

Suggesting Total Solution to the Environment



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Filter Bags



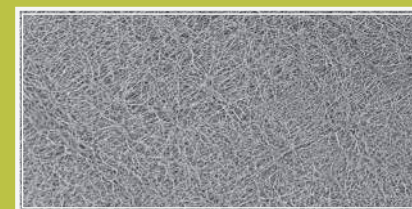
Cages



Venturis



Bulk Head Connectors



ePTFE Membrane



PTFE Staple Fiber



PTFE Scrim



PTFE Needled Felt



HEPA Filter Media



Pulse Valves & Timers



PTFE Sewing Thread



ULPA Filter Media

What We Do For Improving Your Process

Based on many experiences of working with customers in the various industries, Micro-one clearly understands your need for quality—and we have been serving as a total solution provider with diverse products for consistent performance and longevity to add value and lower overall costs. Moreover, our R & D center and analysis capabilities give you strong confidence to achieve your ultimate goal for almost zero emission.

www.micro-one.kr

Where We Serve With Our Products

For a long time Micro-one has supplied the most suitable filter bags and related products for use in the various sectors, and is all too aware of the industry-specific challenges with which they can be faced. Almost every industry is now facing with some of the most stringent environmental legislations and various stages of the manufacturing processes which are capable of generating large quantities of pollutants which require treatment and collection. Based on our extensive application experience, wide range of products from Micro-one is recommended to bring maximum benefits to dust collecting system.



Cement Industry

Raw mills, coal mills, kilns, clinker coolers, finish blending/milling processes, packaging and general conveying are all operations which require some form of exhaust ventilation in order to clean dust-laden gases, but which also come with their own very specific operational demands. There has been an increasing trend over recent years toward bag filters for the de-dusting of rotary kilns and clinker coolers, the high temperature gases from which had typically been cleaned previously by means of electrostatic precipitators. Micro-one has been at the forefront of development of advanced filter bag technologies with ePTFE membrane helping cement plants to reduce their dust emissions whilst improving cement and clinker production efficiencies. The below range of products has been designed and produced in collaboration with our customers in the cement industry to meet the exacting application requirements in this market.

<i>Polyester</i>	<i>Aramid (Nomex)</i>	<i>Polyimide (p84)</i>	<i>PPS</i>	<i>Glass fiber</i>	<i>ePTFE membrane</i>
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Waste Incineration

Industrial and municipal solid waste incineration is also Micro-one's one of the main fields where we have been continuously recommending and supplying customers with PTFE + ePTFE membrane bags because this ultimately offers the best combination of chemical and thermal properties, including a maximum continuous operating temperature up to 250° C. Glass fiber bags are also available in ePTFE membrane to assist with emissions and/or pressure drop challenges

<i>PTFE</i>	<i>Glass fiber</i>	<i>ePTFE membrane</i>
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Steel & Iron Industry



Power Generation Industry

Plants in the steel & iron industry are constantly striving to limit their emissions, whether they are by land or air with particulates being an ever-present focus. There is a vast array of processes within the metals industry for which control measures are required to inhibit particulate emissions. Coking batteries, sinter-bands, converter furnaces, electric arc furnaces, casting and fettling operations all generate quantities of particulate matter to be collected and, on occasion, reprocessed. Furnace operations in particular can produce large volumes of inherently fine dust, most of which can be categorized as respirable. As a result, the levels of release into the atmosphere of such dusts are under constant scrutiny and appropriate air pollution control is required to bring total dust emissions below ever-decreasing regulatory limits. Micro-one is a long-established supplier to the steel and iron industry. Wide range of products have been developed with due consideration for the specific thermal, chemical and process parameters seen across the industry.

