

Vogelsang Group

**Your success
is our
motivation!**

VOGELSANG

“We speak the language of our customer.”



With more than 100 years of in-depth industry experience we at Vogelsang are specialists for the complete service of electrical industrial drive technology and power generation.

Our traditional family business is working in the 4th generation for our customers and partners from a wide range of sectors. More than 400 competent and well-trained employees in our group - 300 of them in the service sector alone – are passionately taking care of the most diverse challenges in the field of machine maintenance, repair and servicing every day.

To meet our high service standards, we consistently rely on the intergenerational transfer of know-how and our own staff training. Years of experience and in-depth knowledge of machines from a wide range of industries always ensure first-class work and maximum customer satisfaction. We work solution-oriented, flexibly, reliably and we actively tackle every task.

Thanks to our six locations in Germany and the Netherlands, we are always close to our customers and can react flexibly to every requirement.

At Vogelsang the people are our focus of every project – this is why every customer receives individual advice and one contact person for the entire project. And: with us, it's the handshake that counts. We see ourselves at eye level with our partners.

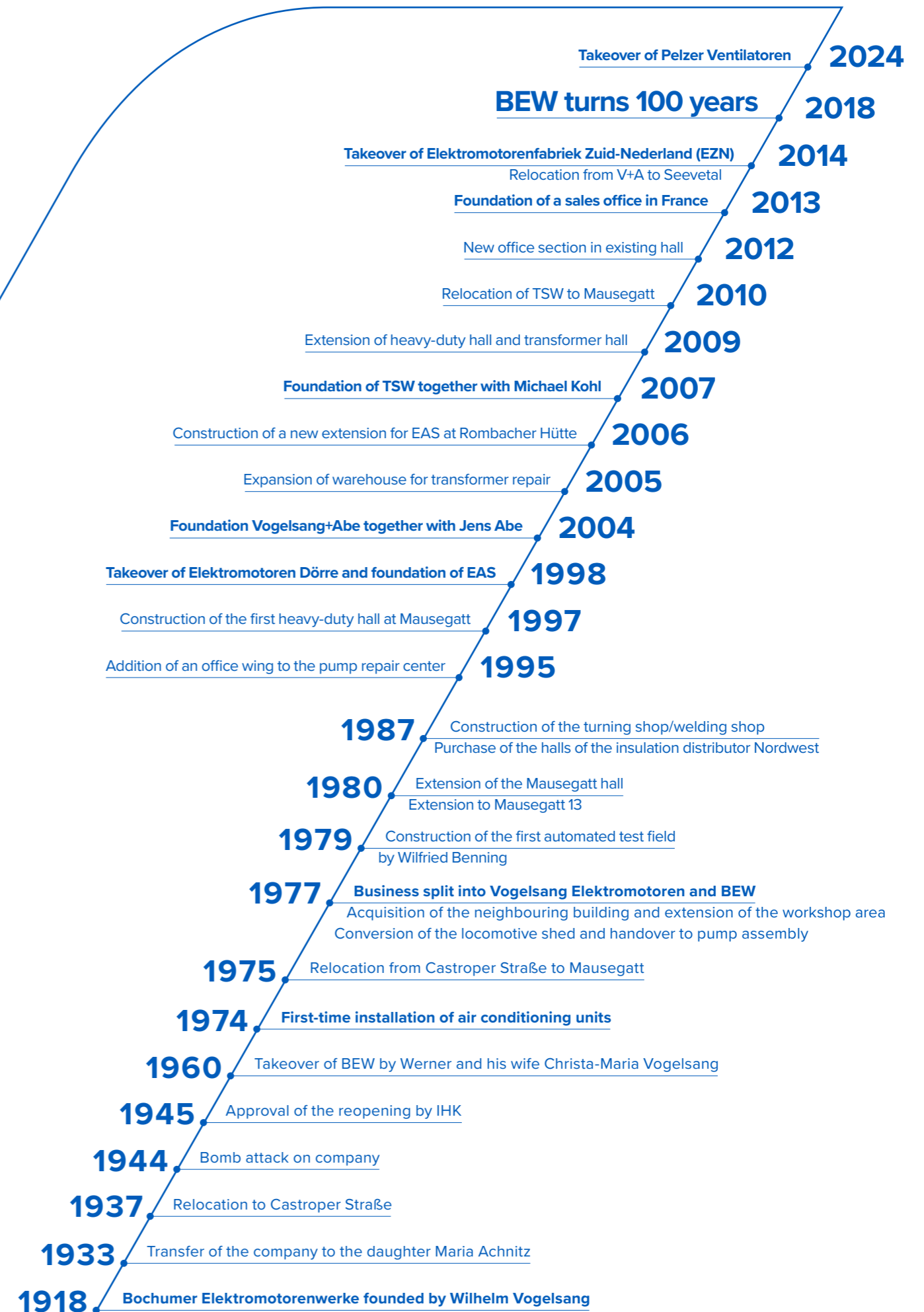
Also very important: We think and do business sustainably. This is a central concern and obligation at the same time for us against the backdrop of rapid climate change.

