



impulse



VEM Sachsenwerk GmbH

VEM motors GmbH

VEM motors Thurm GmbH

Keulahütte GmbH

Number 01/2005

Customer information

www.vem-group.com



Service-oriented
CC Düsseldorf as a technology partner of the steel industry

RESULTS



Explosion-protected
Chemical processes call for safe drives

SPECIAL TOPIC



Standard-conformant
Successful certification of shut-off valves with improved parameters

ENGINEERING

EDITORIAL

Dear readers,

Almost on a daily basis, we are snowed under with new hypotheses and new recommendations as to how some supposed disorder in our national economy could be resolved.



Backed up by a media presence which is often as shallow as it is loud, these solutions are praised as universal remedies. Trade unions, industry associations and parties all then issue their statements, assert lobby interests and contradict the opinions of the opposite political camp. The man on the street, on the other hand, is left to watch in amazement from the sidelines.

If temporary job creation measures are taken into account, unemployment stands at over 6.5 million. The national debt amounts to 1,420 billion euros and continues to grow by 1714 euros per second.

That doesn't seem to bother the politicians. Expenditure is increased. Legal uncertainties spread further and the working population works over half the year to finance the state and its extravagances. Is that all reason enough to give up?

No, not at all. Fortunately, there are still thousands of authorities, enterprises and organisations in Germany which still base their activities on the welfare of the citizens and the working population, and not on "shareholder value" and the speculative adventures of globalisation fanatics. In our government offices and in the economy, the staff and managers must revive our real Christian values with greater determination to avert irreparable damage for Germany. Honesty, reliability, mutual confidence between government and citizens, and a readiness to work and shape developments, however, demand one important prerequisite: Those with responsibility must set an example in every respect.

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VEM presents new development

INNOVATION

Water-cooled grey-cast iron motor with innovative cooling system



A focus of attention for trade visitors from all over the world: the VEM stand at the 2004 Hannover Fair

VEM Group. As an international player, VEM will again be demonstrating its innovation potential at the world's largest industrial trade exhibition, the Hannover Fair, from 11th to 15th April 2005. The regular VEM Group stand in Hall 11 will again be the place to look for technical novelties. Under the banner "The Whole World

of Motors and Drives", VEM will be displaying its competence in drive technologies for all branches of industry. The focuses of attention this year are a new VEM development and a branch with special demands: steel and rolling mills. Even beyond the electric motors, metal as a material will be playing a central role.

The highlight on the VEM fair stand will without doubt be the first water-cooled grey-cast iron motor. On show to the public for the first time in Hanover, this motor is in the running for an important award: VEM has entered its newly developed "Liquid-cooled three-phase motor in grey-cast iron design, cooling method IC 31 W" for the "HERMES AWARD". This international technology prize of the Hanover Fair is conferred upon outstanding innovative products.

Solutions "Made in Germany"

It is true that water- and oil-cooled electric motors have been on the market for some time. But to date, they have been manufactured exclusively as welded steel constructions. The VEM solution, on the other hand, is based on the use of grey cast iron as housing material. Steel tubes for circulation of the cooling medium are cast into the housing. The advantages of this motor: It is significantly less expensive than a welded steel construction and offers better thermal properties. Although suitable for universal application, the new motor is able to play out particular strengths in converter-fed operation.

In the large machine sector, too, VEM will be presenting the success of its strategy "Quality, a VEM Trademark - Made in Germany" with yet another record achievement. Major orders for rolling mills are evidence that VEM

is a worldwide specialist in this field. Two twin drives, with outputs beyond the ten megawatt mark, are currently being developed in the Dresden workshops. Visitors to the fair stand will be able to study the models at first hand.

Metal is naturally also one of the key elements of the Keulahütte product range. As a supplier of customer castings, Keulahütte will be pointing to a number of special products, and providing information on durable, environment-friendly corrosion protection with modern epoxy-resin powder coatings.

It is a trademark of the Hannover Fair that exhibitors from all over the world present not only innovative products and solutions, but also their range of qualified services. At the VEM stand, customers will be offered detailed information on the broad range of services available through the closely meshed VEM service network. As a guarantee of transparency and confidence in this respect, the VEM Group has joined the ZVEI trade association initiative "Services in Automation".