<i>Polyester</i>	<i>Aramid (Nomex)</i>	<i>Polyimide (p84)</i>	<i>PPS</i>	<i>Glass fiber</i>	<i>ePTFE membrane</i>
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Due to the increasing global demand for energy, coal continues to be the dominant fuel being burned in the plants of utility power providers, and also the additional use of biomass is on the increase. Equally, the reduction of waste being sent to landfill and the need to recover the energy from material that cannot otherwise be recycled is leading to a significant number of energy-from-waste sites with a variety of materials being combusted to generate heat to produce steam to drive turbines and generate electricity. Many stand-alone plants now process all manner of waste types; municipal, medical, industrial, hazardous, sewage sludge, paper sludge, and many other kinds increasingly varied. The flue gases from these combustion processes require cleaning to remove the numerous gaseous and solid pollutants, the emissions of those are tightly controlled and closely monitored. The very nature of the process ensures that the flue gases are often high temperature and chemically aggressive which are coupled with the requirements for low particulate emission levels and the need to maintain good draft through the system. This places great emphasis on the quality of the filter media to be employed in any fabric filter gas cleaning system. Micro-one has been actively worked over many years in supply of our power generation range of filter bags which have been designed to meet and exceed the requirements of the growing energy market.

<i>Aramid (Nomex)</i>	<i>PTFE</i>	<i>PPS</i>	<i>Glass fiber</i>	<i>ePTFE membrane</i>
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Non-Ferrous Metal & Aluminum Industry

From the handling and drying of the raw materials, through calcination, anode baking, electrolytic reduction in 'pots', reverberatory furnaces and casting operations, particulate emissions generated, both direct and fugitive, require control and collection. Fabric filters are commonly applied for air pollution control, but the gas chemistry of some of these processes can make them particularly troublesome. Micro-one knows very well about the specific and various working conditions of this industry, offering the most proper collecting solutions.

<i>Polyester</i>	<i>Aramid (Nomex)</i>	<i>PTFE</i>	<i>PPS</i>	<i>Glass fiber</i>	<i>ePTFE membrane</i>
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Many Other Industries We Serve for the Air Quality

*Diverse working experiences
in the numerous industries enable
us to create new technology for
better air quality!*



Paper & Pulp Industry



Casting Industry



Asphalt Plant & Aggregate Industry

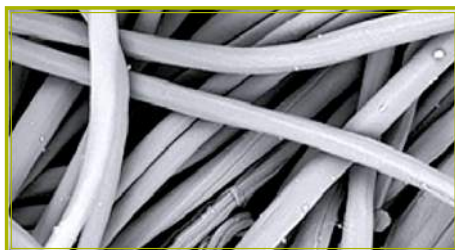


Lime & Gypsum Industry

Applicable Fibers with Treatment

■ PTFE

PTFE is the one of the best fibers with outstanding chemical and thermal resistance, operating up to 250 °C. There are two kinds of fiber used in application: brown & white.



▲ Brown PTFE



▲ White PTFE

Due to collecting efficiency and lower cost, now the white PTFE is a substitute for the brown PTFE called as Teflon.

Generally applied for Power generation, Chemical, Carbon black, Incineration, Combustion

■ Aramid (Nomex)



Suitable up to 200 °C in dry condition, and care is needed when used in moisture condition at high temperature as it is prone to hydrolysis which chemically degrades the fibers by turning them into powder resulting in failure of the filter media.

Generally applied for Asphalt, Quarry, Lime, Foundry, Cement, Smelting, Gypsum, Chemicals

■ Glass Fiber

Compared with other non-woven fibers, Glass fiber is woven filtration material applied for both lightweight and heavyweight cleaning system, and also it has a good thermal and chemical resistance properties operating up to 260 °C.



For much better performance, ePTFE membrane is laminated on the glass fiber to collect dust on its surface along with its non-stick characteristic improving cleaning and inhibiting penetration of fine dust into the structure of media

Generally applied for Power generation, Chemical, Carbon black, Incineration, Combustion

■ PPS



Normally operating up to 180 °C with the excellent chemical resistance except for oxidizing agents such as NO₂ and Oxygen itself. This has very good acid resistance and wide application in combustion process.

Generally applied for Power generation, Cement, Combustion, Incineration, Dryer, Carbon black

■ Polyester



With a strong, abrasion resistance, Polyester is the most versatile, cost effective, and widely used filter media for dust collection working up to 150°C, which is strong against acids, solvents and oxidizing agents, but it tends to hydrolyze which results in a loss of strength and toughness as the fibers break down and turn into powder. And according to the condition of collection fine or coarse fiber can be designed with variety of the chemical and thermal treatments.

