Tri-Vent® Series Intake Filters and Filter Silencers

The Future of Filtration.

ENDUSTRA FILTER MFRS
1145 Birch Drive
Schererville, IN 46375
800-521-1008
www.endustrafilters.com

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The Future of Filtration:

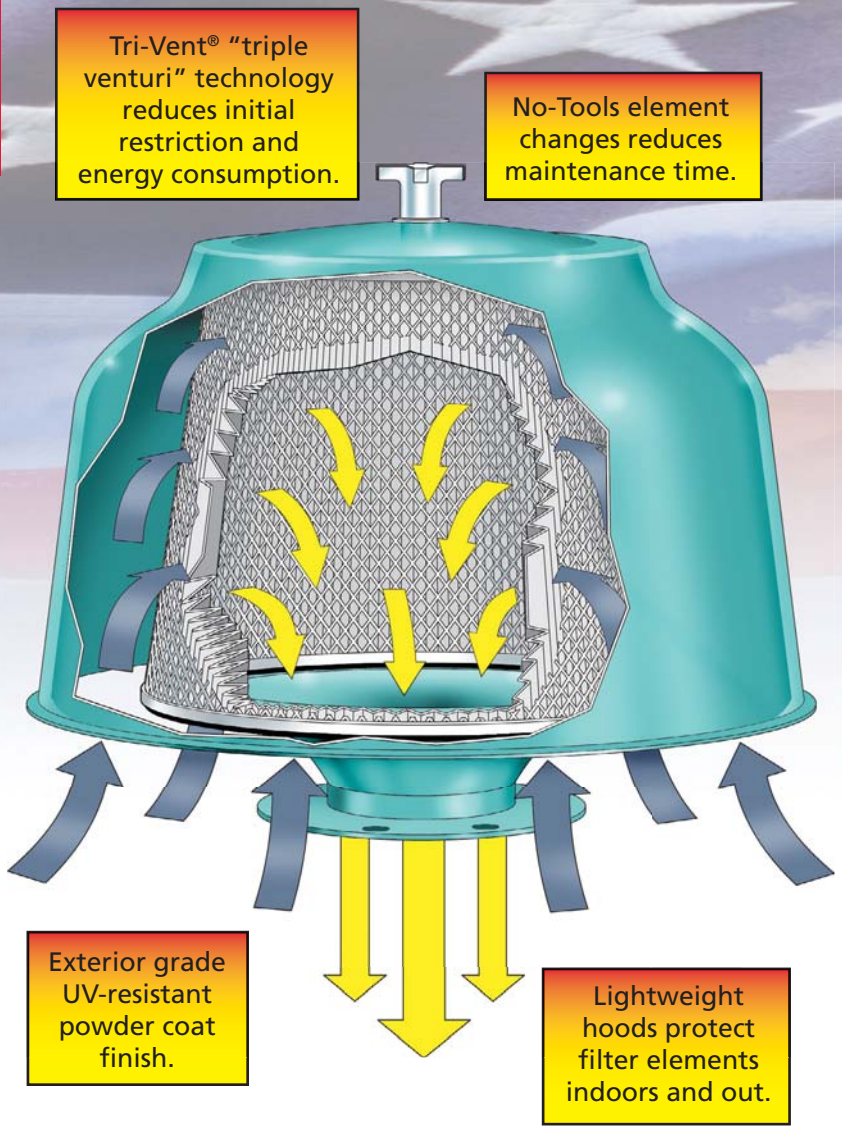
Endustra's Tri-Vent® Series Intake Filters and Filter Silencers set new benchmarks for the industry: *The Future of Filtration is here, inside this catalog.*

Built on the unmatched platform of the Endustra Venturi Outlet Design, called "the first truly innovative design improvement in air intake filter housings for nearly half a century," the Tri-Vent® pays for itself with energy savings in less than a year ("Boosting Blower Performance," *Water & Wastes Digest,* October 2008).

We realize that performance is only the first step. Our future as an American manufacturer relies on our customers' ability to meet the demands of the global marketplace. Competitive pricing and exclusive features such as Enduralast® Synthetic Media, No-Tools element changes, powder coating, and a 100% satisfaction guarantee provides the second step: quality and value for the long term.

For Endustra, *The Future of Filtration* is not a slogan. We are 100% family owned and operated, manufacturing our products in small town America. We couple high-tech design with old-fashioned commitment to employees as people, and to customers as partners, and we won't operate any other way.

