Who we are
• VEM: Vereinigter Elektro-Maschinenbau (United Electrical Machinery)
• a mid-sized German company
• successful on the market under the group brand name VEM – since privatisation in 1997

Product Range
• Special motors and machines made to customer specifications with outputs from 0.06 kW to 42 MW
• Controlled electrical drives systems
• Special motors and machines to customer specifications
131 years of electrical engineering tradition
8 countries with manufacturing facilities and subsidiaries
1,200 employees in Germany
300 employees worldwide
0.01 - 300 tonnes in motion
0.06 kW – 42 MW range of electrical drive systems, special motors and special machines
110,000 m² production space
about 200 million turnover
0.06 kW – 42 MW range of electrical drive systems, special motors and special machines
110,000 m² production space
about 200 million turnover
VEM-Group  Structure including subsidiaries

VEM GmbH

Low voltage machines
- VEM motors
- VEM motors Thurm

High voltage machines & Controls Drives
- VEM Sachsenwerk

VEM Subsidiaries

Production
- VEM Tschechien s.r.o.
- VEM Tschechien s.r.o.

Sales and technical Support
- Austria, Belgium, Brazil, Canada, Chile, China, Czech Republic, Denmark, Egypt, Finland, France, Germany, Great Britain, Greece, Hong Kong, Hungary, Iceland, India, Indonesia, Iran, Iraq, Italy, Japan, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia, Saudi Arabia, Singapore, Slovakia, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, Ukraine, United Arab Emirates, USA, Yemen
<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1786</td>
<td>VEM – ELECTRIC DRIVES FOR EVERY DEMAND</td>
</tr>
<tr>
<td>1886</td>
<td>Founding of the original precursor of VEM Sachsenwerk GmbH</td>
</tr>
<tr>
<td>1903</td>
<td>Founding of “Sachsenwerk, Licht- und Kraft-AG”</td>
</tr>
<tr>
<td>1908</td>
<td>Founding of the original precursor of VEM motors Thurm GmbH</td>
</tr>
<tr>
<td>1938</td>
<td>First stock corporation in Eastern Germany after German unification: VEM Antriebstechnik AG, with VEM Sachsenwerk GmbH, VEM Elektromotorenwerk Wernigerode GmbH and VEM Elektromotorenwerk Thurm GmbH</td>
</tr>
<tr>
<td>1948</td>
<td>Development of mercury-arc converters by the company “Gleichrichterbüro Berlin-Schöneweide”</td>
</tr>
<tr>
<td>1949</td>
<td>Formation of VEM VVB as an association of nationally-owned enterprises in electrical engineering</td>
</tr>
<tr>
<td>1961</td>
<td>Founding of VEM Trademark Association</td>
</tr>
<tr>
<td>1990</td>
<td>Acquisition of transresch Antriebssysteme Berlin GmbH</td>
</tr>
<tr>
<td>1997</td>
<td>Privatisation through acquisition of the companies by the Dr. A. Merckle family</td>
</tr>
<tr>
<td>2011</td>
<td>Acquisition of VEM-group by the Wang family</td>
</tr>
</tbody>
</table>

What began with a single factory in 1886 has since developed into a strong VEM Group, one of the branch’s leading European manufacturers.
Certificates

- DIN EN ISO 9001, DIN EN ISO 14001, DIN EN ISO 50001
- IRIS – International Railway Industry Standard
- ATEX-Richtlinie 2014-34-EU
- GOST R, GOST RTN, GOST R Ex
- CCC – China Compulsory Certificate

Seawater protection in accordance with the requirements of international classifications organisations

- American Bureau of Shipping (ABS)
- Bureau Veritas (BV)
- China Classification Society (CCS)
- DNV GL
- Lloyd's Register of Shipping (LRS)
- Polski Rejestr Statków
- Russian Maritime Register of Shipping (RMRS)
VEM-Group  Trademark and approvals

