New dimensions in epoxy-resin powder coating

Keulahütte: Castings produced at Keu- lahütte in Krauschwitz can now be treated with a new highly effective corrosion protection technology, enabling further substitution of the previous bitumen-coated or cemented fittings. The core of this technology is a recently commissioned fluidised-bed powder coating plant. Complementing our existing coating facilities, this robot-assisted plant provides for flexible coating of all the piping parts and fittings manufactured at the company. It is thus also possible to supply tailored solutions to satisfy specific customer wishes. Furthermore, the customer is now offered integrally coated fittings and hydrants whose corrosion protection properties are at least comparable to those of enamelled products.

Where the previous spray plant, for technological reasons, required comparable fittings to be coated manually, the new automatic sequence permits the coating time to be reduced to an average 75 seconds. But this is not the only benefit of the new plant: it brings also a high degree of automation for the coating process, extremely constant coating thicknesses between 300 and 400 µm, and more efficient energy utilisation. As neither solvents nor binding agents are necessary, the process is at the same time very kind to the environment. The previous spray plant nevertheless remains available to handle large parts, deviating colour wishes and duplex coating processes.

Successful restructuring

The commissioning of the fluidised-bed coating plant represents the final stage of a comprehensive restructuring of the machining workshops. With a new building for the finished parts stores, the installation of a horizontal machining centre and relocation of the fitting and hydrant assembly section, the past two years have witnessed considerable investments aimed at concentration of the department’s processes. The whole plant for the epoxy-resin coating of cast parts is now accommodated in a hall complex directly alongside the mechanical workshops.

The restructuring has at the same time achieved complete technical and territorial separation of the foundry processes from final machining and dispatch, providing for a streamlining of logistics processes. Following the final cleaning stage, the casting is now transferred centrally to the finishing workshops.

Robot-assisted technology

The fluidised-bed coating plant operates with robot assistance. After blasting, the cast parts are aligned and placed on a continuous conveyor. Their sizes and configuration are reported to the system. Parts up to a cast weight of 120 kg are subsequently passed through a continuous furnace, where they are heated by convection to temperatures of 200 - 210°C. A robot picks them up and dips them into a bed of fluidised epoxy-resin powder. The heat brought by the cast parts causes the powder to bond to their surface with a high layer thickness. The high heat capacity hardness this layer completely and renders a protective coating which is comparable to that of the epoxy resin.

The restructuring for the Keulahütte in Krauschwitz can now be seen as a new stage in our company’s development. It is a result of the investment in our company’s fixed assets, which is necessary for the company to grow in the medium-term. It is a necessary improvement of our existing departments, which will allow us to constantly renew our product portfolio.

The cooperation and involvement of the company Keulahütte is also an active board member in the section for shipbuilding and offshore supplier industries.

VDE founds working group for electrical machines and drives

VDE Group: The Dresden regional group of the Industry Association of Electrical Engineering, Electronics and Information Technology (VDE), as executive representative of those key technologies, has founded a new working group whose most important tasks include exchanges of experience regarding worldwide development trends in the drives sector, the promotion of scientific cooperation and support for the companies and staff involved in this process. In this connection, the VDE asked the participation of companies which have been active in the development and manufacturing of electrical machines and drives in Saxony for many years.

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Robot coating of slide valve housings

The fluidised-bed coating plant permits greater flexibility in corrosion protection for cast parts.

INNOVATION

Fluidised-bed coating plant permits greater flexibility in corrosion protection for cast parts

Rationalisation

VEM motors reacts even more flexibly to customer wishes

Dear readers,

By the time you hold this issue of Impulse in your hands, the year 2005 will be fast approaching its close. It will still be too early for final analyses, but I can already confirm that it has been a successful year for the VEM Group. Contrary to the trends in Germany, we are continuing to grow steadily. Contrary to the trends in Germany, our workforce has remained constant. And contrary to the trends, our production is based in this country and that will remain so in the future. Not even the framework conditions imposed upon us by politics are going to change our minds. As an entrepreneur, I stand for reliable relationships to both staff and customers. I stand for resolution and fair partnerships. I expect this also of the political decision-makers in our country. The standard by which we will be assessing the new government is thus correspondingly high.

