



Autosonic™ mini+ Auto

Fully Automated Ultrasonic Testing Device

Range of Application

Autosonic™ mini+ Auto offers a system, which is universally suitable for the periodical re-qualification of 0.6L gas cylinders as those used in carbonators.

Diameter	60mm
Lengths	340 mm
Capacity	180 cylinders/hour

Unit Description



Autosonic™ mini+ Auto: machine layout.

Autosonic™ mini+ Auto is composed by several autonomous smart stations, which process each cylinder according to its individual data: robotic island for cylinders palletizing/de-palletizing, weighing station, Ultrasonic Testing (UT) station and marking station, together combined with vision stations for images acquisition, processing and verification. Cylinders travel on belt conveyors using pallets tagged by Radio Frequency Identification (RFID). This advanced tracking methodology, facilitates a continuous processing of consecutive test batches. The system is controlled by a PLC with a dedicated Human Machine Interface (HMI).

An original equipment manufacturer (OEM) based ultrasonic acquisition unit drives the UT station, and user-friendly inspection software allows a fast and reliable interpretation of the results. UT sensors inspect the cylindrical part of the gas cylinder, including the transition area to the base and to the shoulder, searching for longitudinal and transversal flaws.

The result is a complex machine that interacts in an optimal way with all involved entities, i.e. Production environment, information technology and human operators providing the maximum value to the owner.

Each station of the **Autosonic™** mini+ Auto is interconnected and can be accessible remotely for troubleshooting and for effortlessly rolling out software updates, all while maintaining system resilience against cyber-attacks through the use of a VPN module.

Autosonic™ mini+ Auto provides:

- palletizing/de-palletizing;
- automatic fillup of the cylinders database;
- weight check according to ADR/RID;
- UT according to ISO 18119 as minimum;
- drying station;
- engraving of retest data;
- engraving quality check.

Palletizing/de-palletizing

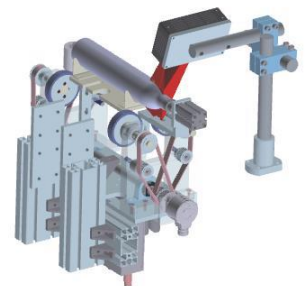
Palletizing/de-palletizing is done through a robotic arm guided by an auxiliary laser 3D system able to recognize cylinders sizes and orientation.



Autosonic™ mini+ Auto: loading/unloading system.

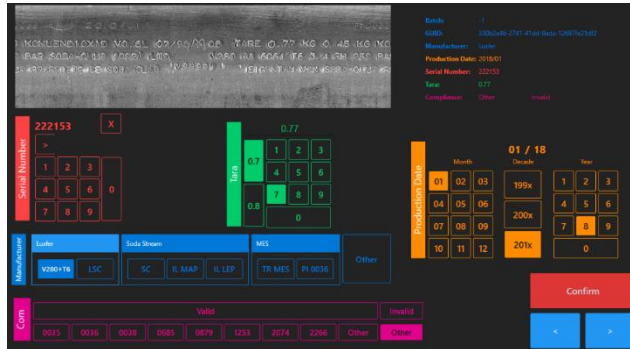
Automatic Fillup of the Cylinders Database

Multiple 3D Laser Vision system and optical character recognition (OCR) algorithms are used to acquire engraved data located on cylinder shoulder.



Autosonic™ mini+ Auto: laser 3D system for engraved cylinder data recognition.

Images and processed data are shown in real time on a dedicated HMI and then stored into a database, so when cylinder data are not properly detected by the OCR, stored images can be used for post-processing, where an operator can fill-up manually the missing data.



Autosonic™ mini+ Auto: cylinder data review.

UT Equipment and Software

All the products of the **Autosonic™** family use the same scanning head. This is composed by a water chamber, a pneumatic centring device and integrated ultrasonic transducers.



Autosonic™ mini+ Auto: test head.

Test electronic is multiplexed and it represents the state of the art of ultrasonic acquisition unit. The electronic will acquire data coming from 6 signal inputs. 4 inputs are needed for the longitudinal and transversal flaw detection, 1 input for the measurement of the wall thickness of the cylindrical part.

Ultrasonic signals are displayed in the cylinder testing software *UT Work*. Every test and calibration is automatically recorded together with its settings. The traceability of the test results is fully ensured.

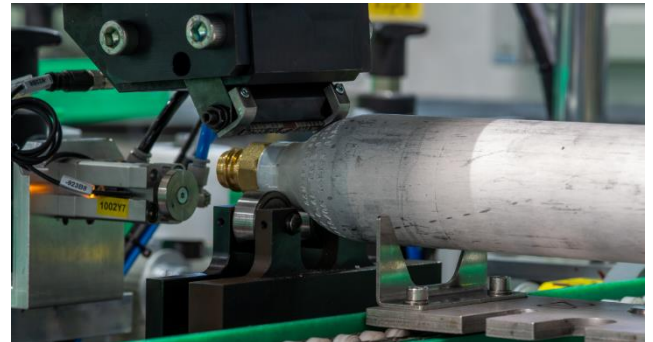
An automatic calibration function verifies the proper calibration of the UT system. The automatic verification of the calibration routine is performed through a special control function every 25 cylinders. After the selected number of inspected cylinders, the system enters in calibration mode and it performs an inspection of the calibration block automatically loaded. In case the calibration verification fails, **Autosonic™** mini+ Auto automatically re-tests all the cylinders already inspected waiting into buffer.

Drying Station

Drying will be performed through warm air. The drying time can be set through the HMI.

Engraving of Retest Data

Tested cylinders are stamped according to ISO 13769 and Machine Owner's requirements. The system will identify an empty position on the re-test line of the cylinder through a vision inspection station. Stamping will be performed with a wheel stamping system. An additional downstream vision system checks if the cylinder has been properly stamped.



Autosonic™ mini+ Auto: engraving system.

Options

- Data entry solution

Contact

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