impulse

VEM Sachsenwerk GmbH | VEM motors GmbH | VEM motors Thurm GmbH | Keulahütte GmbH

Number 01/2004 | Customer information | www.vem-group.com

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Keulahütte manufactures products to measure

TRENDS

Rail vehicles
Vehicles with VEM auxiliary motors are in service from Vienna to Shanghai

TRAFFIC

Contacts
Who is available for you when at the Hanover Fair

FAIR

Two premieres lined up

INNOVATION *VEM highlights at the forthcoming Hanover Industrial Fair 2004*

RFID technology makes it possible: Important data can be stored and retrieved at the motor itself.

VEM Group. The leading European industrial fair will be opening its doors for six days starting on 19th April. With the world's first "memory motor" and the largest generator in the world for wind power plants, the VEM Group is able to point to two spectacular innovations this year.
The customers and partners visiting our stand will have a first opportunity to glean further information on the use of RFID technology (Radio Frequency Identification) in conjunction with electric motors. With this technology, important data can be stored on and retrieved via special labels, so-called tags, attached to the motors. A standard motor thus becomes an outstandingly service-friendly "memory motor", which is itself able to provide details on its performance ratings and maintenance requirements, or other customer-specific information at any time. A read-write unit not only permits retrieval of the stored information, but also enables customers to add their own data. Especially for large-scale plants in rolling mills or the chemicals industry, memory motors offer enormous benefits. In the case of production disturbances, relevant information is available immediately and on site – and that without direct contact, which is particularly convenient where access to the individual machines is difficult.
A second, quite literally huge development is the 5 MW wind power plants generator from Sachsenwerk. For obvious reasons, only a model of the world's largest asynchronous generator will be on show in Hanover. The original is soon to be given the chance to demonstrate its prowess in a gigantic wind power installation on the North Sea coast. Following the test phase, generators of this type are earmarked for use in offshore wind farms.

Complete range

Alongside the two premieres, a number of "classic" products will also be presented. From compact drives to large machines, the VEM Group offers
(continued on page 2)

VEM at Hanover Fair

Visit us in Hall 11 on Stand B 08

For your diary:
An expert presentation on the future-oriented possibilities offered by "memory motors" and on the underlying RFID technology

Date:
20th April 2004, 10 a.m.
Congress Center, Room 18

Well equipped to meet customer demands in the building of large machines

TRENDS *New developments for large three-phase machines from VEM Sachsenwerk – three example projects*

VEM Sachsenwerk. The steel industry, petrochemicals and power stations are branches which are currently posing previously unknown challenges for manufacturers of large machines. New rolling mill drives, for example, are generally equipped with three-phase drives, and existing installations are being converted from DC to variable-speed three-phase synchronous and asynchronous drives. The extreme demands on compressor systems in the polymer industry are met by technologically "series-connected" primary and hyper-compressors with slow-running synchronous motors.

With its manufacturing facilities, lifting equipment and modern test bays, Sachsenwerk is in an ideal position to handle such challenges. This is borne out by current examples of major projects, such as the stand drive for a tandem train at ThyssenKrupp Stahl Duisburg, a DUO blooming stand drive for Böhler Edelstahl Kapfenberg, compressor drives for LDPE plant at the Marun complex in Iran, and drives for flue-gas desulphurisation plants in Nottinghamshire, England.
There is scarcely any other company in Germany which bundles the prerequisites for the building of large machines to the extent Sachsenwerk does. The origins for this competence are to be found back in the 1920s and 1930s. At that time, the company noted increasing demand from industry for large high-voltage motors. They were required for newly established chemical plants, to extend the steel-making facilities along the Ruhr valley, for Saxon paper mills, for expansion of the power and water supplies in Breslau (today Wroclaw), Munich, Dresden and Moscow, and not least to satisfy orders from the Soviet trade agency in Berlin. Such demand, and later the rebuilding of local industry after 1945, culminated in the 1950s in series production of large three-phase high-voltage motors in various forms and with various cooling and protection types for outputs up to approx. 6 MW. Throughout the GDR years, Sachsenwerk enjoyed a monopoly in the East European countries in respect of large machines. Today, VEM supplies three-phase high-voltage motors tailored to individual customer specifications for practically all branches of industry.
(continued on page 2)

Photo: Karin Wagner

Quality guarateed: Steel-mill drive

EDITORIAL

Dear readers!

As spring slowly emerges, more and more tourists will be coming to admire the natural beauty of our country. Those of us who live here, however, apply different yardsticks to measure the attractiveness of our home region. Our places of interest are the opportunities for employment and learning. These are the pressing questions which form the core of every discussion on Germany as an industrial location.
As an entrepreneur, I am against using economic fluctuations as an excuse to transfer production abroad to countries with low wage levels. The industrial location Germany is for me an inherent value worth fighting for. The performance capabilities of the companies of the VEM Group are proof in themselves. In future, too, our considerable vertical range of production will remain a VEM trademark. With the quality and with the worldwide sales commitment of the whole VEM Group, our continued success is not in danger.
One important factor in this equation is the high level of training of our employees in Dresden and Wernigerode, in Zwickau and Krauschwitz. Our in-house apprentice training programmes are here an investment in the future. Over 80 trainees are learning their trades in companies of the VEM Group each year. Upon completion of their training, around 30 are taken over into permanent employment per year. Vocational colleges with a strong emphasis on practical relevance are training engineering staff for VEM. Practicals and dissertation topics weave close links to establishments of higher education. For the customer, this is at the end of the day reflected in quality products and services. And that is the way things are to stay.