The future yardstick for the VEM Group will be equally demanding, because successful development necessarily leads to higher self-imposed standards. Above-average order levels, for example in the traffic engineering segment, will be setting our staff new challenges with regard to schedule reliability and quality. But with their commitment and diligence – that I am sure – they will continue to satisfy all the demands placed on them.

After all, it has always been this reliability, high quality and the performance standards of our products which have been so appreciated by our customers. We are all sparing no effort to ensure that this remains the case in the future.

On this note, I wish you already in advance a successful and happy New Year 2006.

Regards,
Dr. A. Merckle
Compact drives gaining popularity

VEM Group. The industrial use of variable-speed drives with built-on frequency converter has been increasing significantly recently. The VEM Group offers these compact drives for the output range from 0.35 kW to 22 kW with proven and robust grey-cast motors. The majority are 2- and 4-pole drives, though 6- and 8-pole compact drives with forced ventilation have also been available for a year now. Three advantages of these drives are especially worthy of mention. The reduced volume of the overall system, the straightforward installation in the same way as an asynchronous motor without shielded motor cable, and the fact that the whole drive is supplied by a single partner, which greatly simplifies service.

Further benefits are to be gained from the possibilities to use compact drives for control tasks requiring an operating frequency less than 50 Hz and in partial-load applications. The compact drive draws only the actually required power from the mains supply, which achieves decisive savings in energy consumption. Pump drives must be configured such that the pumped medium is always delivered in the desired quantities and at the desired pressure, even during peak-load periods.

When the performance of a drive is determined by the generally short-time peak loads, this means that it is actually rather overdimensioned for the remaining normal operating periods. Motors operate in the lower to mid-output range for most of the time. A speed reduction permits drastic energy savings and places less stress on the overall system.

Series components

The scope of applications and the customer acceptance of VEM compact drives have grown continuously since the product launch in 2000. Increases in the numbers of drives compared to the previous year of approx. 25 % in the lower output range and almost 50 % in the upper output are not least testimony to the outstanding reliability of the drives. Compact drives for the lower output range, in particular, have been able to enter new fields of use in machine-building and in ventilation. This has a very positive effect on new-customer business, as can be seen from the diagram for M21. T drives.

The especially notable energy savings for pumps operating in the partial-load range have resulted in considerably increased demand for compact drives from 11 kW. Overall, compact drives hold clear price advantages over conventional variable-speed drives with separate frequency converters. They are supplied as complete, ready-to-install units. They incorporate important components as standard, and by principle eliminate other expensive components.

Where motors and converters are configured separately, further costs are incurred for electrical planning, switchgear integration and installation. All these sub-suppliers must harmonise to develop a properly functioning drive system from the individual components and accessories – EMC filters, reactors, shielded cables, etc. The obvious advantages of compact drives are exploited extensively by pump and fan manufacturers. When a pump system is to be supplied, installed and commissioned, the pump manufacturer assumes responsibility for the whole project. The costs remain within their own company, and there is no need for complicated shifting and offsetting.

Internet platform

Customer advice and support play an increasingly important role in the case of special applications. For example, cooperation with a renowned customer, which enabled the use of a special winding, led to the application range being extended to 60 Hz. This raised the competitiveness of the product significantly. This customer alone has already indicated probable increases of up to 250 drives per year. Customers can find out more about our special expertise in the field of compact drives by visiting our Internet site at www.vem-group.com (button “Products”). We offer potential users an information platform and in this way have established yet another avenue for contacts to new customers.

VEM motors are currently preparing a customer-specific solution permitting the use of energy-saving motors for outputs up to 5.5 kW with integrated converters and optimum efficiency in the partial-load range. Future application fields are to be seen in pumps and fans. Even high-performance drive tasks can thus be realised, where necessary. Additional motor and converter options can be set to further extend the scope of application, and official approvals will accelerate worldwide use.

Lighter, simpler to install, economical – the new drives offer many benefits

Compact drives in use

RESULTS

Compact drives gaining popularity

APPLICATION

VEM motors with integrated frequency converter offer significant benefits

FAIRS

Fair news 2005

Fairs

VEM Group. Contacts, customers and contracts were the keywords characterising the meetings and discussions with which the VEM Group and its individual companies were represented at numerous fairs this year.

