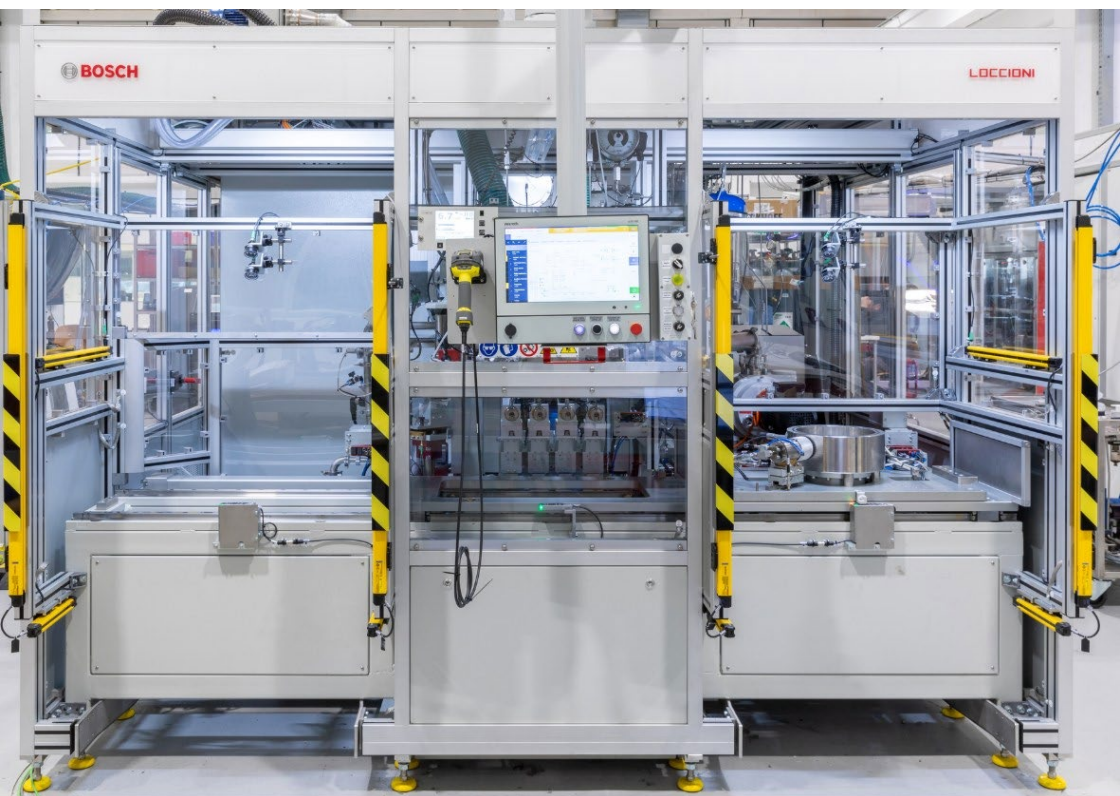


H2 high-pressure valve EOL Leak test station up to 1000 bar

Stand-alone testing solutions

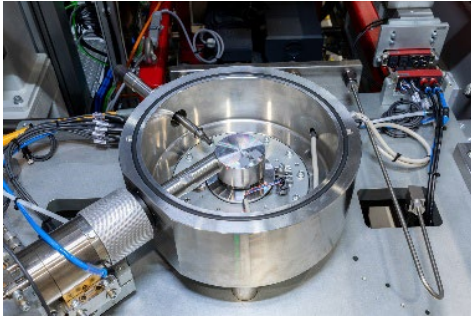


This rig performs end-of-line functional testing on every single valve. The bench runs helium leak tests on hydrogen components (two types of tank valve) at up to 1200 bar, detecting leaks $\geq 1.0 \times 10^{-5}$ mbar·l/s, as well as functional tests with nitrogen at up to 1200 bar.

THE SYSTEM

The test bench is designed for multipurpose testing: the fixturing concept can be adapted to valves, manifolds or pressure regulators. The bench is currently used to test hydrogen tank valves, and also includes an automatic loading and unloading system and an advanced automation system.