Regards, Adolf Merckle

Two premieres lined up

(continued from page 1)

a complete range of drive solutions and three-phase motors and generators for low, medium and high-voltage applications.
VEM is thus able to meet the demands of its customers for versatile, efficient and modular products and system solutions for all branches of industry.
By addressing the topic complex "Competence in explosion protection", the members of the VEM family demonstrate their ability to develop and manufacture electrical equipment to ATEX for all protection types, in both the low-voltage and high-voltage ranges. The function model for EEx e 6 kV insulation testing and the explosion-protected motor K12R 355 EEx e with integrated RFID technology, in particular, underscore this claim in impressive fashion.
Comprehensive plant engineering competence becomes evident in the exhibition section "Fire gas motors for class F400" and "Drives for rolling mills and steelworks", where high-tech system design is paired in almost perfect harmony with a robust, reliable construction.
One dominant feature of the VEM series is their strictly modular design principle, as implemented and demonstrated in the various solutions for cooling, ventilation, monitoring, braking and speed control for the motors. There is a sheer endless choice of options, from simple, non-ventilated motors through to drive solutions with integrated frequency converters.
This year, for the first time, Keulahütte GmbH Krauschwitz will also be represented on the VEM Group stand. The traditional foundry specialists, with their castings for wind generator systems, as well as housings and bearings for general engineering, round off the production spectrum of the group.

Customer castings

TRENDS *Keulahütte invests in its latest product range*

Keulahütte. The name Keulahütte GmbH Krauschwitz is known to customers on the German and European markets above all in connection with the development, manufacturing and distribution of pressure pipe fittings, hydrants and general fittings. Over the past few years, the company has also been promoting customer castings as a relatively new product range. With these efforts, Keulahütte is seeking specialisation in a field devoted to the manufacturing of tailored castings in the most varied materials for customers in the machinery, vehicle engineering and heavy-duty fittings sectors, as well as for special piping manufacturers.
In 1998, the share of customer castings in overall turnover amounted to 8.7 per cent. Thanks to intensive sales activities and consistent utilisation of the installed foundry plant, it was possible to increase this figure to 27.2 per cent in 2003. Our machine moulding shop is available for series parts in the cast weight range from 5 kg to 180 kg. The heart of this shop is the automatic air-pulse moulding machine with a moulding box size of 1,250 mm x 1,000 mm x 350/350 mm. We are similarly well equipped, however, for the manufacturing of small batches and single items. They are produced in the hand moulding shop, which is able to deal with workpieces up to a cast weight of 3,000 kg.

Charger-air cooling for M 43C marine diesel engines

The range of materials covers the certified casting qualities EN-GJL 200, GN-GJL 250 and EN-GJS-350-22LT to EN-GJS-600-3. For the production of liquid iron, two medium-frequency induction crucible furnaces are available, with a capacity of 7 t each and an installed electrical load of 4.8 MW.

Our investments over the past few years have been geared predominantly to the wishes expressed by our customers for specially manufactured castings. With the manufacturing of such products in mind, emphasis was placed on modernising and expanding performance options in mechanical machining. Alongside a vertical turning and milling centre, this section is to be complemented from August 2004 by a horizontal machining centre with a table size of 1,000 mm x 1,000 mm. The product group "Customer castings" currently offers above all the following cast product types:

- Rope drums, bearing and drive casings, and planetary carriers for lifting tackle and hoists
- Charger-air cooling housings, exhaust piping systems and injection pump housings for marine diesel engines
- Control stars, output shaft casings and castings for hydraulic brakes for installation in wind power generator
- Housings for coolant fittings and pump parts
- Castings for air-separating plants, suitable for extremely high pressures
- Impeller hubs and hubs for ventilation systems for tunnels and power stations
- Castings for textile and pelleting machines.

The latest addition to the product range has been charger-air cooling housings for marine diesel engines of type M43 C. These high-quality castings with a piece weight of 2,780 kg are produced in our hand moulding shop from EN GJS-400-15 nodular iron.
Our modern test laboratory guarantees total monitoring of all incoming and manufactured products and materials. Keulahütte GmbH has been certified to DIN EN ISO 9001 since 1994 (currently DIN EN ISO 9001:2000).

You can look forward to further information on interesting product examples and applications in the next issues of "VEM-Impulse".

Well equipped to meet customer demands in the building of large machines

(continued from page 1)

Three examples of international projects with large machines from VEM Sachsenwerk GmbH

Stand drive for rolling train

At the Duisburg-Bruckhausen works of ThyssenKrupp Stahl AG, Sachsenwerk joined forces with ALSTOM Power Conversion Berlin to renew the drive on stand 1 of a four-stand tandem line. The cold-rolling train handles coils weighing up to 25 t with strip lengths up to 2000 m and strip thicknesses from 1.5 to 5.5 mm, and strips with a minimum thickness of 0.3 mm in widths from 600 to 1400 mm. The products are used for white goods, vehicle bodywork, electrical control cabinets, engine-building and in many other industrial applications. The speeds involved can reach 1080 m/min. The drive to date was by way of a variable-speed DC motor. Sachsenwerk used the existing foundation pit to replace the original drive with a suspended IM 7211 motor in a special version for rolling mills. The 5 MW synchronous motor is a 6-pole motor with T-slots for the salient poles. A vector-controlled cycloconverter from ALSTOM Power Conversion controls the motor with a cycle duty time of 5 min in the frequency range from 8 Hz to max. 20 Hz.
The motor is matched to the cycloconverter and the torque overloads of rolling mill practice with a voltage of 2,000 V and optimised reactances. With its weight of 72 t, an overall length of 5.4 m, a width of 3.2 m and a height of 3.9 m, the motor represents the mid-range of machines from Sachsenwerk.