Get to know us, our philosophy and our range of services. **We look forward to meeting you!**

Yours
Dipl.-Ing. Christian Vogelsang
Managing Director



Vogelsang: Over 100 years of tradition and innovation!





First-class services for every requirement!

Whether in industrial drive technology or power generation: we at Vogelsang group take over all tasks to do with your electrical machines. Competent, flexible and in the highest quality.

From assembling and commissioning to maintenance and repair, as well as analysis to complete re-engineering: we provide all services from a single source - without any problematic interfaces. At our six locations we have the necessary workshop equipment even for particularly demanding challenges.

Depending on your requirements, our technicians can also carry out complex tasks directly on your premises. Whether in underground mining or on wind turbines, on ships or in steelworks, in power stations or in the chemical industry: we move safely in almost any working environment.

First-class services for you:

- Repair and factory overhaul
- Repair, maintenance, analysis and assembly on site
- Reengineering and New Delivery
- Load and acceptance tests
- Repair and maintenance of diesel and gas engines
- Assembly and disassembly of machine sets
- Condition monitoring
- Diagnoses and analyses

In-depth industry expertise guaranteed



Our added value for your success:



Our workshop equipment



Our comprehensive services on site



Our test fields



Our vertical range of manufacture



The high number of qualified personal



Our locations close to you

Shape today and tomorrow with strong values.

Whatever we do for our customers: We always act in accordance with our philosophy and our values. Because these are what we identify with in our work, our drive and they form the foundation of our business success.

Our strategy: Partnership and customer proximity.

For our customers from industry and the manufacturing sector, we are a reliable problem solver and valued partner at eye level. Thanks to our geographical proximity to our customers' production sites and the personal support provided by our experienced project engineers, we are always on the spot competently, flexibly and quickly. Each project is individually calculated with realistic specifications - so our services are always transparent and comprehensible for our partners or customers.

Very important to us is the further education of our employees through continuous training as well as the promotion and training of young junior staff. In this way, we ensure our continued existence as a medium-sized company and qualify ourselves as a long-term partner for our customers.



Our principles: Teamwork and innovative strength.

Reliability, honesty and mutual trust characterize our daily work and cooperation with our customers. We work with passion, believe in team spirit and the abilities of all. Because only together can we achieve success.

We focus on continuous development: We are convinced that innovation is the basis for personal and company growth. Therefore, we strive to acquire state-of-the-art technological skills, develop new ideas and manufacturing methods, and improve our daily work. Our goals: a modern and safe workplace for our employees, long-term customer relationships and entrepreneurial success.



Our responsibility: Respectful cooperation.

Legality, transparency and fairness are our priority. This means: We always act with respect and respect human dignity. This also includes an inclusive working environment that values the uniqueness of each person and the diversity of our society. We also expect our suppliers and partners to act in a socially responsible and ethical manner in line with our principles. Because this forms the best basis for a cooperative partnership. To the benefit of all.

Our commitment: Sustainable commitment to climate protection.