Generally applied for Wood, Lead, Nuisance dusts, Quarry, Fertilizers, Metal process, Grain handling, Cement, Tobacco, Ceramics, Vacuum cleaners, Flour, Plaster, Smelting, Polishing, etc.

■ Polypropylene



In regard to temperature, polypropylene is the lowest rated filter media, but it shows one of the best chemical resistances and properties which match well with various special industries. Continuous operating is 90°C under dry, non-aggressive condition. Due to the low density, it is 30% thicker than polyester, and with good chemical structure, it doesn't hydrolyze, but weak against any of oxidizing agents.

Generally applied for Food, Oil, Galvanizing, Chemicals, Liquids, Detergents

■ Acrylic



Working up to 120°C, Acrylic fiber has a good chemical resistance as well as resistance to hydrolysis, and due to low strength, it sometimes mixed with polyester to make a compromised needle-felts.

Generally applied for Power generation, Cement, Lime-stone, Incineration, Smelting, Asphalt.

■ Polyimide(P84)



Known as P84, polyimide can be operated up to 230 °C under dry condition with good chemical and thermal resistance although PTFE fiber exceeds these characteristics, and it is weak with NO₂ and hydrolysis in hot and wet conditions.

Generally applied for Power generation, Cement, Straw burning, Medical incineration, Lime, Gypsum, Waste incineration, Metallurgical.

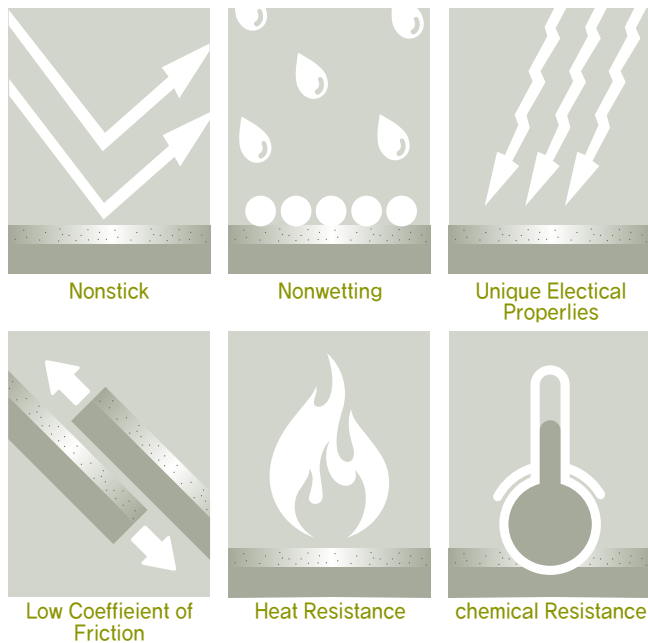
■ Various Treatments

- ▶ Calendering is to physically squeeze the filter media between heated rollers, giving the surface characteristic of the media to vary how it responds to dust and flow.
- ▶ Heat setting is for minimizing of shrinkage
- ▶ Anti-static
- ▶ Singeing(glazing) is to burn off the hairy surface to prevent dust build-up
- ▶ ePTFE membrane lamination on the various filter medias
- ▶ Coatings and impregnations are chemical treatments for the improvement of fiber properties such as resistance to hydrolyze, easy release of dust, down-sizing of pores, liquid repellent, and etc.

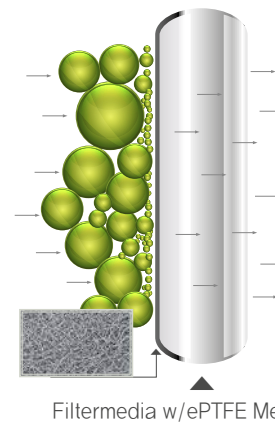
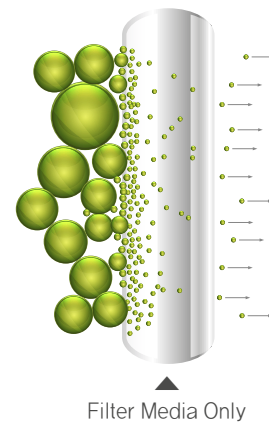
Why Micro-one's ePTFE Membrane Works Superiorly

Micro-one's ePTFE membranes are made of Polytetrafluoroethylene, simply called PTFE, which is thermally (up to 250 °C) and chemically (anti-acid and anti-alkaline) stable, through the very complicated process of billet to rod to film to membrane, having more than 50% porosity with 1~2 μm pore size for filtration efficiency and higher air permeability. It is laminated onto a variety of substrates for surface filtration up to 99.9%, preventing dust penetration into filter media.

