



P E T R O G A S
G A S S Y S T E M S

Solutions for filtration applications

www.petrogas.nl

Introduction Petrogas Filtration

Clean and aerosol free gas is critical for industrial equipment to operate effectively and reliably. Petrogas filtration is dedicated to designing and manufacturing dust filter and coalescer cartridges that provide high efficiency removal of solids and liquids from contaminated gases, ultimately protecting downstream equipment and reducing maintenance costs.

Our manufacturing is ISO9001 certified and is carried out to the highest standards using the latest manufacturing technology to ensure a high quality, consistent product. We use only high quality grade media materials from prominent suppliers, leading in creating, manufacturing and supplying technically advanced high efficiency and liquid filtration media.

Petrogas filtration is a part of Petrogas Gas-Systems B.V., a renowned Dutch engineering company that develops, manufactures and supplies turn-key gas installations worldwide. Our filter cartridges are hence mainly designed for application in filter-separators to remove particulates from process streams e.g. air, hydrogen and natural gas.

Petrogas upholds a stringent QC policy ensuring that every filter cartridge delivers a performance according to its design. Besides rigorously upholding our quality we are also constantly improving it. Through research, design and frequent testing we are constantly stimulating product development and improvement.



About Filter Cartridges

The filter cartridges from Petrogas ensure highly efficient removal of particles in air, hydrogen, natural gas and other industrial gases. With our high quality and reliable products Petrogas ensures a long lifetime of your system. Due to the high effective filtration area and high efficiency media, these cartridges provide a high solid removal efficiency which ensures optimum protection of downstream equipment.

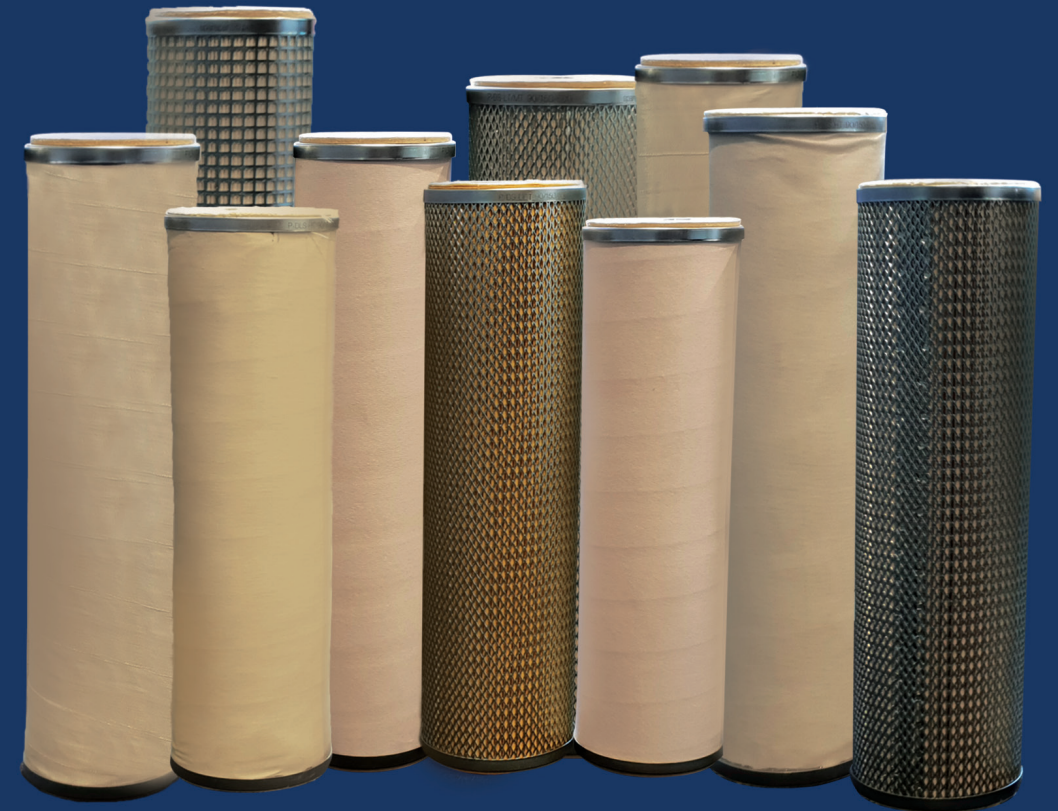
Petrogas filtration consists of three types of filter cartridges:

- The dust separator (DS)
- The dust and liquid separator, also known as the coalescer cartridge (DLS)
- The liquid separator (LS)

Petrogas produces these filter cartridges in a various of standard dimensions, but can be customized to any dimensions. This ensures you have the right solution for your equipment, based on individual project requirements.

Besides the different type of separation, Petrogas also categorize the filter cartridges by temperature range they can operate. They have three categories of temperature ranges such as medium temperature (MT), high temperature (HT) and ultra-high temperature (UHT). The medium temperature cartridge can operate up to 120°C, the high temperature cartridge can operate up to 170°C and the ultra-high temperature can operate up to 240°C.

Due to our strong global network and good stock levels we are able to dispatch our filter cartridges within hours of receiving an order, minimizing your down time. We will ensure that even the most remote locations will be reached in the shortest time-span possible.



Make: Petrogas Gas-Systems B.V.

Cartridge Type:

DS: Dust separator

LS: Liquid separator

DLS: Dust liquid separator

Temperature Ranges:

MT: Medium temperature -20/120°C

HT: High temperature -20/170°C

UHT: Ultra high temperature -20/240°C

Efficiency:

UHE: Ultra high efficiency

No symbol: High efficiency

Inside Diameter (mm):

90/160/170/220/270/350

Other dimensions on request

Outside Diameter (mm):

150/230/232/240/280/330/410

Other dimensions on request

Lengths (mm):