Against the backdrop of advancing global climate change, we are doing everything in our power to support the energy turnaround, the reduction of CO₂-emissions and the sensible use of technological progress to achieve these goals. We are committed to the efficient and sustainable use of our resources. This is the only way we can protect the needs of future generations and preserve our living space in the long term. In doing so, we are closely aligned to the UN's 17 global sustainability goals („Sustainable Development Goals“).



SUSTAINABLE DEVELOPMENT GOALS



**“We are specialists
for full-service on
electrical machines”**



Our services in the workshop.

Our workshops with more than 15,000 m² at six different locations are equipped with extensive plant and testing technology. This means that you receive an optimal solution for every requirement, every type of machine and every size - economical, flexible, well thought-out.

Our workshop equipment at a glance:

- Assembly stations with hoists up to 100 t
- Welding shop for welding works according to DIN EN 1880-7 and DIN EN 15085-2
- Rewinding of DC, low voltage, high voltage and transformers
- VPI impregnation system (3,700 mm Ø)
- Own coil shop for high voltage, roundwire, DC, transformer coils
- Presses for coil lengths up to 4,500 mm
- Mechanical workshop with machine tools up to 80 t unit weight
- Load test stands for motors, pumps, fans, transformers and gearboxes
- Areas for storage of machines up to 100 t unit weight
- Spare parts warehouse for the stocking of critical spare parts
- Own fleet with trucks up to 44 t total weight including low-bed trailer and permanent driving permits for holidays and weekends

EX? No problem!

We are also experts in repairing explosion-proof machines. With our own expertise and test capabilities for acceptance and certification tests, we are very well positioned and qualified for wide-ranging repairs. More than 90 years' experience in this area, as well as good networking with manufacturers, delivery points and universities form the basis for top performance in this area too.

Our services on site.

Depending on your requirements, we can provide you with all the services you need for your machines and technical systems - for long-term reliable operation and optimal cost efficiency of your processes - around the clock, 365 days a year.



Our services at a glance:

- Assembly and disassembly works (with own assembly and mobile cranes)
- Planning and implementation of major projects and plant shutdowns
- Sourcing and adaptation of replacement machines
- Customized service and diagnostic concepts for machine availability, runtime and condition assessment:
 - Planning of revisions in dependencies of the machine condition
 - Determination of damage symptoms
 - Installation and rental of online monitoring systems
 - Data acquisition, evaluation or analysis of the measured values and evaluation
 - Initiation and implementation of immediate and corrective actions
 - Alignment of machine sets by means of laser and plane measurement
- Balancing of fans and motors and other rotating machines
- Partial discharge and Tandelta measurements (PD – tan δ)
- 24/7 service hotline



We drive your generators to top performance.

Whether turbo or slow-running, whether coupled with a diesel engine, gas or steam turbine, in the nacelle of a wind turbine or in a hydroelectric power plant: We are your strong partner for generators of various types.

Our services at a glance:

- Repair of three-phase and direct current generators
- Disassembly, overhaul and complete generator refurbishment.
- Repair and maintenance of turbo generators up to approx. 75 MVA
- Revision work on mechanical, hydraulic and electrical components
- Bearing replacement and brush revision on site
- Induction heating system for the disassembly of generator caps
- Machining of stators up to 50 t in the factory
- Rewinding of generators in low and medium voltage
- Load run including check of the control in our test field (depending on the power also in parallel with the grid)

Our know-how: the drive for your projects.

Our specialists have decades of experience in the repair of electric motors in a wide variety of industries and locations. No matter what the challenge is: we are at your service.

