

Test System for Flameproof Enclosures (Ex-d)

Product Information

07/2015

IEC 60079-1... No Problem!

If a solution is being sought for testing "flameproof enclosures (Ex-d)", MATEŞ ELEKTRONİK provides the turnkey solution for making most vital tests defined in the standard. Several approved laboratories are already using this system manufactured and commissioned by MATEŞ.

Which Tests?

Ones that require this system and instrumentation

- ⇒ Flame Transmission Test
- ⇒ Reference Pressure Test
- ⇒ Overpressure Test

Why MATEŞ?

- ⇒ Over 20 years of experience on precision metering and designing test systems on various fields, countless accredited laboratories commissioned across world.
- ⇒ Since May 2015, licensed manufacturer of PTB for the new Spark Test Apparatus (STA) used on Intrinsic Safety (Ex-i) Tests

*"...it is working perfect
and we can recommend the
supplier. The equipments
has a very high quality
standard and the
commissioning time was
short..."*

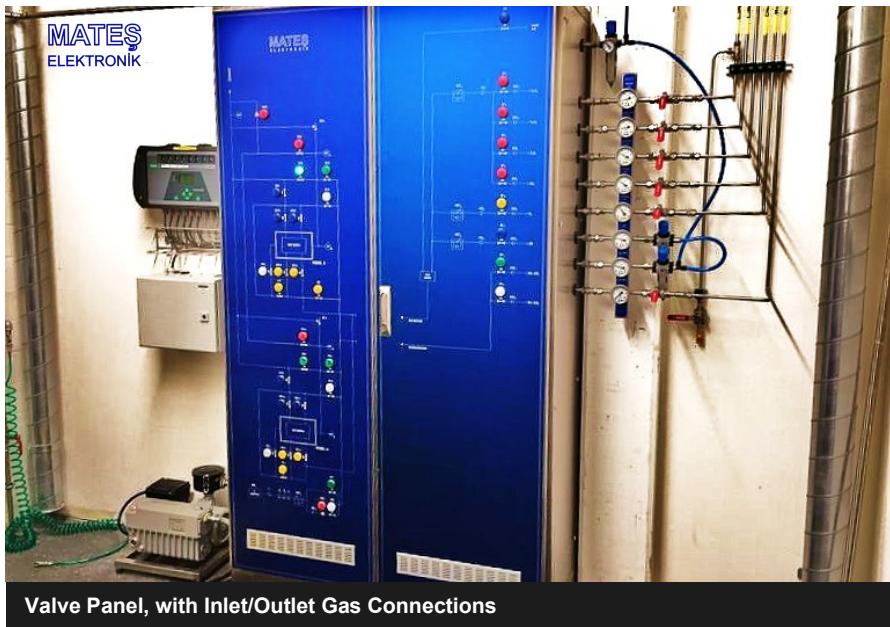
-Current Customer



Ex-d Test System. From Left to Right; Automation Panel, Vessel and Valve Panel

Turnkey Solution with

- Vessel and High Speed Camera
- All Piping and All Sensors
- Gas Mixer, Oxygen Analyzer and Vacuum Pump
- Automation and Software



Vessel, Robust Enough!

As vessel is the core of the whole test, the vessel should resist to all flame transmissions.

This MATEŞ Stainless Steel Vessel is able to handle 50bar of dynamic pressure.

For ease of use, all opening/closing and locking mechanisms of the vessel are hydraulic and electronically operated.

All safety precautions are taken such as safety locks on hydraulic connections, electromechanical pressure switch for automatically preventing unlocking vessel on pressured state and gas filling is not allowed while the vessel is not fully closed.

Vessel has an internal diameter of more than 1 meter, and an internal height of at least 1 meter. Therefore, most common samples can fit into the vessel.

Over pressure tests, and under pressure (optional) tests are also possible with the vessel.

Capabilities, Extended!

As this MATEŞ System is delivered as a turnkey solution, there should be only minor need for future modifications. Therefore, only high-end instruments with precise measurement capabilities are being used.

Now, the system is able to control 2 different vessels. This ensures smaller samples to be tested on a smaller vessel for saving time and resources. All controls are made from the same software and same interface. Therefore, switching between vessels can be done just by the press of a single button.