■ Characteristics of PTFE

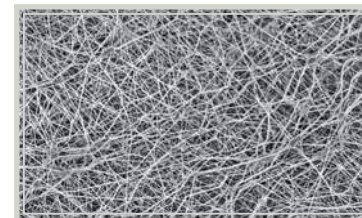


Efficiency for less 1μm	55.5%
for less 5μm	93.0%



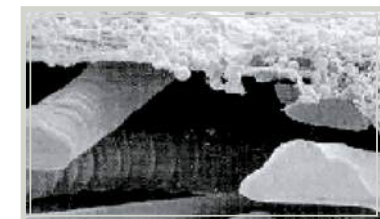
■ Advantage with ePTFE Membrane

- Surface filtration up to 99.9%
- Superior efficiency for fine dust
- Easy dust release
- Keeping lower pressure drop
- Longer bag life
- Less pulse interval required
- Less ID fan power – saving energy

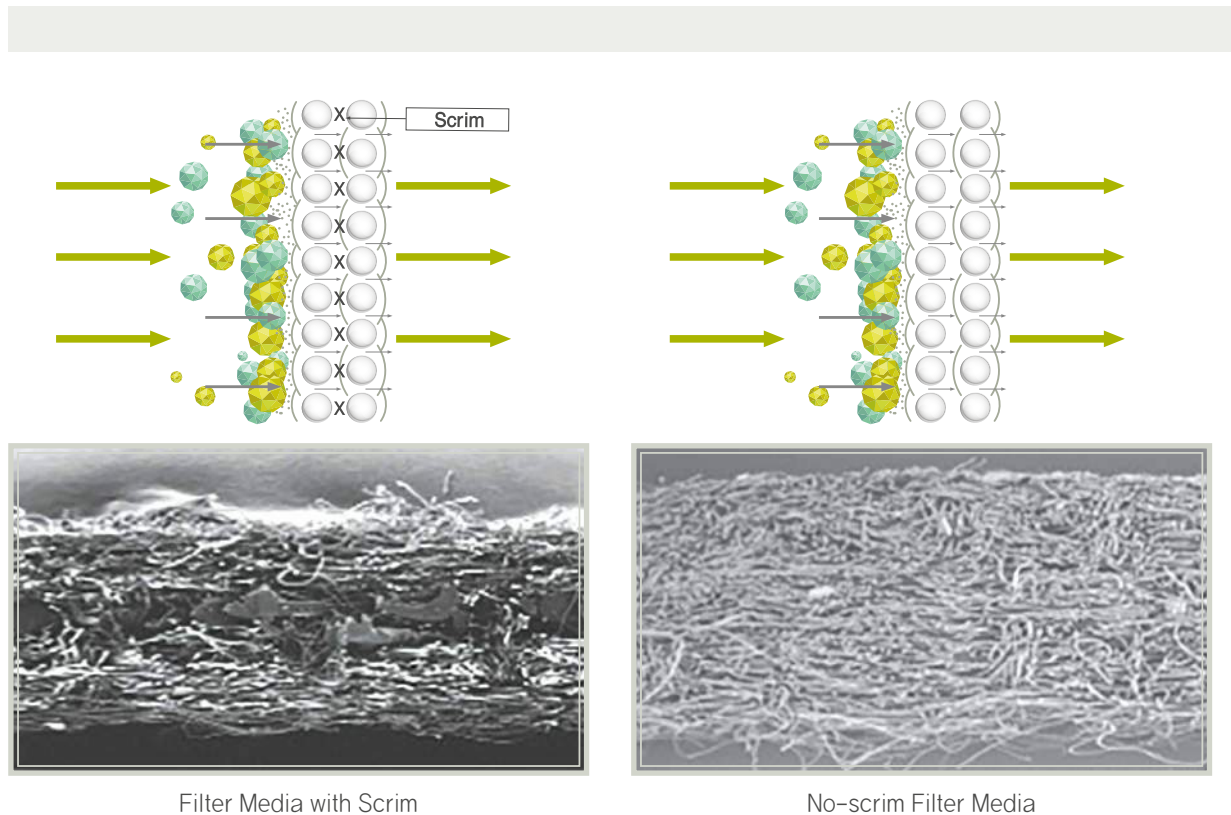


*A-year-after result
is much different!*

Efficiency for less 1μm	99.9%
for less 5μm	100%



What is Advantage of No-scrim Filter Media



No-Scrim filter media has 100% of fiber layer, but filter media with scrim consists of 80% of fiber layer and 20% of scrim layer by weight which has no filtering function. Therefore no-scrim filter medias are far superior in their performance, filtering efficiency, and lifetime comparing filter media with scrim. Except for PTFE, No-scrim is applied for almost all fibers such as P84, PPS, Aramid (Nomex), Polyester, and Polypropylene.

MICRO-ONE has been leading the market with no-scrim filter media + ePTFE membrane for better air quality, which now becomes the mainstream in the field of air and gas pollution control.

■ Property Comparison

Polyester 500g/m ²	With Scrim	No-scrim
Weight (g/m ²)	500	500
Thickness (mm)	1.87	2.02
Permeability (dm ³ /dm ² /min)	152	169
Mullen (MPA)	3.27	3.98
MD/XD Heat Stability (%)	2.6/2.0	2.2/1.5

Aramid 400g/m ²	With Scrim	No-scrim
Weight (g/m ²)	400	400
Thickness (mm)	1.99	1.94
Permeability (dm ³ /dm ² /min)	213	197
MD/XD Strength (N/5cm)	604/1324	847/1181
MD/XD Elongation @ Peak (%)	79/44	44/51
MD/XD Heat Stability (%)	0.5/0.3	0.6/0.3

Our Product Lineup

■ *Filter Bags with Various Fiber + ePTFE Membrane* : a variety of filter bags can be manufactured to meet specific application needs.