500/600/735/750/835/1100

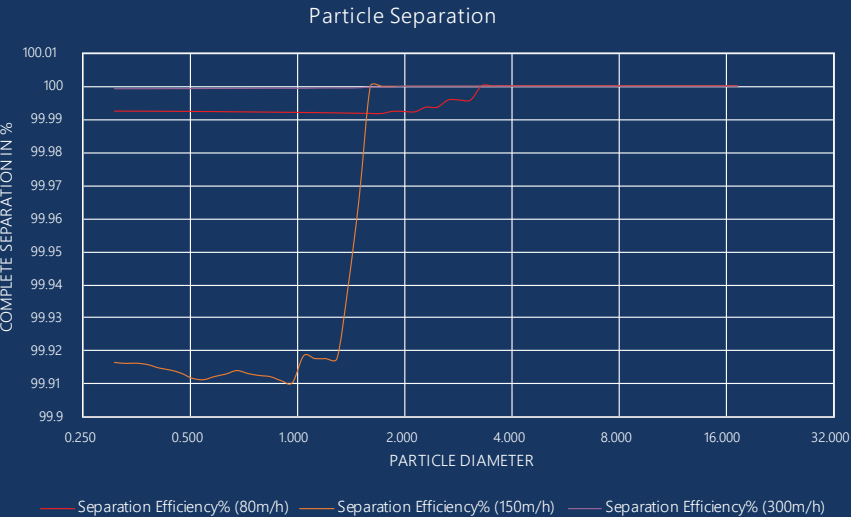
Other lengths on request

P-DS-MT-UHE-220/280/500



Coalescer Filter Cartridge P-DS-MT

Performance Specifications:



- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 1.5 bar
- Recommended change cartridge differential pressure: 800-1000 mbar
- Maximum operating temperature: 120°C short peak temperatures of max. 150°C (max. 20 min.) are acceptable

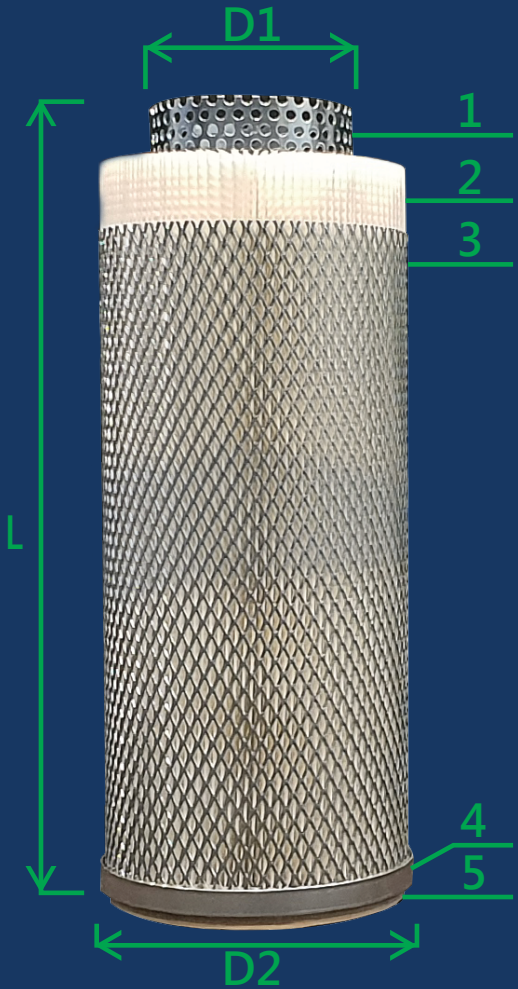
Product Specifications:

Materials of Construction

1. **Inner Core:** Q235 perforated galvanized steel
2. **Filter Media:** Resin impregnated high cellulose grade with 20% water repellent polyester fibers.
3. **Outer Core:** Q235 perforated galvanized steel
4. **End Caps:** Q235 galvanized sheet steel
5. **Gaskets:** Wool felt

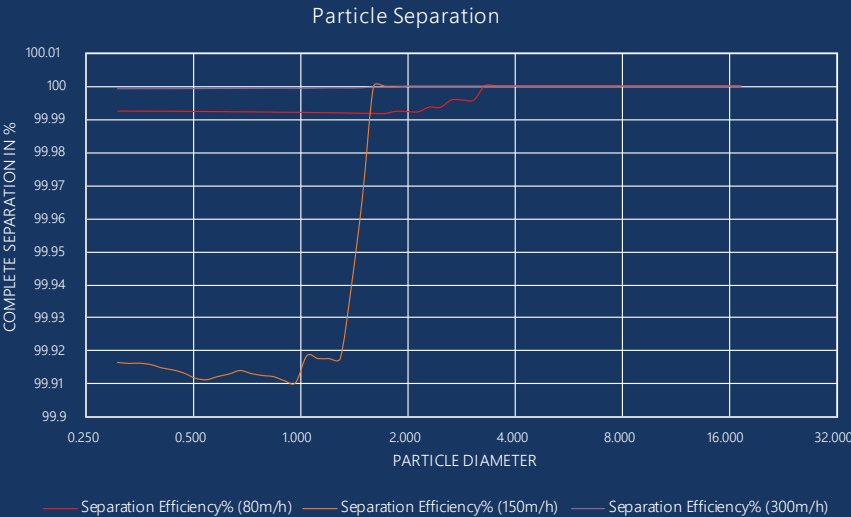
Dimensions (in mm)

- L. **Length:** 500/600/735/750/835/1100
- D1. **Inside diameter:** 90/160/170/220/270/350
- D2. **Outside diameter:** 150/230/232/240/280/330/410
Other dimensions on request



Coalescer Filter Cartridge P-DS-HT

Performance Specifications:



- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 1.5 bar
- Recommended change cartridge differential pressure: 800-1000 mbar
- Maximum operating temperature: 70°C short peak temperatures of max. 90°C (max. 20 min.) are acceptable

