

Issue 03|2018



IMPULSE



Chemical, oil
and gas industry
VEM reluctance motors
at IE5 level

DRIVE MANUFACTURERS

EUROPEAN TRENDS AND PROSPECTS

PREVIEW 2019

VEM AT INTERNATIONAL FAIRS
AND OUR TECHNICAL CONFERENCE



DEAR READERS,

There is a lot happening at the VEM Group. Many are thrilled, while others are perhaps nurturing false hopes. I am talking about the decision to sell the VEM Group to the Wang family from China, a deal which now lies well over a year ago.

How has the situation developed in the meantime? The principle "Made in Germany" remains as strong as ever. That is also the philosophy of the new owner. He values the long traditions and experience of VEM and intends to uphold them. The order books for large machines from Sachsenwerk are bulging – with drives which could even be labelled "Made in Dresden". And Dresden is also to remain the headquarters of the VEM Group.

Those who believed that VEM would be reduced to an empty shell under Chinese ownership have been proven wrong. And there are perhaps even competitors for whom that would have been a desirable outcome. Instead, a subsidiary has been opened in Shanghai under the name VEM China GmbH and now offers special drives from Dresden, Wernigerode and Zwickau on the Chinese market. It has already become established strategy for the VEM locations in Wernigerode and Zwickau to place their product focus on special drives. It is merely in the case of simple standard motors that the customer can choose drives manufactured – albeit in accustomed VEM quality – in China. This fact is then naturally reflected in the pricing.

Seeing that other large companies are currently closing factories or announcing closures, there is one thing which I cannot overemphasise: VEM is the last remaining company in our branch with a product portfolio covering the entire spectrum of electric drive systems, special motors and special machines for outputs from 0.06 kW to 60 MW, and whose value creation is essentially concentrated in Germany. To help us to maintain this standing, we are investing in the future at the individual locations. One example is the coil workshop at Sachsenwerk in Dresden, which has been equipped with a new industrial robot system. The number of employees at VEM is also to remain constant. All in all, therefore, we have every reason to look ahead with self-confidence – and to roll up our sleeves.

Yours, Dr. Torsten Kuntze
Managing Director VEM GmbH



Synchronous reluctance motors at IE5 level

VEM unveils motors as the latest addition to the group's product portfolio at SPS in Nürnberg.

The renaissance of the reluctance motor began to pick up speed about a decade ago. The increased demands placed on energy efficiency and the adoption of the new ecodesign directive in 2009 were decisive factors. VEM has already been implementing aspects of the developments for some time – with smaller reluctance motors which start autonomously and synchronise without a frequency converter, such as those used on spinning machines. For this version, however, energy efficiency was not an issue.

Now, VEM has raised the highly efficient drive system to a new level with the development of synchronous reluctance motors with matching frequency converter. Motors in two sizes were presented as compact drives at this year's SPS fair in Nürnberg, and stood as examples for the possibilities of this decentrally controlled system. It is suitable above all as a drive for fans, pumps and compressors. The interest shown in the reluctance motors among customers and competitors was correspondingly great. Very specific enquiries for special sizes and outputs have already been received. In addition, converter manufacturers were interested in testing their products together with a VEM reluctance motor and its integrated control system.

The benefit of this drive system is not only that combination with a converter enables operation over an extended speed range and thus significantly enhanced efficiency. At the same time, its manufacturing uses none of the rare-earth elements

which the EU has classified as "critical metals". The rotor is essentially just electrical steel. Not least for that reason, this system is a favourably priced alternative to other drive types.

Extended output range

"We have been able to prove that our synchronous reluctance motors meet the requirements for efficiency class IE5," says Sylvia Blankenhagen, chief designer at VEM motors Thurm in Zwickau. "So far, that has only been the case for permanent-magnet motors. This new drive system is thus a meaningful addition to our product portfolio." The IE5 threshold values correspond to those specified in the standard DIN/TS 60034-30-2.