Endustra wants your business. Call our friendly, professional staff at 800-521-1008, or visit our website www.endustrafilters.com.



Do Tri-Vent® Filters pay for themselves?

Turn to page 11.

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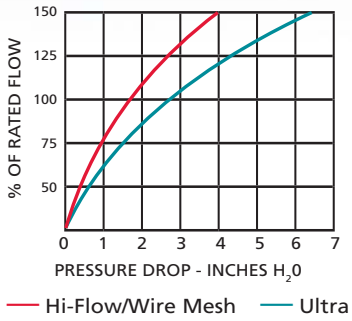
Tri-Vent® Series P04

Intake Filters

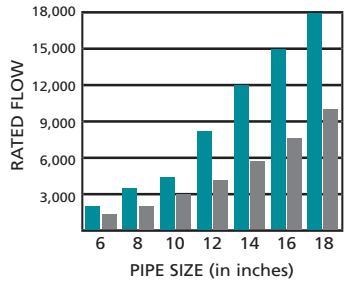
Tri-Vent® Technology Advantages

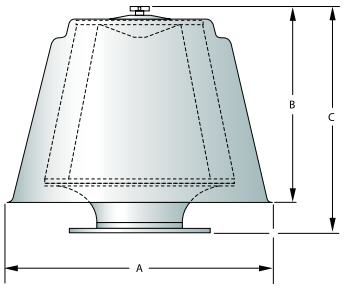
- 30-50% lower initial restriction
- Energy savings = 100% cost recovery in less than a year
- Cost-effective efficiency
- Lightweight, compact design
- No-Tools element changes
- Enduralast® Synthetic Media for consistent, all weather performance
- Powder coating

FLOW CURVE



RATED FLOW COMPARISON





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Model #	Enduralast® Element Number		FLG Size	Nominal Dimensions			Rated Flow SCFM	Weight
	Ultra Synthetic, 99.97% eff, @ 1-µ (nom)	Hi-Flow Synthetic, 98% eff, @ 10-µ (nom)		A	B	C		
P04RG-	E045773	E047933	3"	16	8	12	600	25
P04RH-	E045773	E047933	4"	16	8	12	900	25
P04RR-	E045773	E047933	5"	16	8	12	1100	25
P04RI-	E045773	E047933	6"	16	8	12	1350	25
P04RI-	E045774	E047934	6"	26	11	15	2000	40
P04RI-	E045775	E047935	6"	26	15	19	2250	45
P04RJ-	E045774	E047934	8"	26	11	15	2500	50
P04RJ-	E045775	E047935	8"	27	15	19	2900	55
P04RJ-	E045776	E047936	8"	28	20	22	3300	60
P04RK-	E045774	E047934	10"	26	11	15	3750	55
P04RK-	E045775	E047935	10"	27	15	19	4000	60
P04RK-	E045776	E047936	10"	28	20	22	4250	65
P04RL-	E045775	E047935	12"	27	15	19	5150	60
P04RL-	E045776	E047936	12"	28	20	22	6500	65
P04RL-	E045777	E047937	12"	38	26	30	8250	85
P04RM-	E045777	E047937	14"	38	26	30	12,000	80
P04RN-	E045777	E047937	16"	38	26	30	15,000	90
P04RS-	E045777	E047937	18"	38	26	30	18,000	100

Options

- 3-6" NPT connections
- Wire Mesh Medium, 60% eff. @ ISO Fine Dust
- Stainless steel or aluminum
- Custom fittings
- Special coatings
- FDA/USDA standards
- HEPA/ULPA
- Over 75 media types

Tri-Vent® Series P09

Intake Filter Silencers

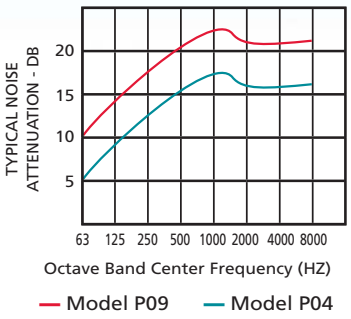
No Compromise

For a generation, everyone reasoned that high-efficient filters equaled high maintenance costs, and the only way to make a filter element last longer was to allow more dirt to pass through. This is known as "the filtration compromise."