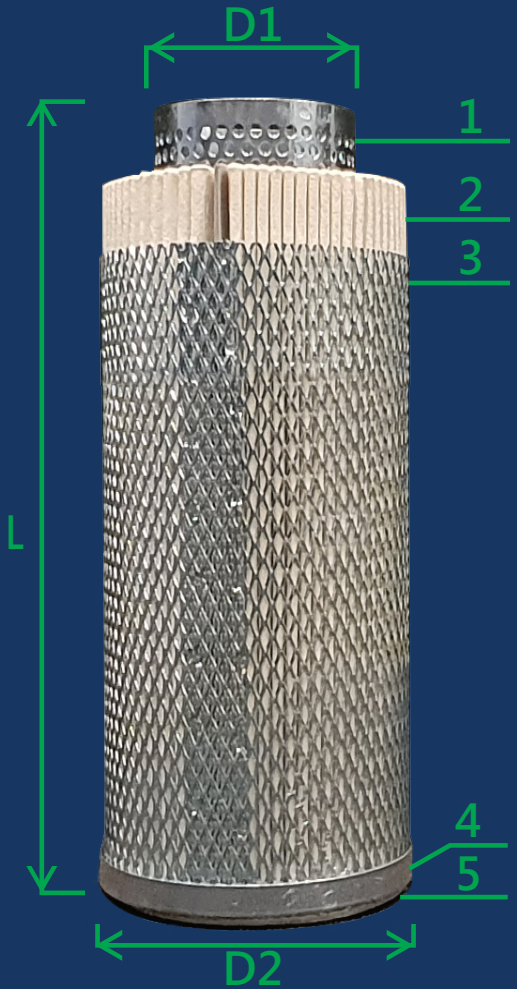
Product Specifications:

Materials of Construction

1. **Inner Core:** Q235 perforated galvanized steel
2. **Filter Media:** PPS
3. **Outer Core:** Q235 perforated galvanized steel
4. **End Caps:** Q235 galvanized steel
5. **Gaskets:** High temperature felt

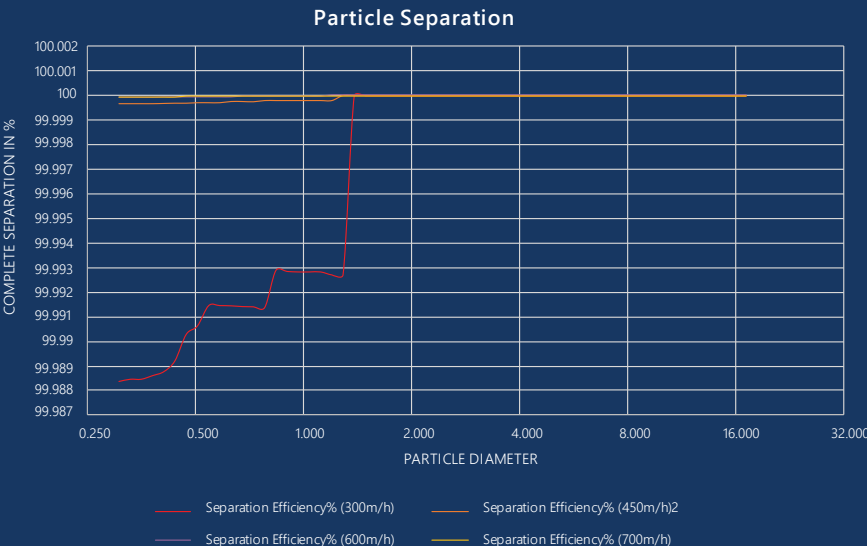
Dimensions (in mm)

- L. **Length:** 500/600/735/750/835/1100
- D1. **Inside diameter:** 90/160/170/220/270/350
- D2. **Outside diameter:** 150/230/232/240/280/330/410
Other dimensions on request



Coalescer Filter Cartridge P-DS-UHT

Performance Specifications:



- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 3 bar
- Recommended change cartridge differential pressure: 1000 mbar
- Maximum operating temperature: 240°C short peak temperatures of max. 260°C (max. 30 min.) are acceptable

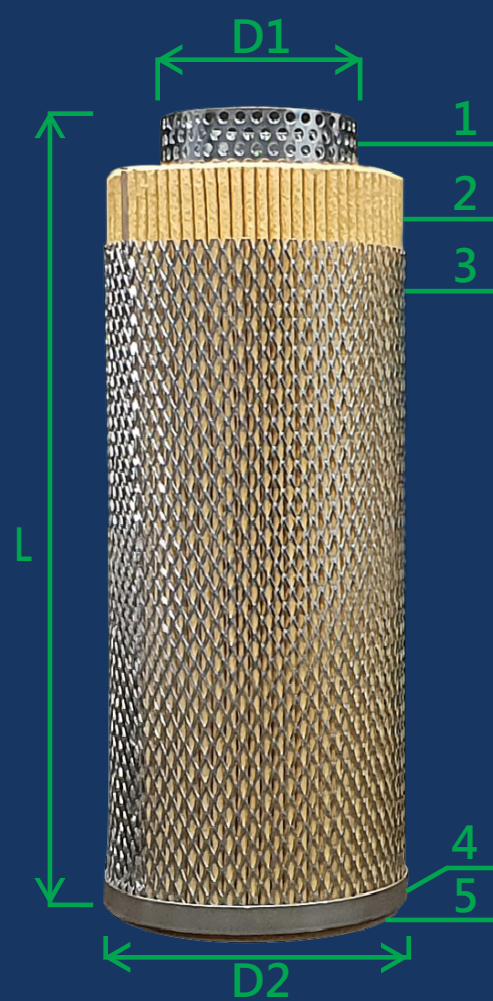
Product Specifications:

Materials of Construction

1. **Inner Core:** Q235 perforated galvanized steel
2. **Filter Media:** high temperature resistant felt
3. **Outer Core:** Q235 perforated galvanized steel
4. **End Caps:** Q235 galvanized sheet steel
5. **Gaskets:** high temperature resistant felt

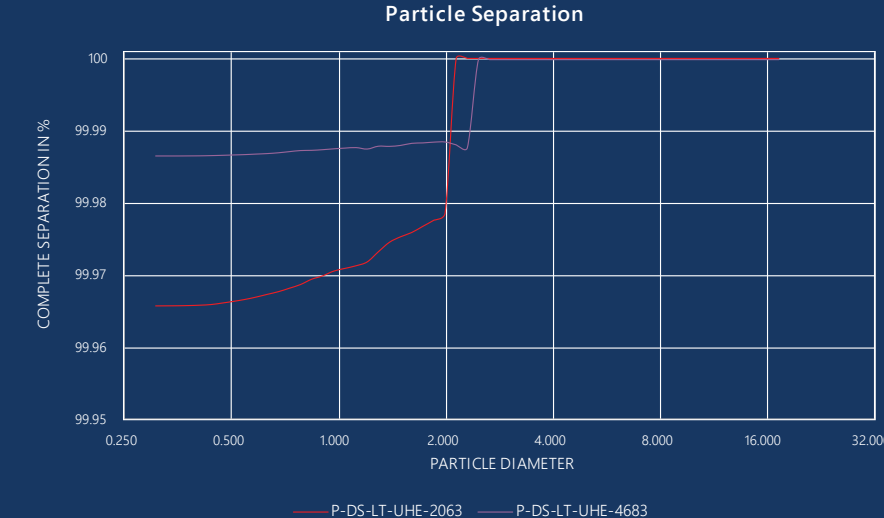
Dimensions (in mm)