PTFE Fiber Bag



Glass Fiber Bag



Aramid (Nomex) Fiber Bag



PPS Fiber Bag



Polyester Fiber Bag



Polypropylene Fiber Bag



Acrylic Fiber Bag



P84 Fiber Bag

■ Filter Bag Selection Table

Fiber Type	Temperature (Max.)	Against Hydrolysis	Against Acids	Against Alkalis	Against Oxidization
PTFE(Teflon)	250°C (270°C)	Excellent	Excellent	Excellent	Excellent
Glass Fiber	260°C (280°C)	Excellent	Good	Moderate	Excellent
Aramid (Nomex)	200°C (220°C)	Moderate	Moderate	Moderate	Moderate
PPS	180°C (190°C)	Excellent	Excellent	Excellent	Moderate
Polyester	145°C (150°C)	Fair	Moderate	Fair	Good
Polypropylene	90°C (100°C)	Excellent	Excellent	Excellent	Fair
Acrylic	120°C (135°C)	Good	Good	Moderate	Good
Polyimide (P84)	230°C (240°C)	Good	Moderate	Moderate	Good



■ *Bag Cages*

The fit between the bag and cage is critical for pulse-jet filters to perform properly. Filters that are too loose or too tight will have severely limited collection efficiency and may fail prematurely.

We are manufacturing all standard round cages as well as specialized cages such as Oval, Star, 2piece, and Form Lock. Both Top Load and Bottom load cages are available.

Cage Construction

No of Vertical Wire	10,12, 16, 20, 24, or customized cages
Horizontal Ringspace	100mm, 150mm, 200mm, 250mm
Cage Top	Slotted, Roll band, Roll flange, All wire, Collar venturi, Split ring
Cage Bottom	Welded cup, Crimped cup, Snap cup, Wire formed
Material	Carbon steel, Galvanized steel, 304 stainless steel, 316 stainless steel
Cage Length	Up to 10 meters

■ *Venturis*

For more efficient cleaning, venturis are available for all diameter cages. Venturis come in 75mm to 150mm lengths. Venturis are made in a variety of materials: aluminum, carbon steel, galvanized and stainless steel.



