▼ *Autonomous screwing and adjustment unit for testing machines / Credit LCM*

100% AUTOMATION

through customised system design

Test-Fuchs GmbH and LCM accelerate test runs in the aviation industry and at the same time increase the level of precision and safety.

The operational capability of a wide range of aircraft components such as hydraulic pumps, cylinders for the rudder and tail unit or hydraulic motors must, of course, be tested regularly and reliably. In this system-critical business area, Test-Fuchs GmbH from Groß-Siegharts (Lower Austria) has established itself as a highly specialised partner for customers such as Airbus, BOEING and Lufthansa.

In order to test the hydraulic pump of an aircraft, for example, the throttling of the volume flow must be changed up to 30 times. Each pump is operated over the entire speed and pressure range. The maximum output must be fixed using an adjusting screw Previously, the tester had to adjust the screw manually and run the test cycle. As this is very time-consuming and not without danger, Test-Fuchs decided to automate this key aspect of pump testing. LCM was brought on board as a development partner for this challenging project.

Two high-precision, high-torque Harmonic Drive actuators were installed - one for the adjusting screw, the other for the lock nut. Mounted between them is a high-precision force and torque sensor, which sets the exact tightening torque of the lock nut required by the guidelines and records it automatically. The system also recognises a wide variety of screws such as slotted head, cross-head, external hexagon, internal hexagon or internal square and automatically carries out the necessary tool changes.

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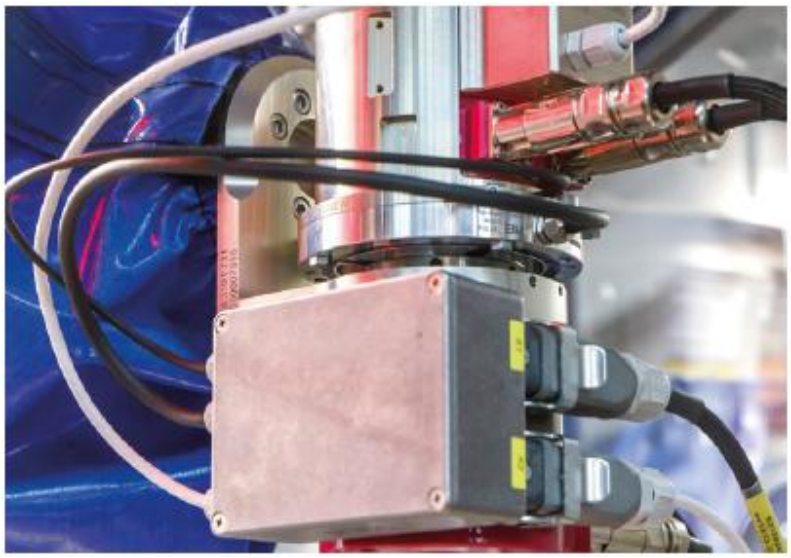
Onboard electronics of the screwdriving unit
Credit: LCM



Each individual tool is coded and is also scanned to ensure that it matches the screwdriver. While the new screwdriving unit for Test-Fuchs automatically changes tools for around 30 different lock nuts and set screws, this number is basically open-ended as long as the tool magazine can be reached by the robot arm.

The fully automated testing process offers enormous advantages in terms of speed and reproducibility of the results. The operator can now operate five test stands simultaneously instead of one. Because the test environment is oily, hot and, at up to 95 decibels, extremely loud, this means not only time and quality gains but also a much higher level of comfort and safety. The first test benches with the new robot arm were delivered in February 2021. Since then, demand has remained high.

"By automating the processes and meticulously recording them, we have succeeded in further increasing the number and precision of the tests together with LCM."

Volker Fuchs,
Owner Testfuchs GmbH

FACTBOX DIGITAL PRODUCT DEVELOPMENT

LCM develops customised systems for a wide range of applications - from the initial idea to market maturity.

- A tried-and-tested and clearly structured process model ensures that project goals are achieved quickly without detours.
- Many years of experience in all relevant areas of expertise ensure precise solutions.
- The range of services extends from requirements analysis to technology assessment, development of highly integrated system architectures, component search, design, layout and implementation of the construction, development of the control and software architecture through to commissioning of the entire system.
- Depending on requirements, customers are supported in individual project steps or throughout the entire project.

ABOUT TEST-FUCHS GMBH

Test-Fuchs is an indispensable partner to the international aerospace industry. The family-owned company's test systems check the usability of a wide variety of parts and components. Test-Fuchs was founded in 1946 and has branches in Austria, Germany, Italy, Great Britain, France, China, Singapore and the USA.

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