All requirements are built-in. All required measurements and adjustments are possible. Briefly, the system measures following quantities;

- ⇒ Static pressure of vessel and sample
- ⇒ Dynamic Pressure (2 sensors / easily extendable up to 3)
- ⇒ Humidity of Exhaust Gas
- ⇒ Flow Rate for each inlet gas (MFCs)
- ⇒ Oxygen Content of the Mixture Gas (Selectable Input) (O₂ Analyzer)

All data is transmitted digitally directly from sensor via latest technology communication methods. Therefore, consideration of data loss or additional errors are not needed.

In addition to all these measurement capabilities, the system has the capability to capture flame transmissions with the built-in high speed camera.

What Kind of Samples Can Be Tested?

Other than the basic reply of "Flameproof Enclosures", there are a bit more of details. Samples with up two isolated sections can be simultaneously tested. System provides two separate gas mixture supplies for sample inlet in addition to one to vessel. For ignition, three spark plug ignitors are supplied, and both can work simultaneously.

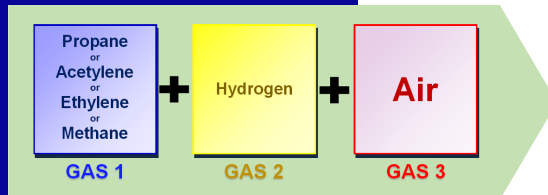


Gas Mixer, Not Separate Anymore!

As there is only one software for all controls, mixer is also integrated on the same software.

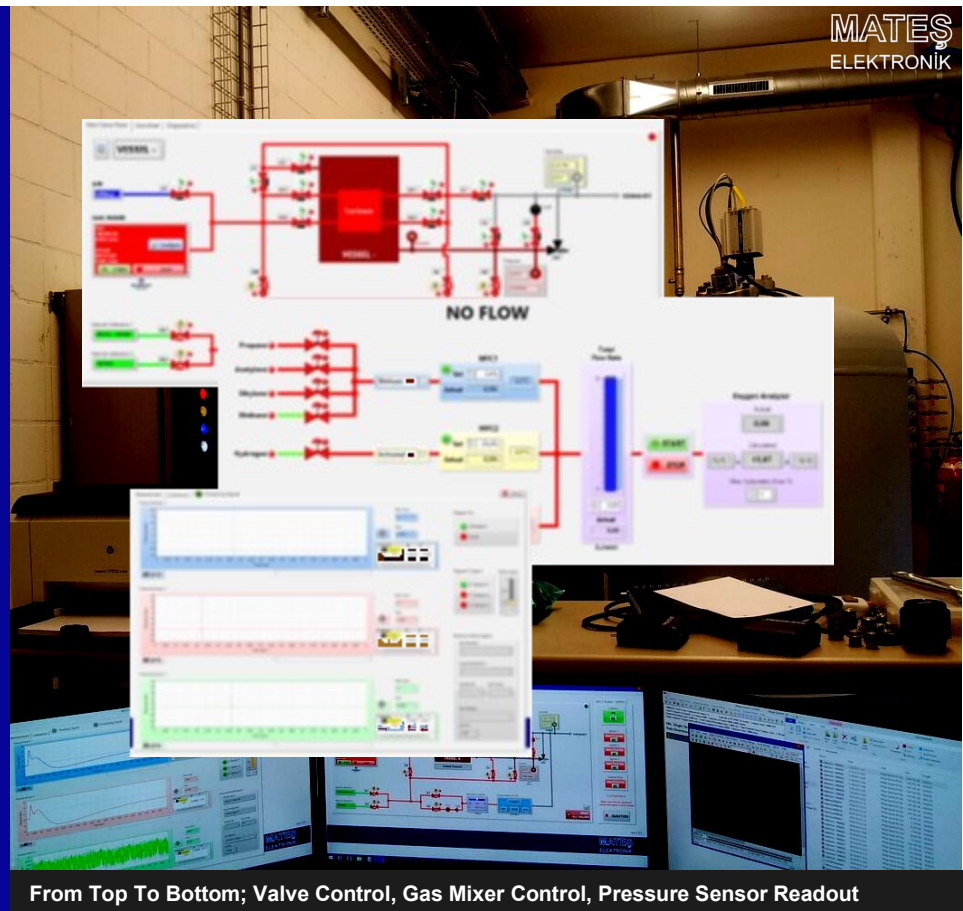
While selection from pre-defined mixtures is possible, creating custom mixtures with custom percentages can also be applied. and those custom mixtures can be saved to system.