Hanover Industry Fair

VEM presented “The Whole World of Motors and Drives” at the year’s most important industrial fair. With a focus on steel and rolling mills, customers were given an insight into the VEM product range from roller table motors, via twin drives to the newly developed water-cooled grey-cast iron motors. Armed with these developments and the successful strategy “Quality, a VEM trademark – Made in Germany”, the group confirmed its reputation as a driving force in the branch.

IFAT Munich

This year’s International Trade Fair for Water and Wastewater (IFAT) again far excelled the expectations of the 2,223 exhibitors from 35 countries by welcoming some 290,000 trade visitors from 166 countries. An attendance at this national and international meeting of the branch was consequently a must, and at the same time a highlight on the fair calendar for Keulalatte. The perfect styling of the exhibition stand and drew particular attention to the coating of the products. One innovation presented was Tyton-SitPlus. Over 200 meetings were held with potential customers and other interested visitors over the 5 days of the fair, approx. 30 % of this number being international contacts. The generally positive response cannot hide the fact that we are facing ever stronger international competition on the market for our standard fittings and hydrants, but we are naturally standing up to this challenge with innovation, market competence and Keulalatte will also be attending the next IFAT, the world fair for the environment and waste disposal, to be held in Munich from 5th to 9th May 2008.

Elcom Ukraine

The fair in Kiev proved once more that Ukraine has become an important sales market for VEM. The International Trade Exhibition for Energy and Electrical Engineering was a perfect forum to cultivate contacts, to win new customers and to conclude contracts with a sustained effect.

TBIF Teheran

The international industrial fair in the Iranian capital was for VEM a welcome opportunity to improve existing business relationships and to establish new contacts.

SPS IPC DRIVES Nuremberg

VEM will be attending this fair for the 16th time when the branch meets in Nuremberg in November to reveal the latest innovations in electrical automation, systems and components.
SPECIAL TOPIC: STEEL AND ROLLING MILLS

Worldwide boom in the steel industry

VEM Group offers a comprehensive product range from universal drives to customer-specific large-scale machines

VEM Group: The prices for quality flat rolled steel have risen during the fourth quarter and are expected to rise further in 2006. Despite the high fuel prices, more cars were sold in August than in the same month of any of the previous four years. Order book levels in the German machinery and plant engineering sector were in July 3% higher than in the previous year. Such news is currently dominating the headlines in the economic sections of our newspapers. One important background to these developments has been the high world market price for steel, which is in turn due to shortages in supplies to the manufacturing industry and construction. Whether rolling mills are upgraded or modernised, or whether new plants are built in the so-called emerging countries, a worldwide boom in the industry is the result. The VEM Group has long since established a reputation as a supplier of drives for this industrial branch. With our sophisticated project range from universal drives of the most varied sizes through to customer-specific large-scale machines, we are able to react to the boom at the highest quality level.

EXAMPLE Large-scale drives from Sachsenwerk

As a traditional supplier to steel and rolling mills, Sachsenwerk is able to point to an outstanding vertical range of manufacture and maximum flexibility in accommodating the demands of the industry. Just a few of the countless production prerequisites are the crane capacity of 200 t in the production hall, VPI impregnation for diameters up to 6.60 m, the large test stands and the balancing system for balancing of the rotors. Irrespective of the strategic alignment of the steel industry, VEM Sachsenwerk is thus the ideal partner for all forthcoming tasks. This applies, for example, to the building of new rolling mills, for which complete drives can be sent out all over the world from Dresden both quickly and in high quality. But it applies equally to the modernisation of production facilities, for which Sachsenwerk, as a supplier of large-scale drives, possesses extensive know-how. The specialists from Dresden have gathered vast experience in the conversion of production lines from DC machines to three-phase technologies with parallel performance enhancement, all of which can be achieved.

VEM Sachsenwerk projects

VEM motors projects

70 Section mill (ARC 280), Voest Alpine, Austria
2 Coiler pinch rolls, TKI Bochum/Siemens, Germany
31 PM and HSM, Showa/Seemano, China
HSM delivery table, Lake Erie Forge/TMEIC, Canada
56 HSM/Coiling section, NLMK/Siemens, Russia
26 Plate mill/pendulum table, Voest Alpine Stahl, Austria
31 PM and HSM, Shougang/Siemens, China
34 Plate mill/mill table, Voest Alpine Stahl, Austria
70 Plate mill/coiling section, NLMK/Siemens, Russia

