

Air Filter Test Rig

Automatic HEPA/ULPA Filter Leak Scanning Instrument

According to: EN 1822; IEST、ASHRAE 52.2; EN 779、
ISO 11155-1、SAE J726 ; ISO 5011



※ HEPA/ULPA Filter Leak Scanning Instrument: (Horizontal scanning platform Type)



System Specification:

1. Equipment Dimension: 2 m x 4.5 m

2. Wind Tunnel System:

- (1) Horizontal scanning platform and use water to seal the media.
- (2) Power inquire of Inverter and Motor: 3-phase, 380 ~ 480V, 50 / 60Hz
- (3) Max. Static Pressure of Filter: 50 mmH₂O
- (4) The Max / Min. Flow Rate: Up to 2800/600 CMH
- (5) Wind Cabinet
- (6) Filter holder: enclosing 2'x2' (Other sizes can be replaced)

3. Aerosol system:

- (1) Oil Aerosol Generator 1 set
- (2) Aerosol Concentration Diluter (1: 100): For up to U15 ULPA Filter
(Option Aerosol Concentration Diluter for U16 Testing)
- (3) Aerosol Feeding Tube 1 pcs.
- (4) Aerosol Sampling Tube (Upstream and Leak x 1 pcs.)



4. Leakage Scanning Device:

- (1) Three-axis motion control system, XYZ Max. stroke: 1220m/m × 1220m/m × 300m/m
(Other filter size inquiry available)

5. Control System:

- (1) Control the entire Filter Leakage Scanning system by PC Base
- (2) Automatic control aerosol generator switch turn on and off (the Rise time and Purge time setting by manually or automatically)
- (3) Switching with ball valve to obtain sample concentration of upstream and downstream.

6. Software Design:

- (1) Testing parameter settings: including filter size, scanning speed, second detection time, detection of particle size and filter class
- (2) System Function: Automatic filter leak scanning, Velocity uniformity of HEPA filter, Filtration Efficiency (Multi Points)

7. Particle Counter: 1set (For Upstream and Downstream), Particle size range: 0.1μm
Option: Available to up to 3set Particle Counters for Downstream

※ HEPA / ULPA Filter Leak Scanning Instrument: per EN 1822-4, EN1822-5 and IEST RP-CC034

(Vertical scanning Type)



System Specification:

1. Equipment Dimension: 7m x 3 m x (Max.)2.0 m

2. Wind Tunnel System:

- (1) Vertical scanning.
- (2) Inverter 、 motor: 3 phases (380~480V 、 50/60Hz)
- (3) Max. Static Pressure of Filter: 150 mmH₂O
- (4) The Max / Min. Flow Rate: 2000/400 CMH
- (5) Material: SS 304

3. Aerosol system:

- (1) Generator (DEHS): Cold, Polydisperse (GSD > 1.5)
- (2) Diluter (1:100)
- (3) Sampling probes: W x H = 15 x 75 mm

4. Leakage Scanning Device:

- (1) Three-axis motion control system, XYZ Max. stroke: 1220m/m × 1220m/m × 300m/m
(Other filter size inquiry available)

5. Control System:

- (1) Control the entire Filter Leakage Scanning system by PC Base
- (2) Automatic control aerosol generator switch turn on and off (the Rise time and Purge time setting by manually or automatically)
- (3) Switching with ball valve to obtain sample concentration of upstream and downstream.