Compressor drives for LDPE plants

The LALEH Petrochemical Company in the Marun complex in Iran is erecting a new LDPE plant with an annual capacity of 300 kt. Project planning and management has been placed in the hands of mg engineering Lurgi Oel-Gas-Chemie Frankfurt. The drive technology for the frequency converters is to be supplied by Siemens Automation & Drives Nürnberg, while Sachsenwerk is to be responsible for the HV motors. The ethylene gas is compressed in the pre-compressor, the so-called primary, to approx. 250 bar. Subsequently, the main compressor, usually referred to as the hyper, compresses the gas further to approx. 3,000 bar. Polymerisation occurs in the reactor at approx. 180°C with oxygen as the catalyst. The downstream extruder guides the PE mass through a perforated metal plate, after which a rotating blade cuts PE granulate at lengths of approx. 3 mm. Both compressors are slow-running piston-type compressors from Nuovo Pignone and Burckhardt Compression.
The motors are designed as brushless synchronous machines with salient poles and amortisseurs. Advantages which stand in favour of the synchronous variant include the reactive-power compensation as mains system support and a lesser sensitivity to system voltage drops. The primary motor of type DTKVY 2523-16WS is rated at 6.5 MW for 375 rpm and is powered directly from the 11 kV supply.
With its weight of 40 t, a length of 3 m, a width of 3.2 m and a height of 3.7 m, the motor is to be found towards the top of the range of machines from Sachsenwerk. The hyper motor of type DTKVY 4931-30WS produces 22.4 MW at 200 rpm and is driven via a Simovert S current-source inverter with subsequent "step-up" transformer, which is synchronised to and then operated on the 11 kV mains supply. The motors are suspended IM 7115 designs. The drive-side bearing support is provided by the bearing of the compressor. As explosive gases may arise in the vicinity at certain times, explosion protection category "p" is implemented. For the extruder we have similarly chosen a synchronous motor, in this case with an output of 3.5 MW, with four poles and two winding systems of 2.4 kV each. Following start-up and synchronisation of the hyper motor, the Simovert S can thus be switched over to control the extruder motor. With a weight of 154 t, a length of 4.2 m, a width of 6.5 m and a height of 6.9 m, this motor represents the "high-end" range of Sachsenwerk machines.

DUO blooming stand drive

Together with ALSTOM Power Conversion Berlin, Sachsenwerk is reconstructing a 950 DUO blooming stand drive for Böhler Edelstahl Kapfenberg. At the end of 2004, the previous drive by way of a dynamically high-quality three-phase drive is to be replaced by a vector-controlled cycloconverter and a 6 MW synchronous motor.
The motor of type DMMYZ 3860-20V is a 20-pole design and operates in the frequency range up to 5.83 Hz, with a maximum rating of 16.67 Hz. It is matched to the cycloconverter and the torque overloads of rolling mill operation and designed for a maximum 6,000 load cycles per 8-hour shift.
This represents a duty cycle time of approx. 5 s for acceleration to approx. +35 rpm, reversal to –35 rpm and braking to zero. The vector control of the cycloconverter and the high torque utilisation of the motor achieve a rise time of around 160 ms for 35 rpm.
To be able to ensure the maximum possible mechanical durability of the rotor, we have chosen a cylindrical rotor with radial cooling providing for optimum head dissipation. Adaptation to the foundation pit has produced a suspended IM 7311 motor. With a weight of 175 t, an overall length of 5.3 m, a width of 5.2 m and a height of 5.8 m, this motor can be assigned to the "high-end" range of machines from Sachsenwerk.

NEWS

International trade fairs

VEM Group. The VEM Group will already be present at four trade fairs in the first half of 2004. Just two days after the Hanover Fair closes its doors, the next VEM presentation will be able to welcome visitors to the **ELCOM Ukraine**. This is the first time that VEM is attending this International Trade Exhibition for Power and Electrical Engineering and Electronics. The ELCOM is taking place in **Kiev** from 26th to 29th April 2004.
From 11th to 15th May 2004, VEM motors GmbH will be showing its drive solutions, also for the first time, at the **ACHEMASIA** in **Beijing**, the largest branch fair in Asia for the chemical and petrochemical industries. Against the background of the dynamic economic development in China and Southeast Asia, this fair is an important opportunity to strengthen our market position in the region.
During the same week, from 11th to 14th May, the **Wind Energy** 2004 will be taking place in **Hamburg**. VEM Sachsenwerk GmbH will be representing our colours at the principal international fair for the wind-power industry. Encouraged by a successful presentation two years ago, VEM will again be demonstrating its special competence in the field of wind-power generators.

FACTS

Agreement signed with F. L. Smidth

Dr. Dietmar Puschkeit, Gerhard Freymuth and Andreas Asmussen at the signing (seated, l. to r.)
Standed, l. to r.: Peter Ufer, Elke Scheffler, Poul Petersen, Andreas Karhula Lauridsen and Kell Storm

VEM Sachsenwerk. "Company agreement as preferred supplier" is the heading above a supplier and business agreement signed between VEM Sachsenwerk GmbH and F. L. Smidth of Denmark on 10th February. Sachsenwerk is thus now listed with the world's largest manufacturer of cement plant as a preferred supplier. This is the latest outcome of cooperation going back to 1995 – cooperation which is to be strengthened further in the coming years. Together with F. L. Smidth, Sachsenwerk has already equipped cement plants around the world with electric motors. These projects illustrate the notable success of the designs which Sachsenwerk already launched in 1974 with the Unified Series. Even in the years before 1989, the company supplied impressive numbers of machines for the cement industry.

From Vienna to Shanghai

TRAFFIC *Rail vehicles with motors from VEM are in service around the globe*

VEM Group. What do the Belgian state railways, the Vienna tram network, the light-rail system in Saarbrücken, locomotives of the Dutch state railways, the German ICE trains and the Shanghai underground all have in common? The rail vehicles of all these operators run with motors from companies of the VEM group. Whether as fan motors, for pumps, in air-conditioning systems or for pressure-equalisation compressors – there is almost no end to the different applications. Two examples here characterise the diversity.

Auxiliary traction drives

The Antwerp shunting yard in Belgium is the first location at which the new diesel-hydraulic locomotive HLD 77 has been taken into service. It is built by a company in Northern Germany which has gathered considerable experience with diesel tractive units since 1920. The HLD 77 is designed for shunting and for light line services in the Benelux states, as well as in France and Germany. VEM motors have been installed in 120 locomotives since the series was launched in 1999. By the time the project comes to a close this year, the count will have reached 180 units. The "Competence Center North Germany" bundles the deliveries from all the VEM group companies.

