

## 20-LITER SPHERE APPARATUS

FOR DETERMINATION OF EXPLOSION CHARACTERISTICS  
OF DUST CLOUDS  $P_{\max}$  °  $(dp/dt)_{\max}$  °  $K_{st}$  ° MEC ° LEL ° LOC

Model: SPD-3.1

ver. 3.1, 2021

### THE DEVICE COMPLIES WITH THE STANDARDS LISTED BELOW:

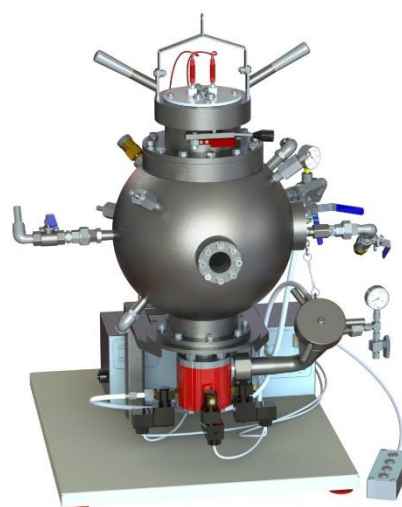
- ASTM E1226 Standard Test Method for Explosibility of Dust Clouds
- ASTM E1515 Standard test method for MEC
- ASTM E2931 Standard test method for Limiting Oxygen Concentration
- EN ISO/IEC 80079-20-2 Explosive atmospheres. Material characteristics. Combustible dust methods.
- EN 14034-1 Determination of the maximum explosion pressure  $P_{\max}$  of dust clouds
- EN 14034-2 Determination of the maximum rate of explosion pressure rise  $(dp/dt)_{\max}$  of dust clouds
- EN 14034-3 Determination of the lower explosion limit LEL of dust
- EN 14034-4 Determination of the limiting oxygen concentration LOC of dust clouds

### SPECIFICATION:

Double layer sphere vessel	20-liter, stainless steel
Maximum working pressure	30 bar (optional 40 bar)
ANKO software	ANKO Explosion Plotter®
Software functionality	ASTM test procedures EN test procedures ISO/IEC test procedures signal noise cancelling test report printing data export to any format

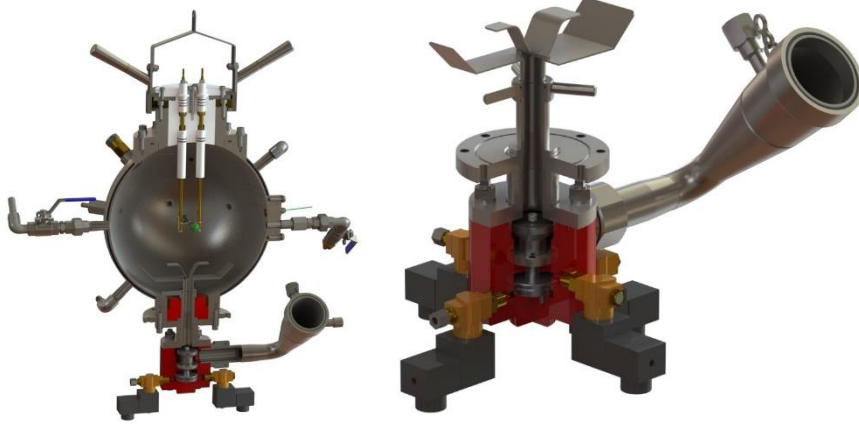
#### Measurement range:

$P_{\max}$	0-25 bar
$(dp/dt)_{\max}$	> 4000
$K_{st}$	> 1000
LEL, MEC, UEL	from 0 g/m <sup>3</sup>
LOC	1-21 %
Quick dust injection valve	opening time ≤ 30 ms
Front panel vacuum display	0-1 bar abs
Vacuum pressure adjustment	automatic -0.6 & manual
Water cooling system	external cooling block
Compatibility with available chemical igniters	compatible with Sobbe compatible with Simax
LOC module	optional, built-in
Additional manometers	0/25 bar; -1/0 bar
Manual control of injection valve	opening/closing air filling up to 20 bar
Dimensions (WxDxH)	without lift 600x700x900 mm with lift 600x700x1450 mm
Top head lift	available upon request
Power supply:	110 or 230 VAC



The information given in this document represents the state of engineering at the time of publishing. We reserve the right to make modifications to above specifications.

## DUST DISPERSION & IGNITION SYSTEM



12/24V ignition block

Dispersion nozzles:

- rebound
- C-shape (optional)

fast opening valve,  $T_o < 30\text{ms}$

the installation of chemical ignitors is safe, thanks to the grounding of metal parts

PC or front panel manual control

quick cleaning procedure

## REQUIRED ACCESSORIES

- double stage vacuum pump
- laboratory cooler with temperature indicator
- compressed air
- nitrogen (for LOC only)
- flammable gases (for hybrid mixtures)
- fume hood
- laboratory bench
- vacuum cleaner
- laboratory scale
- dust dryer
- particle size distribution analyser (recommended)
- laboratory grinder (recommended)
- laboratory sieve, minimum  $500\mu\text{m}$  and  $63\mu\text{m}$
- sample containers
- safe for ignitors storing
- cleaning tools
- personal protection measures

## RECOMMENDED INSTALLATION METHOD

We recommend installing 20L inside the fume hood or other well ventilated chamber. Installation advice and consultation are free.



## SOFTWARE - ANKO DUST EXPLOSION PLOTTER®

- PC control and data processing
- visualization of pressure graphs
- automatic calculation of results
- signal noise cancelling
- safety measures & procedures
- custom options available
- upgrades free of charge

Automatic software procedures:

- $P_{\text{max}}$ ,  $(dp/dt)_{\text{max}}$ , Kst,
- MEC, LEL & UEL
- LOC
- hybrid mixtures
- partial pressure calculations
- automatic gas mixing control

Application:

- science and research
- accredited laboratories
- industrial tests
- explosion prevention systems certification