- 1948: Existence of the brand name VEM
- 1954: Use of the brand name as a trademark
- 1961: Founding of the Trademark Association
- 81 trademark registration in 67 countries. The protection focuses on classes 7 and 9.
VEM has sales and service sites in North and South America, Europe, Africa and Asia.
Low voltage machines
VEM motors GmbH, Wernigerode (Germany)
VEM motors Thurm GmbH, Zwickau (Germany)
Sales 2015: 101 Mio. Euro

Large Drives Systems – Electrical Machines & Controlled Drives
VEM Sachsenwerk GmbH, Dresden (Germany)
Sales 2015: 113 Mio. Euro

Components
VEM Slovakia s.r.o., Piešťany (Slovakia)
VEM Tschechien s.r.o., Most (Czech Republic)
Large Drives
VEM location Dresden
Facts

- Founded in 1903
- Engineering, manufacturing and sales of motors and generators (synchronous and asynchronous)
- Power range 60 kW – 42 MW
- Custom and serial production
VEM supplies the branches

- Transportation
- Machine and plant engineering
- Steel and rolling mills
- Cement and mining industry
- Shipbuilding
- Chemical, oil and gas industry
- Water management
- Renewable energies
- Power plant technology
## Product range large drives

<table>
<thead>
<tr>
<th>Industry</th>
<th>Application</th>
<th>Machine type</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mill stand, edger, winders, rolling, mills, cement mills, mining, wood processing plants, pumps and compressors, fans, mixers, mills, crushers</td>
<td>Three-phase synchronous and asynchronous motors in medium and high-voltage version, Controlled three-phase drives</td>
<td>up to 42 MW</td>
</tr>
<tr>
<td>Power plants – including units, pumps and fans</td>
<td>Three-phase asynchronous motors auxiliary plant machines in medium and high-voltage version</td>
<td>up to 20 MW up to 18 MW</td>
<td></td>
</tr>
<tr>
<td>Conveyor and transport systems, Cranes and excavators, Lifting equipment</td>
<td>Three-phase synchronous and asynchronous motors in medium and high-voltage version</td>
<td>up to 25 MW</td>
<td></td>
</tr>
</tbody>
</table>
## Product range large drives

<table>
<thead>
<tr>
<th>Application</th>
<th>Machine type</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ship building</strong></td>
<td>Offshore and barge building</td>
<td>up to 25 MW</td>
</tr>
<tr>
<td></td>
<td>Three-phase synchronous and asynchronous motors in medium and high-voltage version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Three-phase synchronous generators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>POD drives</td>
<td></td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td>Power plants including Aggregates, pumps and fans</td>
<td>up to 20 MW</td>
</tr>
<tr>
<td></td>
<td>Three-phase asynchronous motors</td>
<td>up to 18 MW</td>
</tr>
<tr>
<td></td>
<td>auxiliary machines in medium and high-voltage version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Wind power</td>
<td>1.5 – 7 MVA</td>
</tr>
<tr>
<td></td>
<td>Wind power generators</td>
<td></td>
</tr>
<tr>
<td><strong>Generators</strong></td>
<td>Synchronous generators</td>
<td>up to 40 MVA</td>
</tr>
</tbody>
</table>
# Product range large drives

<table>
<thead>
<tr>
<th>Application</th>
<th>Machine type</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transportation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline and industrial</td>
<td>Three-phase asynchronous traction motors</td>
<td>up to 1,600 kW</td>
</tr>
<tr>
<td>locomotives of all tractions</td>
<td>Three-phase synchronous traction and machines mains generators</td>
<td>up to 3,000 kVA</td>
</tr>
<tr>
<td>Multiple units</td>
<td>Three-phase asynchronous traction motors</td>
<td></td>
</tr>
<tr>
<td>• electric</td>
<td>Three-phase synchronous traction generators</td>
<td></td>
</tr>
<tr>
<td>• diesel-electric</td>
<td>Three-phase synchronous machines mains generators</td>
<td></td>
</tr>
<tr>
<td>• diesel-hydraulic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rapid transit railway</td>
<td>Three-phase asynchronous drive motors</td>
<td>up to 250 kW</td>
</tr>
<tr>
<td>Trams</td>
<td>Three-phase asynchronous drive motors</td>
<td>up to 130 kW</td>
</tr>
<tr>
<td>Monorails</td>
<td>Three-phase asynchronous drive motors</td>
<td>up to 125 kW</td>
</tr>
<tr>
<td>Trolley buses, hybrid busses</td>
<td>Three-phase asynchronous drive motors</td>
<td>up to 250 kW</td>
</tr>
<tr>
<td>Mining trucks</td>
<td>Three-phase synchronous traction generators</td>
<td>up to 4,000 kVA</td>
</tr>
</tbody>
</table>
Products for industry