High-speed trains

The ICE2 series came through its "baptism of fire" on 1st June 1997 with eleven trains for the route Cologne - Hanover - Berlin. The maximum speed was initially restricted to just 250 km/h, but was later increased to 280 km/h outside the tunnels. The high-speed trains are in the meantime in service on most ICE routes, with the exception of those in Austria and Switzerland. A train normally comprises a drive coach, two 1st-class coaches, a service coach, three 2nd-class coaches and a non-driven control coach.
The British operator Virgin Trains also runs high-speed trains on its two lines. The West Coast line connects London with the West Midlands and reaches up into North Wales and Scotland. The Cross Country line serves links between Birmingham and the South West, the South coast, Northern England and Scotland. Renowned suppliers HFG Faiveley provided the complete air-conditioning systems for the Virgin Trains rolling stock. In the years 2000 to 2002 alone, the company equipped 78 coach units for its British partner. VEM motors Thurm supplied the corresponding fan motors.
The two rail operators have many things in common: They are considered high-tech pioneers, and safety, reliability and comfort are trademarks of their high-speed trains. The demands to be met by the VEM drives are certainly high-flown. As components of a reliable pressure equalisation system, they help to ensure that sudden pressure changes – for example as the train enters a tunnel – and vibration are held below the strict railways thresholds and do not detract from passenger well-being. Thanks to their inverter control, the motors display a very high electric strength. A quiet and draught-free air-conditioning system must provide perfect regulation of the temperature in the coaches under both summer and winter conditions. At the same time, finally, protection against external factors such as dust and chemical influences also plays an important role. With their mature design, their reinforced insulation system, improved bearings and extended relubrication intervals, the VEM motors are able to satisfy the demands of our customers to the full.

A high-speed train of the Austrian Federal Railways (above). The roof section houses the VEM auxiliary drives (centre). The new diesel-hydraulic locomotive HLD 77C (below).

VEM motors for the HLD 77

- 2 diesel cooler fan motors (25 kW) from VEM motors in Wernigerode
- 1 diesel space air intake fan motor (1.1 kW) from VEM motors Thurm
- 1 hydraulic pump motor from VEM motors Thurm
- 1 auxiliaries generator, including electronic exciter equipment, from Sachsenwerk

VEM motors for the ICE2

Approx. 1,300 motors from VEM motors Thurm of the following types:
- K20O 71 – used as bypass fans
- K21O 80 – used as condenser fans

Compact driver cabin air-conditioning for Virgin Trains ICE

Cooling output:	approx. 4.5 kW
Heating output:	approx. 6.0 kW
Air supply:	approx. 600 m³/h
Fresh air:	approx. 120 m³/h
Coolant:	R 134a
Weight:	approx. 150 kg

Traction motors for low-floor rail vehicles

TRAFFIC *Modular design of the series guarantees tailored and cost-effective solutions*

VEM Sachsenwerk. Modern vehicles for local public transport are required to meet exacting demands. Flush passenger access without steps over the full length of the vehicle calls for a low-level carriage floor. Only little space remains for the installation of a geared traction motor drive.
VEM Sachsenwerk has successfully tackled the challenges with the development of a new traction motor series for local transport operators. The series is based on a single, identical active section and permits both longitudinal or transverse mounting for coupling to a bevel-gear or spur-gear transmission unit. The traction motors of the new series are adapted to the individual vehicles and to their corresponding converters by way of the core length and the number of windings. The output range covers the spectrum from 85 kW to 130 kW at 60 Hz. The drive is thus ideally suitable as a universally applicable component for a broad range of local public transport vehicles.

The new traction motor series is built around a four-pole asynchronous three-phase squirrel-cage motor without housing. The target specification for the installed height of the traction motor as a transverse drive was defined at 350 mm. The surface-cooled motor meets degree of protection IP 55 and is generally self-ventilated. Facilities for forced ventilation are offered as an option in the form of an additional, integrated fan unit.

The modular design of the motors in the series enables customer-tailored products to be offered at competitive prices for the most varied drive systems. Special attention was paid during development to a robust and low-maintenance design. The motors of this series are in the meantime operating to the full satisfaction of the customers in the most varied local public transport vehicles.

In a transversely mounted drive, the geared traction motor is arranged within the vehicle bogie. On the gearing side, the motor has no end shield of its own, and is instead flanged directly to the gearing. Motors are in successful use as transverse drives with various outputs in "Flexity Classic" low-floor trams on the streets of Dessau, Dresden, Halle and Frankfurt/Main.

In a longitudinally mounted drive, the geared traction motor is arranged outside the bogie, between the two wheel set shafts. Each wheel set is driven by its own drive unit. In this case, the gearing incorporates a bevel-gear pairing. The longitudinal motor is rotated by 90° compared to a transverse drive, meaning that the motor width is 350 mm. This proves advantageous for installation within the low given clearance. These motors are earmarked as longitudinally mounted drive units for "Flexity Outlook" low-floor trams for Eskisehir (Turkey), Geneva and Brussels.

As a so-called special drive, the motor of the Las Vegas monorail is mounted almost vertically on the vehicle chassis. The motor suspension is at the D-end shield. The torque is transmitted via a cardan shaft to the gearing mounting transversely in the vehicle. The N-end shield accommodates the separate ventilation, which is driven by an external-rotor motor. It was thus possible to design an extremely compact motor with forced ventilation, which furthermore satisfies very high demands in respect of quiet running at speeds of the order of up to 6000 rpm.