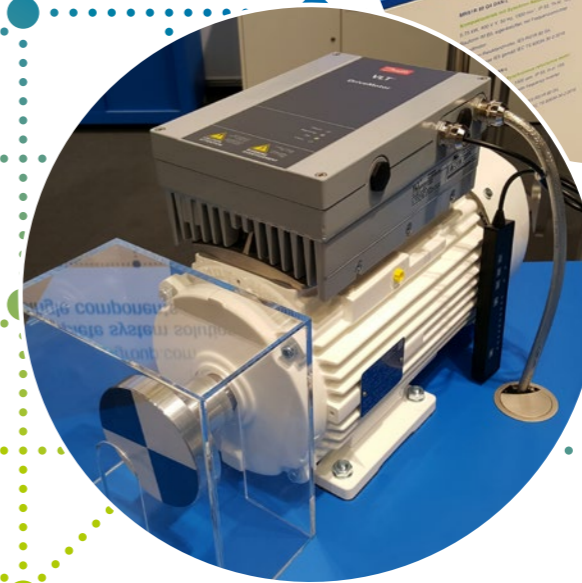
The output range of the new VEM motors is currently from 0.75 to 4 kW, though an extension is already scheduled for the coming year. Compact drives with motors up to 22 kW have been planned, and further increases are by all means possible.

The synchronous reluctance motor was developed through close cooperation between the VEM locations in Dresden and Zwickau. Sylvia Blankenhagen: "Without the cooperation of the calculations and drive systems departments at Sachsenwerk, and without the great commitment shown on the type testing stand and in the production centre in Zwickau, we could not have achieved such a positive result."

**ELECTRIC DRIVES
MADE IN GERMANY**



Presented at this year's SPS fair in Nürnberg: Reluctance motors from VEM



SPS in Nürnberg:

Focus on Industry 4.0

VEM Group at the leading trade fair for smart and digital automation

As already last year, the VEM Group presented its latest products in the field of Industry 4.0 at the SPS IPC Drives fair in Nürnberg. The new product family VEMoDIAC, with its subgroups VEMoDIAC-Sens, VEMoDIAC-Visu and VEMoDIAC-Gate, offers users a simple entry into the world of Industry 4.0 motors. In future, these drives can be monitored in real time using the VEM technology, facilitating efficient and demand-oriented maintenance. A second focus of our trade fair presentations was placed on the compact and reluctance drives which were developed at the Zwickau production facility together with experts from the VEM location in Dresden (see article alongside). This year's fair stand concept was rounded off with a PM synchronous motor with water-jacket cooling for shaft height 450. Like the four reluctance motors, it was shown in a version meeting the demands of efficiency class IE5.

1st CEMEP TECHNICAL CONFERENCE



TRENDS AND PROSPECTS FOR EUROPEAN DRIVE MANUFACTURERS

Future developments affecting the European manufacturers of electric drives and power electronics were key topics of the 1st CEMEP Technical Conference, which was held in Wernigerode on 13th and 14th September 2018. The conference was chaired by CEMEP president

Claus Petersen. Around 80 participants from around Europe took this two-day opportunity to discuss the latest trends and prospects for sustainable development of the European drives branch.

DIGITISATION

The digitisation of industry requires seamless interfaces for parameter exchange between the involved machines. To this end, the Europeans are working on uniform standards. The participants attached special importance to the efforts necessary to implement effective data security with protection against unwanted external spying attempts and manipulative disruption.

E-MOBILITY

It is still difficult to forecast the precise demand for electric drive technologies for incorporation into electric cars. Important aspects are electric semiconductor power components and raw materials for drive motors. Depending on the technological concept employed, considerable quantities of rare-earth metals play a more or less significant role. These metals must generally be imported from China. The branch expects that, by around 2025, the material demands for e-mobility could exceed those for industrial drives. This would also result in significant value shifts for the industry's manufacturing technologies, affecting for example price developments, and the availability and quality of the industry standard. At the latest at that point, furthermore, it will scarcely be possible to satisfy the demand for young, well-trained specialists in Europe.

RESOURCE MANAGEMENT

Materials consumption and the sparing use of natural resources are key determining factors for the future. They have

already occupied the branch for almost ten years. The latest trends in European policy on improvements in recycling management were among the topics at the centre of discussion. Recycling enables the continuous recovery of natural material resources and can also safeguard the necessary availability for coming generations. Europe is currently setting the course for corresponding statutory regulations. From the perspective of the industry representatives, it is here imperative to treat consumer goods and industrial capital goods differently.

