

StarterTest

Test Bench for Starter Generators



Overview

StarterTEST is a versatile test bench designed for aircraft starter generators operating at 28 Vdc. It ensures reliable performance evaluation under high current loads up to 400 Amps, with precise speed control and integrated data acquisition.

- Test range: 2,000 to 12,000 RPM
- Support for torque sensor integration
- Digital instruments for current, voltage and RPM
- Compact and modular design for workshop integration

Mechanical Design

The bench is built on a solid steel structure with high-precision mounting for safe and vibration-resistant operation.

- Machined steel base with anti-vibration feet
- Threaded holes for universal mounting kits
- Dedicated coupling flange for perfect alignment
- Safety covers on rotating components

Drive Unit

The drive system uses a vector-controlled asynchronous motor paired with an inverter to deliver smooth acceleration and precise control.

- 6.5 kW motor with encoder feedback
- Speed transmission via belt and pulley
- Max RPM: 13,000
- Electronic drive with EMI filter and braking resistor

Electrical and Safety

The electrical cabinet provides all protections and power distribution for both motor and control logic, following IEC standards.

- 7.5 kW vector inverter with encoder control
- 400V $\pm 10\%$ input, 50Hz – 110V auxiliaries
- Operating temperature: 0 to 40 °C
- 3 kW braking resistor with natural ventilation

Measurement and Instrumentation

Three high-accuracy digital instruments ensure reliable real-time measurements, all integrated via RS485/Modbus interface.

- RPM indicator (48x96 mm, $\pm 0.2\%$)
- DC Voltage meter (30 Vdc F.S.)
- DC Current meter (50 A F.S.)
- Certified 50 A shunt included

Load Bank

The resistive load bank allows manual selection of load steps and safe dissipation of generated energy.

- 6 kW resistive load at 28 Vdc
- Steps of 500 W / 25 A each
- Static relays for high-current control
- No cooling system required

GenTEST Vision Software

Developed in LabVIEW, this software handles test cycle control, value acquisition and data export. The interface is intuitive and supports multi-channel inputs.

- Real-time display of voltage, current, RPM, torque, temperature
- Start/Stop commands with alarm logging
- Stores test data in Excel or CSV format
- Optional PLC (MCRPC) for full automation

Optional – Remote Load Control

The system can be expanded with remote PLC-based load control, giving the operator full authority over load variation from a PC interface.

- • PC control interface for resistive loads
- • Real-time load step adjustment