EXAMPLE Roller table motors from VEM motors

The demand for higher-quality and higher-performance motors is a consequence of the current boom in the steel industry, and one to which VEM motors has also responded successfully. Especially fruitful in this respect is the close interaction between staff of VEM motors GmbH and cooperation partner KLONE ENGINEERING at the Competence Centre in Düsseldorf as a first port of call in all matters concerning the steel industry. It bundless the metalworking competence of KLONE ENGINEERING with the innovation expertise and long-standing manufacturing experience of VEM motors GmbH, as well as the latter’s excellent production facilities and comprehensive know-how in the designing of electrical machines. Such proven partnerships are to be maintained in the future, and new contacts are to be sought. One addition to the portfolio of the Competence Centre in Düsseldorf this year was the newly launched frame size 400 in the series of roller table motors. This development was triggered by the increased interest shown by customers. The spectrum has now been extended to cover the whole range of frame sizes from 112 to 500, and is now tailored perfectly to the typical requirements of rolling mill customers. It is not to be overlooked that the increasing steel prices and the growing demand for steel on the world market will continue to boost the volumes of orders in the branch in 2006. VEM is already expecting a double-figure growth rate for the coming year and has secured all the necessary pre-requisites. This includes not least the fact that the VEM Group is already prepared to handle the demands placed on product logistics and transport.

QUOTE

Gerhard Freymuth, managing director of VEM Sachsenwerk (right), and chief designer Andreas Broßling at an asynchronous machine of the type also used in rolling mills

“The VEM Group is a strong partner for the steel industry. The decisive principle: For drive technology, it is not the price, but the quality which counts. We are well placed to meet this challenge in the future, too.”
Frame size 400 completes the line-up of roller table motors

**STEEL AND ROLLING MILLS**

VEM reacts to the worldwide expansion of steel capacities with a new drive concept

Roller table motors fresh from manufacturing at VEM motors (above) and in action in a rolling mill (right)

VEM motors. The increasing worldwide demand for steel is forcing the producers to invest and to modernise their existing capacities. This also results in calls for new drive concepts. VEM answers such calls with a whole series of roller table motors, and has now extended this series to include also frame size 400. These drives are ideally prepared to handle the extreme operating conditions prevailing in the steel industry, meeting the unusually exacting electrical and mechanical demands arising from the varying operating modes and load situations. Many steel and rolling mills are still equipped with DC roller table motors, whose suitability is founded on their good control response. However, since modern combinations of three-phase motor and frequency converter today achieve practically the same control performance, three-phase systems are gradually ousting the conventional equipment when new mills are built or existing facilities are modernised. Against this background, VEM motors already introduced its new ARC series of roller table motors in the early 1990s. These motors are particularly suitable for converter-fed operation. The first motors of the series, in frame sizes 160 and 315, were built and delivered to Cockfelt in 1993 for a new rolling mill in Eisenhüttenstadt. Further sizes were added over the years until 2004. The latest frame size 400 has now rounded off the product range, which today offers the market frame sizes from 112 to 400. First orders for the largest motors have already illustrated the interest of customers in the steel industry. Alongside the above-mentioned series of roller table motors, VEM supplies also geared table motors and motors in steel housings.

Faster, more flexible and in better quality

**INTERVIEW**

Works manager Arnd Turke sums up the extensive changes at the company

Sachsenwerk has made considerable investments. With which goals?

Over the past three years, in particular, we have put a lot of effort into streamlining and improving our processes. Higher-performance machinery is being used to greater depth and even more flexibly to customer wishes. A total of seven million Euros has been spent since 2003 and has achieved an annual increase in productivity of over 4%. The positive results of the company in recent years also permitted us to finance the most important of these investments without outside capital.

What benefits are derived for the customers?

We now possess manufacturing facilities at a level ensuring that we can handle special customer demands in an optimum manner. We have landed a quality leap enabling us to manufacture our products faster, more flexibly and in better quality than others. It is no exaggeration when I say that we are a specialist machine supplier whose production is geared not to the existing possibilities, but to the wishes of the customers.

How was that achieved?