Synchronous and asynchronous motors

- Steel and rolling mills
- Cement and mining industry
- Engineering and plant construction
- Paper and cellulose industry
- Water management
Reference steel and rolling mills

Alstom Power Conversion GmbH, Böhler Kapfenberg, Austria

Type: DMMYZ 3860-20V
Rolling mill drive
6,000 kW, 2,850 V, 35/100 r.p.m.

SMS Demag AG, MMK5000, Russia

Type: DMMYZ 3867-20V,
Rolling mill drive
12,000 kW, 3,000 V, 60 r.p.m.
References cement and mining industry

FLSmidth A/S, Obajana, Nigeria
Type: DSRAS 8031-6WF
Cement mill drive
3,000 kW, 11,000 V, 994 r.p.m.

FLSmidth A/S, Kokshe, Kazakhstan
Type: DSRCJ 8031-6WF
Mill drive
3,316 kW, 6,000 V, 995 r.p.m.

OAO Severnyj Gorno-Obogatitel', Sevgok, Ukraine
Type: DBKAJ 9030-8WF
Fan drive
4,500 kW, 6,000 V, 744 r.p.m.
**Products for ship building**

**Synchronous and asynchronous motors, synchronous generators**

- Passenger ships
- Service ships
- Megayachts
- Specialist ships
- Ferries
- Cargo ships

Synchronous motor
References cruise liners and yachts

Siemens AG, AIDA Cruises, Hamburg Germany
Type: DTMSZ 3352-16YS
Propeller drive
12,500 kW, 3,200 V, 131 r.p.m.

SAM Electronics GmbH, Lürssen Werft, Megayacht, Bremen, Germany
Type: DSRCJ 8031-6WF
Propeller drive
3,316 kW, 6,000 V, 995 r.p.m.

OAO Severnyj Gorno-Obogatitel', Sevgok, Ukraine
Type: DTMSZ 3466-16YS
Propeller drive
18,000 kW, 4,300 V, 133 r.p.m.
References ferries and cargo ships

Schottel GmbH, „Fjord“, Werft Norway

Type: DKWUZ 7131-8U
Propeller drive
2,700 kW, 675 V, 800 r.p.m.

SAM Electronics GmbH, Containerschiff for Hapag Lloyd HHI Werft, Korea

Type: DGMUX 1645-16W
Shaft generator
5,000 kVA, 6,400 V, 65 – 94 r.p.m.
Products for the energy sector

**Synchronous and asynchronous motors for**
- Chemical, oil and gas industry
- Power plant technology

**Synchronous and asynchronous generators**
- Windpower
- Hydro-electric

**Ignition protection categories**
- Ex n (Non sparking)
- Ex e (increased safety)
- Ex d (flameproof enclosure)
- Ex p (pressurised enclosure)
References chemicals, oil and gas

Siemens AG, Tasnee, Saudi-Arabia

Type: DTKVY 4344-36WS
Piston compressor drive (hyper)
27,500 kW, 10,000 V, 200 r.p.m.

Salzgitter Anlagenbau GmbH,
„285-LDPE-Anlage“ Basell, France

Type: DTKVY 4937-30W
Piston compressor drive (hyper)
23,500 kW, 11,000 V, 200 r.p.m.

Burckhardt Compression, „Reliance“, LDPE-Anlage in Jamnagar, India

Type: DTKVY 4356-30WS
Verdichterantrieb
30,000 kW, 11,000 V, 200 r.p.m.
Ex pxe IIBT3
References power plant technology

RWE Industrie-Lösungen GmbH, REA Cottam, U. K.