- L. **Length:** 500/600/735/750/835/1100
- D1. **Inside diameter:** 90/160/170/220/270/350
- D2. **Outside diameter:** 150/230/232/240/280/330/410
- Other dimensions on request



Coalescer Filter Cartridge P-DS-MT-UHE

Performance Specifications:



- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 1.5 bar
- Recommended change cartridge differential pressure: 800-1000 mbar
- Maximum operating temperature: 70°C short peak temperatures of max. 90°C (max. 20 min.) are acceptable

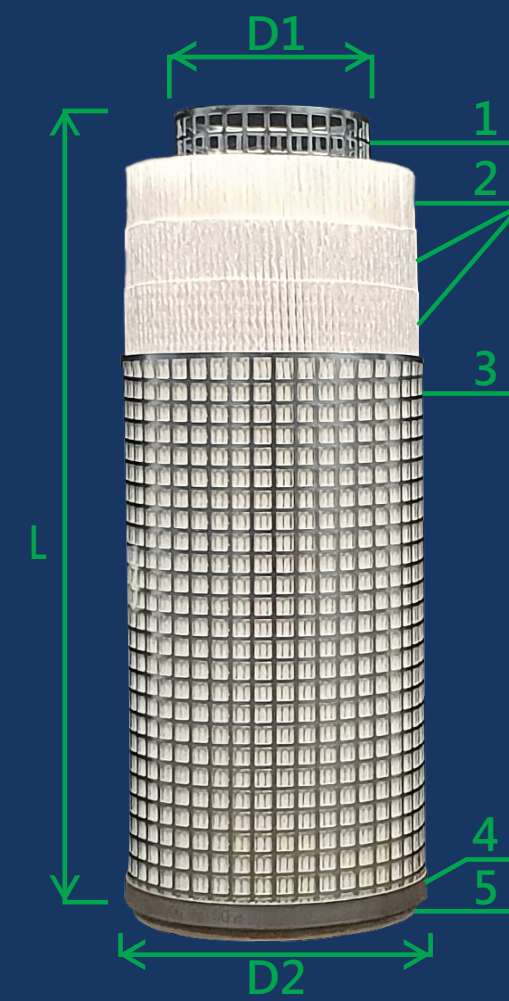
Product Specifications:

Materials of Construction

1. **Inner Core:** Q235 perforated galvanized steel
2. **Filter Media:** FA6900 and HC4683
3. **Outer Core:** Q235 perforated galvanized steel
4. **End Caps:** Q235 galvanized steel
5. **Gaskets:** Wool felt

Dimensions (in mm)

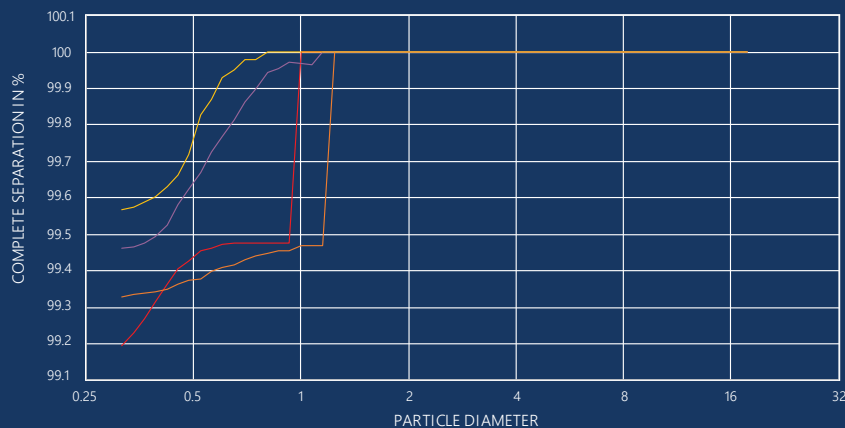
- L. **Length:** 500/600/735/750/835/1100
- D1. **Inside diameter:** 90/160/170/220/270/350
- D2. **Outside diameter:** 150/230/232/240/280/330/410
- Other dimensions on request



Coalescer Filter Cartridge P-LS-MT

Performance Specifications:

Particle Separation



— Separation Efficiency% (150m/h) — Separation Efficiency% (300m/h)
— Separation Efficiency% (450m/h) — Separation Efficiency% (700m/h)

- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 2 bar
- Recommended change cartridge differential pressure: 800-1000 mbar
- Maximum operating temperature: 120°C short peak temperatures of max. 150°C (max. 20 min.) are acceptable

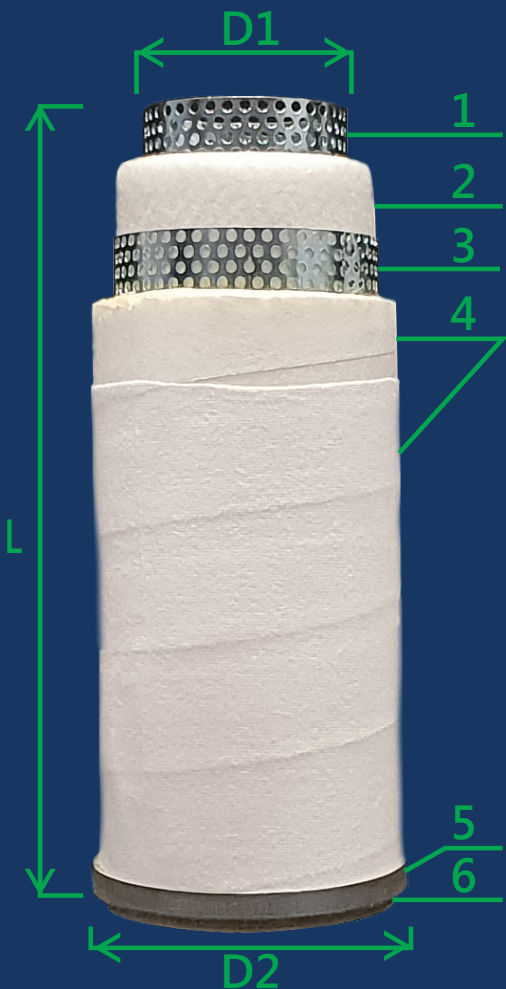
Product Specifications:

Materials of Construction

1. Inner Core: Q235 perforated galvanized steel
2. Prefilter Media: polyester
3. Outer Core: Q235 perforated galvanized steel
4. Coalescing Media: densely wrapped layers of glass microfibers
5. End Caps: Q235 Galvanized sheet steel
6. Gasket: Wool felt

Dimensions (in mm)

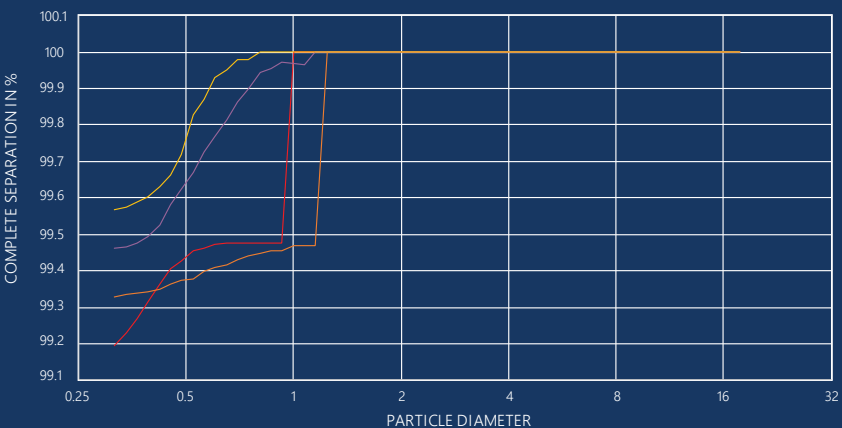
- L. Length: 500/600/735/750/835/1100
D1. Inside diameter: 90/160/170/220/270/350
D2. Outside diameter: 150/230/232/240/280/330/410
Other dimensions on request



Coalescer Filter Cartridge P-LS-HT

Performance Specifications:

Particle Separation



— Separation Efficiency% (150m/h) — Separation Efficiency% (300m/h)
— Separation Efficiency% (450m/h) — Separation Efficiency% (700m/h)

- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 1.5 bar
- Recommended change cartridge differential pressure: 800-1000 mbar
- Maximum operating temperature: 70°C short peak temperatures of max. 90°C (max. 20 min.) are acceptable

Product Specifications:

Materials of Construction

1. Inner Core: Q235 perforated galvanized steel
2. Prefilter Media: Wire Mesh
3. Outer Core: Q235 perforated galvanized steel
4. Coalescing Media: glass fiber
5. End Caps: Q235 Galvanized sheet steel
6. Gasket: High temperature felt

Dimensions (in mm)

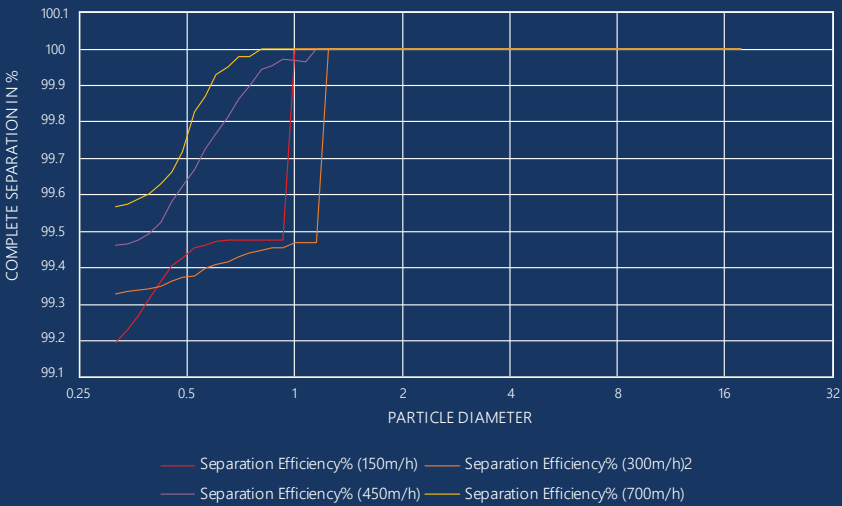
- L. Length: 500/600/735/750/835/1100
D1. Inside diameter: 90/160/170/220/270/350
D2. Outside diameter: 150/230/232/240/280/330/410
Other dimensions on request



Coalescer Filter Cartridge P-LS-UHT

Performance Specifications:

Particle Separation



- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 1.5 bar
- Recommended change cartridge differential pressure: 800-1000 mbar
- Maximum operating temperature: 70°C short peak temperatures of max. 90°C (max. 20 min.) are acceptable

Product Specifications:

Materials of Construction

1. **Inner Core:** Q235 perforated galvanized steel
2. **Pre-filter Media:** Wire Mesh
3. **Outer Core:** Q235 perforated galvanized steel
4. **Coalescing Media:** galss fiber
5. **End Caps:** Q235 Galvanized steel
6. **Gasket:** P84 felt

Dimensions (in mm)