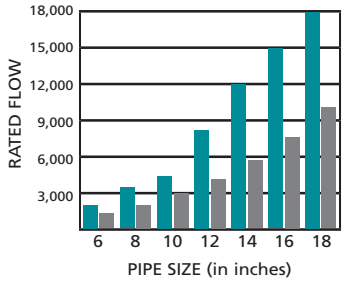
Tri-Vent® technology makes no compromise. Our high-efficiency filters reduce energy consumption, and our exclusive Enduralast® Synthetic Media provide optimal filter element life in the harshest environments.

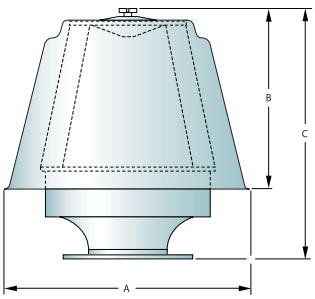
Reduce cost, reduce weight, and reduce maintenance. Don't compromise.

TYPICAL NOISE ATTENUATION



RATED FLOW COMPARISON





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Model #	Enduralast® Element Number		FLG Size	Nominal Dimensions			Rated Flow SCFM	Weight
	Ultra Synthetic, 99.97% eff, @ 1-µ (nom)	Hi-Flow Synthetic, 98% eff, @ 10-µ (nom)		A	B	C		
P09RG-	E045773	E047933	3"	16	8	18	600	30
P09RH-	E045773	E047933	4"	16	8	18	900	30
P09RR-	E045773	E047933	5"	16	8	18	1100	30
P09RI-	E045773	E047933	6"	16	8	18	1350	30
P09RI-	E045774	E047934	6"	26	11	21	2000	50
P09RI-	E045775	E047935	6"	27	15	21	2250	60
P09RJ-	E045774	E047934	8"	26	11	21	2500	60
P09RJ-	E045775	E047935	8"	27	15	25	2900	70
P09RJ-	E045776	E047936	8"	28	20	29	3300	75
P09RK-	E045774	E047934	10"	26	11	21	3750	70
P09RK-	E045775	E047935	10"	27	15	25	4000	75
P09RK-	E045776	E047936	10"	28	20	29	4250	80
P09RL-	E045775	E047935	12"	27	15	25	5150	85
P09RL-	E045776	E047936	12"	28	20	29	6500	85
P09RL-	E045777	E047937	12"	38	26	35	8250	90
P09RM-	E045777	E047937	14"	38	26	35	12,000	105
P09RN-	E045777	E047937	16"	38	26	35	15,000	115
P09RS-	E045777	E047937	18"	38	26	35	18,000	125

Options

- 3-6" NPT connections
- Wire Mesh Medium, 60% eff. @ ISO Fine Dust
- Stainless steel or aluminum
- Custom fittings
- Special coatings
- FDA/USDA standards
- HEPA/ULPA
- Over 75 media types

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Tri-Vent® Series TM09

Top-Mount Intake Filter Silencers

Simple Solution

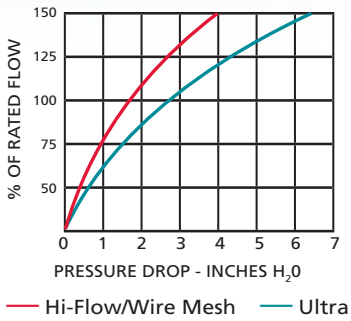
Ladders are the number one cause of work place injuries in the US (Bureau of Labor Statistics, 2004), yet old-fashioned, leaky, multi-stage panel filter housings often rise 15 feet above grade.

"Why not hang the filters upside down" we asked, "and cut energy consumption in half?"

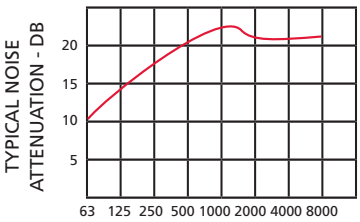
Enter Tri-Vent® Technology.

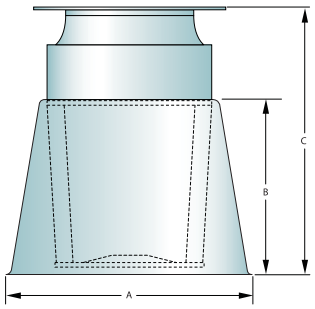
The Series TM09 allows a single operator to change elements while standing on firm ground. And our largest element weighs only 24 pounds.