Type: DKKES 1040-8WE
Induced-draft fan drive
8,000 kW, 11,000 V, 745 r.p.m.

E.ON Kraftwerke GmbH, Kraftwerk Datteln, Germany

Type: DKKGU 1040-4WE
Feed water pump
14,500 kW, 10,000 V, 1,484 r.p.m.

Cegelec-AEG Berlin, Power plant Opole, Poland

Type: DKKAB 8033-8U
Induced-draft fan drive
4,500 kW, 2x 800 V, 747 r.p.m.
References Wind Power Generators

REpower Systems SE  5M – 5.4 MW
Windpark alpha ventus

REpower Systems SE
Windpark „Thornton Bank“, North Sea
5.4 MW, 950 V, 1,170 r.p.m.

REpower Systems SE
Windpark „Nordsee Ost“, North Sea
6.5 MW, 6,600 V, 1,170 r.p.m.
## References: Hydro-Electric Generators

**Vattenfall, Pumped-Storage Power Station, Goldisthal, Germany**

<table>
<thead>
<tr>
<th>Power (G)</th>
<th>331 MVA</th>
<th>340.4 MVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (M)</td>
<td>261 MW</td>
<td>300 MW / 351.6 MVA</td>
</tr>
<tr>
<td>Voltage</td>
<td>18.0 kV</td>
<td>18.0 kV</td>
</tr>
<tr>
<td>Speed</td>
<td>333.3 r.p.m.</td>
<td>300.0 – 346.6 r.p.m.</td>
</tr>
</tbody>
</table>

**Vattenfall, Pumped-Storage Power Station, Germany**

<table>
<thead>
<tr>
<th>Power (G)</th>
<th>50 MVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (M)</td>
<td>40 MW</td>
</tr>
<tr>
<td>Voltage</td>
<td>10.5 kV</td>
</tr>
<tr>
<td>Speed</td>
<td>250 r.p.m.</td>
</tr>
</tbody>
</table>
Products for traction

Traction motors as well as main and auxiliary generators

- Mainline and industrial locomotives of all tractions
- Multiple units
- Rapid transit railway
- Trams
- Monorails
- Trolley buses, hybrid buses
- Mining trucks
References suburban trains and trams

Bombardier Transportation, Flexity Swift, Docklands LRT, London

**AC traction motor**
DKOBZ 0610-4B
130 kW, 1,781 r.p.m.

PESA Bydgoszcz, Poland, Tram Swing, Szeged, Hungary

**AC traction motor**
DKCBZ 0211-4FA
105 kW, 1,777 r.p.m.
References electric multiple units and locomotives

Bombardier Transportation, Flexity Swift, Docklands LRT, London

**AC traction motor**
DKOBZ 0610-4B
130 kW, 1,781 r.p.m.

**AC traction motor**
DKCBZ 0211-4FA
105 kW, 1,777 r.p.m.

Asynchronous traction motors
References hybrid buses and mining trucks

Vossloh Kiepe, Düsseldorf, Hess Hybridbus, Dresden/Leipzig

**AC traction motor**
DKLBZ 0309-4
160 kW, 1,466 r.p.m.

Siemens Energy & Automation, USA,
Komatsu 960E, 3650HP

**Synchronous main alternator**
DRLDZ 5013-8L
2,506 kVA, 1,800 r.p.m.
Controlled Drive Systems
VEM location Dresden
# Product range – controlled drives systems

