

# Think Future!

Specific applications for electric drive technology and power electronics

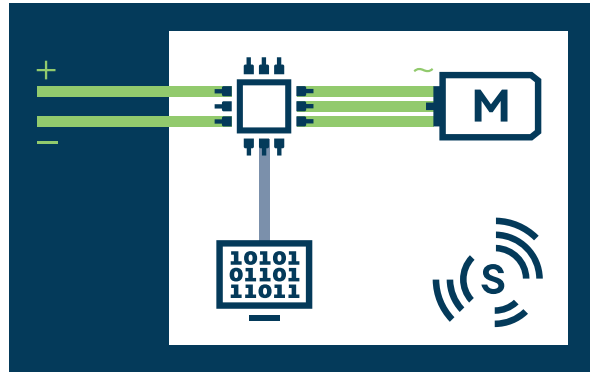


# Systems solutions require system know-how

Our comprehensive systems expertise in electric drive technology and power electronics is based on our specialist knowledge of electrical machines with related inverters/DC-DC converters, including the associated software, along with the courage to change perspective.

We have the expertise to combine single components into individual systems solutions. By pooling our experience, knowledge and technology, we are able to meet your requirements with precision.

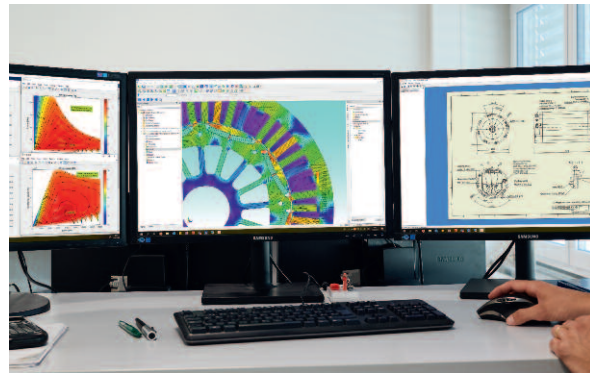
Drivetek supplies you with high-end customized drive systems solutions, from scratch or to optimize form factor, size, weight, or functionality.



## Systems engineering

Cost-effective! Model-based system development:

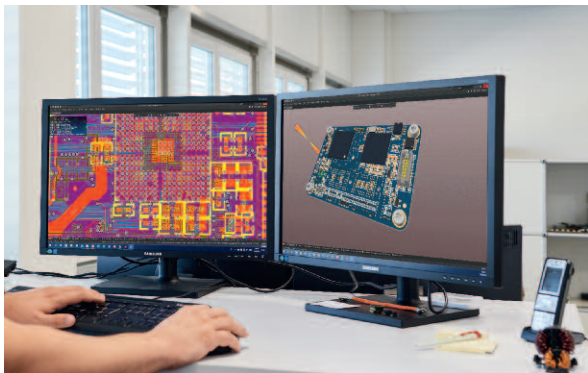
- Systems modelling and analysis expertise
- Hardware/software co-simulation



## Electrical machines

Your partner for permanent magnet machines:

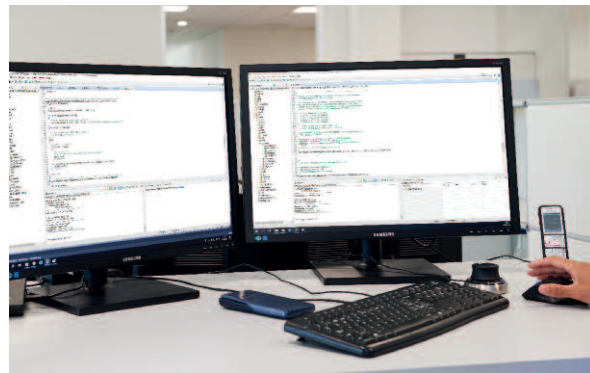
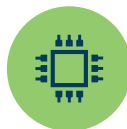
- High-performance electric motors and generators
- Outstanding power density and efficiency
- From prototyping to series production



## Hardware

From power to control:

- Advanced SiC or IGBT inverters for main and auxiliary drives
- Low-voltage MOSFET inverters
- Grid-tied or island-mode power generation inverters
- Highly efficient and compact DC/DC converters (isolated / non-isolated)
- DSP- and/or FPGA-based control electronics



## Software

Because we understand the system:

- Embedded real-time applications on DSP and FPGA devices
- Motor control strategies for maximum efficiency
- Software solutions for grid-tied and island-mode power generation
- QUASAR™ proprietary motor control software for all machine types
- Q-control, proprietary Windows®-based diagnostic and configuration tools



## Your market is our challenge



- Motor sports
- Buses and trucks
- Off-highway vehicles
- Ships and boats
- Passenger cars
- Light rail

### Specific applications for the automotive and transportation industries

Main and auxiliary drives for electric, hybrid, or fuel-cell vehicles require a high degree of system know-how and mature technology. This is where Drivetek comes in: we can help you throughout the entire process, from the design stage with the associated drive cycle simulations all the way through to component development and testing on our own test benches. We know how to control energy: from energy storage, via converter and drive, right down to the wheel of the vehicle.