ENERGY EFFICIENCY

Every kilowatt of electrical energy which can be saved is similarly of direct benefit for global climate. Efficiency does not mean placing restrictions on productivity. It is rather a case of avoiding unnecessary electrical power losses. The experts discussed how meaningful system analysis could identify notorious energy wasters. The branch calculates that the potential savings from industrial, variable-speed electric drives lie between 70 and 100 TWh in Europe alone. That is equivalent to the energy output of up to 45 fossil-fuelled power station blocks – with all their associated carbon emissions. Demand-driven process control systems are an important factor for Industry 4.0. CEMEP is contributing to the elaboration of appropriate statutory provisions for the member states of the EU.

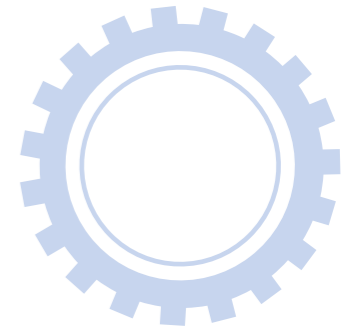


18th and 19th September 2019

INVITATION TO THE 17th VEM TECHNICAL CONFERENCE

There are still quite a few months to go, but VEM has already begun preparations for the 17th VEM Technical Conference next autumn. The traditional conference series paused this year to make room for the 1st CEMEP Technical Conference in Wernigerode, but will be back for the 17th time in 2019. Many regular participants have already enquired about the continuation and the specific dates of the next two-day conference. Here is a brief preview:

Motto: Focus on drive technology
Dates: 18th and 19th September 2019
Venue:
Harzer Kultur- und Kongresshotel (HKK),
Pfarrstraße 41, 38855 Wernigerode



You can look forward to further details in the next issue of our online news magazine "Impulse". VEM would be pleased to welcome you in Wernigerode in September 2019.

Planned VEM trade fair calendar for 2019



- **RAILive!** – from 06.03. to 07.03., Bilbao
- **ACHEMAsia** – from 21.05. to 23.05., Shanghai
- **NOR Shipping** – from 04.06. to 07.06., Oslo
- **Electric & Hybrid Marine World Expo** – from 25.06. to 27.06., Amsterdam
- **Trako** – from 24.09. to 27.09., Gdansk
- **FIHAV** – Oct./Nov., Havana
- **SPS** – from 26.11. to 28.11., Nürnberg

UNIFORM COMPLIANCE WITH STANDARDS ON QUALITY, THE ENVIRONMENT AND ENERGY

New common standards with an integrated management system at the three VEM locations



ISO 9001 – one of the three new certificates of the VEM Group

The project to implement a uniform integrated management system for internationally applicable certification has been brought to successful completion with granting of the relevant certificates to VEM. The system applies equally to all three VEM locations in Dresden, Wernigerode and Zwickau. It governs all business-relevant processes in accordance with the stipulations of ISO 9001 (quality management), ISO 14001 (environmental management) and ISO 50001 (energy management). VEM has already held corresponding certification for many years. In the past, however, each location implemented its own system, each with different documentation and audited by different certification bodies. “That added unnecessarily to the costs of supervision and also hindered a uniform appearance of the VEM Group as a whole,” says Marco Macion, head of quality management and process development

for the VEM Group. “Renewal of the certification was the perfect opportunity to introduce an integrated approach across all management systems and all locations.” This project was realised successfully over the past two years. The certification body praised the integrated management system implemented by VEM as an excellent development. For Marco Macion, the system benefits not only internal processes: “Our customers can build upon uniform standards when recording and evaluating market and customer demands. Research and development activities are now coordinated on a group-wide basis in the same way as customer support. Customer orders are handled with the same high levels of expertise at all locations, and even the processing of possible complaints has been harmonised.”

PUBLICATIONS

Converters in the spotlight

Cost-effective configuration of drives for the upper output range – how it's done.

The benefits for the customer from proper matching of the system components for complex drive systems comprising motors and current converters are explored in a VEM article for the trade magazine “antriebstechnik”, issue 9/2018. The costs, efficiency and limitations of different converter concepts are assessed for different voltage levels.



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