Demands on traction motors

- minimal dimensions
- wear-free and simple to maintain
- high performance and overload capacity
- low LCC and high degree of efficiency
- robust despite low weights
- environment-friendly, also at the time of disposal

NEWS

Longitudinal drives for Brussels

VEM Sachsenwerk. The good co-operation with partners Bombardier Transportation has proved fruitful once more. Sachsenwerk is currently working off an order from the renowned rail vehicle manufacturers for 222 traction motors for new trams to be supplied to Brussels. This is the third order for this particular series; driven by VEM motors, the conspicuous low-floor trams with their innovative design are already in service in Eskisehir (Turkey) and in Geneva (Switzerland). The Brussels trams are to be 5 and 7-section vehicles, each equipped with four or six 105 kW longitudinal drives from Sachsenwerk. The first of these 350 mm wide, self-ventilated asynchronous three-phase motors will be leaving the Dresden factory at the end of September 2004. Subsequent deliveries will continue through until mid-2006.
Alongside longitudinal motors for the "Flexity Outlook" family, VEM Sachsenwerk also produces transverse motors for the Bombardier series "Flexity Classic".

3rd Technical Conference in Wernigerode

VEM Group. "Drive Technology – Technologies for the Future" is the motto of the 3rd VEM Group Technical Conference, which is to be held in Wernigerode from 14th to 16th September 2004. The focus of the diverse two-day programme is on presentations and discussions reflecting a broad spectrum of topics relating to our branch. The conference at the Treff-Hotel Wernigerode will be addressing the most varied specialisations and fields of application for drive technologies, while at the same time presenting products and developments from VEM. The guest list includes manufacturers, customers and representatives of universities and colleges.
With this 3rd Technical Conference, the VEM Group is continuing a successful tradition. Central topics in previous years have included drive technologies for the chemicals industry and power savings in connection with the "Motor Challenge" programme. The 3rd Technical Conference already promises to meet the high expectations and has been planned with a strongly international orientation.
Readers interesting in attending can register their participation under:
✆ +49-(0)3943-683-297
e-mail: margila@vem-group.com

Subsidiary in Singapore

VEM motors. With effect from the beginning of the year, the VEM representative office in Singapore has been transformed into a subsidiary company and now does business under the name VEM S. E. Asia Pte. Ltd. With this qualitative step forward, VEM has given a clear sign of the importance it attaches to sales activities in the Asian markets. As a subsidiary, the company is in a better position to compete for project business in the region.

Your contact partners at the Hanover Fair 2004

CONTACT *Visit us in Hall 11 on Stand B 08*

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VEM motors GmbH

Managing Director
Jürgen Sander
19. – 23.04.

VEM Sachsenwerk GmbH

Managing Director
Gerhard Freymuth
19. – 23.04.

VEM motors GmbH

Sales Manager
Rainer Kowalski
21. – 23.04.

Competence Center Nord

Sales Manager
Ulrich T. Beholz
19. – 24.04.

Competence Center Berlin

Sales
Gerlinde Schröter
20. – 21.04.

Competence Center West

Sales Manager
Frank Steuer
19. – 21.04.

Competence Center Ost

Sales Manager
Uwe Macion
22.04.

Competence Center Süd

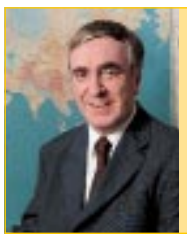
Sales Manager
Hans-Christian Weber
19. – 21.04.

Competence Center Siegen

Sales
Ulrich Leifer
22. – 24.04.

VEM motors GmbH

Sales Eastern Europe
Jürgen Reinhold
19. – 20.04.

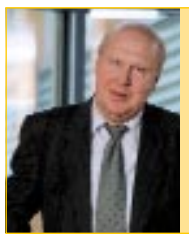


VEM motors GmbH

Sales Manager Overseas
Wolfgang Wagner
19. – 24.04.

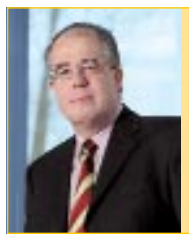
VEM motors GmbH

Sales Overseas
Wolfgang Klammer
19. – 24.04.



VEM motors GmbH

Design Dept. Wernigerode
Dirk Seehase
22. – 24.04.

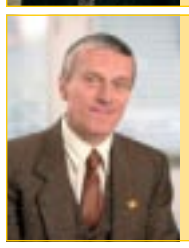


VEM motors GmbH

Wolfdietrich Risch
Customer and project representative

VEM motors Thurm GmbH

Sales
Dieter Baensch
19. – 21.04.



VEM motors Thurm GmbH

Design Dept. Thurm
Roland Schmidt
19. – 21.04.

VEM motors Thurm GmbH

Dr. Jörg Tröltzsch
Customer and project representative

VEM motors GmbH

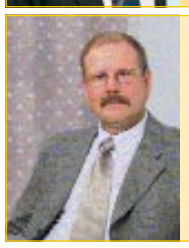
Sales Controlling
Lutz Schube
21. – 22.04.

VEM motors Austria GmbH

Michael Völker
22. – 23.04.

VEM motors Austria GmbH

Günter Köberl
20. – 21.04.



Esmac Oy

Kari Randell
19. – 21.04.

Esmac Oy

Jari-Pekka Lievonen
19. – 21.04.

VEM motors UK Ltd.

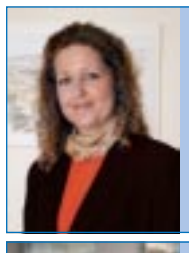
Ralph Crocker
22. – 23.04.

Keulahütte GmbH Krauschwitz

Sales Customer castings
Harald Queißert
19. – 23.04.

VEM Sachsenwerk GmbH

Marketing
Sabine Michel
19. – 24.04.



VEM Sachsenwerk GmbH

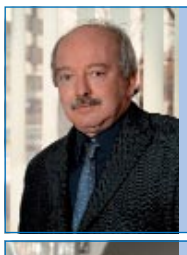
Contract Controlling
Elke Scheffler
19. – 24.04.

Kommunikation Schnell GmbH

Marketing
Katrin Beier
19. – 24.04.