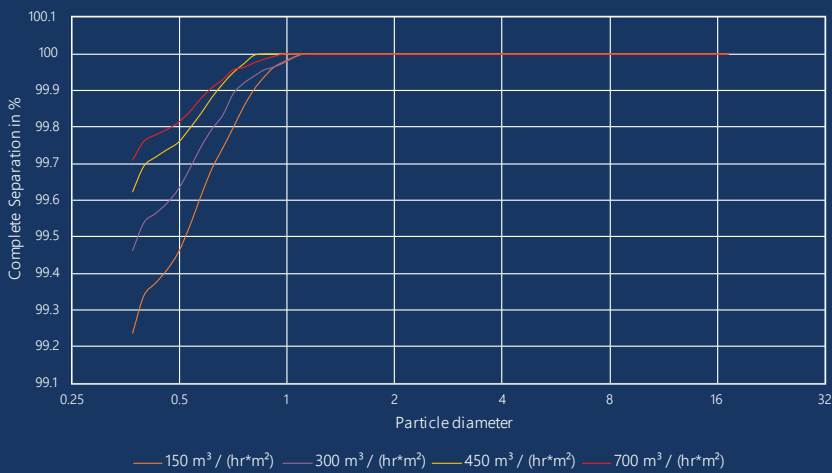
- L. **Lenght:** 500/600/735/750/835/1100
D1. **Inside diameter:** 90/160/170/220/270/350
D2. **Outside diameter:** 150/230/232/240/280/330/410
Other dimensions on request



Coalescer Filter Cartridge P-DLS-MT

Performance Specifications:

Particle Separation



- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 2 bar
- Recommended change cartridge differential pressure: 800-1000 mbar
- Maximum operating temperature: 120°C short peak temperatures of max. 150°C (max. 20 min.) are acceptable

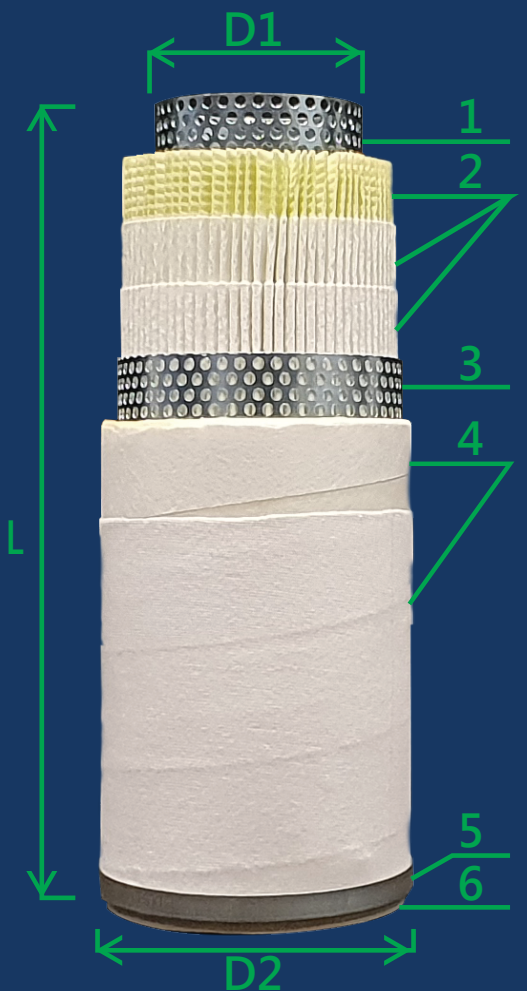
Product Specifications:

Materials of Construction

1. **Inner Core:** Q235 perforated galvanized steel
2. **Pre-filter Media:** pleated microfiberglass coalescing media, a resin
3. **Outer Core:** Q235 perforated galvanized steel
4. **Coalescing Media:** densely wrapped layers of glass microfibers
5. **End Caps:** Q235 galvanized sheet steel
6. **Gaskets:** Wool felt

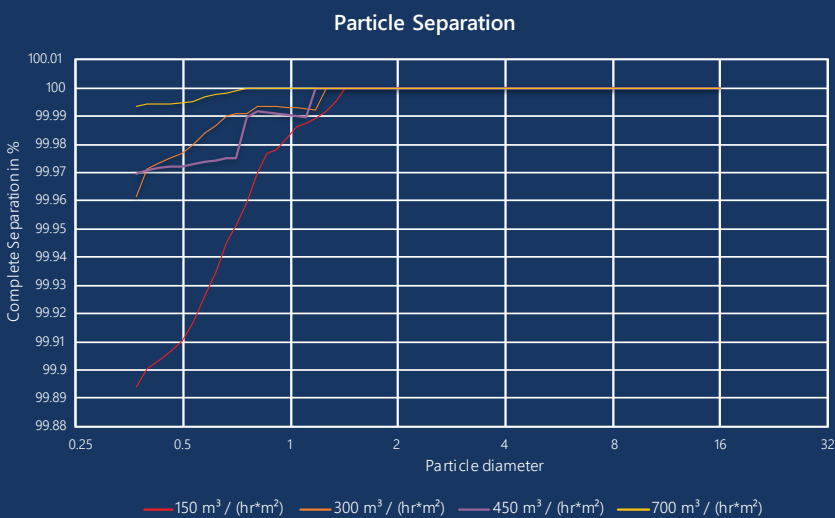
Dimensions (in mm)

- L. **Lenght:** 500/600/735/750/835/1100
D1. **Inside diameter:** 90/160/170/220/270/350
D2. **Outside diameter:** 150/230/232/240/280/330/410
Other dimensions on request



Coalescer Filter Cartridge P-DLS-HT

Performance Specifications:



- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 2 bar
- Recommended change cartridge differential pressure: 800-1000 mbar
- Maximum operating temperature: 170°C short peak temperatures of max. 190°C (max. 20 min.) are acceptable

Product Specifications:

Materials of Construction

1. Inner Core: Q235 perforated galvanized steel
2. Prefilter Media: PPS
3. Outer Core: Q235 perforated galvanized steel
4. Coalescing Media: galss fiber
5. End Caps: Q235 Galvanized steel
6. Gasket: High temperature felt

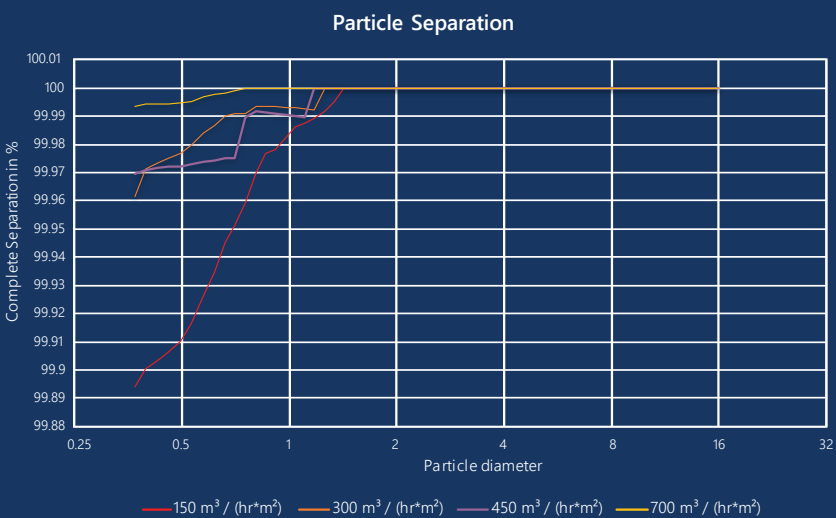
Dimensions (in mm)