Visit us at the 2005 Hannover Fair
Hall 11 Stand B 08
11th - 15th April
Daily 9 a.m. - 6 p.m.

The chosen theme "Explosion-protected electrical equipment - Standardisation, ATEX implementation and international trends" ensures broad topicality. Positive development forecasts for the chemical industry permit us to expect further stimulus for electrical machinery manufacturers.

sentatives of test institutes and universities, as well as practical users. The latest information on the 4th Technical Conference, together with a list of speakers, is to be found on our WEB-SITE at: www.vem-group.com



The 3rd Technical Conference in September 2004 was a magnet for customers and partners alike.



WERNIGERODE
June 16th/17th 2005

More orders from the steel industry

RESULTS

VEM Competence Centre in Düsseldorf as branch technology partner

VEM motors. Steel and rolling mills represent a market segment with complex demands, but at the same time one for which VEM is a competent address with its sophisticated product range. For almost three years now, customers have found an important partner in the VEM Competence Centre in Düsseldorf. As a first port of call in all matters concerning the steel industry, it boasts a team of specialists from both VEM motors GmbH and cooperation partner KLOSE ENGINEERING.

The longstanding fruitful cooperation between the two companies has developed above all in dealings with the steel industry. The combination of metalworking experience at KLOSE ENGINEERING and the excellent manufacturing facilities and comprehensive know-how of VEM in the designing of electric motors has been well received by the customers. The synergy effects, which have brought a new quality to the marketing of VEM products in terms of advice, engineering and sales, are reflected in repeated growth in annual turnover.

Several major orders from important plant manufacturers added up to an especially successful year for the

Düsseldorf competence centre. These orders included roller table motors of the ARC series, geared motors and AC mill motors for use in hot strip mills - as in China at MaSteel and Maanshan. Similar drives were also set on their way to a plate mill at Bao Steel in China.

Orders from Korea and Italy

In Luxemburg, a medium-section tandem mill at PROFILARBED S. A. was equipped with over 400 geared motors from VEM motors. Orders realised in Germany, furthermore, included roller table motors for TKS Thyssen-Krupp Stahl AG in Duisburg. VEM motors supplied these motors for the new reheating furnace of Hot Strip Mill 2.

But there has been more still on the daily agenda for the competence centre team besides the coordination and realisation of such comprehensive tasks. The staff in Düsseldorf have also been able to record a number of large orders which evolved from detailed technical consultations with the respective customers.

Two examples serve to illustrate the point. Together with the electrical

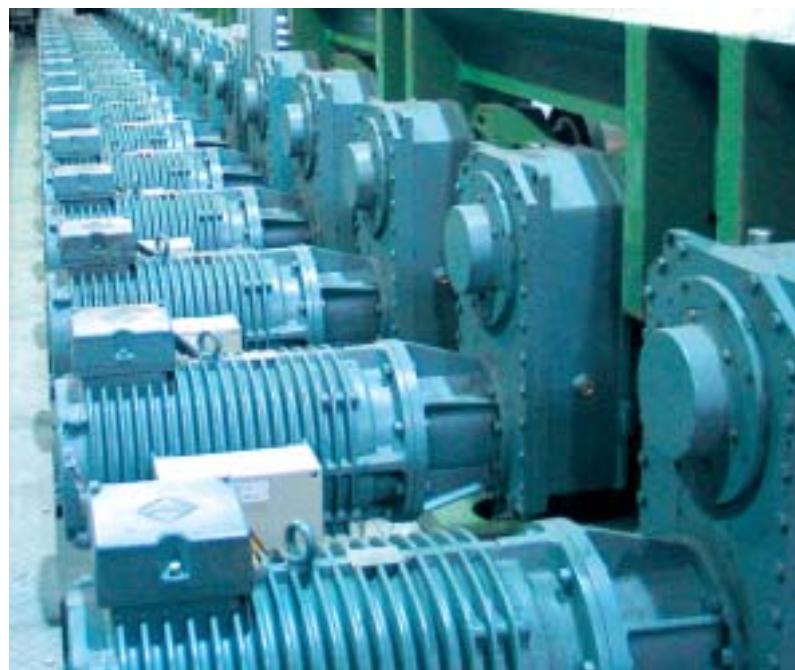


Photo: E. G. Klose

Slab roller table to the furnace

equipment contractor, the competence centre developed completely new motors for the Korean steel producer POSCO. The orders were sealed in June and the drives for a plate mill in Pohang in Korea were already dispatched in December 2004. They are

designed with open-circuit cooling and have replaced old DC motors. The largest motor (frame size 630) weighs 6,900 kg. An order for Italy can be mentioned as a second example. Received in December, this order also involves motors for a plate mill.