VEM Sachsenwerk GmbH

Sales Plant Construction
Dr. Stefan Eberl
22. – 23.04.

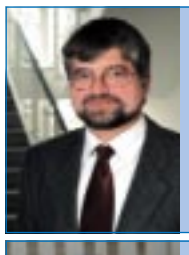


VEM Sachsenwerk GmbH

Sales Plant Construction
Peter Ufer
19. – 21.04.

VEM Sachsenwerk GmbH

Sales Wind Power/Marine
Claus Kruse
19. – 24.04.



VEM Sachsenwerk GmbH

Sales Contracting
Dr. Rainer Laaß
22. – 24.04.

VEM Sachsenwerk GmbH

Sales Contracting
Jens Muschel
19. – 21.04.

VEM Sachsenwerk GmbH

Sales Traffic Engineering
Wernfried Kühnel
19. – 21.04.

VEM Sachsenwerk GmbH

Head of After-sales Customer Service
Heiko Helms
22. – 23.04.

VEM Sachsenwerk GmbH

Dr. Frieder Kielmann
22. – 23.04.

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Narrow ridges with outlook

FACTS *The VEM Group has contributed actively throughout to the German standards committee K 311*

VEM Group. It would be inappropriate to speak of storming the summits. The paths are not clear enough for that, and a pronounced summit is often not in sight. It is more a case of balancing along a narrow ridge: constantly testing the ground for the next step, observing the routes taken by others, but setting the direction oneself wherever possible, always falling back upon local knowledge and experience on the way to new goals. That is the nature of work on new standards: Those who remain passive will eventually simply get dragged along, and if they lose their footing, they will soon learn how steep the fall is on either side of the ridge. And those who remain standing at any point, will inevitably find themselves left behind.,

The VEM group has delegated Dr. Frieder Kielmann (2nd row, 3rd from the right) to the standards committee K311.

Checking the direction of the wind

When the members of K311 visit VEM Sachsenwerk in Dresden on 1st and 2nd April 2004, they will as usual be awaited by a packed agenda. K311 – Section 311 of the German Electrotechnical Commission (DKE) – is the German standards committee which helps to specify the way ahead for electrical machines. Helps to specify, because the market is of course not only active in Germany. Alongside the German DIN standards, the corresponding European EN and globally valid IEC standards have already for many years been decisive for technical development and for product standardisation. The task for K311, therefore, is to check the wind direction prevailing at its counterpart IEC/TC2 (Rotating Machinery), to analyse the situation and, if necessary, to exert its own influences.

Smooth transition

VEM attached great importance to competent participation in K311 right from the beginning of the 1990s. The prerequisites were already present, as very successful basic research and standardisation work had already been pursued during the seventies and eighties. This included functional evaluations of insulation systems, which were represented cooperatively by Prof. Dr.-Ing. habil. Müller from the Dresden University of Technology, Faculty of Electrical Engineering, Chair for Electrical Machines. With recognised commitment, Prof. Müller represented the interests of the whole VEM group on the committee until 1998 – from the smallest low-voltage standard motor up to the largest high-voltage hydro-electric generator.
The hotly disputed topics of those years were, for example, terminal designations, impulse voltage withstand levels, functional evaluations of insulation systems, starting characteristics of three-phase motors, excitation systems, noise limits, climatic categories, the determination of losses for converter-fed machines, duty type S10, EMC, power and shaft height assignments, explosion protection, bearing voltages and energy-saving motors.

As successor to Prof. Müller, Dr. Frieder Kielmann was appointed to represent VEM at K311 in 1998. His experience in practical standards elaboration had been gained over many years of contribution to SC2J/TC2, and secured a smooth transition.

Working down to the details

K311 and its corresponding working groups deal with new projects, draw up expertises on draft standards and propose amendments to existing standards. Contributing on behalf of the VEM group, Dr. Kielmann is an active member of the working groups AK 311.0.6 (Insulation systems for electrical machines), AK 311.0.7 (Converter-fed operation of asynchronous machines) and AK 311.0.8 (High-voltage machines, explosion protection). In 2003 alone, the German standards committee dealt with 155 documents. The regular half-yearly meetings are naturally not enough for such an agenda. The committee members are thus constantly involved with their committee tasks. The results are then carefully evaluated by the management bodies of the VEM group and by the relevant technical departments.
The decisions reached by K311 must reflect all the standpoints expressed by the participating manufacturers, users and university representatives. It is undisputed that standards must contain technically correct and economically acceptable specifications. Even so, individual manufacturer interests and other specific aspects often lead to heated debate. For this reason, the resolutions are always the outcome of a majority decision.

There is not enough space for all useful background information and explanations to be included in the standards themselves. It is thus a longstanding tradition to accompany the standards of a particular technical field with a series of VDE publications. In the case of "Rotating electrical machines", the standards are grouped under VDE 0530. The corresponding publication series bears the number 10. The currently valid 6th edition dates from 1997 and is to be fully revised by the middle of the year.

Current projects of K311

The projects dealt with over the period 2002–2004 are best illustrated by way of the activities report given by the chairman of IEC/TC2, Prof. Seinsch:
Basic standard DIN EN 60034-1 or VDE 0530 Part 1 (Rating and performance) – 11th edition (publication as IEC in first half of 2004)

DIN EN 60034-2 or VDE 0530 Part 2 (Methods for determining losses and efficiency); especially disputed here are the specifications for measurements of the additional load-dependent losses of cage induction motors with outputs up to 150 kW (IEC 61972)

DIN EN 60034-3 or VDE 0530 Part 1 (Specific requirements for cylindrical rotor synchronous machines) – 5th edition (publication as IEC: mid-2004); will then apply not only for turbo-generators, but for all synchronous machines with cylindrical rotor and outputs from 10 MW upwards

DIN EN 60034-4 or VDE 0530 Part 4 (Methods for determining synchronous machine parameters) – specifications of the preferred measuring methods are being sought

