



Impulse *online*

■ Transportation

Talk of the town in Leipzig



Page 2

The new XL tram for the Leipzig Transport Authority is driven by VEM traction motors.



03 New test bay



04 Propellers without hubs



07 16th Technical Conference



08 70-year anniversary

The new XL tram for the Leipzig Transport Authority is driven by VEM traction motors. Photo (also cover photo): Leipziger Gruppe



■ Transportation

New Leipzig trams rely on drives from Dresden

It is already the talk of the town in Leipzig – the city’s new XL tram. The first trams of this new generation were delivered in December 2016. In the meantime, manufacturer Solaris and the Leipzig Transport Authority are ready to start test operations on the streets.

The drives for the 38-metre-long XL trams were designed as three-phase asynchronous traction motors by the VEM engineers in Dresden. Each of the self-ventilated, surface-cooled motors is 640 mm long and weighs in at 355 kilograms. As a single-bearing motor, it is flanged directly onto the gearbox via a diaphragm coupling. The four powered bogies of an XL tram possess two axles each, which means that the complete tram has eight driven wheel sets. “Our highly utilised motors have been designed for a continuous output of 85 kW, with a short-time rating of 115 kW,”

explains VEM engineer Hans-Georg Becker, who is responsible for sales to the transportation sector. “After all, the trams need to achieve the designated output without compromises also when carrying a full complement of passengers, on inclines and under maximum acceleration.”

Overall, more than 320 traction motors are to be manufactured at VEM’s Sachsenwerk factory in Dresden. The first phase of the project covers deliveries of 112 drives.

■ VEMoDRIVE series

New test bay for motor-converter combinations



View into the new test bay

VEM is further sharpening its profile as a supplier of complete drive systems. In mid-March, a new test bay for motor converter combinations from VEM transresch was opened in the grounds of VEM Sachsenwerk. This was made possible by relocation of VEM transresch from Berlin to Dresden last year, as a result of which the two VEM partner companies now also share a joint site.

The equipment installed in the test bay includes a specially developed laboratory transformer, as well as a demonstrator system which can in future be used to explain the design and function principles of subsynchronous cascades (SSC) to customers. During a get-together to mark the opening of the new test bay, the employees at the VEM location in Dresden were also able to see converters of the VEMoDRIVE series in action in various presentation setups.

VEMoDRIVE is the brand name under which VEM manufactures customer-tailored variable-speed drive systems. They comprise a transformer, a frequency or power converter, and an electric machine for outputs ranging from just a few kilowatts to many megawatts – in low-voltage and medium-voltage versions for voltages up to 13.8 kV.

The VEMoDRIVE concept unites components from leading manufacturers and offers customers and operators almost unlimited options for the user-specific planning, modification and expansion of their automation and drive systems. It is furthermore a relatively simple matter to modernise and expand an existing installation.

VEMoDRIVE covers both single controlled drives as compact units and complex multiple-drive solutions, including all the necessary planning services.

■ Drive systems

VEMoDrive-VSI2.0 frequency converters on the rise

The VEMoDRIVE-VSI2.0 converter offers many benefits for motor operation. And that is convincing more and more customers, as shown by a continued increase in orders received from home and abroad, for example from the Middle East region. The customers appreciate above all the possibility to obtain a complete drive system, comprising motor, converter, transformer and control systems, from a single partner. Systems are currently demonstrating their capabilities in projects in power generation, the chemical industry and the primary sector.

One of the advantages of the VEMoDRIVE VSI2.0 converter is that it enables the motor to start up with full torque. That reduces the otherwise high starting current to nominal current level, which in turn permits energy-efficient operation at a process-optimised

speed. The complete converter series from 0.55 to 3,000 kW (230 – 690 V) is presented in the electronic catalogue VEMeKAT on the VEM website and in the printed catalogue "VEMoDRIVE frequency converter VSI2.0".

The electronic catalogue VEMeKAT [can be found here](#).

VEMoDRIVE-VSI2.0 converters cover a multitude of compact-, single- and multi-drive applications.



VEM – branch specialist for

Rim Thruster without hubs and transmission losses

The system comprising a PM ring motor and inside propeller is a highly efficient and space-saving solution for marine propulsion.