FLOW CURVE



TYPICAL NOISE ATTENUATION





Model #	Enduralast® Element Number		FLG Size	Nominal Dimensions			Rated Flow SCFM	Weight
	Ultra Synthetic, 99.97% eff, @ 1-µ (nom)	Hi-Flow Synthetic, 98% eff, @ 10-µ (nom)		A	B	C		
TM09RI-	E045775	E047935	6"	28	20	30	2250	65
TM09RJ-	E045775	E047935	8"	28	20	30	2900	70
TM09RJ-	E045776	E047936	8"	28	20	30	3300	75
TM09RK-	E045775	E047935	10"	28	20	30	4000	75
TM09RK-	E045776	E047936	10"	28	20	30	4250	80
TM09RL-	E045775	E047935	12"	28	20	30	5150	85
TM09RL-	E045776	E047936	12"	28	20	30	6500	85
TM09RL-	E045777	E047937	12"	38	26	36	8250	100
TM09RM-	E045776	E047936	14"	28	20	30	10,000	90
TM09RM-	E045777	E047937	14"	38	26	36	12,000	115
TM09RN-	E045777	E047937	16"	38	26	36	15,000	120
TM09RS-	E045777	E047937	18"	38	26	36	18,000	125

Options

- Wire Mesh Medium, 60% eff. @ ISO Fine Dust
- Stainless steel or aluminum
- Custom fittings
- Special coatings
- FDA/USDA standards
- HEPA/ULPA
- Over 75 media types

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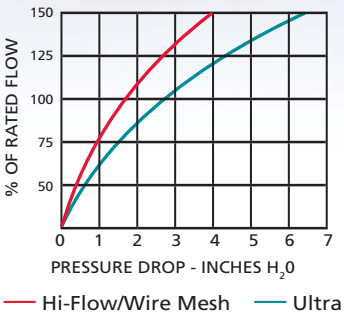
Air Inlet and Vacuum Filters

Cut the footprint, weight, and system pressure loss by half with the Tri-Vent® Series P08.

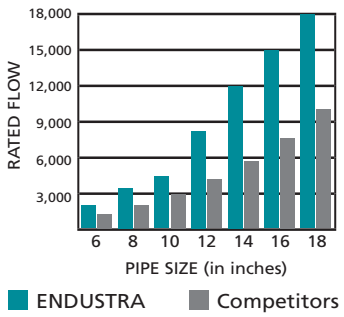
Available with NPT or flanged connections, the P08 offers standard No-Tools element changes in most sizes.

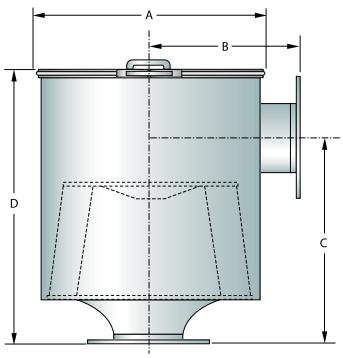
Change elements safely on the ground and draw air from a clean, remote source, or prevent costly environmental hazards in vacuum or dust-collection applications.

FLOW CURVE



RATED FLOW COMPARISON





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Tri-Vent® Series P08

L-Configuration Inline Filters

Model #	Enduralast® Element Number		FLG Size	Nominal Dimensions				Rated Flow SCFM	Weight
	Ultra Synthetic, 99.97% eff, @ 1-µ (nom)	Hi-Flow Synthetic, 98% eff, @ 10-µ (nom)		A	B	C	D		
P08RGG-	E045773	E047933	3"	16	11	18	23	600	50
P08RHH-	E045773	E047933	4"	16	11	18	23	900	50
P08RRR-	E045773	E047933	5"	16	11	18	23	1100	50
P08RII-	E045773	E047933	6"	16	11	18	23	1350	50
P08RII-	E045774	E047934	6"	20	13	20	27	2000	75
P08RII-	E045775	E047935	6"	20	13	24	31	2250	85
P08RJJ-	E045774	E047934	8"	20	13	20	27	2500	80
P08RJJ-	E045775	E047935	8"	20	13	24	31	2900	85
P08RJJ-	E045776	E047936	8"	25	18	28	35	3300	125
P08RKK-	E045774	E047934	10"	20	13	20	30	3750	90
P08RKK-	E045775	E047935	10"	20	13	24	33	4000	95
P08RKK-	E045776	E047936	10"	25	18	28	37	4250	135
P08RLL-	E045775	E047935	12"	20	13	24	37	5150	100
P08RLL-	E045776	E047936	12"	25	18	28	40	6500	155
P08RLL-	E045777	E047937	12"	30	21	38	46	8250	215
P08RMM-	E045777	E047937	14"	30	21	38	48	12,000	230
P08RNN-	E045777	E047937	16"	30	21	38	50	15,000	240
P08RSS-	E045777	E047937	18"	30	21	38	52	18,000	250