- L. Lenght: 500/600/735/750/835/1100
- D1. Inside diameter: 90/160/170/220/270/350
- D2. Outside diameter: 150/230/232/240/280/330/410
- Other dimensions on request



Coalescer Filter Cartridge P-DLS-UHT

Performance Specifications:



- Filter efficiency: refer to graph
- Flow direction: from outside to inside
- Maximum allowable differential pressure: 1.5 bar
- Recommended change cartridge differential pressure: 800-1000 mbar
- Maximum operating temperature: 70°C short peak temperatures of max. 90°C (max. 20 min.) are acceptable

Product Specifications:

Materials of Construction

1. Inner Core: Q235 perforated galvanized steel
2. Prefilter Media: P84
3. Outer Core: Q235 perforated galvanized steel
4. Coalescing Media: galss fiber
5. End Caps: Q235 Galvanized steel
6. Gasket: P84 felt

Dimensions (in mm)

- L. Lenght: 500/600/735/750/835/1100
- D1. Inside diameter: 90/160/170/220/270/350
- D2. Outside diameter: 150/230/232/240/280/330/410
- Other dimensions on request



Filter Cartridge Performance Testing Method

Petrogas filtration has conducted elaborate filtration efficiency tests at renowned testing facilities. The test method and apparatus are in accordance with VDI 3926 standard.

The performance test for separation of solid particles is operated by negative pressure suction in such a way that a fixed quantity of test dust particles are added constantly through the feeder (Palas BEG-1000) at air intake. The aerosol enters into the filter and passes through the filter cartridge to achieve filtering. The solid particles are discharged finally through the ash hopper. A number of sensors are used in the test to check the actual working performance of the filter cartridge at different filtration velocities. The test procedure is as shown in Fig. 1. Relevant parameters measured in the test are as below

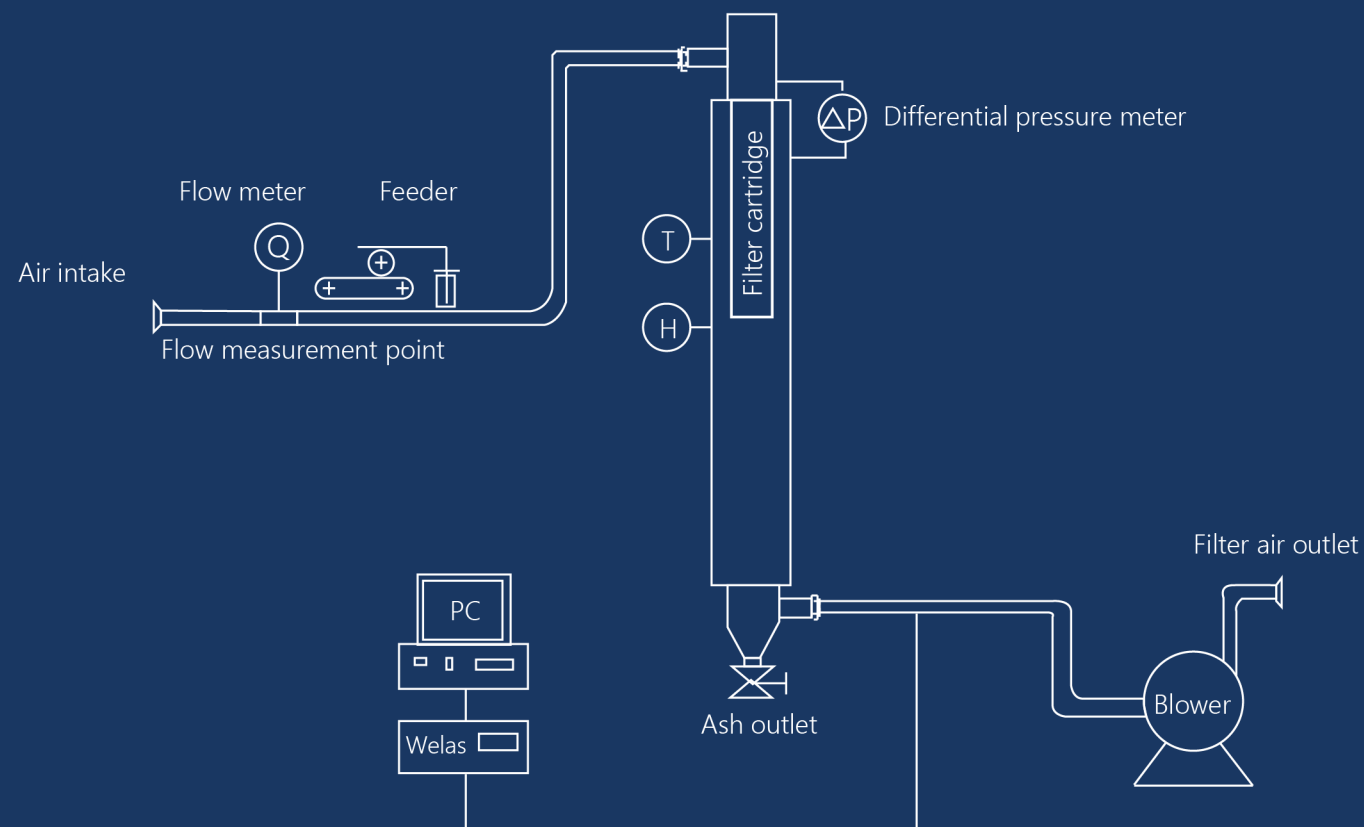


Fig. 1 Overview Test Device (Gas-Solid)

The performance test for separation of liquid particles is also operated by negative pressure suction in such a way that a fixed quantity of gas-liquid mixture is added constantly through the sprayer at filter inlet. The aerosol enters into the filter and passes through the coalescence filter cartridge to achieve filtering. The liquid is discharged finally through the liquid outlet. A number of sensors are used in the test to check actual agglomeration working performance of the filter cartridge at different filtration velocities.

