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END OF THE GEARBOX?

A modular design can ensure that a test bench is able to deal with the high load devices used across the modern test industry

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With the arrival of the A380 and the B787 aircraft, power generating technology has fundamentally changed. These new high-speed generators have set a challenge for the testing community. The company Test-Fuchs accepted this engineering challenge and initiated a project to design a test system that would meet the high speed/high load challenges and also address universal long-term problems with the gearbox.

The design and manufacture of generator test benches has become one of the core skills of the Austrian company. Since the 1960s the technology and the aircraft applications have rapidly developed into the high-speed/high-load devices that are currently on the market.

In partnership with customers, the Test-Fuchs design team developed a direct-drive system that exceeded the OEM specifications but also removed the troublesome problems with the gearbox.

The test bench was designed using the Test-Fuchs modular concept, which offers variants, modules and UUT (unit under test) options. The concept also allows the arrangement of an ideal test solution for the customer's fleet requirements. The modular design has proved exceptionally interesting for the large fleet operators because the automatic system reduces development costs but still provides the advantage of customization. Customers get their own tailored-to-fit personal test system.

GENERATOR TEST BENCH

The concept for generator test benches provides the very latest technology for the drive units and load units, creating a competitive advantage for the customer. The true innovation was in the new direct-drive test system and the electronic controls between the generator test stand and the UUT. This concept has been proved in non-aerospace applications, but the real challenge was in developing the required control system. It has been fully researched and has undergone many months of testing in the Test-Fuchs research department.

To reduce investment costs for the customer, a universal generator control unit (GCU) has been developed. The major advantages of this unit are full integration into the test equipment and a single investment for all test capabilities.

The generator test bench supports a high level of automation and optimizes the test duration. Only minimal intervention by the operator is necessary. Easy and fast adaptation between the units undergoing testing was one of the key design elements. Test-Fuchs now offers an easy and fast coupling system that reduces the installation time of the units considerably. In addition to manual testing with automation, the system

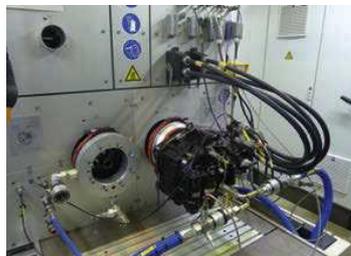
is capable of fully automated test runs. The modular design was not only applied to the hardware of the test system itself, but the software also follows a modular concept and can therefore easily be adapted to all customer requirements in a minimum amount of time.

UNIQUE HYDRAULIC SYSTEM

One of the features of this new design is a completely flexible hydraulic system, making the maintenance easier and faster, again saving costs for the customer.

Test-Fuchs has developed a completely new generation of generator test benches, which will become the company's flagship testing system for the future. This kind of test bench is capable of testing all power generating components, such as the IDG, AC generators, DC generators, DC starter generators, CSD and VSCF installed on various aircraft types including models from Embraer, Bombardier Q400 and CRJ, Airbus and Boeing. ■

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ABOVE: System unit under test



LEFT: Generator test bench LMP901B