Options

- 3-6" NPT connections
- Wire Mesh Medium, 60% eff. @ ISO Fine Dust
- Stainless steel or aluminum
- Custom fittings
- Special coatings
- FDA/USDA standards
- HEPA/ULPA
- Over 75 media types.

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Tri-Vent® Series K08

Side-Access Inline Intake Filters

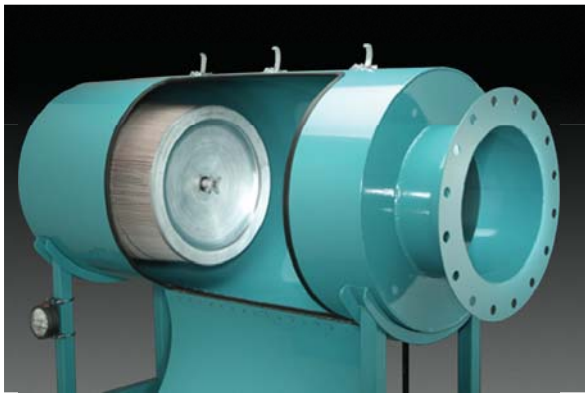
No-Tools!

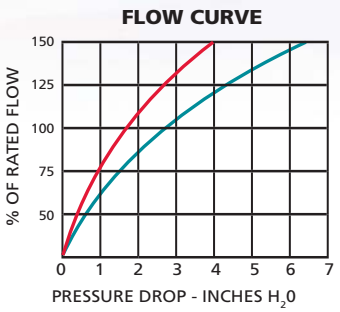
We created the Series K08 with maintenance in mind.

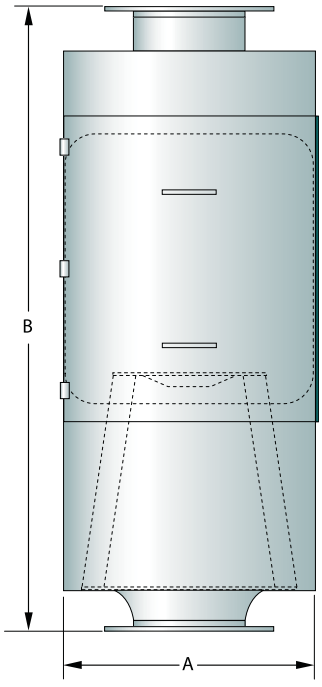
Our ergonomic, No-Tools design, combined with light-weight Enduralast® Synthetic elements, allows a single technician to service the K08 in minutes.

Tri-Vent® Technology reduces energy consumption, element change frequency, and maintenance costs.

Draw fresh air from a clean, remote source and make filter element changes easy. Switch to the Tri-Vent® Series K08.







Model #	Enduralast® Element Number		FLG Size	Nominal Dimensions		Rated Flow SCFM	Weight
	Ultra Synthetic, 99.97% eff, @ 1-µ (nom)	Hi-Flow Synthetic, 98% eff, @ 10-µ (nom)		A	B		
K08RII-	E045775	E047935	6"	22.25	42	2250	125
K08RJJ-	E045775	E047935	8"	22.25	42	2900	125
K08RJJ-	E045776	E047936	8"	22.25	50	3300	160
K08RKK-	E045775	E047935	10"	22.25	42	4000	125
K08RKK-	E045776	E047936	10"	22.25	50	4250	160
K08RLL-	E045775	E047935	12"	22.25	42	5150	140
K08RLL-	E045776	E047936	12"	22.25	50	6500	175
K08RLL-	E045777	E047937	12"	28.25	62	8250	250
K08RMM-	E045777	E047937	14"	28.25	62	12,000	260
K08RNN-	E045777	E047937	16"	28.25	62	15,000	270
K08RSS-	E045777	E047937	18"	28.25	62	18,000	280

Options

- Wire Mesh Medium, 60% eff. @ ISO Fine Dust
- Stainless steel or aluminum
- Custom fittings
- Special coatings
- FDA/USDA standards
- HEPA/ULPA
- Over 75 media types.