VEM has developed a special form of marine propulsion together with the company SCHOTTEL. The SCHOTTEL Rim Thruster (SRT) is an electric drive system which operates without gears or drive shaft. The stator of the PM synchronous motor is integrated into the walls of a tunnel. Permanent magnets are fitted on the rotor surface, and the propeller blades are mounted inside the rotor. The overall system is thus effectively a propeller without a hub. The result is a drive which converts the electrical energy input into propulsion power directly under the ship's hull, without transmission losses and with minimised mechanical vibration. The rotors with the magnets and the cast and wound stators are manufactured by VEM in Dresden. The complete thruster is assembled by SCHOTTEL.

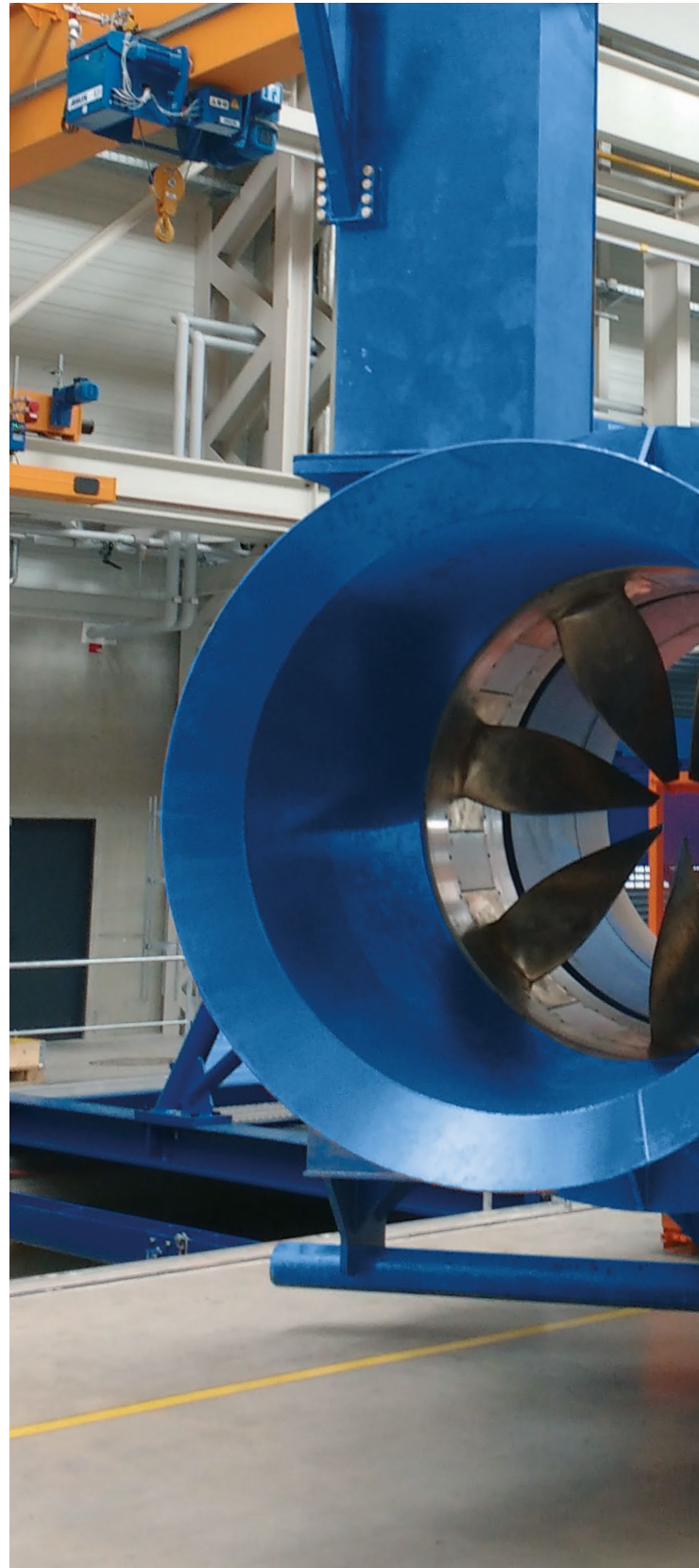
Smaller than conventional thrusters

Thanks to its compact design, the overall system is much smaller than a conventional thruster. The speed and direction of rotation are controlled via a frequency converter. This drive solution offers a high dynamic response, permits fast acceleration and deceleration, and supplies the full rated torque also at slow speeds. Cooling is by way of the surrounding seawater. The stator and rotor are encapsulated to protect the electrical and magnetic components.