<table>
<thead>
<tr>
<th>Component</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive systems for DC and Three-phase installations with</td>
<td></td>
</tr>
<tr>
<td>Thyristor converters for DC drives</td>
<td>100 kW – 28 MW</td>
</tr>
<tr>
<td>LV frequency converters 380 V – 690 V</td>
<td>4.5 kW – 4.5 MW</td>
</tr>
<tr>
<td>MV frequency converters 2.3 kV – 6.9 kV</td>
<td>315 kW – 27 MW</td>
</tr>
<tr>
<td>Excitation devices for synchronous machines</td>
<td>500 kW – 12 MW</td>
</tr>
<tr>
<td>Automation systems</td>
<td></td>
</tr>
<tr>
<td>Development of complete automation systems for primary</td>
<td></td>
</tr>
<tr>
<td>industry (metallurgy/cement)</td>
<td></td>
</tr>
<tr>
<td>Reconstruction of old systems based on PLC and</td>
<td></td>
</tr>
<tr>
<td>visualisation systems (SIMATIC S7, SIMATIC TDC, WinCC)</td>
<td></td>
</tr>
<tr>
<td>Other services</td>
<td></td>
</tr>
<tr>
<td>Commissioning and support worldwide</td>
<td></td>
</tr>
<tr>
<td>Certification of explosion-protected drive systems</td>
<td></td>
</tr>
</tbody>
</table>
## References and products

### Water-cooled converter

<table>
<thead>
<tr>
<th>Type</th>
<th>ACS5000 motor outputs from von 5 – 27 MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Compressors, extruders, fans, pumps, mills</td>
</tr>
<tr>
<td>References</td>
<td>Compressor drive, 7,800 kW, Epe/Gronau, Germany</td>
</tr>
</tbody>
</table>
### References and products

**Subsynchronous converter cascade (SCC)**

For the speed regulation of asynchronous slip ring motors, for motor outputs of 500 kW up to 12 MW

<table>
<thead>
<tr>
<th>Reference</th>
<th>Retrofit of water supply in Saudi Arabia, for an output of 850 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special feature</td>
<td>Design dimensions of SCC as for old system</td>
</tr>
</tbody>
</table>

**Principle**

Retrofit of water supply, Saudi-Arabien
Multidrive converter (multi motor drive)

For motor outputs from 1.5 kW up to 1,900 kW

References

Multidrive converter with feed-in/recovery for waste utilisation plant in Rotterdam
motor capacities from 400 up to 480 kW for fans and feed water pumps
For outputs up to 1,900 kW
Reference ID fan in cement mill Kirefa, Senegal
Output 1,745 kW
Power converters for DC roll stand drive

Reference: Hoesch Spundwand

Output: 2 x 2,500 kW
References and products

Natural gas storage Staßfurt
Type: MV converter ACS6000
5,200 kW, 3,160 V, 597 r.p.m.

For polyethylene (LDPE) plant/high-pressure process
Type: LCI (Load Commutated Inverter)
For synchronous motor 23,000 kW, 11,000 V, 200 r.p.m.
Low Voltage
VEM location Zwickau and Wernigerode
Facts

- Founded in 1908
- Manufacturer of single-phase and three-phase asynchronous machines
  - BG 56 – 132
  - 0.06 – 9.0 kW
- Energy saving motors
- Permanent magnet synchronous machines
- Compact drives
- Single-phase motors
- Special motors
Facts

• **Founded** in 1947
• Manufacturer of **three-phase asynchronous machines**
• BG 132 – 450, 5.5 – 1,000 kW

- Energy-saving motors
- Special-purpose motors
- Permanent magnet synchronous motors
- Standard motors with grey cast iron shell
- Explosion-protected motors
- Roller table motors
- Brake motors
- Motors for marine
- Fire-gas motors
- Traction motors
- Single-phase motors
- Extruded aluminium motors
- Circular saw motors
- Extruded aluminium motors
- Reluctance synchronous motors
- Multiple-speed motors
- Built-in motors
### Product range