The mixer gives ability to create mixtures with up to 3 gases as listed below



This ensures to prepare all kinds of mixtures required by the standard.

For any mixture prepared, their oxygen ratios are calculated real time and eases the procedure of reaching the correct quantity of oxygen. This gives the convenient comparison capability.



From Top To Bottom; Valve Control, Gas Mixer Control, Pressure Sensor Readout

Many Controls, Only One User Interface!

MATEŞ System Software supports whole test procedure without need of leaving control desk for activating/deactivating any instrumentation or checking any indicators on test zone.

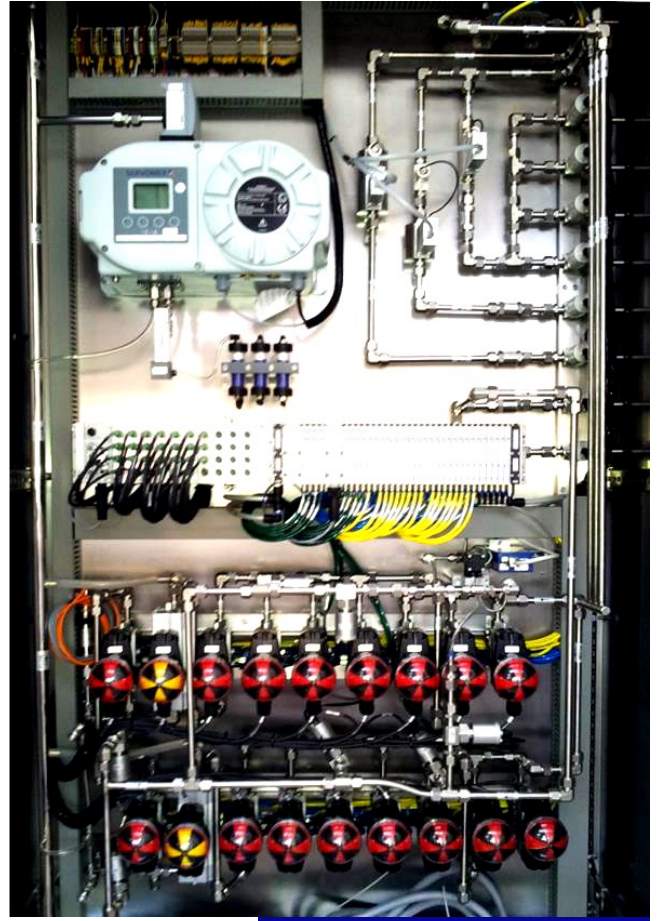
For simplifying usage, preventing conflictions and making all user checks more conveniently, all controls and indications are located on a single display.

Valve actuations can be made manually or via presets that can be created by the operator. In standardized tests, this allows saving some time.

Ignitions are also triggered on the software, so determinations of with igniters are going to be activated.

Dynamic pressure measurements are also done with the same software, this eliminates the need of further instrumentation. This gives a more convenient approach as this software is already tailored for this specific test.

Dynamic pressure measurements can be reported with an auto-generated excel file or a text of raw data. All other measurements are also automatically stored on ignition with their test specific data for future reference.



Commissioning! Just in The Blink of An Eye!

Less complicated work on commissioning ensures a problem-free future for the whole equipment. Considering this fact, whole system is designed in way that will not required complicated work on commissioning.

As soon as the test room infrastructure is ready (including electrical connections, gas inlets and dry air inlet) As the system is just composed of 2 panels, a vessel and a set of computers, it is not a long work to install each equipment and making interconnections.

Cabling is only on few amounts as most instrumentation is communicating just via few communication lines. Furthermore, piping are already inside a single panel. Therefore, only piping connections are made between the vessel and the panel with only a few tubes.

Trainings takes short duration because the system is user friendly, and nearly all user controls are already available on the software.

Maintenance

As a standard, 1 year limited warranty is provided for all Ex-d Test Systems. While, after sales support can be given with on-site visits, in cases that a visit is not vital, possible solutions can be provided faster via remote connections to camera and PC.

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