- > Automatic loading/unloading
- > Changeover
- > Part fixturing



1. Fixturing system design

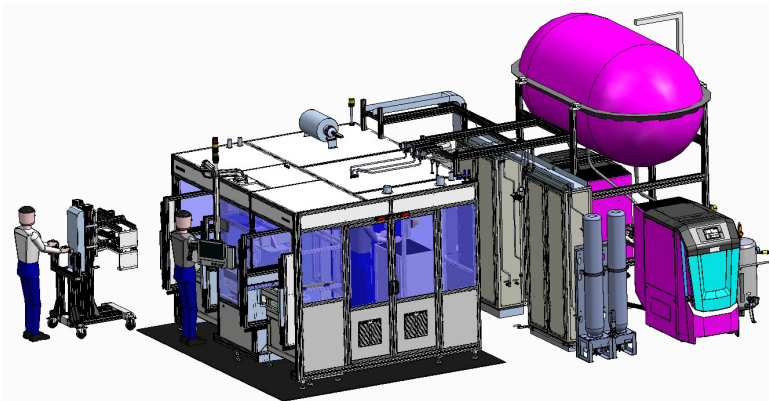
MAIN FEATURES

The system runs a range of tests on the tank valves, both to analyze their sealing performance in depth and to detect any manufacturing defects quickly.

- > High-pressure helium leak test
- > High-pressure performance test with nitrogen
- > Electrical functional test
 - Automatic screwdriving of the external manual valve control
 - Helium recovering system

TECHNICAL SPECIFICATIONS

- > Nitrogen pressure: 5–1200 bar
- > Helium pressure: 5–1200 bar
- > High-pressure storage cylinder: 4 l
- > Solenoid valve control voltage: 0–24 V DC
- > Chamber vacuum: $< 10^{-2}$ mbar
- > Leak measurement with He mass spectrometer (at full pressure): $< 10^{-5}$ mbar·l/s



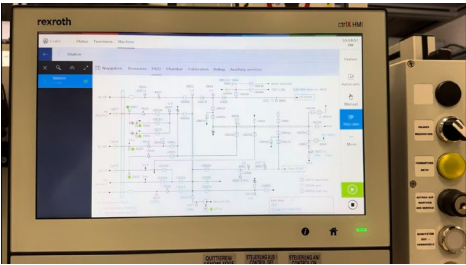
2. Overall view of the test system

THE SOFTWARE

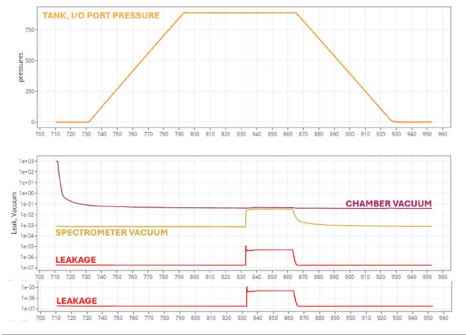
The software is based on the Opcon+ platform and suite.

Application features:

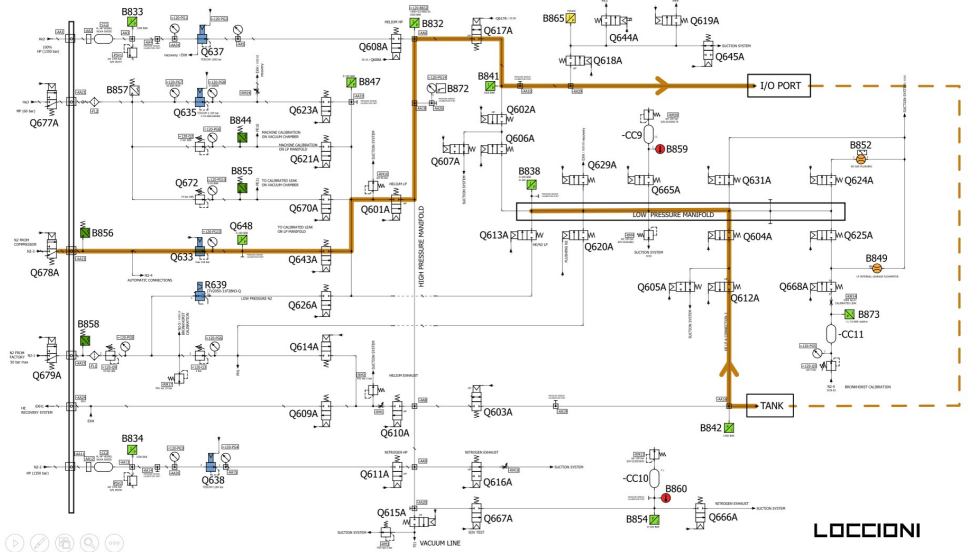
- > User access configuration
- > Hardware monitoring and calibration
- > Manual debugging
- > Program editor
- > Program execution
- > Automatic cycling
- > Result analysis
- > System health analysis
- > Data maintenance tool



3. Automatic mode panel



4. Test curve analysis



5. Synoptic view

LOCCIONI