| Low-voltage machines for outputs 0.06 – 1,000 kW | 0.06 – 1,000 kW |
| Low-voltage machines in 2-, 4- and 6-pole versions as energy-saving motors for outputs 0.75 – 375 kW in efficiency classes IE2 or IE3 acc. to IEC 60034-30/IEC60034-2-1 |
| Asynchronous motors |
| Standard motors acc. to IEC/DIN with squirrel cage rotor (IE2, IE3) | 0.06 – 160 kW |
| Nominal sizes 56 – 315, protection type IP 55 3,000, 1,500, 1,000, 750, 600, 500, 375, 300, 250 r.p.m. and pole-changing combinations |
| Transnorm motors acc. to IEC with squirrel cage rotor (IE2, IE3) | 200 – 1,000 kW |
| Nominal sizes 315 – 450, protection type IP 55 3,000, 1,500, 1,000, 750, 600, 500, 375, 300, 250 r.p.m. and pole-changing combinations |
| Three-phase motors for marine operation (IE2, IE3) | 0.06 – 710 kW |
| Protection against seawater in accordance with the requirements of important international classification societies: Det Norske Veritas-Germanischer Lloyd (DNV-GL), Bureau Veritas (BV), Lloyds Register of Shipping (LRS), American Bureau of Shipping (ABS), Russian Maritime Register of Shipping (RMRS), Registro Italiano Navale (RINA), Polski Rejestr Statkow (PRS), Chinese Classification Society (CCS) |
### Product range

<table>
<thead>
<tr>
<th>Customer-specific motors, unclassified and pole-changing combinations</th>
<th>0.06 – 1,000 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,000, 1,500, 1,000, 750, 600, 500, 375, 300, 250 r.p.m.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard motors acc. to IEC/DIN with squirrel cage rotor IE4</th>
<th>75 – 90 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal size 280</td>
<td></td>
</tr>
<tr>
<td>3,000, 1,500 r.p.m.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transnorm motors acc. to IEC with squirrel cage rotor</th>
<th>110 – 400 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal sizes 315 – 355</td>
<td></td>
</tr>
<tr>
<td>3,000, 1,500 r.p.m.</td>
<td></td>
</tr>
</tbody>
</table>

### Modifications

- base and flange design
- attached brake
- attached star-delta switch
- with thermal winding protection
- with external fan
- pole switching
- voltage switching
- memory version (RFID transponder)
- with incremental encoder (IGR) or tachogenerator

### Possible cooling types

- self-ventilated, IC 41; force-ventilated, IC 416; force-ventilated, IC 418; not ventilated, IC 410;
- water-cooled, IC 71W (IC 31W)
### Product range

**Three-phase motors with slip-ring rotor**
- Nominal sizes 132 – 315, protection type IP 54, IP 55
- Speeds 1,500, 1,000, 750, 600, 500 r.p.m.
- 2.2 – 315 kW

**Explosion-protected motors acc. to 2014/34/EU (ATEX) in the protection types**
- Increased safety “e” (“eb”) 0.12 – 320 kW
- Flameproof enclosure “d/de” (“db/db ec”) 0.12 – 630 kW
- Non-sparking “n” (increased safety “ec”) Zone 2 0.06 – 710 kW
- Protection by enclosure “tb” zone 21 0.06 – 710 kW
- Protection by enclosure “tc” zone 22 0.06 – 710 kW
- Efficiency classes up to IE3