■ Diaphragm Valves and Timer Board

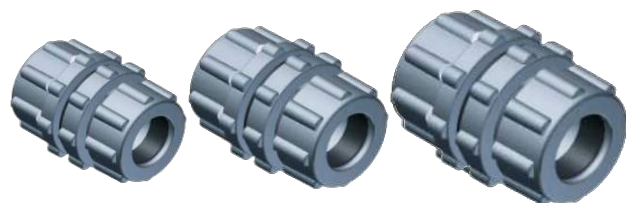
Our diaphragm valves are suitable for dust collector applications, in particular for pulse-jet filter cleaning.

Type	Model	Size	Remark
Dresser nut ports	KM-40	40A	Available with integral pilot or as remotely piloted valve. Outlet at 90 degrees to inlet.
	KM-50	50A	
	KM-65	65A	
Flange ports	KM-40S	40A	Available with integral pilot or as remotely piloted valve. Outlet at 90 degrees to inlet
	KM-50S	50A	
	KM-65S	65A	

The control of timer board can function in 2 modes, Continuous Mode and On-Demand Mode.

In Continuous Mode, the pressure switch terminals are shorted. Upon application of output voltage, the control activates output #1 after the preset off time. It will continue to activate outputs sequentially until input voltage is removed.

In On Demand Mode, the pressure switch terminals are connected to an isolated set of contacts of a differential pressure switch. The control will activate the outputs sequentially whenever the pressure switch contacts are closed. When the pressure switch contacts open, the output sequencing stops. Re-closing of the contacts will cause the control to resume activating the outputs. Program wire allows the user to select the maximum number of outputs to be activated.



■ Bulk Head Connectors

Model	Size	A	B	C	D	E	F	G	H
MOBC-40	40A	47	63.5	58.9	75.4	134.3	49.5	48.6	105.5
MOBC-50	50A	53.9	68	68.9	83	152	63.7	60.5	115
MOBC-65	65A	55.8	66.2	67.8	82.7	150.5	76.8	76.3	131.6



Model-2000



Model-3000

■ Differential Pressure Gauges

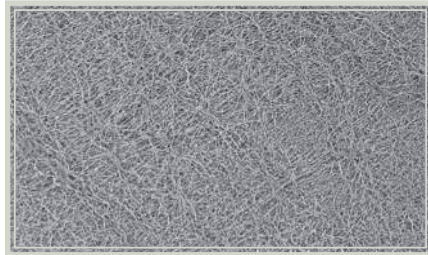
Model	Range (mm of water)
2000 - 300	0 - 300
2000 - 400	0 - 400
2000 - 500	0 - 500

Model	Range (mm of water)
3000 - 300	0 - 300
3000 - 400	0 - 400
3000 - 500	0 - 500

PTFE Product Lineup

■ *ePTFE Membrane*

We have been manufacturing PTFE membranes, which are mostly applied for various filter medias of pulse-jet dust collector to improve filtration efficiency and the textile of clean room wears for semi-conductor, display, and Pharmaceutical industries, and HEPA & ULPA filter as well.



■ *PTFE Sewing Thread*

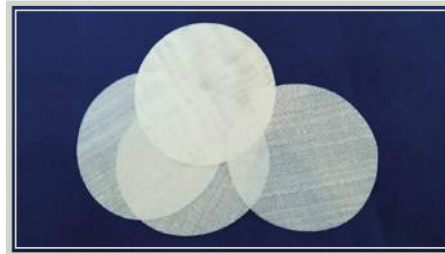


By self-manufacturing the high quality PTFE sewing thread, we can absolutely keep quality sewing process in making filter bags, and also we widely supply it to the market.

■ *PTFE Staple Fiber*



■ *PTFE Scrim*

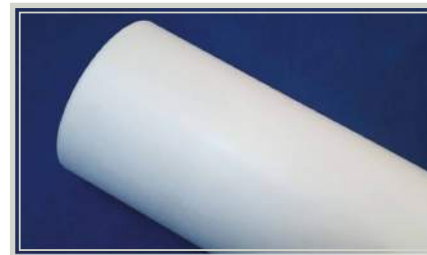


■ *PTFE Needled Felt*



■ *HEPA & ULPA Filter*

We are operating full line of PTFE manufacturing such as membranes, sewing threads, staple fiber, and scrim as well, so we finally produce high quality PTFE needled felt to meet competitive price level from the global market.