The SCHOTTEL Group, with headquarters in Spay am Rhein, is one of the world's leading manufacturers of propulsion and steering systems for ships and offshore applications. The company has been developing and manufacturing azimuth propulsion and manoeuvring systems, complete propulsion systems with outputs up to 30 MW and steering systems for vessels of all types and sizes for almost 60 years.

www.schottel.de

No less an eye-catcher on land – the SCHOTTEL rim thruster propulsion unit without gears and drive shaft



for shipbuilding



Innovative drive with water-jacket motor cooling

RENK AG drive concept Advanced Electric Drive tested successfully at VEM

At the end of 2016, VEM was able to deliver two technically very demanding marine motors to customer RENK AG – and that right on schedule despite the relatively short lead time. The motors concerned are high-speed main propulsion drives with a high power density. The mechanical drive power is applied to the propeller shaft via a reduction gearbox from RENK AG.

The motors with water-jacket cooling were designed for an output of more than 4.0 MW and are characterised by their quiet running and low vibration. They are at the same time very compact and light. In this respect, the complete drive train is predestined for installation on board yachts or support, research and naval vessels. The use of new materials and design principles achieves outstanding power factors and degrees of energy conversion efficiency, which lends a significant boost to the efficiency of the overall propulsion solution.

Notwithstanding the challenging circumstances, the Sachsenwerk team was able to convince an important and demanding customer such as RENK AG with its highly professional approach to the task. Despite the very tight schedule, it was still possible to verify the influence of the converter harmonics on structure-borne noise and the additional losses, including the temperature rise. The results of these measurements are already contributing to the next project of this type, namely a drive solution for an Australian polar research vessel.








VEM supplies marine propulsion and auxiliary drives for the most varied types of vessel – here, for example, the cruise liner AIDAbella.

■ Save the dates

Trade fair overview for 2017

Following up our participation at the Eurasia Rail fair in Istanbul at the beginning of March, there are still another five international events on VEM's trade fair calendar for this year. As a system supplier of drive technologies, we have decided to attend exhibitions abroad in Teheran, Amsterdam, St. Petersburg and Gdansk. In these cities, we will be represented primarily on joint stands. The trade fair highlight for VEM in 2017 will be the SPS IPC Drives in Nürnberg in the autumn, where we will be welcoming visitors to a stand of our own.

Datum	Messe	Ort	Branche
 15. – 18.05.	Iran International Rail Expo	Teheran (Iran)	International trade fair for rail transportation
 06. – 08.06.	Electric & Hybrid Marine World Expo	Amsterdam (Netherlands)	Electric and hybrid drive systems for shipbuilding
 19. – 22.09.	NEVA	Sankt Petersburg (Russia)	Trade fair for shipbuilding and maritime transport
 26. – 29.09.	TRAKO	Gdansk (Poland)	International railway fair
 28. – 30.11.	SPS IPC Drives	Nürnberg (Germany)	Electrical automation – Systems and components

■ Power generation

Driving power generation

The lignite-fired Turów Power Station in Poland, close to the border with Germany, is currently undergoing extensive modernisation to enhance environment friendliness. Drives from the VEM factory in Dresden will also be supporting the attainment of this goal.

A highly efficient lignite-fired power plant is currently being erected at the Turów site by a three-partner consortium led by Duisburg-based plant developer Mitsubishi Hitachi Power Systems Europe GmbH (MHPSE). The new block has been designed for a nominal output of 450 MW and is one of the most modern plants in Europe.

VEM Sachsenwerk is providing motors and frequency converters to drive the ID, FD and recirculation fans, as well as the coal mills. The latter were optimised for this specific drive application with regard to efficiency ratings and starting characteristics. The new power station block is presently the largest investment project in the energy generation sector in Poland. Upon completion, it will supply electricity to around one million households.

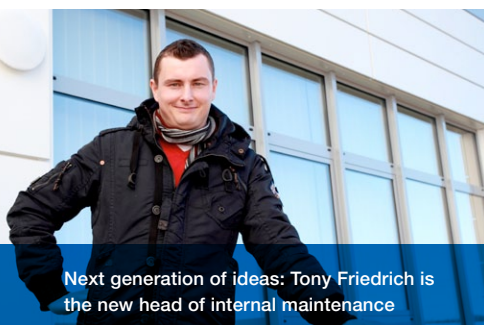
■ Portrait

“We’ll get it sorted!”

Tony Friedrich is the new head of internal maintenance at VEM motors Thurm.