NEWS

New generation of forced-ventilation fans

VEM motors Thurm. The previous series of forced-ventilation fans from Wistro is to be replaced by the new IL series. The forced-ventilation fan units used by VEM will then all be supplied with three-phase motors for the voltage range 220-290/380-500 V, 50/60 Hz. A running capacitor mounted in the fan terminal box, however, permits operation on a single-phase system at 230-277 V, 50/60 Hz (Steinmetz circuit with CB), if necessary. This alternative must be realised by the customer. The motors are available up to degree of protection category IP66 and bear the designation "WISIL".

Visit by Saxon Minister-President

VEM Sachsenwerk. During a visit to Sachsenwerk at the beginning of the year, Minister-President Georg Milbradt gained a detailed insight into the activities of the Dresden member of the VEM Group. He was particularly impressed to learn how the company has consolidated its position on the international market with engineering achievements and individual solutions.



Photo: Karin Wagner

Managing director Gerhard Freymuth explains the insertion of coils into a stator body.

Thanks and best wishes for the future

VEM Sachsenwerk. The longstanding close and successful business relations between the Dresden Transport Corporation (DVB) and VEM can be credited to no small degree to DVB technical director Frank Müller-Eberstein.



Photo: DVB AG

Frank Müller-Eberstein also received well-earned thanks from the Mayor of Dresden Ingolf Rossberg.

His departure from the company on 14th January 2005 concluded an important chapter of his career. As managing director of VerkehrsConsult Dresden-Hamburg GmbH and of the Meissen Transport Corporation, as well as a UITP representative, however, his knowledge and experience will not be lost to the DVB group and the transport branch in general.

VEM thanks Frank Müller-Eberstein for his enormous contribution to the fertile cooperation between our two companies and wishes him all the best for the future.

Keulahütte at IFAT 2005

FINLAND

VEM motors can look back over a 45-year presence in Finland

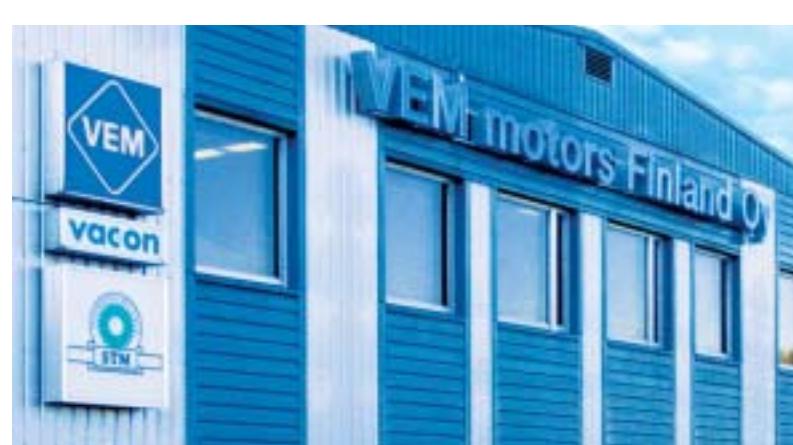


Photo: Marjut Vanha

Under a new name since September 2004: The Finnish VEM subsidiary

VEM motors. Alongside electronics, industrial branches such as wood processing, paper and cellulose, metallurgy and chemicals are key areas of the economy in the northernmost EU member country. In many machines and plants in these branches, drives bearing the VEM trademark are keeping things moving. VEM has sold more than 700,000 motors in Finland since 1960; one in four of the motors which are installed today originate from VEM production.

