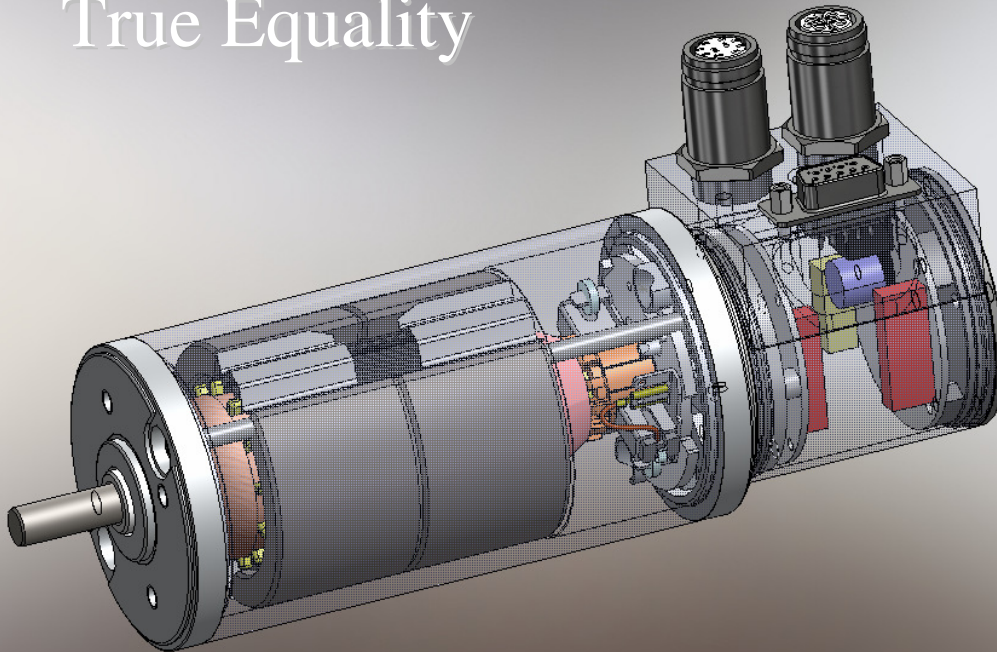


True Equality



Electronics platform enables identical treatment of various drive systems

András Lelkes

Integrated compact drives with motor, control electronics, bus interface, shaft encoder, brake and gear comprised in a single unit offer various benefits for drive applications. A novel electronics platform enables identical control of commutator motors and brushless motors – no matter whether the control electronics are located in a switch cabinet or integrated into the motor.

Brushless direct current motors are a preferred choice for various applications due to their high efficiency, long service life and simple speed control. Another benefit is the wide nominal speed range. Brushless direct current motors are commutated electronically. Therefore a mechanical commutator is no longer required.

The Gosheim (Germany) based drive manufacturer Gefeg-Neckar has been producing integrated compact drives comprising the motor and the commutation electronics for 14 years now. Such drives decrease wiring effort in the system dramatically and operate in

various applications such as decentralized systems, automated production lines, industrial printers, textile machines and materials handling.

Linked motors with high-resolution rotary encoders

The MSA series comprises sinusoidal commutated brushless motors with integrated multi-turn absolute rotary encoder, sequential control and bus interface. State-of-the-art technology makes it possible to integrate the complete drive train – comprising motor, gearbox, electronics and interface to an external control system – into compact drives. The drive may even carry out independent positioning tasks, thus redistributing load from the master control.

The integration of all electronic components for the drive system such as power stage, current and speed control, positioning module, measuring system and bus interface, reduces wiring and planning efforts to a minimum. Wiring of the individual components is no longer required. Only the supply and field cable still need connection. Either CANopen or

Dr. András Lelkes is head of development at Gefeg-Neckar Antriebssysteme GmbH in Gosheim

Profibus-DP serves as communication protocol with the machine or system control.

Electronics platform for cost optimized solutions

Feedback from customers showed that, besides the MSA series with sinusoidal commutation and multi-turn absolute encoders, the market also demands cost optimized solutions. Therefore, GEFEG-NECKAR developed a new electronics platform controlled by a cost effective yet powerful DSP controller. The rotor position is detected by Hall sensors. This positioning information serves for the proper electronic commutation of brushless motors and for speed measurement at all motor types. The 24V power module enables speed control of commutator motors as well as of brushless drives. In applications with only few service hours, a commutator motor with integrated speed control and bus interface might turn out to be an interesting and cost effective alternative (**illustration**).

A CAN interface provides for bus communication using the CANopen protocol (Drives Profile DSP-402). Customers not operating a bus system may still control the motor via analog or digital set point signals. The integrated bus communication provides certain benefits here, too, since it makes easy test-

ing and parameter setting of the drives possible.

The main benefit of the new electronics platform: The drives use the same operating software, no matter whether the control electronics are located in an external switch cabinet or integrated into the motor.

Testing concept utilizes communication abilities of the drives

The German motor manufacturer developed a new concept for automated in-depth testing of the drives without the need for cost intensive test stands. Using this new concept, the motors will be inspected quickly, yet thoroughly during manufacturing.

The electronic control circuit contains the sensors required for inspection. As a result, various operating data types are available for the microcontroller integrated into the motor: supply voltage, motor current, rotor position, speed and temperature. The drive communicates with the test computer via a CAN-bus. This computer is also connected to the production planning and control (PPC) system. After scanning of the production order, it can determine the part number of the drive to be tested. Each part number is linked with a customized test routine, which can be retrieved from a database. This test routine contains the

test procedure and the required measuring values. For each drive, the motor data base also contains the rating plate information and the parameter configuration demanded by the customer. After successful testing, the measurement data will be archived and the motor will be parameterized automatically. Finally, the inspection system prints the rating plate as an adhesion label containing part number, rated values and testing number.



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