6. Software Design:

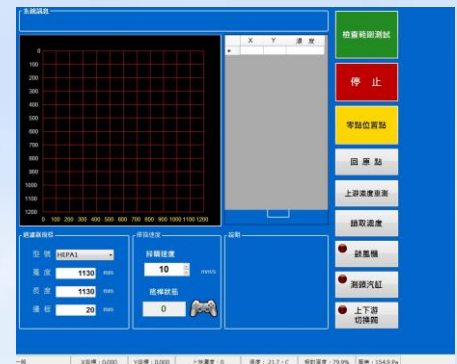
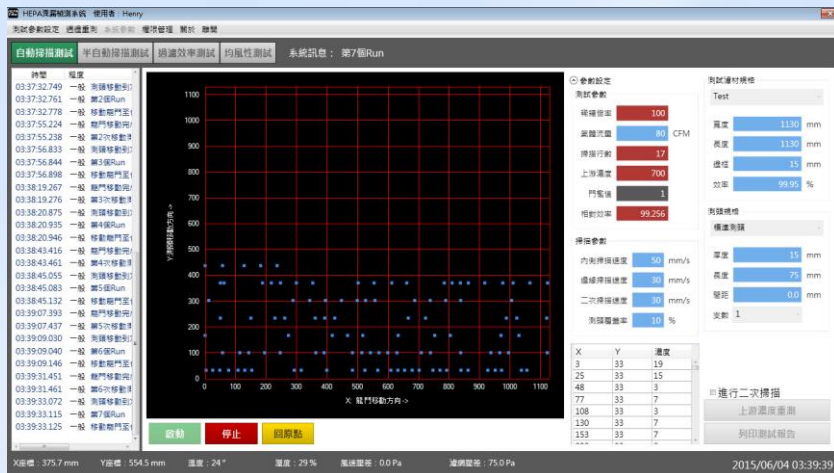
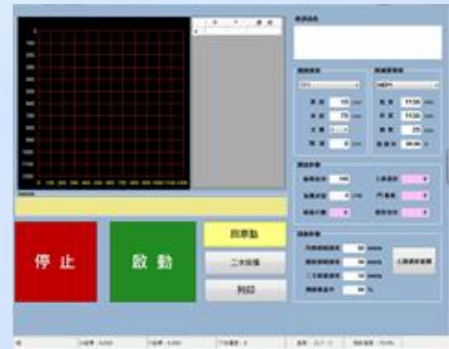
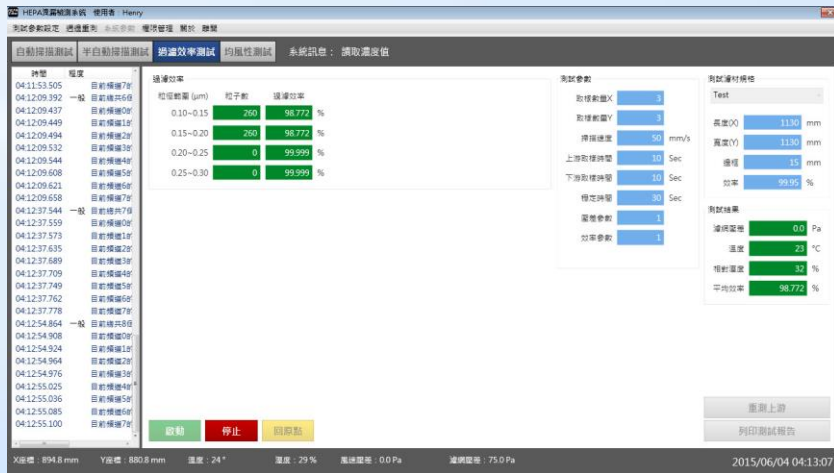
- (1) Testing parameter settings: including filter size, scanning speed, second detection time, detection of particle size and filter class
- (2) System Function: Automatic filter leak scanning, Velocity uniformity of HEPA filter, Filtration Efficiency (Multi Points)

7. Particle Counter: 1set (For Upstream and Downstream), Particle size range: 0.1μm

Available to up to 4 set Particle Counters for Upstream and Downstream



Automatic HEPA/ULPA Filter Leak Scanning: Program Control System



※ HEPA / ULPA Filter Leak Scanning Instrument (Manual Type): System Specification:

Length x Width x Height = 2.5m x 2.5 m x 2.0 m;

- (1) Inverter 、 motor : 3 phases, 380~480V 、 50/60Hz
- (2) Max. Static Pressure : 100 mmH2O
- (3) Max. Flow: 1500 CFM
- (4) Sampling probes x 1
- (5) Max. Filter Dimension: 1220x1220 mm
- (6) Aerosol: Atmospheric dust
- (7) Filter Holder: 610x610 mm (1set)
- (8) Manometer: 1000 Pa
- (9) Optical Particle Counter (0.3um,1 CFM)