The test for separation of liquid particles is as shown in Fig. 2. Relevant parameters measured in the test are as below:

Atomized liquid: dioctyl sebacate (DOS) ; Sprayer model: SU11 (Spraying Systems Co.)

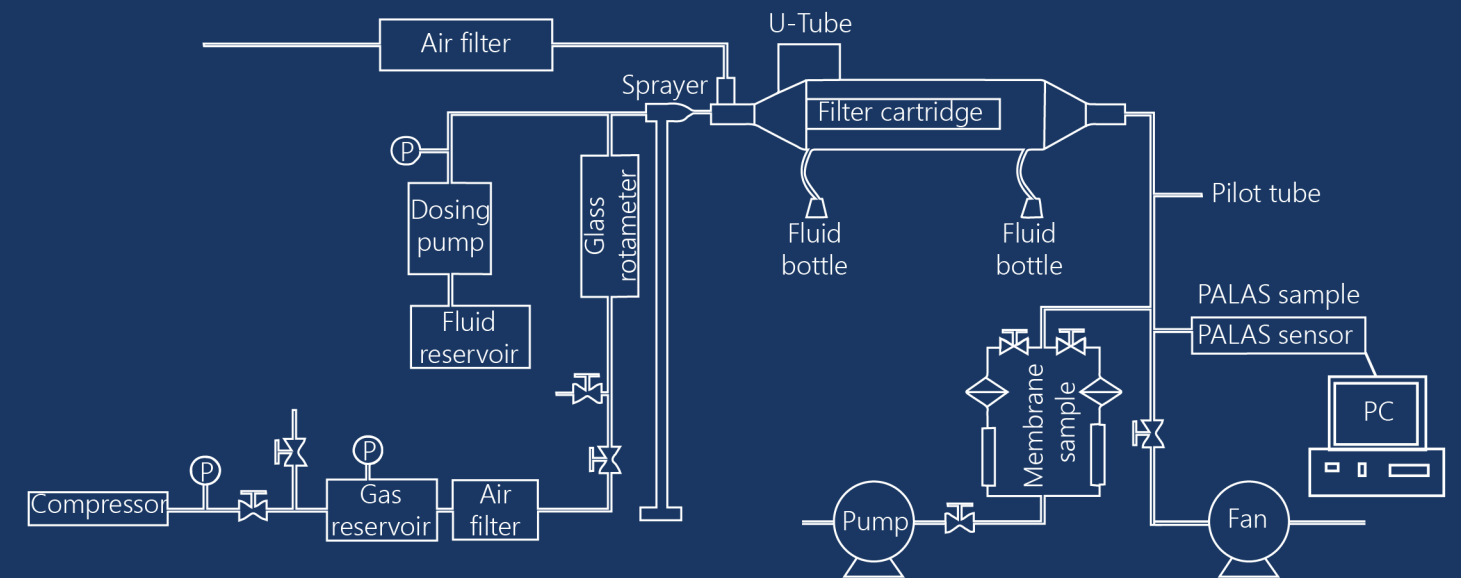


Fig. 2 Overview Test Device (Gas-Liquid)

The measuring of aerosol particle size and distribution in the up-stream and down-stream of the filter is done by an optical particle counter (Palas Welas 3000 Series). This particle measuring system, as shown below in Fig. 3, includes a vacuum pump, sampling nozzle, diluter and computed particle detection system.

Sampling is made with the own vacuum pump in Welas Control System and the sampling flow is 5 Lmin-1. A series of sampling nozzles are fabricated aiming at the common flow range. In order to ensure coaxial and isokinetic sampling the diameter of the sampling nozzle change with the inlet velocity, allowing for the particles to be equally collected regardless of their size.

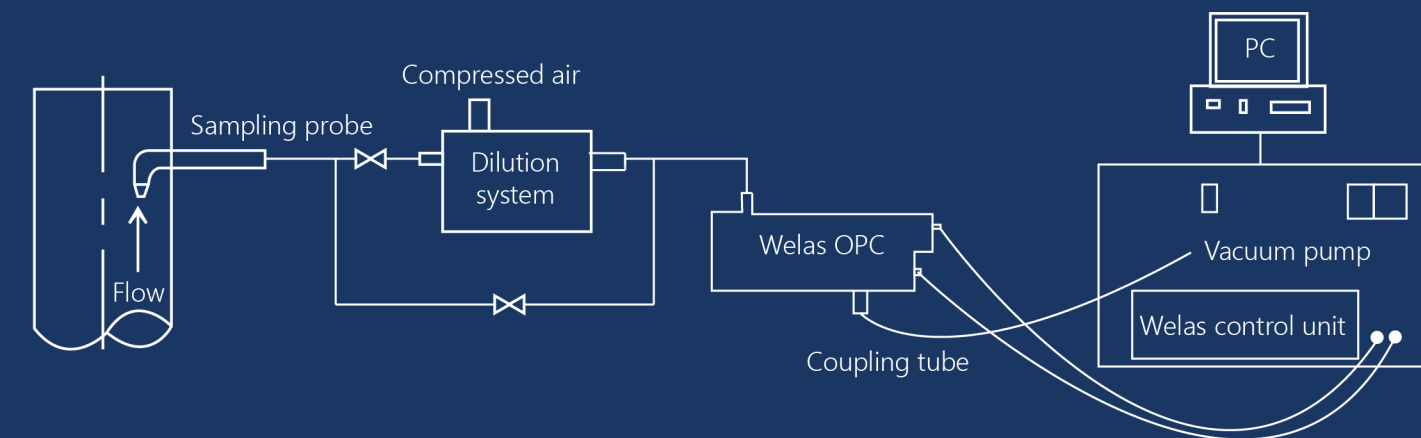


Fig. 3 Particle measurement system



P E T R O G A S

G A S S Y S T E M S

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