This success is founded above all on the longstanding close cooperation with our Finnish sales partner. It was 45 years ago, on 20th February 1960,

that representatives of the company Konemyntti and the former GDR foreign trade office for electrical engineering and electronics signed a contract on sales of VEM electric motors in Finland. In fact, it was the very first contract of its kind to be concluded with a company in Western Europe. The first business contacts had already been established a few years earlier. After the Leipzig Fair in 1957, Konemyntti imported the first VEM motors into Finland and put them on show in the window of its showroom in Helsinki.

Initially used above all in agriculture, their reputation as reliable drives

soon spread. And so more and more VEM motors were to be found in industrial applications. Building upon this successful start, sales in Finland rose constantly over the subsequent years. A change in the market alignment at Konemyntti in 1979 led to the founding of the company Esmac, which took over sales of the VEM motors in Finland and, with new ideas, boosted market success still further. At the beginning of the 1990s, finally, our longstanding trading partner Esmac Oy became the first VEM foreign sales subsidiary. Since 1st September 2004, a new name - VEM motors Finland - also demonstrates the close links between the sales agency and the German motor manufacturer.

With a high level of technical competence, longstanding market experience and the support of the know-how of its parent company, the Finnish subsidiary today offers electric drive components and systems for a broad range of applications. A dense network of resellers and extensive customer service activities form the basis for comprehensive user support, and create the necessary prerequisites to enable VEM to keep even wider sections of Finnish industry moving in the future.

EDITORIAL

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State and economic leaders must display the moral integrity, personal reliability and intellectual strength needed to be able to analyse the complex processes of our time, to be able to act in the best interests of the country with due consideration of the Ten Commandments. The family of owners of the VEM Group and the strategy of the company stand firmly on this foundation. We are thankful that our principles have enabled us, contrary to the trend in Germany, to grow in terms of both quantity and quality and to justify the faith placed in us. We are grateful to all our staff and customers for their magnificent cooperation and loyalty, and look forward to further successful partnership in 2005.

Yours,
R. v. Rothkirch

Drives for hot-rolling mills

NEWS

VEM supplies twin drives, roller table motors and auxiliary drives

VEM Sachsenwerk. The Dresden factory has set yet another milestone in the designing of large machines with the development and manufacturing of a rolling mill main drive for a hot-rolling mill in the Middle East. Two synchronous motors with outputs of 8.5 MW each and a total weight of 450 tonnes have been configured as a twin drive. Alongside these large machines, the plant contractor has also ordered roller table motors and auxiliary drives for the new rolling mill from VEM. The VEM Group is

thus the general supplier of drive equipment for this project, for which deliveries are scheduled for the period through to December 2005.

A hot-rolling mill in Ukraine is also to be equipped with VEM machines. A twin drive from Sachsenwerk is to be sent on its way eastwards in April 2006. The two motors are designed for an output of 4.6 MW each and together weigh 320 tonnes.

Closer contacts to the Gulf region

VEM Group. One of the industry managers who followed a government invitation to accompany the German Chancellor Gerhard Schröder on his recent tour of the Gulf region at the beginning of March was Jürgen Sander, managing director of VEM motors. As representative of a globally active company group, he gladly took up the opportunity to further expand VEM export activities in the Middle East. He was able, for example, to strengthen contacts established during the previous tour of the Arabian peninsula by an official delegation in 2003.

Appreciated by our customers:

Robustness for all applications

VEM Group. The chemical, petrochemical and gas industries have been important customers for VEM drives for many decades. Renowned, globally active companies appreciate the robustness, safety and high reliability of products from VEM. The installation conditions place espe-

cially exerting demands on the electrical machines. In chemical plants, after all, they may be exposed to all manner of gases, vapours and liquids. But even in such aggressive environments, motors and special drives in the most varied versions have constantly proved their qualities.



Special drives for the chemical industry have been part of the VEM product range for decades. OXENO Olefinchemie GmbH, a supplier of base products, is one of many customers who appreciate the quality of VEM drive technologies.

Explosion-protected motors to VIK standards

Wherever explosive gas or vapour/air mixtures can be formed, or where combustible dusts can arise, special, explosion-protected drives are imperative. But even the standard motors in use in the branch need to comply with strict technical specifications. Compliance with the guidelines formulated by the Association of Industrial Energy and Power Generation (VIK) is considered proof of quality in the branch. These standards provide users and manufacturers with a common basis for the technical specification of electric motors, also taking into account incorporation into international projects. The VIK guidelines are subject to constant review and are regularly adapted to the changing demands of the industry.