DIN EN 60034-9 or VDE 0530 Part 9 (Noise limits) – 4th edition (publication as IEC: 10/2003); with application for extension of the scope of validity to include converter-fed machines

DIN EN 60034-11 or VDE 0530 Part 11 (Thermal protection) – 2nd edition (currently being finalised as IEC-FDIS); contains limit values for thermal overloading of the windings

DIN EN 60034-14 or VDE 0530 Part 14 (Mechanical vibration of certain machines) – 3rd edition (publication as IEC: 11/2003); contains limit values for amplitude, velocity and acceleration for two vibration severity characteristics

DIN EN 60034-17 or VDE 0530 Part 17 (Cage induction motors when fed from converters - Application guide) – 4th edition in preparation; contains new recommendations regarding the problems bearing currents, cabling, shielding and earthing

DIN EN 60034-18-27 or VDE 0530 Part 18-27 (Partial-discharge measurements on stator windings of rotating machines) – IEC in preparation; significant for determination of a standard measuring method (off-line)

DIN EN 60034-18-41 or VDE 0530 Part 18-41 (Evaluation and qualification of electrical insulation systems used in machines fed from voltage converters) – IEC in preparation; significant for proof of the ability of insulation systems to withstand periodic voltage peaks from the converter

DIN EN 60034-23 or VDE 0530 Part 23 (Specific requirements for the refurbishing and re-winding of rotating electrical machines) – 1st edition
(publication as IEC: 02/2003)

DIN EN 60034-XX or VDE 0530 Part XX (Methods for determining the equivalent circuit diagram of 3-phase asynchronous machines) - - IEC in preparation; significant for determination of the control algorithms of variable-speed drives with induction motors fed from frequency converters

NEWS

Fire gas motors to EN 12101-3

VEM motors. VEM motors has now received the necessary approval for its K11R series of Fire gas motors in frame sizes between 132 and 280 and with outputs from 3 kW to 75 kW. A specially developed insulation and bearing system stands up to the extreme loads specified in EN 12101-3. Following successful completion of the first system tests in May 2003, two further motors were tested last autumn, as the basis for certification for speeds up to 3000 rpm. With this test series, VEM motors has ventured into dimensions which were to date considered practically unattainable.
New trends from the development of this motor series are to be presented at the 2nd International Conference on Tunnel Safety and Ventilation, which is taking place at the Technical University in Graz (Austria) from 19th to 21st April.

Change at the helm

VEM Sachsenwerk. Close business relationships have existed for some years between VEM Sachsenwerk GmbH and SAM Electronics GmbH, which develops and supplies electrical equipment and fittings to the shipbuilding industry. On 24th February, SAM general manager Prof. Dr. Hensel (2nd from the left) was in Dresden for a last official visit before taking his well-earned retirement. The management at Sachsenwerk thanked Prof. Hensel for his major contribution to

Photo: Karin Wagner

the fruitful cooperation between our two companies, and passed on best wishes for this new phase in his life. At the same time, we were pleased to welcome Mr. Maik Stoevhase (3rd from the left), who will be taking over at the helm of SAM Electronics GmbH on 1st April. He returned home with the assurance from Sachsenwerk that the present commitment will be maintained to extend the success of our joint projects.

Marine motors

VEM motors. **The two VEM factories in Thurm and Wernigerode are delivering a total of 70 drives for seawater, fire extinguisher and fuel pumps for the "Labobar", an Indonesian passenger ship which is currently under construction and will later be carrying over 3,000 passengers on scheduled services between the Indonesian islands.**

Signposting the future

SCIENCE & TECHNOLOGY *VEM cooperates with the West Saxon Technical College in Zwickau*

VEM motors Thurm. The students touring the factory complex of VEM motors Thurm with their professor are showing a lively interest in the production processes going on. The future engineers have already been studying the basic theories for two terms, and now, in their third term, a practical visit is at last on the agenda. That it should be VEM motors Thurm which opens its doors in this way to students from the electrical engineering department at the West Saxon Technical College in Zwickau, has numerous reasons.
From the point of view of the college, it is important to be able to call upon established electrical engineering companies with activities which mirror the training profile of the study course when it comes to factory visits and practical placements. The long-standing VEM company on the outskirts of Zwickau is an almost natural choice. Prof. Dr.-Ing. habil. Andreas Pohl, the pro-dean of the department, himself completed his study and engineering practicals at the company. This contact has been maintained over almost 30 years. Such insider knowledge is invaluable when holding lectures on the subject of electrical machines and drives. And his budget also benefits from the uncomplicated and cooperative support of VEM motors Thurm in the form of specimen electrical machines.

Photo: Sabine Hartenstein

Michael Gruner (2nd from the left) answering questions during a visit by Prof. Pohl (right) and his students to VEM motors Thurm.

When the time comes for the students to seek out practical placements, renowned electrical engineering companies all over Germany are included in the selection list, among them, for several years now, also VEM motors Thurm. The future electrical engineers spend 20 weeks at their chosen company during the period of their training. Sufficient time to devote attention to a topic which is of benefit to the company, and which may later prove suitable as the subject for a final dissertation. "One of our students, who completed his practical with VEM motors Thurm, set up a test stand for the company at the college. With this stand, he was able to perform machine tests and special measurements on VEM motors," explains Prof. Pohl. In the meantime, other students have further qualified the test stand. Under laboratory conditions, it is possible to perform more directly targeted testing of drive technologies with VEM motors than is feasible on the company test stands at the Thurm works. The students are also further developing measuring and test devices for electrical machines, and conducting research into new applications for specific drive solutions. The results are of immediate practical value for VEM motors Thurm and enable the company to stay abreast of the up-and-coming trends from the very beginning.
"And one more thing strengthens the links between Thurm and our college," says Prof. Pohl with a certain pride. "When I visit the company with students, it is Michael Gruner, the deputy head of design, who takes time to answer their questions. He was the student I mentioned before, and the best graduate of our college in 2000. There is no better way to demonstrate to the students the potential fruits of a successfully completed degree."

