energy branch, but it nevertheless stands on a sound and reliable foundation. The many innovative technical solutions elaborated by the specialists at Sachsenwerk contribute to the positive development. The new permanent magnet generator and a project for a drive system which does without a frequency converter are just two examples.

"In Germany, there is a good chance that we could even exceed the EU's 20 per cent mark," says market expert Hanauer. With his team of ten sales representatives, designers and calculation engineers, he has already restructured the company's domestic sales activities. Hanauer: "The cooperation with the branch leaders such as REpower and Nordex has always been good. But at the same time, we also attach great importance to being a dependable partner for the smaller and medium-size manufacturers and operators." And as far as the foreign markets are concerned, VEM will in future have an increasing say in the Asian market thanks to its excellent products, its manufacturing quality and its exemplary customer care. Ralf Hanauer, for one, is absolutely convinced of that.

continued from page 1: **Editorial**

With the exception of tool and pattern purchases, I have stopped all investments for 2010. The objective is a further significant reduction in our borrowing, as a means to achieve greater security and planning freedoms. In Dresden, we are continuing our work on the plans for finalisation of the site restructuring and on repair measures, to further concentrate our activities and thus to save costs. That applies particularly to our energy consumption.

The crisis has shown all too clearly, how important it is not to spend more money than you can reasonably earn. Germany, the regional governments, our cities, and many companies and private individuals have been living beyond their means for decades in some cases. By accepting this approach, we have in the past crowned the banks as our rulers. It is now time to recall that we are the ones who generate value in the economy and lay the foundations for growth. That applies for VEM in the same way as for the country as a whole. It is not the authorities, governments or EU which drive value creation, but us.

The banks are service providers, but we should not make excessive use of their services. If we do, then we cannot pretend to be surprised when we realise that we are no longer able to act as independent entrepreneurs. Therefore, as former German economics minister Ludwig Erhard once said: "Everything in moderation!" It seems that our politicians have still not understood the meaning. But they will soon be forced to do so. We, on the other hand, are again one step ahead. That is our strength, and something we must never neglect.

On that note, I wish you a pleasant summer and every satisfaction in your interesting work.

Yours, Freiherr von Rothkirch

| ENGINEERING |

3.3 MW generators for Turkey

To help Turkey cover its increasing energy demand, VEM Sachsenwerk is supplying a further 35 generators of the 3 MW output class to REpower by 2011. The double-fed asynchronous generators are to be installed in various onshore wind farms in Turkey. With this order, REpower is demonstrating its continued confidence in the proven reliability and technical know-how of VEM.

Brake motors for pitch control

New solution supports optimum automatic adjustment of the rotor blades

The first three brake motors of the newly developed BU1R 112 MZ series were dispatched to the customer in March. Together with a corresponding gearbox, the motor forms a single drive unit for adjustment of the turbine rotor blade pitch. This serves to guarantee optimum utilisation of the available wind.

To maintain a constant generator output, it is necessary to keep the speed of the rotor similarly constant. Larger wind turbines are thus all fitted with an automatic pitch control system. Modification of the effective angle of attack enables the rotor to turn at a constant speed even when the wind speed fluctuates. When the wind is only light, the rotor blades are set with their full broadside to the air flow. As the wind becomes stronger, they can then be turned back according, right up to the point at which they stand parallel to the wind direction. A brake holds the rotor blades in the required position. This pitch control is implemented as an independent system for each rotor blade. To meet such demands, the motors must function extremely reliably.

Dieter Schindler checks the brake motors before dispatch.



Photo Sabine Hartenstein

Compressor motors for LDPE plants

Trio of companies supplies machines to the chemical industries in two countries



Photo: Karin Wagner

Preparing the stator of the hyper-compressor motor for insertion of the rotor

Four synchronous motors for piston compressors are to be supplied for the LDPE plants Ana Maria Campos in Venezuela and Qapco in Qatar in summer 2010. Their total weight is specified at 443 tonnes. The two plants will in future be producing 300 kilotonnes of polyethylene granulate each per year. This granulate is processed into packaging materials such as films.

Working to an order from Burckhardt Compression AG, VEM Sachsenwerk has manufactured two hypermotors with outputs of 24 and 25 MW, and two booster/primary motors with outputs of 5.5 and 8.4 MW for the parallel projects. The machines are designed for a voltage of 11 kV, and have been tailored to customer specifications to ensure full compliance with the special application criteria. The VPI impregnation of the universal VEMoDUR insulation system guarantees a long service life of the windings and the high permissible operating frequency of the motors.

The booster/primary motors are configured for direct starting (DOL), the hypermotors for use of a starting converter. The associated power electronics and control systems are being supplied by Siemens Drive Technologies. As the machines are to satisfy the explosion protection classification "Pressurised enclosure", compliance with the relevant regulations has been verified by an independent testing agency and confirmed by way of an EC declaration of conformity in accordance with the ATEX directive.