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Tri-Vent® Series TK

Manifold Intake Filter Silencers

High Capacity, Low Restriction, No-Tools, No Problem!

Series TKT (bottom outlet).

Series TKZ (side outlet).

Series TKM (top outlet).

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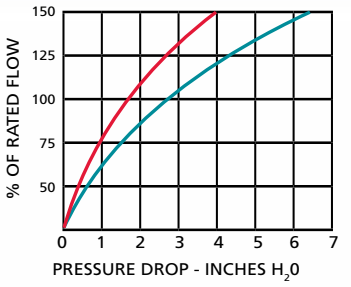
Panel filters historically offered one advantage over cartridges: high capacity in a compact space.

Not anymore.

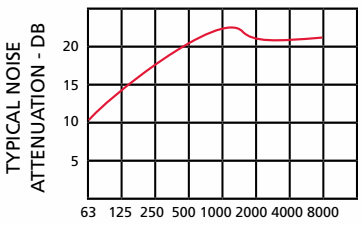
The Series TK reduces initial restriction and power consumption by 30 to 50 percent, and each Enduralast® Synthetic cartridge replaces up to eight panel filter elements.

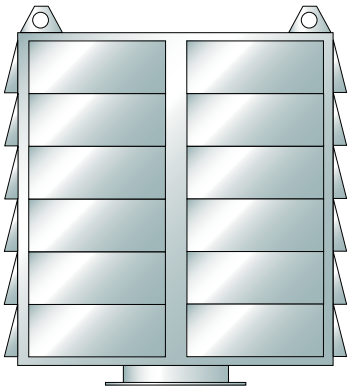
Available in bottom-, side-, and top-outlet single- and multi-stage configurations from 20" through 36" flanged connections, the Tri-Vent® Series TK changes everything.

FLOW CURVE



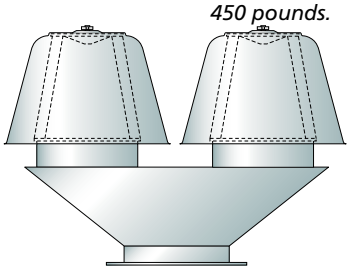
TYPICAL NOISE ATTENUATION





Traditional housing:
78.5"W x 78.5"D x 66"T
2500 pounds.

Endustra housing:
78"W x 38"D x 54"T
450 pounds.



Model #			Enduralast® Element		FLG Size	Rated Flow SCFM	Weight
Bottom	Side	Top	Ultra	Hi-Flow			
TKTRO-2-	TKZRO-2-	TKMRO-2-	E045777	E047937	20"	20,000	425
TKTRP-2-	TKZRP-2-	TKMRP-2-	E045777	E047937	24"	25,000	450
TKTRY-3-	TKZRY-3-	TKMRY-3-	E045777	E047937	30"	30,000	600
TKTREE-4-	TKZREE-4-	TKMREE-4-	E045777	E047937	36"	40,000	800

We will build your Series TK manifold to fit your application. Call for sizing and submittal drawings.

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We can help.

Endustra manufactures Tri-Vent® Filters and Filter Silencers in Schererville, Indiana, and on every product we print "Made in USA." Our American workforce proudly builds a quality product, and Endustra takes pride in benefitting our community and our country.

Our hometown team also benefits our customers: Endustra can easily modify Tri-Vent® designs to suit virtually any application-specific variable. Our in-house engineering team will apply flexible Tri-Vent® technology to meet your needs.

Whether your intake filter requirements include simple modifications or one-of-a-kind designs, same-day submittal drawings, short lead times, and competitive pricing transforms costly customizations into economical solutions.

Standard options include stainless steel and aluminum, special connections, custom colors, corrosion-resistant coatings for marine or harsh chemical environments, food grade compatibility, and high temperature construction.

Put our more than fifty years of design experience to work for you.

Custom Engineering and Design

Series P09 in 316 stainless steel.

K08 side-access three-cartridge manifold inline filter.