Friedrich obtained also master tradesman qualifications and gathered initial career experience in industrial environments. “I moved to VEM because it appeals to me when a company has firm local roots, enjoys a good reputation in the wider region and relies on a core of experienced employees,” he says. From the technical installations and buildings to labour safety and fire protection, his sphere of responsibility is broad and requires him to have his eyes everywhere. Some would be intimidated by such a multitude of duties. But not Tony Friedrich: “I am the kind of person who says: Regardless of the problem, we’ll get it sorted.”

Already during his first three months at the company, he has initiated several new projects, for example conversion of the compressor station to enable more energy-efficient operation, and modification of the ventilation system to permit better utilisation of the extracted air for heating of the production hall. Tony Friedrich prefers to work proactively and with foresight, rather than simply waiting for instructions. The flat hierarchies in the company leave him the necessary room for initiative. He is convinced that this is the way forward: “At the end of the day, determined technical progress enables us to offer our customers even faster delivery.”



Next generation of ideas: Tony Friedrich is the new head of internal maintenance

When someone new joins a company and starts to view things from a different perspective, there is much to be gained for both sides, especially where that person is committed to the further technical advancement of the company. The management at VEM motors Thurm no doubt had this in mind when they recruited Tony Friedrich as new head of internal maintenance with effect from 1st November 2016. After training as an industrial fitter, 27-year-old Tony



16th TECHNICAL CONFERENCE 

10th and 11th October 2017: VEM invites you to the 16th Technical Conference

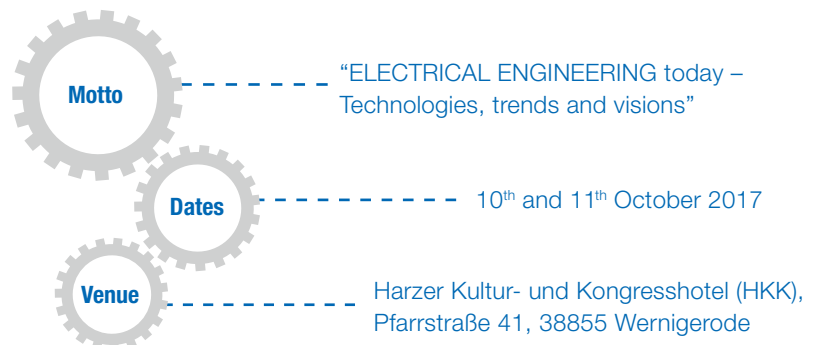
The foundation stone for modern electrical engineering was laid with the discovery of the dynamoelectric principle over 150 years ago. Ever since, scientists, manufacturers and users have been developing electric machines and drives to meet the demands of their times. Exchanges of ideas and technical discussions continue to fuel such developments through to the present day. This year's 16th VEM Technical

Conference is seen as a continuation of this tradition.

The key topics which will be addressed by internationally acknowledged speakers include new trends influencing the development and construction of three-phase machines and corresponding electric drive systems, new drive technologies and fields of application, and

current know-how and experience from the design and calculation of three-phase machines and drive systems, as well as cross-section topics such as materials and test methods.

VEM looks forward to welcoming you in Wernigerode in October.





Particularly striking from the air: The distinctive form of the production hall has become characteristic for the VEM motors site in Wernigerode.



■ Anniversary

From large series to dedicated products

VEM motors GmbH in Wernigerode is this year celebrating the 70th anniversary of its founding.

The founding of today's VEM motors GmbH 70 years ago also marked the birth of electrical machinery manufacture in the town of Wernigerode. It was a resolution of the Soviet Military Administration for Germany which led to the founding of the company on 31st January 1947.

The plan was to establish a factory to produce electric motors on the site of a former aluminium foundry. In early 1947, some 200 employees commenced work on a first order for 200 three-phase motors. Already from 1948, products from Wernigerode carried the trademark "VEM".