These higher class filter medias also become one of our major products, offering the best quality with competitive pricing to the air filter industry, and as a stable resource, we do make partnership with lots of unit manufacturers.

Major Production Facilities

■ Filter Bags



Auto Trimming m/c



2-Rod Sewing m/c



Auto 3-Rod Sewing m/c



Other Sewing m/c

■ Cages



Main Welder m/c



Auto Ring Severing & Welder m/c



Cap Welder m/c



Wire Straightner m/c

■ PTFE Membrane, Carding – needling, and Laminating



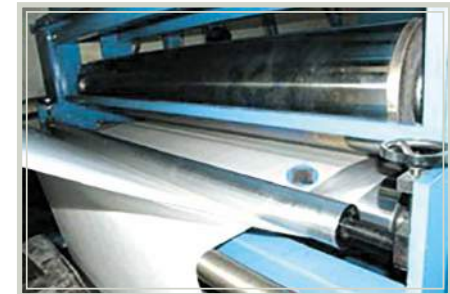
PTFE MD Tenter



PTFE CD Tenter



PTFE Needling m/c



Laminating m/c for 1800mm



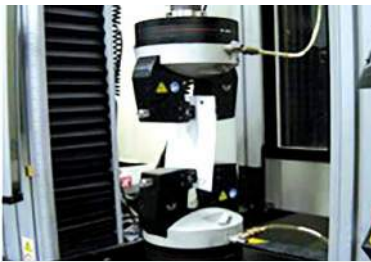
PTFE Carding m/c



Laminating m/c for 2400mm

Research & Development

Micro-one Research & Development Center is constantly working to implement innovative solutions in solving filtration and separation problems. Micro-one R & D provides analysis service of used bag using various test facilities, recommending the most proper solution for bag houses to the clients. Also Micro-one R & D is actively involved R & D program with Public Sector Authorities and Private Sector Corporations in Environmental fields and new material development.



Strength Tester



Air Permeability Tester



Perm Poro-Meter



Fractional Efficiency Tester



Filter Bag Media Tester



Bonding Strength Tester

■ Laboratory Facilities

All members of Micro-one R & D are working very hard to improve better quality of our products, to find out better solution for any problems of dust collecting equipments, and to develop new technology and new material until we achieve emission zero.



Fiber Diameter Tester



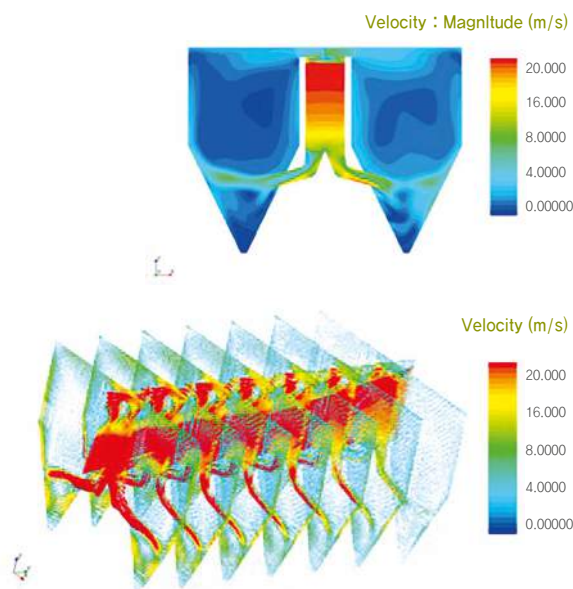
Fiber Strength Tester



Electro-Microscope

Engineering & Fabrication

Micro-one has in-house flow modeling capabilities that include computational fluid dynamics (CFD), physical flow modeling and field testing. By integrating the technology of 3D graphic design, CFD, and physical flow modeling, Micro-one produces the most accurate output for each project. The benefits of Micro-one flow modeling capabilities include:

