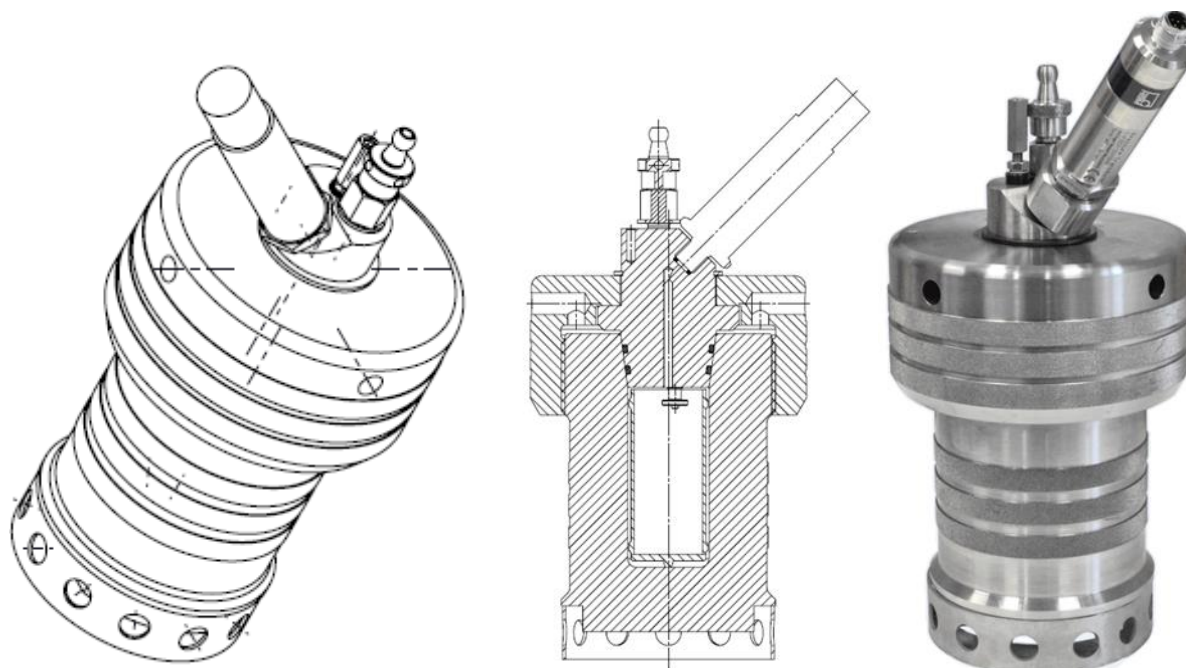


High Pressure Autoclave – HPA 1500

Measurement of the specific energy of substances

High Pressure Autoclave – HPA 1500 is an instrument designed to measure the specific energy of substances for hazard classification of substances according to UN Transport of Dangerous Goods Recommendations Tests.



Application

Evaluation of the specific energy of substances is important for hazard assessment of dangerous substances.

High pressure autoclave HPA1500 apparatus is used to measure the specific energy of a substance. Varying quantities of substance are heated in a sealed vessel and the maximum pressure rise obtained for each sample size is measured. The specific energy is function of the maximum pressure rise. Maximal allowed temperature of vessel is 200°C.

Version HPA2000 (i.e. HPA1500 without the inner sample vessel and beginning testing temperature at 21°C) can be also used as universal testing closed vessel up to 2000 bars. Obtained results (max. pressure, pressure rise time, burning rate. etc.) can serve for classification of energetic materials.

FEATURES

- Universal testing pressure vessel up to 2000bar
- Robust design and corrosion resistive material of pressure vessel
- Precise and robust measurement of pressure/time rise by tenzometric pressure sensor
- Simple operation and evaluation of results
- Ignition unit included



INSTRUMENT DESCRIPTION

High Pressure Autoclave – HPA 1500 consists of these parts:

- *HPA vessel*

Contains stainless steel pressure vessel, breach nut, firing plug with insulated electrode, pressure transducer hole and release valve; set of washers (cooper, o-rings), simple stand – designed to comply with UN Transport of Dangerous Goods Recommendations Tests

- *Measurement and control unit*

Contains speed data acquisition, Ethernet output, pressure transducer conditioners, transducer signal filtration, ignition unit, leading and measurement cables

- *Control and measurement software*

Contains SW for automatic control of system operation + SW for measurement, calibration and data acquisition + SW for results evaluation (maximal pressure, burning time, pressure gradient, etc.)

- *Automatic control, data acquisition and evaluation unit*

notebook with this minimum configuration or higher: 17" display, 2 GHz processor, 1.8 GB RAM, DVD-RW, HDD 250 GB, WLAN, BT, LAN, USB, Win 7



- *Pressure transducer*

Corrosion resistant, strain gage measurement principle, level of protection IP67, range up to 2000 Bar, accuracy class 0.2%, resonance frequency more than 100 kHz, limit load 150%, limit temp. range -40 ..+120°C up to 24 hours, connector close to transducer for better handling

Technical parameters

- *HPA vessel*
 - *designed according to UN Transport of Dangerous Goods Recommendations Tests*
 - *hardened stainless steel, max pressure 200 MPa@21°C or 150MPa@200°C (proof pressure 280MPa@21°C), volume approx. 96 ccm*
- *Measurement and control unit*
 - *1 channel with strain gage amplifier, voltage source for the bridge gauge 10V or 5V (current fuse max. 100mA), filtration 20kHz*
 - *14-bit AD, sampling rate up to 100 kS/s*
 - *ignition current generator max 10A/20V/180s*
- *Pressure transducer*
 - *Pressure range up to 2000 Bar,*
 - *accuracy class 0.2%,*

Installation requirements:

- Space requirements: W x L x H: min 40 x 40 x 40 cm; Net weight approx. 20 kg
- Space requirements (DAQ unit + Meas. unit): W x L x H: 50 x 50 x 50 cm; Net weight: 15 kg
- Stable electric power source: 230 V / 50 Hz, 500 W
- Fume hood and local exhaust.
- The instrument must be placed on the safe place and controlled remotely to protect the operator.
- Measurement room for operators (21°C +/-5°C, RH 30..70%) max 5m away from bunker, with tables, chairs and light
- Recommended digital multimeter for service maintenance (min. 600V, 10A, 5MΩ, ...)
- A trained operator (trained under on-site laws)