

KNESTEL RESISTANCE CONTROL **Dynamic frequency inverter**



for engineering, propulsion technology

Technology field

Power Electronics, MCR technology

Project requirements

The **project objective** was the highly dynamic torque control of a permanent-magnet synchronous motor in fitness equipment for circuit training (eg rowing train, back trainer, etc.). The frequency converter has a CAN-BUS interface, an STO function (Safe Torque Off), an onboard switching power supply 24 V/3 A for the supply of external electronics and also offers the possibility to connect a braking resistor.

Facts/Highlights

- Resistance Control based on Direct Torque Control (DTC) instead of field-oriented control of motor currents
- High torque dynamics (direct regulation of the torque without detour via the torque-forming current)
- Low parameter sensitivity to temperature-changeable machine parameters

Services of KNESTEL

Potential analysis, target price estimation, project management, specifications, project planning, development of software and hardware, electrical and mechanical design, EMC test, prototyping, series production

Possible Applications

- All areas of electrical drive technology from approx. 0.5 kW, where particularly high torque dynamics are required (e.g., fitness equipment)
- Control of drives according to the application with or without detection of the rotor position (e.g. servo drives)
- Applications in conjunction with permanent magnet synchronous motors (PMSM), asynchronous motors (ASM) and reluctance motors (for example electromobility)

About KNESTEL: Knestel has been developing and producing customized electronic and mechatronic special solutions in the fields of motor and machine control, frequency converters, image processing, MCR technology, software development, radio, bus systems and gas analysis for 40 years. We support our customers from the idea to the finished implementation. Individual solutions and concepts - technically up to date. Our production - electronics manufacturing, device and switch cabinet construction, Production of subassemblies, assembly and mechanical processing - is equipped with the latest technology.