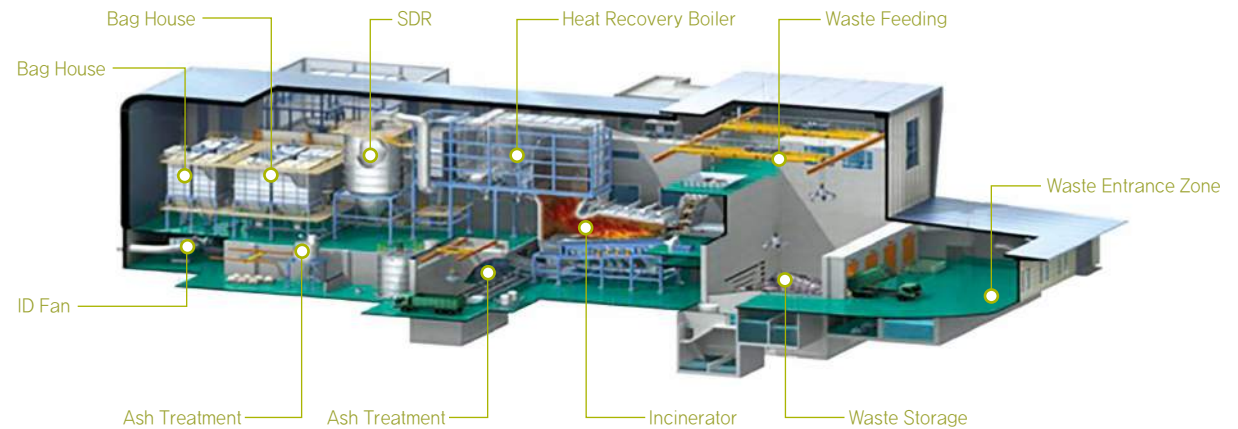


- ▶ Reduced outlet emissions resulting from optimized flow through the pollution control device
- ▶ Elimination of bag failures related to air flow abrasion issues
- ▶ Reduced equipment operating costs from optimized pressure drop
- ▶ Elimination of ductwork repairs caused by improper flow designs
- ▶ Increased filter bag life by eliminating ash erosion from high gas velocities
- ▶ Eliminated maintenance time and costs associated with removal of dust dropout and ductwork buildup
- ▶ Quick turnaround of testing results as a function of Micro-one's fully integrated capabilities allows faster implementation of improvements and quicker payback

Micro-one has the expertise to engineer, fabricate, and install flow optimization modifications, providing a convenient, cost-competitive turnkey solution for our customers. We apply our experience and knowledge to help our customers with enhancing and optimizing the performance of their bag house / fabric filter / semi-dry reactor (SDR) installations for particulate air pollution control. We constantly strive to improve our products and services for the benefits of our customers – providing solutions that reduce energy consumption while extending bag life to minimize maintenance time and the costs of collector operations, all while reducing emissions. Our systems enable us to quickly help our customers optimize their bag house operations and solve any problems that may arise.



■ Lots of Experience of Semi-dry Reactor and Bag House for MSW Incinerators



In Semi-Dry Reactor, the flue gases are introduced into an absorbing tower where the gases are contacted with a finely atomized alkaline slurry:

Usually a calcium based sorbent such as $\text{Ca}(\text{OH})_2$, or CaO . Acid gases are absorbed by slurry droplets and react to form solid salts. The heat of flue gas is used to evaporate all the water droplets, with a non-saturated flue gas leaving the absorber tower. The effect of cooling & humidifying the hot gas stream increases collection efficiency over simple dry injection.

Apart from manufacturing various type of filtration systems and filter elements, we offer the following services:

- ▶ Technical consultancy in filtration system – For both new and existing system
- ▶ Site validation and analysis, feeding back cost effective suggestions and solution
- ▶ Site Fitment of all type of filter bags and cages
- ▶ Annual maintenance contract of bag house and related equipments and spare parts

■ *Lots of Experience of Bag House for Power Plants, Cement Plants, Paper & Pulp industry*



We have designed and constructed fabric filters for a variety of applications, including coal fired steam generators, stoker boilers, fluidized bed combustion boilers, municipal waste incinerators, cogeneration facilities, and industrial processes such as steel, wood, aluminum, glass, cement and etc. With inherent high collection efficiency, a fabric filter system is very effective to collect fine dust and heavy metals. We offer a wide variety of filter bag cleaning technologies and associated fabric filter media to suit virtually all operating conditions and dust characteristics.

*We will continuously work
for your benefit!*



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