Our services at a glance:

In the workshop:

- Maintenance, repair and overhaul of motors
- Reengineering and production of spare components and of complete machines
- Mechanical adaptation of machines
- Production of high voltage windings in resin rich and VPI technology
- Production of roebel bar windings
- Production of DC windings for stators and rotors
- Commutator repairs, new delivery and reconstruction
- Production of round wire windings also in inverter-proof design
- Re-stacking of stators and rotors
- Renewal of rotor windings (short-circuit windings of asynchronous motors and pole coils for synchronous machines)
- Repair of Ex-protected motors
- Load and acceptance tests on modern, computer-aided test rigs

On site:

- Disassembly and assembly, maintenance and inspection work
- On-Site-Balancing
- Roller bearing analyses and electrical analyses
- Laser alignment of machine trains
- Measurement and evaluation of machine vibrations with frequency analyses
- Thermographic and endoscopic examinations
- Flatness and machine-foundation surveys
- Efficiency tests of complete machines according to patented methods
- Dissipation factor measurement (tan delta) and partial discharge measurement (PD) on high-voltage windings
- On-site commutator machining with mobile turning devices
- Consulting for and support of maintenance projects
- Introduction of condition-based maintenance
- Efficiency analyses on complete machine sets



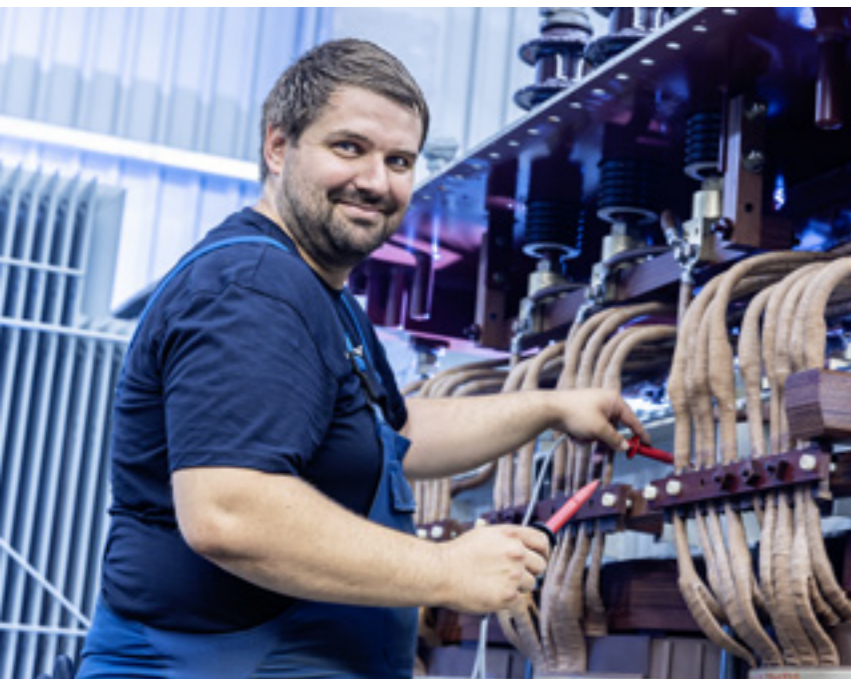
We keep your transformers running!

Whether grid, coupling, furnace, rectifier and distribution transformers or compensation, earth and charging coils: We are your one-stop shop for all repair and overhaul services. Special coils as well as oil, cast resin and dry-type transformers are also in the best hands with our experts.

Our services at a glance:

In the workshop:

- Repair and overhaul of transformers (on the high voltage side up to 110 kV or up to 100 MVA, active part weight up to 100 t)
- New windings of coils, coil blocks and partial coils
- Vacuum drying of active parts and refilling with regenerated or new oil under vacuum
- Preparation, regeneration as well as replacement of used insulating oils with environmentally friendly recycling
- Final testing according to VDE/IEC or specific customer specifications
- Revision of on-load tap-changers and loadless tapchangers
- Repair and reconstruction of transformer housings and bushings



On site:

- Repairs and revisions on all types of transformers (all manufacturers)
- Mobile vacuum microfiltration for 1,000 l/h, 4,000 l/h and 9,000 l/h with different hose sets
- Regeneration of insulating oils by means of the fuller's earth process
- Mobile oil conditioning units for temporary use
- Operating oil analyses, gas-in-oil analyses and furan analyses
- Replacement of feedthroughs and conversion to alternative feedthrough systems
- Conventional sealing work and conversion to alternative sealing systems
- Environmentally friendly refilling of oil transformers
- Tests according to VDE as well as partial discharge measurements

Full service for your pumps!