The motors of the VEM type series for the chemical industry comply with the VIK standards. That is not least a competitive advantage, because it is quality which counts in this field. In the

low-voltage range, drives for pumps, fans, ventilators and air-conditioning systems comprise the major share of business. For explosion-hazard areas, VEM offers three-phase motors in the versions EEx e II 2G (increased safety), EEx nA II 3G (non-sparking) and EEx d II 2G (flameproof enclosure); dust-explosion protected motors with Ex II 2D and Ex II 3D, and combinations, are similarly part of the product range.

High-voltage machines are used above all for compressors and extruders. The drives are then designed as asynchronous motors with squirrel-cage rotor or as synchronous motors with outputs up to 24 MW. They can be supplied with protection to EEx e II 2G, EEx d II 2G, and EEx p.

Manufacturing is managed in accordance with a certified quality assurance system. The suitability for use in areas subject to explosion hazards is tested and certified. The correspond-



Shaft waste water pump. Explosion-protected electrical equipment is prescribed in areas in which explosive gas-air mixtures may occur.

ing certificates are recognised by all member states of the European Union, as well as by many other countries.

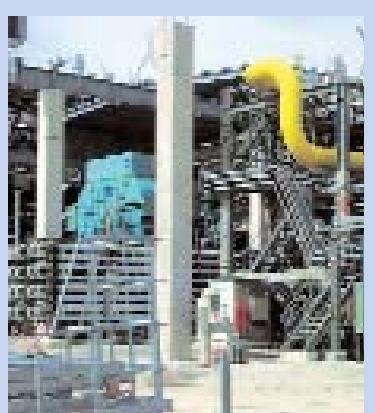
Direct drives keep up the pressure

Decades of experience and comprehensive know-how have enabled VEM Sachsenwerk in Dresden to develop into an internationally recognised manufacturer of high-voltage compressor drives covering an output range from 3 to 24 MW.

Among its masterpieces is one of the world's largest two-stage reciprocating compressor drives, manufactured for a polyethylene plant at Shell Petrochimie Méditerranée in the south of France. With the aid of the VEM machines, the LDPE plant produces a form of polyethylene which is soft, tear-resistant, thin and extremely elastic, and thus ideally suitable for use as films and bags.

The two compressors which provide for the necessary gas compression during the production process are driven by special machines supplied by VEM. A pre-compressor motor, also known as the "primary compressor", achieves an output pressure of 300 bar with its 5,600 kW and 375 rpm. The main compressor motor, the "hyper-compressor", is designed with a nominal output of 23,500 kW and runs much slower at just 200 rpm. The final pressure achieved is 3,100 bar.

The compressor drives have been manufactured as pressurised enclosures for explosion protection Ex p. In this case, the perfect sealing of the motors is imperative, which in turn calls for special know-how and outstanding manufacturing precision, especially where large machines are concerned. To keep leakage losses as low as possible, seal gaps are reduced to an absolute minimum for the shaft glands and the terminal box seals on the housing, for example. To ensure that the motor inner remains free of explosive substances during operation, non-explosive



Primary compressor of the LDPE plant

cool air from outside is blown in before each start-up and the machine is flushed with this air over an extended period. The constant pressurisation of the housing with the clean air prevents any explosive ambient air from penetrating into the motor inner.

Sachsenwerk has specialised in slow-running directly driven machines and possesses the ideal prerequisites for manufacture. The large machines are built specifically for individual customers and applications. Alongside other major projects, the direct drives for reciprocating compressors have also proved to be a good reference. The full order books for tailored high-voltage machines are ample proof of the satisfaction of the customers.

Know-how for slow-running machines

The drives are designed as brushless synchronous motors with air-water cooling. Whereas the primary compressor can be connected directly to the 11 kV supply, the hyper-compressor must first be starting converter. The starting converter starts the 23.5 MW machine; a step-up transformer at the converter output raises the converter output voltage from 3 kV to 11 kV. Monitoring of the values and phases of the mains and motor voltages permits smooth synchronisation to the mains supply. The process chain of the LDPE plant also incorporates an extruder drive from VEM Sachsenwerk.