Electromechanical actuators represent another main pillar in this demanding market. Our technology is used in steering aids, brake and clutch actuators and throttle valve actuators.

Sophisticated multi-level inverter technology (MLI) completes our specialties in the field of power electronics. This makes it possible to control motors and generators at very high speeds. MLI was designed for fuel-cell air compressors, electric turbochargers and highly efficient high-speed motors such as refrigeration compressors.



- Drive systems for elevators
- Active harmonic filters
- Active front ends
- Engineering of complete plants
- Replacement of pneumatic and hydraulic drives

### Productive and efficient industry drive systems

Cost pressure and competition are diametrically opposed in industrial applications. Plants and machines should be faster, more reliable and more economical. At the same time, they are increasingly required to stand out in terms of functionality and performance.

When standard control and drive solutions no longer meet these requirements, Drivetek develops tailor-made solutions: new products that impress both customers and competitors with their high performance, compactness, and functionality.



- Electrical and hybrid aircraft
- VTOL – vertical take-off and landing vehicles
- Transition road/air vehicles
- Power electronics and drives for satellites

### Electrified solutions for aerospace

Profiled expertise and precise compliance with a structured approach make us your ideal partner for the development of highly specialized drives for the aerospace industry.

For experimental and commercial aviation, Drivetek conscientiously develops drives and systems solutions at the limits of what is conceivable. Back in the early 2000s, we developed the electric drive of the Antares glider and a hybrid e-boosters for the launch phase of an ultralight airplane. Today, we are engaged in the electrification of hybrid and electric drives for flight applications, such as the Terrafugia TRANSITION roadable aircraft. Together with our customers, we are setting new performance standards for inverter compactness and the highest power-to-weight ratio.

Benefit from our comprehensive systems analysis and expertise in this specific area!



- Grid-tied or island-mode inverter applications
- Permanent magnet generators
- DC/DC converters
- Controls

### Technology for the energy transition

Energy is a precious resource! Drivetek technology is applied specifically to save energy thanks to higher efficiency or to exploit renewable energy resources.

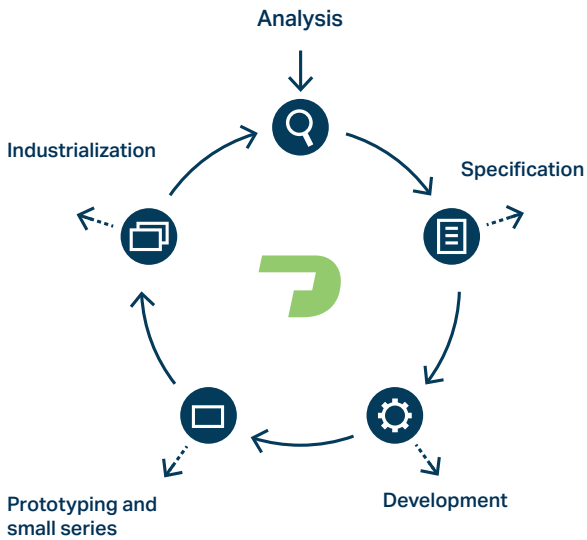
The technological basis for this is provided by highly efficient, variable-speed permanent magnet generators, low-loss converter topologies as well as inverters for grid-tied or island-mode power generation. The variable-speed technology significantly improves the partial load efficiency of wind and hydro power.

Drivetek technology makes the use of energy sources economical. We develop cost-effective components thanks to synergies with solutions from automotive or industrial technologies.

Drivetek has an enormous wealth of experience in combined heat and power units (CHP). We consistently apply this knowledge in small gas turbines applications and fuel cell CHP plants.

## Our services: the full selection, single or pooled

Outline your request and we will design/construct the solution: with a neutral view, fresh approaches, sound knowledge, and with the help of state-of-the-art technology. On request, our engineers provide customers with support along the entire process chain or for individual phases, from the idea to the product launch.



### Analysis

Before the actual development work, we take the time to familiarize ourselves with your future product and your application. Based on the understanding gained, we then work alongside you to define the development goal and optimization criteria.

### Specification

In line with the requirements, we carry out performance simulations from which we derive the specifications for the drive system. Error analyses and parameter variations can be tested quickly and easily on the model. This process saves precious time and hence money. We can consider functional safety requirements according to ISO 26262 right from the first step.

### Development

We develop electric drives, inverters and DC/DC converters offering unparalleled performance and first-class efficiency. Testing is carried out in our fully equipped test environment.

### Prototyping and serial production

Prototype production and serial production of customer-specific drive systems take place in-house or in collaboration with a network of highly qualified suppliers.

### Industrialization

We assist you every step of the way, from sample to series production, and ensure that the design meets your requirements in terms of manufacturability and production costs.

### Electric motor test benches

Our test benches are tailored to the conditions typically seen on our markets. They are designed for testing, validating and characterizing drive systems in various configurations and for parameterizing and optimizing electrical machines.

Three motor test benches with outputs of up to 250 kW, torques of up to 1,000 Nm, a speed range of up to 15,000 rpm, and DC power supplies of up to 1,000V are available.