16" flanged Series P08 with No-Tools hinged lid for foul air application.

Four-cartridge manifold for direct mount to a 60" axial fan.

No-Tools inline filter with 80/20 extruded frame mounting bracket.

Series P08 with tubing inlet-outets, anchoring legs, and custom powder coat finish.

Enduralast® Synthetic Media

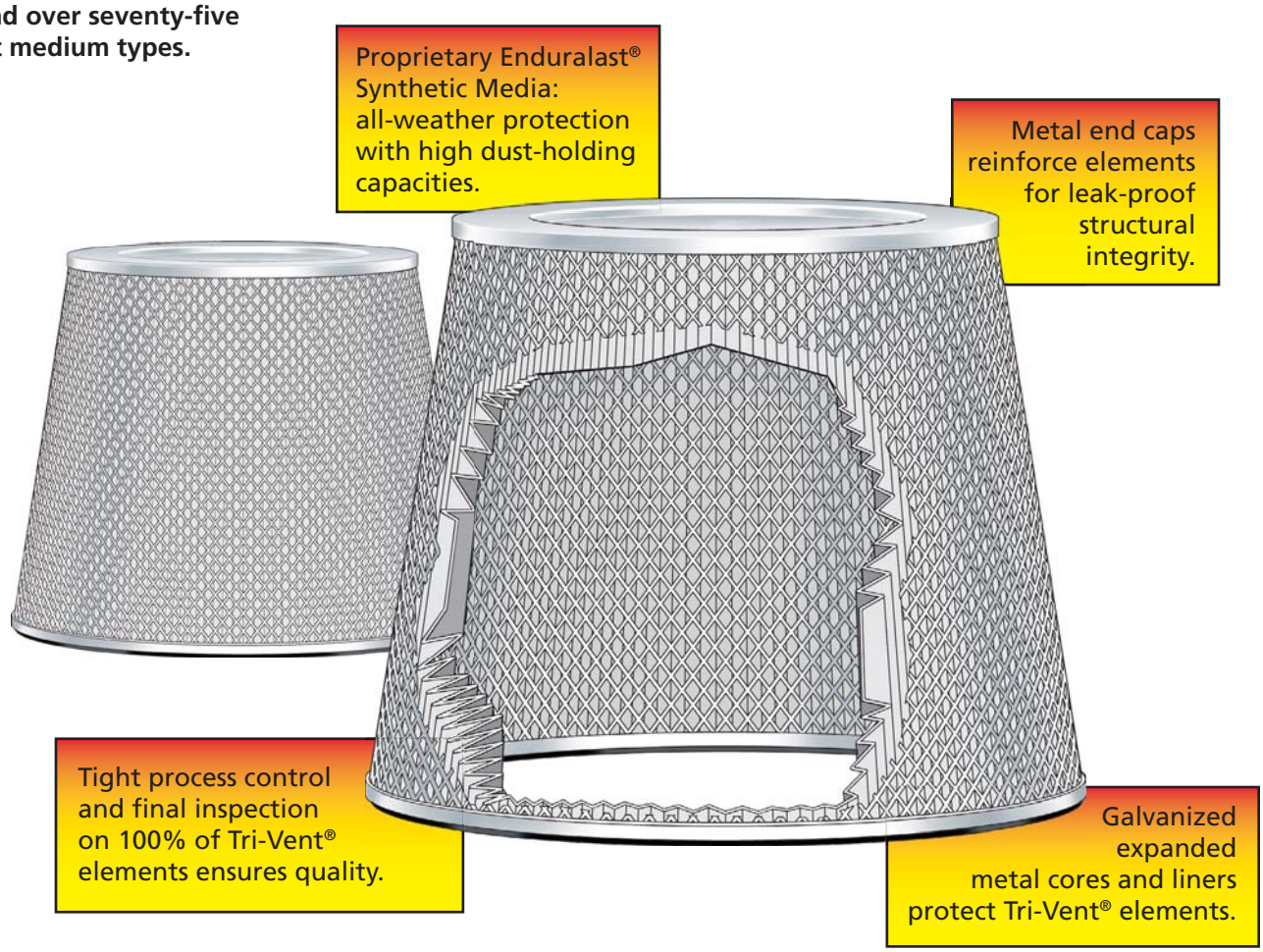
All-Weather Capacity

Another Tri-Vent® exclusive: proprietary Enduralast® Synthetic Media resist moisture and humidity for consistent performance in all climates.