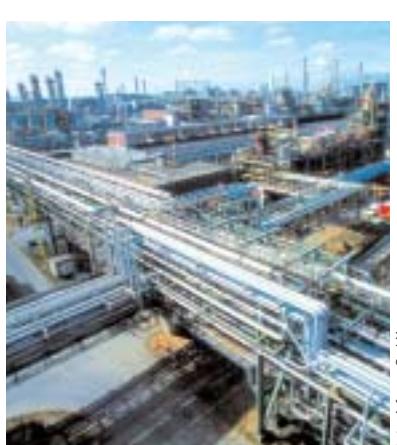


The 160-tonne main compressor drive is lifted into place by crane

German chemical parks convinced by VEM service

VEM is listed as a preferred supplier with all major plant operators in the German chemical industry. The company gained its first footing on the West German market immediately after Unification. The first cooperation with a West German partner dates from 1990. Very soon, it was possible to convince leading plant manufacturers of the performance capabilities of the VEM products.

In the meantime, the VEM Group supplies its drives not only to individual companies, but also to all prominent chemical parks across the country. One of the largest locations of its kind, the Marl Chemical Park in North Rhine-Westphalia, acquires its motors from VEM. Our contractual partner is the company Infracor, as technical



Infrastructure in the Marl Chemical Park

nies provide employment for approx. 10,000 workers. The main user of the site is Degussa AG, though other companies such as Air Liquide, BP, Linde and OXENO Olefinchemie have also settled there. A framework contract defines the terms and conditions. The drives are then delivered at call, either directly from stores or within a period of two to five weeks.

Besides Marl, the four chemical parks operated by Bayer in Leverkusen, Brunsbüttel, Dormagen and Krefeld are also on the VEM customer list. They all appreciate not only the motors, but also the service they receive from VEM. Assistance is available on call at all times and is given through local service centres working in close contact with the VEM factories.

Three-phase brake in all sizes

VEM motors Thurm. The three-phase brake "Temporiti" is in future to be available in all sizes. The VEM motors equipped with this brake observe the output/mounting dimension correlations according to IEC/DIN. A version with increased output and IEC mounting dimensions (B20R...) is possible. Thanks to the short activation delay times of the brake, motors with three-phase brake are especially suited for higher switching frequencies. The precise values can be requested from the manufacturer by specifying the additional moment of inertia. The standard voltage of the brake is 230 V, 400 V - 50 Hz. VEM offers motors with three-phase brake (self-ventilated) with degree of protection IP55. A version with manual mechanical release is also available.

Standard-conformant shut-off valves

ENGINEERING

Revised product range with improved parameters and DVGW certification



Our photo shows a DN 250 shut-off valve with electric drive.

Keulahütte. Shut-off valves from Keulahütte enjoy an excellent reputation throughout Europe. For some time now, new European standards with new product specifications have also been in force for such fittings. It is thus

possible, for the first time, to make Europe-wide product comparisons. Successful product certification demands, among other features, proof of durability with a minimum of 2,500 load cycles at the respective pressure of 10 or 16 bar.

Keulahütte has reacted accordingly and has revised its range of shut-off valves in diameters between 200 and 1,200 mm for nominal pressures PN 10 and PN 16. Correction of the housing angle and minimising of the seal gap have achieved an enlarging of the sealing area and a reduction in the flexing of the seal itself during actuation. In this way, it has been possible to extend the service life of the seals. The materials used to date

for the seal seats, namely enamel and stainless steel, have been supplemented with an epoxy-resin powder coating. One specific advantage of the epoxy-resin powder coating is the homogeneous transition from inner to outer coating and thus a new quality level in corrosion protection. It goes without saying that the coatings and elastomers used possess all the necessary hygiene and bacteriological certificates for distribution throughout Europe.

The product range now comprises three basic variants: Shut-off valves with stainless steel ring, with enamel inner coating and with epoxy-resin powder coating, supplemented by diverse customer-specific variants. We are thus able to provide our customers with even more competitive products. The shut-off valves have successfully received DVGW certification.