Improved framework conditions

Numerous new motor series were added to the product range over the subsequent four decades. The number of orders being received increased significantly. In 1961, 14 years after the founding of the company, Wernigerode was able to deliver its one-millionth motor. Constantly growing sales, a worldwide reputation and considerable order volumes were typical for these times, especially in the second half of the 1980s. The social and political upheavals of 1989/1990 left a painful dent in the success

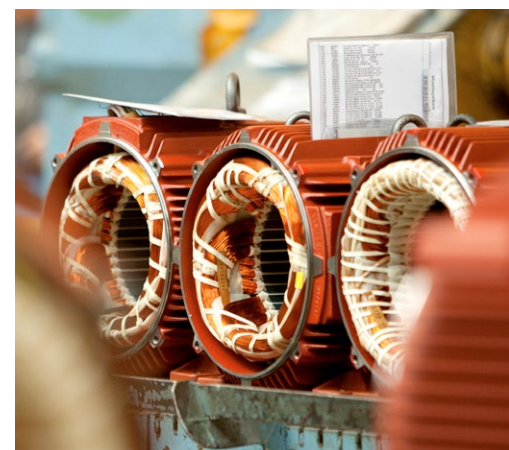
story, after export business with Eastern Europe collapsed almost completely. The company was forced to recognise that the manufacturing of standard motors alone was no longer a reliable means to secure the future of its manufacturing facilities. During the turbulent 1990s and under the temporary aegis of the government privatisation agency, however, there were only limited opportunities to develop a new business concept.

A new chapter in the company annals was opened on 1st January 1997. Blaubeuren entrepreneur Dr. Adolf Merckle and his family took over the Wernigerode factory and other electrical engineering companies in Eastern Germany. Through this privatisation and the formation of the VEM Group, the framework conditions for elaboration of a future corporate strategy were immediately improved.

Expansion in the premium segment

VEM motors GmbH and its 430 employees are today progressing along a path away from series manufacture and towards dedicated design. Like the other members of the group, VEM motors acts increasingly as a system supplier and is geared to offering customers overall drive concepts from a single partner.

Both management and workforce are optimistic for the coming years. Managing director Rüdiger Strümpel explains why: "Our drives are high-quality products and have their firm place in the premium segment. That is especially appreciated by customers who want to be sure that the motors they buy will still be running flawlessly many years into the future."



They may appear identical at first sight, but the motors are all designed for different applications.

■ Double anniversary

Three letters which stand for quality, modernity and appeal

The VEM Trademark Association has been protecting the interests of the VEM brand name for 55 years.

The history of the VEM trademark presents us with a double anniversary this year. The first use of the three-letter trademark "VEM" dates back to 1947. But it was not until the founding of the VEM Trademark Association at the end of 1961 that a basis was established for systematic administration and protection of the associated rights. That is now 55 years ago. The VEM trademark had already been registered a few years previously by Transformatoren- und Röntgenwerk Dresden under reference number W9690. The 65th anniversary of this original application will be coming up at the end of 2017.

Strong and known the world over

When 32 electrical engineering enterprises in East Germany came together to found the trademark association in December 1961, they shared an important aim – to promote and strengthen the VEM trademark and to represent their joint interests both nationally and internationally. As registered owner of the trademark, the association protected the rights of its members against the claims of third parties, e.g. against

imitation of the trademark by other companies. At the same time, the association asserted the secondary meaning of the trademark.

The reputation of products which bear the VEM trademark has always been founded on their quality and reliability. Over the course of 55 years, further attributes have evolved, such as modern drive components and systems, technical innovation, expert advice and service. VEM products are in reliable use as machine and plant drives in the most varied branches, for example the steel industry, the chemical and petrochemical industries, energy and environmental technologies, transportation, shipbuilding and general engineering. They cover an output range from 0.06 to 42,000 kW – with a full spectrum motors, generators and complex drive solutions. The companies of the VEM Group are helping to define the state of the art in all the sectors in which they do business, and are continually expanding their worldwide network of customers. They is thus still plenty to do for the trademark association.



The graphic design of the trademark has also evolved over the years.

■ Facts and figures

VEM Trademark Association

- Founded 13th December 1961
- 1961: Trademark registered in 22 countries
- 2017: Trademark registered in 67 countries

Publisher

VEM Holding GmbH
Pirnaer Landstraße 176,
01257 Dresden
Tel.: +49 351 208-0
Fax: +49 351 208-1028
www.vem-group.com

Responsible editor

VEM Sachsenwerk GmbH
Lars Klatte
Corporate communications coordinator
lars.klatte@vem-group.com

Layout and design

Juniks Marketing GmbH, Dresden
Photos: Sabine Hartenstein, Wolfgang
Koglin, Leipziger Gruppe, SCHOTTEL
AG, Jörg Schützhold, VEM archives

Subscribe/unsubscribe

To automatically receive each new issue of "Impulse online" by e-mail, please subscribe [here](#).
If you no longer wish to receive the newsletter, please cancel your subscription [here](#).