Enduralast®'s low pressure drops and high dust-holding capacities combined with the superior flow characteristics of a conical element outperform standard paper and polyester.

Hydrophobic, oil-resistant, 99.97% efficient @ 1-micron (nom) Ultra Synthetic replaces old-fashioned paper. For extended life in severe environments, 98% efficient @ 10-micron (nom) Hi-Flow Synthetic can double the capacity of standard polyester.

Tri-Vent® elements are also available in wire mesh, HEPA/ULPA, and over seventy-five different medium types.



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Boosting Blower Performance

The Onondaga County Department of Water Environment Protection's Wastewater Treatment Plant (WWTP) features 32 multistage centrifugal blowers which supply air to eight 1.4 million gallon aeration tanks at the heart of a facility serving the 270,000 residents of Syracuse, NY, and much of Onondaga County. Employing state of the art engineering, the plant design features energy efficiency, equipment redundancy and flexible process capacities. In order to realize energy efficiency, the plant design included a new air intake filter specification which called for a cartridge-style 8" outlet intake filter silencer that would show just 2" W.G. initial restriction at 3,300 SCFM.

Blower building interior with Endustra Tri-Vent® P09 intake filter silencer and differential pressure gauge at the Metropolitan Syracuse WWTP.

Aeration basins and blower building exterior at the Metropolitan Syracuse WWTP.

Aeration basins and blower buildings at the Metropolitan Syracuse WWTP. The plant has 16 buildings, each housing two multi-stage centrifugal blowers.

The original filters were not provided as specified and "Right away, we started having problems with the filters," reports Maintenance Superintendent Jim Renk. "The high pressure drop was tripping alarms and collapsing filters."

Thirty-two blowers added up to more than 250 replacements every year, plus weekly cleanings, and every time an element had to be cleaned or changed, the job required two people. "The filter lids weighed in excess of 100 lbs, and each element weighed nearly 60 lbs. We were cleaning filters all the time," Renk recalls, "and that was a safety issue because of the excessive weight."

Ross Sanford, Crew Leader and lead supervisor for the Predictive Maintenance Group at the plant, learned initial restrictions across clean filter elements were in the 4.0-4.5" range—double the design specifications. Vibration analysis and laser alignment further suggested that the filters were causing undue strain on the blowers, and high amp draws confirmed that problem.

Endustra designed an element to withstand the differential pressures, and recommended the County purchase a single Endustra P09 Intake Filter Silencer to conduct a cost-benefit analysis by recording gauge and amp-volt readings every month for one year. The Endustra housing was installed alongside an existing filter, and the testing began.

Endustra's initial restriction was 0.8" W.G., and amp draws were 4.5 amps lower. "We had learned that increased surface area would mean the filters would last longer, but it turns out that the design of the filter housing has a lot to do with blower performance as well," says Renk.

Based on estimated energy savings of $2136.00 per filter per year, plus maintenance and labor savings, Sanford determined that the payback for retrofitting all 32 blowers would be approximately one year, and the entire aeration system was retrofitted.

Four years after the installation of all 32 Endustra Tri-Vent® P09s, Onondaga County has saved hundreds of thousands of dollars in energy bills. Further, no one cleans filters anymore. "The elements last so long that filter cleaning is no longer cost-effective," reports Renk. "We just wait until the delta-P gets too high. The life on these elements is excellent."

When it is time to change filters, the job requires only one person and eliminates many safety concerns because the Endustra hood and element each weigh only twenty pounds.

Text excerpted from "Boosting Blower Performance," WATER & WASTES DIGEST, October 2008.
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Company Philosophy

Since the founding of Endustra Filter Manufacturers in 1971, a company philosophy has developed. We believe it can be expressed with four words.

Reliability
Quality
Pride
Dedication

Reliability is inherent not only in our products, but in our high standard of business ethics.

Our goal to continually improve the quality of our service and products is with the hope that by doing so, we will improve the quality of life for all those with whom we deal.

We are proud of our company, our products and our employees, and we take pride in knowing that over the years we have been of benefit to our customers and suppliers, who in turn have contributed to our success.

We dedicate ourselves to the continued growth and prosperity of our company, our customers, our suppliers, our community and our country.

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