Engine simulator test bench

The ST-66 starter tester from D&V Electronics delivers maximum flexibility, and has extended measuring and documentation functions

D&V Electronics Ltd

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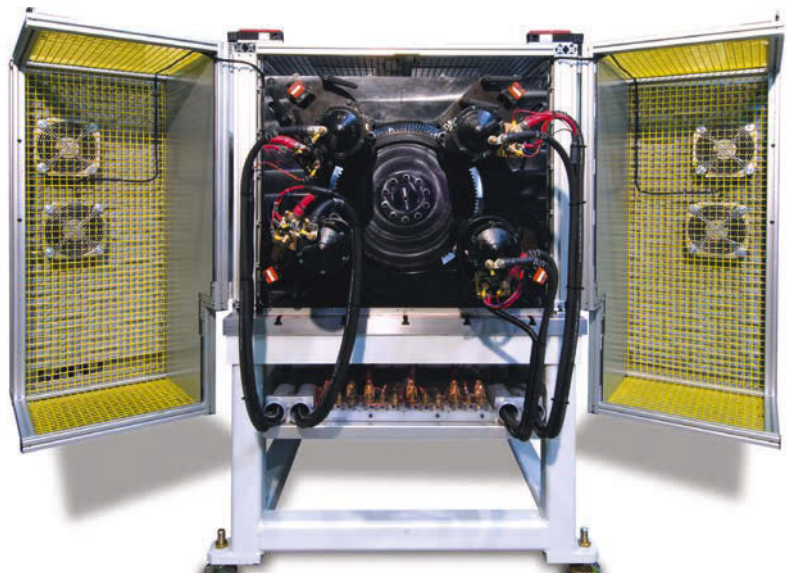
Live engine testing is dirty, loud, messy, hot, complicated, costly and not environmentally responsible. For over seven years, D&V Electronics Ltd has supplied engine simulation testing technology that replaces the live engines used in test facilities around the world. By using a high-power electric motor with fine-tuned control techniques, D&V Electronics is able to provide a clean, controlled, repeatable, efficient, cost-effective and versatile test bench to test starter motors and integrated starter generators.

The refined motor control techniques and testing technology of D&V reproduce the speed oscillations of the pistons firing. D&V has been using this engine crank sequence technology for starter motor endurance testing on its ST-66 Engine Simulator. The ST-66 can reproduce this crank sequence loading pattern from a client-supplied speed profile of a live engine. Alternatively D&V has created a unique software utility to generate an engine crank speed profile similar to that of an engine with two to 16 or more cylinders.

The ST-66's ability to simulate precisely the operating condition of the starter and the engine crank profile enables operators to set repeated cold engine crank sequences for precise evaluation of the starter motor's endurance capabilities.



ABOVE: D&V Electronics' ST-66 can mount, and smart cycle between, four starter motors

The ST-66 is versatile and can run up to 10 engine crank profiles on each starter, with a step performance test included as a profile. Operators can also upload speed profiles from a prototype engine that exists only in simulations. The integrated torque sensor in the simulator provides great component loading information that is very difficult to acquire in live engine testing.

The ST-66 tooling supports up to four starter motors that can be run sequentially, with temperature controls to determine when to run, or not. This means that four tests can be run on one tester, completely eliminating fuel demand and engine wear.

New technology from D&V now enables test technicians to use the platform for design validation of new start/stop and COM starters testing millions of cycles, which is impossible to duplicate on a live engine test stand. It can also be used in a variety of applications from starter design validation to flex plate durability verification.

The ST-66 is a powerful tool for component and design validation, providing a consistent and reproducible test environment to emulate application problems such as extended cranking, as well as the ability to produce tests that are too destructive, or too difficult to reproduce, for live engine testing.

D&V's data acquisition system has sampling rates of 2,000 samples per second to display real-time data while testing, enabling the operator to set a separate sampling rate for the long-term storage of results. This enables operators to use and view real-time instruments such as a digital oscilloscope, signal trace viewer, or plotted results at 500µs sampling rate while providing tools to store a manageable amount of data and focus on the critical results from the tens of thousands of endurance test results.

The ST-66 simulator testing technology is already in use in test facilities around the world, validating and improving next-generation starter motor design. With improved measuring capabilities, D&V Electronics' engine simulators are a verifiable necessity for lab endurance operations. ❮