**Three-phase compact motors** (efficiency classes up to IE5) 0.55 – 22 kW

**Variable speed three-phase drives** 0.75 – 710 kW

**Three-phase brake motors** (IE1, IE2, IE3) 0.12 – 710 kW
# Product range

<table>
<thead>
<tr>
<th>Description</th>
<th>Power Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three-phase motors for use in mechanical smoke and heat extraction equipment</td>
<td>0.12 – 710 kW</td>
</tr>
<tr>
<td>DIN EN 12101 – 3:2015)</td>
<td></td>
</tr>
<tr>
<td>For stress temperatures of 200 ºC, 300 ºC and 400 ºC</td>
<td></td>
</tr>
<tr>
<td>Efficiency classes up to IE3</td>
<td></td>
</tr>
<tr>
<td>Drive solutions for the steel and rolling mill industry</td>
<td></td>
</tr>
<tr>
<td>• Three-phase rolling mill motors</td>
<td>0.5 – 710 kW</td>
</tr>
<tr>
<td>• Three-phase gear rolling mill motors</td>
<td>0.4 – 450 kW</td>
</tr>
<tr>
<td>• Three-phase motors for cranes in metallurgical plants</td>
<td>4.8 – 315 kW</td>
</tr>
<tr>
<td>• Efficiency classes up to IE3</td>
<td></td>
</tr>
<tr>
<td>Permanent magnet synchronous motors for converter-fed operation</td>
<td></td>
</tr>
<tr>
<td>• Ultra-premium-efficiency-motors acc. to IEC 60034-30/IEC 60034-2-3</td>
<td>0.12 – 75 kW</td>
</tr>
<tr>
<td>• High power motors</td>
<td>0.18 – 315 kW</td>
</tr>
<tr>
<td>Three-phase asynchronous generators</td>
<td>5.5 – 710 kVA</td>
</tr>
<tr>
<td>Built-in motors</td>
<td>0.06 – 710 kW</td>
</tr>
<tr>
<td>Single-phase motors</td>
<td>0.06 – 2.2 kW</td>
</tr>
</tbody>
</table>
Three-phase motors with squirrel cage rotor, explosion protected
Type of protection „e“, „n“, Ex „d/de“
About 1,000 motors/year, frame size 63 – 400
Reference smoke venting motors

Delivery of three-phase motors with squirrel cage rotor, type series K10R, 45 kW, 400 V D, 50 Hz, IM B14, 60 pieces

Fan motor

Mounting dimension 200
45 kW, 230/400 D/Y
1,450 r.p.m., IM B5, 50 Hz

Fire gas motor

Mounting dimension 90, F 400
1.1 kW, 400 V
1,470/2,940 r.p.m. IM B3, 50 Hz
Reference smoke venting motors

Type: IE2-W22R 355M 4
300 kW, 415 V,
1,495 r.p.m., IM B3, 50 Hz

Motor after fire gas test in field of SystemAir
(in use there for more than 10 years)
Reference materials handling

Delivery of **three-phase motors** for lifts,
Forced-ventilated design with brake

**Types**
- K21F 160 L4
- B21F 250 M4
- K21F 180 L4
- B21F 280 M4

**Type**
- BU1R 250 M4 B HB IGR PRE PT SL HW;
  55 kW, 690 V Y, 1,475 r.p.m.,
  IM B3, 50 Hz
References steel industry, pulp and paper industry

**Geared roller table motor**
Frame size 225 with “Bauer-Getriebe AG“ 39 motors
**Geared roller table motor**
Frame size 200 with “Bauer-Getriebe AG” 154 motors

900 pieces **three-phase motors** with squirrel-cage rotor
For frequency converter and mains operations
Output range 0.55 – 500 kW
Frame size 80 – 800
Drives for pumps, centrifuges, rollers, fans, drying groups, dispersers, blowers
Motors in the **air conditioning unit of high-speed trains**.  
Used as bypass fan  
Used as condenser fan

**Variable-speed drive system** for the cooling of the traction motor
References cranes

Lifting and slewing drives in a construction plant version

Slewing crane, Sea Hildesheim, Germany
References shipbuilding and offshore facilities

Amongst others, supply of the entire range of LV motors from 0.37 kW to 160 kW (approximately 250 motors for each ship)

Use of VEM motors on platforms like “Stena Don” or the oil platform “Oseberg 7”
Good reasons to buy from VEM

- Product range from single drive to entire drive systems
- Internal design and development for tailor-made solutions
- Flexibility due to a high level of vertical integration
- Quick response times
- Worldwide customer service
- 24h-delivery service of stock motors (online stock)
- 1,750 highly motivated and qualified employees

**Made in Germany**
- Durable, robust under extreme conditions
- Environmentally friendly and highly energy efficient
- Low “life cycle costs”
Longstanding customers of VEM
Service
With the delivery of your drive, our Customer is available as contact for you. The team supports you as operator of high quality machines and systems with a wide range of services.
• Testing house service and contact manufacturing
• Mechanical analyses for condition and error diagnostics
• Installations and commissioning
• Technical services
• On-call service
• Maintenance
• Inspection
• Repair
• Training
• Spare parts supply
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