Whether maintenance and repair of individual pumps or engineering and installation of entire pumping systems: With our experience, we ensure maximum availability of your pumps in chemical process engineering as well as fresh and waste water technology.

Our services at a glance:

In the workshop:

- Manufacturer-independent repair of submersible pumps, standard centrifugal pumps, compressors, borehole pumps, special and custom pumps as well as canned motor and slurry pumps
- Spare parts and new delivery of pumps
- Pump testing on our own test rigs (loads up to 300 kW, hydraulic pumps up to 40 bar/DN 300)
- Acceptance testing of Ex-proof pumps
- Steel and plant construction with own construction and prefabrication of pipelines
- Construction of new pumping stations for waste- and floodwater management

On site:

- Manufacturer-independent pump maintenance and repair (types see above)
- Spare parts and new delivery of pumps
- Inspection of control, switching and safety devices
- Measurement of electrical values, flow rates and wall thickness measurements
- Pump assembly and disassembly (also for aggressive media incl. environmentally friendly disposal of residual media)
- Analysis and optimization of existing pumping systems (including efficiency analysis, comparison of target/actual characteristic curve)



Wind of change for your fans and blowers!

As experienced experts in the fields of industrial process air, mine and tunnel ventilation, we offer you a complete maintenance service for your centrifugal fans, axial fans, ducted fans and industrial blowers - also for high-temperature applications

Our services at a glance:

In the workshop:

- Complex repairs and rebuilds of fans, ventilators and blowers (all manufacturers)
- Professional disassembly and assembly of existing systems or equipment
- Straightening and repair work on fan blades
- New production of impellers and fan blades
- Re-bearing and production of new shafts
- Mechanical machining of hubs and seats
- Extensive testing including balancing under operating conditions
- Final test including performance test

On site:

- Immediate action and repair of fans, ventilators and blowers
- Professional disassembly and assembly of existing systems or equipment
- Balancing in operating condition
- Performance and analysis of offline measurements for mechanical condition analysis and optimization of operating behavior
- Efficiency analysis of existing blowers and fans
- Supply of online condition monitoring systems for vibration and bearing monitoring



Full Power for your combustion engines!

Whether on ships, locomotives or stationary applications: We provide flexible and customized services for the maintenance, repair and condition-based servicing of your combustion engines. No matter where they are located. But we are also at your side when it comes to reducing CO₂ emissions: We check the feasibility of converting your plants to alternative fuels and support you during commissioning.

Our services at a glance:

- Professional maintenance and inspection of stationary equipment on site as well as in our own workshop
- Mechanical machine processing in our own workshop
- Maintenance contracts of complete plants
- New construction and conversion as well as plant optimization
- Analyses and condition monitoring
- Machine delivery (independent of brand and with manufacturer's warranty)
- Procurement and delivery of spare parts
- Preparation of feasibility and profitability studies for the conversion of CHPs to biofuels
- Engineering and realization of turnkey plants
- Commissioning and optimization during operation



Full power for your coils.



Overhaul, repair, rebuild: When it comes to professional work on your induction coils, we at Vogelsang are the right partner. Our decades of expertise and our modern equipment ensure you first-class results.

Our services at a glance:

- Mechanical and electrical overhaul or repair of induction coils and magnetic stirrers
- Rewinding of air cooled as well as water-flown stirrers and inductors
- New development of linear and permanent mold stirrers, air chokes and special coils
- Insulation production

Our service for lifting magnets and separators – attractively good.

Thanks to our modern machinery in our mechanical workshop and our expertise in the production of windings, we offer you comprehensive repair services for all aspects of lifting magnets and magnetic separators. Flexible and efficient.