With a whole package of measures embracing the whole manufacturing process, including better utilisation of the existing production areas and the purchasing of high-performance machine tools. I would like to mention here the shaft machining centre. We have modernised our punching section with a new automatic punching machine, we have purchased two CNC machining centres for drilling and milling, we have modernised the measuring and analysis facilities of our test stand and will also be upgrading the crane capacity in the main production hall. The new 3D CAD system will form the earliest possible stage meet customer expectations with regard to fast and uncomplicated communication.

What have been the most important results?

Our medium and large machines are in great demand among our customers, for example in the cement industry, the steel industry and in shipbuilding. Corresponding orders raise the hopes of those for our employees, who are then able to bring their high level of qualifications into the spotlight. The optimised work processes have by the way also enabled us to improve working conditions, in the form of new lighting and heating systems, for example.

What can customers expect in the future?

Our market position today enables us to stand up even to our larger competitors. Here, especially, there will be no letting up - after all, standstill in industry is the best way towards decline. For this reason, a further investment volume of 3 million Euros is already planned for the coming year. In union with our new technical developments, which are reflected in new customer wishes, this will not only enhance our manufacturing flexibility, but will at the same time further improve our testing processes.
The motor assembly is complete

The motor assembly is complete
Hans-Joachim Kittler: Head of quality control at VEM motors Thurm

The 4th Technical Conference already on the horizon

VEM motors. The German cruise operator AIDA Cruises (Rostock/Neu-Isenburg) has awarded the Meyer shipyards in Papenburg an order for four new 68,000 BRT cruise liners. For the first time, VEM has received a contract to supply the full range of low-voltage motors from 0.37 kW to 160 kW for such a cruise liner.

With Germanischer Lloyd marine-standard classification, our motors are to be installed in all areas of the ships. Deliveries to pump suppliers have already commenced.

With an overall length of 249 metres and a width of 32.2 metres, the three liners take the AIDA concept into its third generation. As the new club liners for AIDA Cruises, they incorporate a host of technical innovations and new approaches to interior decoration. The 1,015 cabins accommodate up to 2,030 passengers. The first of these liners is to be launched in April 2007, joining the rest of the AIDA fleet in the Mediterranean, around the Canary Islands, in the North and Baltic Seas and in the Caribbean.

Motors with frequency converters in demand

VEM motors. For some decades, customers in the chemicals industry have counted among the most important purchasers of VEM drives of the most varied power ratings. In recent years, large-scale projects, VEM motors work together closely with ATB. Interview with Dr. Hans Linnenbrink from Bayer MaterialScience how the customer views this partnership.

What is your relationship to VEM? We have been working together since mid-2004. Via a general contract with ATB, we obtain large numbers of standard, ExEx a and ExEx e motors from VEM, installing them worldwide in countries operating to the IEC standard.

The latest example is a major chemical works in Shanghai which is currently being expanded and in this connection equipped with motors from VEM.

What demands does your company place on the VEM drives? With VEM, we have gained the services of a manufacturer who meets all the requirements placed on high-quality and robust motors, and at the same time promises favourable costs and fast availability. We pay particular attention to compliance with the quality parameters contained in the VIK requirements for three-phase asynchronous motors.

Which trends in the chemicals industry are relevant for a motor manufacturer? Major German chemical works, in particular, are turning increasingly to motors with frequency converters. This is naturally followed by a demand for further harmonisation in respect of transverse motors. VEM is already involved in such developments and has formulated certain ideas. As head of the working group on drive technologies at the VIK and of NAMUR, I know that we must generally find a compromise between the wishes of the operators and the needs of the suppliers in terms of economically reasonable manufacturing of the products. But the trend shows that the specification of uniform motor designs with improved performance characteristics is not actually more expensive, and can in fact often bring savings.

What is your experience with VEM products? Very good, as far as the quality of the products is concerned. And if technical problems do arise, we were always successfully solved to our satisfaction. Specifically in the Asian region, all those involved are facing new challenges with regard to project management. Organisation-al procedures and the quality of the available service, in particular, must be matched to these new demands.

VEM motors Thurm. “My duties are so varied, I could hardly imagine a more interesting job,” says Hans-Joachim Kittler, the head of the quality control section at VEM motors Thurm. Born in Brandenburg, he can fall back on a wealth of experience gathered in such a way that customers in the chemicals industry have come to expect a good solution.”

Stay tuned for other articles exploring partnerships and technological advancements in the field of engineering and manufacturing. For more information and insights, visit our website at www.vem-group.com.