If it belongs together, we supply it together

Keulahütte. This was the core of an idea with which Keulahütte has solved a critical point with regard to the installation of slide valves in the ground. With modification of the valve hood for a specially developed installation fitting, the worker in the pipe trench is now offered an ideal solution. The telescopic fitting is mounted on the Keula slide valves with a twist-lock fastening, for simple installation without tools. It is characterised furthermore by its extremely smooth operation.

Memory motor presented

DEVELOPMENT *Conference on the future of plant engineering*

VEM motors. The world's first "memory motor" was presented to the public in Magdeburg on 3rd March 2004. In the forefront of the conference "The Future of Plant Engineering – Collaborative Business", VEM motors GmbH and the Fraunhofer Institute for Factory Operation and Automation offered information on their joint innovation. With the aid of RFID technology (Radio Frequency Identification), it is in future possible to store a variety of important data directly with an individual motor – data which could be extremely valuable not only during manufacturing and distribution of the machines, but also in later use at the customer's site.

On 4th and 5th March, the trade public had the opportunity to learn more about the new technology at an information stand in the conference hotel.

ON SITE

Outline agreement signed in Dubai

VEM motors. **The Middle East tour of a German economic delegation headed by Federal Chancellor Gerhard Schröder last October has produced its first results for VEM motors. In January, the "Memorandum of Understanding" prepared in the autumn was signed in Dubai. Managing Director Jürgen Sander travelled to the United Arab Emirates to meet Mr. S. Sharafi from our partner company Khoory.**
The agreement is aimed at already significantly increasing the VEM motors turnover in the Arab region this year. At the same time, VEM received the first order to be derived from this direct cooperation – for deliveries of motors to a paper mill in Dubai.

Rolf Heide: Head of the Competence Centre Siegen

PEOPLE *Convinced of the quality of his products*

Rolf Heide is what is usually referred to as an "old hand" in the trade. When he moved to the VEM Group in 2000, he was already able to point to several decades of experience in electrical engineering. Born in Westphalia, he has been active in the branch ever since his initial commercial traineeship. A man who has worked with electric motors for 43 years has been able to follow developments at first hand. "Today's motors use much better materials and are manufactured predominantly as series products," he comments. "It is difficult for today's newcomers to imagine how motors in the old days were more often than not one-off designs, and that each motor met its own individual specifications, because there were no binding standards."

Photo: Wolfgang Koglin

Rolf Heide is 63 years old and is married with 2 children.

Such problems are of course a thing of the past. As head of the VEM Competence Centre in Siegen, Rolf Heide and his two colleagues sell high-performance electric motors to customers in North Rhine-Westphalia and Hesse. His day begins at 6.30 a.m. "You can get a lot done before the official working day starts at 8 a.m.," he says to explain his love of the early hours. "And it is also not unusual for customers to phone me at home after work in the evening." He has no complaints about that. To a certain extent, it is a reflection of the close ties with his customers. "You simply have to be there when your customers need you," is the principle of a thoroughbred sales manager.
The fact that Rolf Heide is known all over the branch is the outcome of years of conscientious work. For example with West German companies supplying accessories for the motor industry. "When things become urgent for a customer and there seems to be no solution to a problem on the basis of normal delivery times, then I move heaven and earth to try to help. The companies know that they can rely on that." But for all the effort he and his team put in, such a level of customer care would still not be possible without the strong backing of the VEM Group. Technical advice and comprehensive service from VEM motors are tangible benefits for the customer. And the general conditions for motor sales have also improved over the past few years. "VEM is a good address. I was already able to see that for myself before joining the company," says Rolf Heide. "In fact, that was the factor which sealed my decision to take on a new job at the age of 59. And I have never regretted the decision, because it is a real pleasure to work independently and to be able to sell products whose quality I believe in.

The head of the Competence Centre coordinates continuing strategies with the management in Wernigerode every six weeks. It is then discussed how customer and company interests can best be reconciled. For Rolf Heide, one thing is certain: He will be postponing his well-earned retirement for a while yet and will be rescheduling his sporting hobbies for the evening hours. This will give him enough time to familiarise his successor and to ensure that future users will also be able to say: VEM customers are at the right address at the Competence Centre in Siegen.

NEWS

Thurm obtains CCC certificate

VEM motors Thurm. From the end of March, all "small power motors" with outputs up to 1.1 kW supplied to the PR of China, irrespective of the number of poles, will bear a CCC symbol on their rating plates and on the packing. This China Compulsory Certification (CCC) was awarded to VEM motors Thurm GmbH on the basis of a strict company audit by the Chinese authorities CQC. This entailed sending the requested specimen motors, materials and spares to China for a comprehensive series of tests. The four units KPER..., EBPER... (three-phase and single-phase motors in grey-cast versions), KL1R... and EBL1R... (three-phase and single-phase motors in aluminium versions) were submitted. China must be specified as an export destination in the applications. The certification is especially important in connection with project business and replacement deliveries.
The new certification system for selected products is intended to secure equal treatment for domestic and foreign suppliers and goods in accordance with the rules of the WTO.

Renewed DIN EN ISO 9001 certification

VEM Sachsenwerk. VEM Sachsenwerk GmbH has been certified since 1993. In December 2003, certification of the quality management system was successfully renewed on the basis of the updated edition 12/2000 of DIN EN ISO 9001. The auditing was performed by BVQI, one of the largest certification bodies in the world. The integrity of our quality management system is thus documented in recognised form for our customers for a further three years.
By way of annual audits, the certification office monitors whether the company complies with the demands of the standard. It is part of our corporate philosophy to place customer satisfaction at the focus of all activities. Every single employee of the company contributes actively to this satisfaction with the quality of his or her work. The certified quality management system gives our customers the reassurance that all necessary measures have been taken to enable constant improvement of our products and processes.

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