NEWS

Ship generators delivered on schedule

VEM Sachsenwerk. The six synchronous generators of type DRKSY 2238-14WS for the cruise liner "Pride of America" were delivered on schedule by January. Representatives of the customer SAM Hamburg, the Lloyd shipyards in Bremen and the shipping company NCL came to VEM Sachsenwerk in Dresden for the acceptance testing of the 48-tonne machines.



Synchronous generator for the cruise liner "Pride of America"

Testing by the certification societies DNV and ABS was also performed at the same time. SAM Hamburg is now preparing the six three-phase synchronous diesel generators for commissioning on board. With its meeting of the especially tight manufacturing schedule, VEM was again able to furnish impressive proof of its reliability.

Container switchplant for Candela

VEM motors. VEM has delivered 21 fan drives and various cooling water pump drives for a power station in Candela in Southern Italy. They have been incorporated into a container switchplant controlling power the distribution and the cooling system functions.



Cross-grinding of the bores



The installed load of the container switchplant amounts to 2 x 4,000 A

Geared to cooling and air-conditioning

NEWS

New machining technology for special rotor bodies permits more flexible order processing



Balancing machine with automatic compensation drill

VEM motors. Whether it is a question of a pleasant room climate or keeping foods fresh - there is always a cooling unit working in the background. But they can only do their job with a corresponding drive: semi-

hermetic motors which can be incorporated into the cooling units without housings of their own.

Equipped with a new machining technology, VEM motors is in the future able to perform the mechanical mach-

ining of the rotor bodies for built-in semi-hermetic motors itself. This extends the in-house value creation chain and reduces the dependence on outside suppliers. The modern plant now available in Wernigerode permits completion of all machining steps, right through to balancing and packaging.

VEM can call upon many years of experience for the inside machining of the stacked and aluminium die-cast laminated cores. The rotor body bores are pre-machined on a machining centre with so-called T-type tools and high-pressure coolant fluid to remove the swarf. NC measuring probes ensure observance of the required form and position tolerances.

After completion of the keyway, inside machining ends with grinding of the bore to its final dimensions. Parallel to clamping of the following rotor body on an external loading station, the outer diameter is next turned on a cycle-controlled lathe. The final work step is subsequently the balancing, where any unbalance detected is automatically compensated. The finished rotor body is then conserved and packaged. Inspections after

each machining step and a separate final inspection ensure the flawless quality of the products.

The commencing of in-house machining of the rotor bodies permits more flexible order processing, minimises the circulating stocks and reduces throughput times. But above all, it guarantees the customers a constant high level of quality.



Cross-grinding of the bores

Dr. Stefan Eberl: Head of Plant Engineering Sales at VEM Sachsenwerk GmbH

PEOPLE

Sales and technology are two sides of a coin, as the university of life proves



Dr. Stefan Eberl is married with a daughter and grandchild. His leisure time is spent above all walking in the Erzgebirge hills with his wife.

ty of the sales department. After all, they represent the starting point of every future order, as the basis for the dimensioning, material input and production expenditure for every machine." He knows that his customers appreciate being able to maintain contacts through a single partner with whom they have already become acquainted. For this reason, the sales department generally still remains the central point of call after the project has been realised and taken into operation. This service calls for a great deal of knowledge and commitment on the part of the sales staff. Stefan Eberl, however, sees his own main task in looking after project business. "I tend only to get involved in daily activities if things are getting bogged down. But then I get right down into the details."

Stefan Eberl gained the necessary qualifications for this approach back in the 1970s, at the technical university

in his home city of Chemnitz. He pursued research after his initial studies, completed his doctoral thesis on "Pulsating-current-fed DC motors" and also taught students. "But eventually I decided it was time to get out of the so-called 'ivory tower' and looked for a job in industry." He is eternally thankful for his time as chief designer for drive technologies with the Textima combine, and equally also his managerial positions with leading companies in the electrical engineering sector. This 'university of life' taught him the importance of approaching people and establishing confidence. Indeed he still emphasises that his sales and technical know-how are two sides of a coin. "Our business is the building of partnerships and long-term project realisation for the major European plant manufacturers. That can be seen as our strength, and also generates 90 per cent of our turnover."

IMPRINT

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Art:
Kommunikation Schnell GmbH, Dresden

Editorial deadline:
10. März 2005

Print:
Druckerei Vettters GmbH

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