※ Filtration Media Test Rig:



- (1) Voltage: 230V
- (2) Max. Static Pressure : 100 mmH2O (electronic pressure transducer)
- (3) Max. Flow : 100 LPM (electronic flowmeter)
- (4) Test sample area : 100 cm2
- (5) Aerosol: Emery 3004 (PAO) or NaCl (optional)
- (6) Electrostatic Neutralizer
- (7) Aerosol detection, efficiency to 99.99%
- (8) Manual adjust flowrate
- (9) Human machine interface: The testing data can be acquired and data stored by PC.
- (10) Available testing items: Initial pressure drop, Initial efficiency, Loading



✂ Filter test system for EN 779 / ASHRAE 52.2:



System Specification:

Filter test system for EN 779 or ASHRAE 52.2

1. Test Duct:

- (1) Materials: Stainless
- (2) Max. flow rate: 2500CFM
- (3) Max. filter dimension: 2'x 2'
- (4) Diff. pressure for filter sample: 1000Pa

2. Aerosol and Dust:

- (1) Oil Aerosol generator: 1 set
- (2) Switching unit: manual upstream / downstream measurement
- (3) Isokinetic sampling probes: 2 pieces
- (4) Dust feeder: The feeding velocity can be controlled according to the airflow rate.

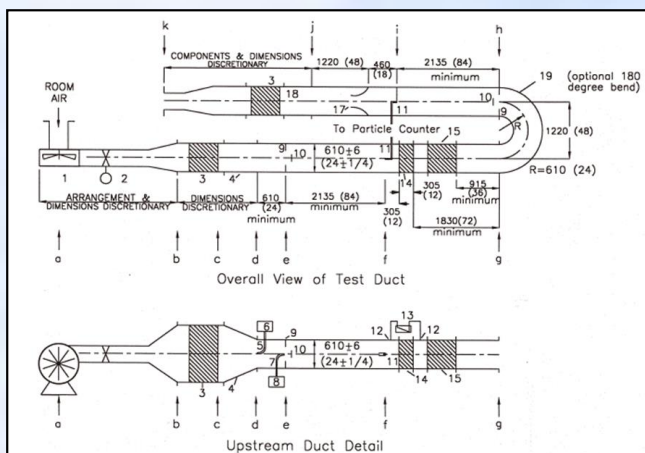


3. Optical Particle Counter:

- a. Volume flow: 5 L/min
- b. Measuring range: 0.2 – 10 μm / 0.3 – 17 μm / 0.6 – 40 μm / 2 – 100 μm .
- c. Maximum number concentrations up to 40,000 particles/cm³

4. W-form frame of testing filter material for discharge efficiency:

(filter material 1.8 m²), minimum media velocity is 12.7 cm/sec



TTRI Test services for air filter:

✂ Testing of air filter:

- Ventilation filter (ASHRAE 52.2; EN 779)
- HEPA/ULPA Filter (EN 1822-4; EN 1822-5)
- Cabin air filter (ISO 11155-1; ISO 11155-2)
- Engine intake filter (SAE J726 ; ISO 5011)
- Flat sheet filter media (EN 1822-3; TSI 8130)



✂ Testing items of the major performances:

- ✧ Pressure drop versus air flow rate for clean filter
- ✧ Initial pressure drop and initial efficiency
- ✧ Dust loading capacity
- ✧ Efficiency after different dust loading phases and average efficiency
- ✧ Efficiency and filter scanning for HEPA/ULPA filter
- ✧ Most penetrating particle size (MPPS) for filtration media

✂ Setup of testing equipment:

- ◆ EN1822-4 automated filter scanning test system
- ◆ Test rig according to ASHRAE 52.2 and EN 779
- ◆ Test rig according to ISO 11155-1
- ◆ Filtration media test rig



Water / Oil Testing Service:

- ✚ Water Filtration Testing Service: Bubble Point, Pore size, Liquid permeability
- ✚ Oil Filtration Testing Service: Multi-pass test, Filtration efficiency test

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