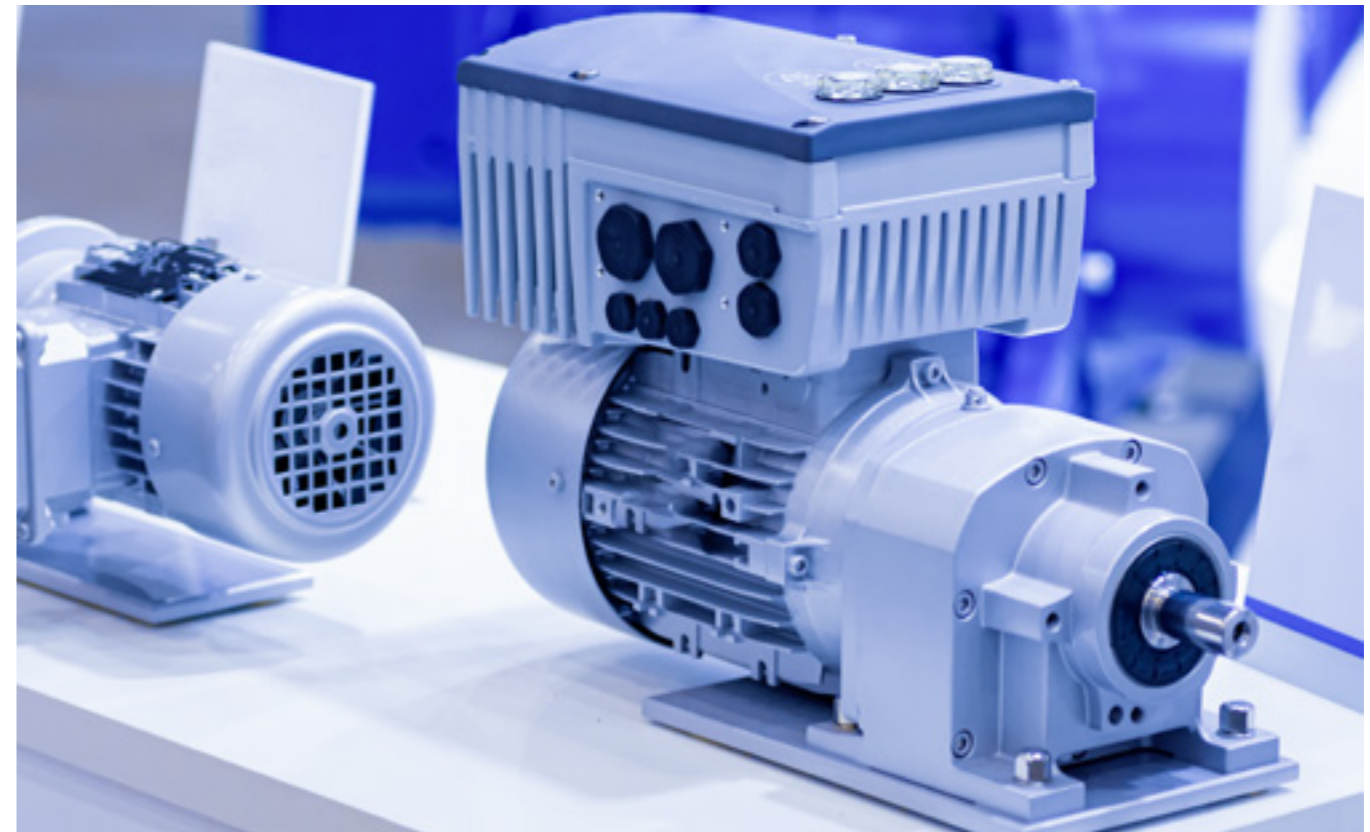
Our services at a glance:

- Overhaul, repair and rebuilding of lifting magnets (round/rectangular) as well as magnetic separators of different manufacturers
- Mechanical and electrical repair
- Production of new windings (profile wire or anodized aluminumstrip) and insulations
- Mechanical strengthening of the windings
- Reengineering of linear and mold stirrers



Frequency converter – Service that inspires!

From regular service or adjustment work on inverters or drive units, to rapid assistance in the event of a fault, to the complete planning of a new system: we are your expert for all services relating to your frequency converters.



Our services at a glance:

- Service for the following manufacturers: Siemens, ABB, Loher (other manufacturers on request)
- Emergency/fault service - fully equipped service vehicles with spare parts and high-quality measurement technology available
- Periodic maintenance or cleaning of equipment and replacement of wear parts
- Stocking of spare parts and new equipment (400 V, 500 V, 690 V)
- Provision of replacement equipment for the duration of repairs
- Control and fault detection in case of problematic operation
- Electrolytic capacitor replacement
- Adjustment work including checking of parameter settings, of the higher-level safety circuit and test run
- Modernization of variable speed drive systems
- Design, planning and commissioning of new drive units
- Production and assembly of customer-specific circuit variants or integration into existing control systems and regulations



Reengineering, adaptation or new delivery? We do!

Whether complete rebuild or project planning of new machines: With us, you will receive an optimal solution for every drive requirement. Your advantages: Manufacturer-independent and competent advice, short delivery times and extensive adaptation options in our factory – for maximum cost efficiency and time savings.

Better to be safe: Quality check in our test facilities.

In our modern test facilities, we examine the entire spectrum of repaired machines: from motors and generators to pumps, fans and transformers. In addition, we offer extensive special tests - according to your requirements and specifications. For permanently reliable function and optimum safety.

Our services at a glance:

- General function, type and acceptance tests including the possibility of integrating of intermediate and final tests in the the repair process
- Ex-acceptance tests
- Heating runs and load tests
- Logging and documentation of all measured values and results by means of meaningful acceptance reports

Our testfields for you:

According to the requirements and the machine type we have a variety of test- and measurement-otptions

- Test field for electric motors up to 800 kW
- Test field for electric motors up to 15 MW
- Test field for transformers
- Test field for pumps
- Test field for fans
- Mobile special measurement equipment



Our services at a glance:

- Engineering and design of motors and generators
- Complete service from engineering and project planning to commissioning
- Brand-neutral advice on machine rebuilds and new purchases
- Design and supply of diesel gensets
- Mechanical adaptations and special designs
- Acceptance of machines for potentially explosive atmospheres on own test fields

Reengineering and new delivery of:

- Standard and transnorm asynchronous motors in low voltage and medium voltage
- explosion-proof motors for equipment categories I, II and III)
- DC motors and their components
- Frequency converters
- Transformers
- Pumps and pumping equipment
- Fans

“Always getting the best for you.”

Whether it's a small delicate project or a complex large-scale machine repair: our highly qualified employees are committed with great passion to our customers every single day.





Customized condition monitoring systems for a plus in safety!

React before it happens: With our intelligent CM system („Early Warning System“) we monitor your machines and keep the most important symptoms for an upcoming machine failure completely in view. The system monitors machine vibrations in 3 axes as well as the surface temperature. Unplanned machine breakdowns can thus be avoided. This saves valuable time and costs.

Our services at a glance:

- Sensor-based measurement („condition monitoring“) on motors, pedestal bearings, pumps, fans, foundations, pipelines, transformers
- Professional installation and commissioning of the sensor
- Set up communication between sensor and server via wifi, Bluetooth or the cellular network
- Cloud-based data analysis and visualization of measurement results
- Monitoring of the operating behavior in preset measuring cycles
- Periodic reporting of the measurement results
- Flexible monitoring packages - tailored to the respective requirement

Precise diagnosis and analysis from the specialist!

When machines are used in complex production processes, individual condition monitoring or continuous condition analysis is highly recommended. This is how emerging problems can be predicted and unplanned downtimes and failures can be avoided in the best possible way. We offer you the entire diagnostic and analysis spectrum for your drive technology. Competent and tailored to your needs.

Our services at a glance:

Diagnostics and condition monitoring:

- Implementation of condition-based maintenance concepts
- Diagnostic tests on electrical machines
- Optimization of operating conditions
- Efficiency analysis

Measurements for condition analysis:

- Vibration analyses
- Roller bearing and sleeve bearing analyses
- Frequency analyses (FFT)
- Resistance and insulation measurements
- Flow rate measurements
- Wall thickness measurements
- Thermographic examinations
- Endoscopic examinations
- Tan-δ measurements
- Partial discharge measurements (PD)
- Plane and foundation surveys
- Efficiency analyses



Companies in the Vogelsang Group

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