2030Districts Network Museum Group

Museum Indoor Air Quality

Feb 19

1 -2 PM EST

Zoom

Gary Chrismon
Molecular Segment Manager
Camfil USA

Kevin Molls
Building Maintenance Engineer
Rock and Roll Hall of Fame and Museum

2030 Districts Museum Committee

Peter Bardaglio, Ithaca
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Dave Low, 2030 Districts Network
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Expanding Climate Action in the Visual Arts

The 2025 Frankenthaler Climate Initiative Grant Cycle is now underway.

The FCI Application Portal is open through Friday, March 28.

Explore the press release, review our 2025 eligibility guidelines, and watch our informational webinar.

https://www.frankenthalerclimateinitiative.org

2030 DISTRICTS NETWORK

2030 Districts Network Museum Working Group 2025 Webinar Schedule

February 19th
Museum Indoor Air Quality

May 21st
AI's Impact on Museums

August 20th
Funding Opportunities for Museums

November 19th
Museum Case Studies

www.2030districts.org

All sessions from 1:00 to 2:00 PM ET

Zoom links will be sent with registration confirmation.

Upcoming Network Education Session

[REGISTRATION HERE]

Charles H. Wright Museum of African American History and Detroit Historical Society will be presenting in London

MuseumNext®

GREEN MUSEUMS SUMMIT

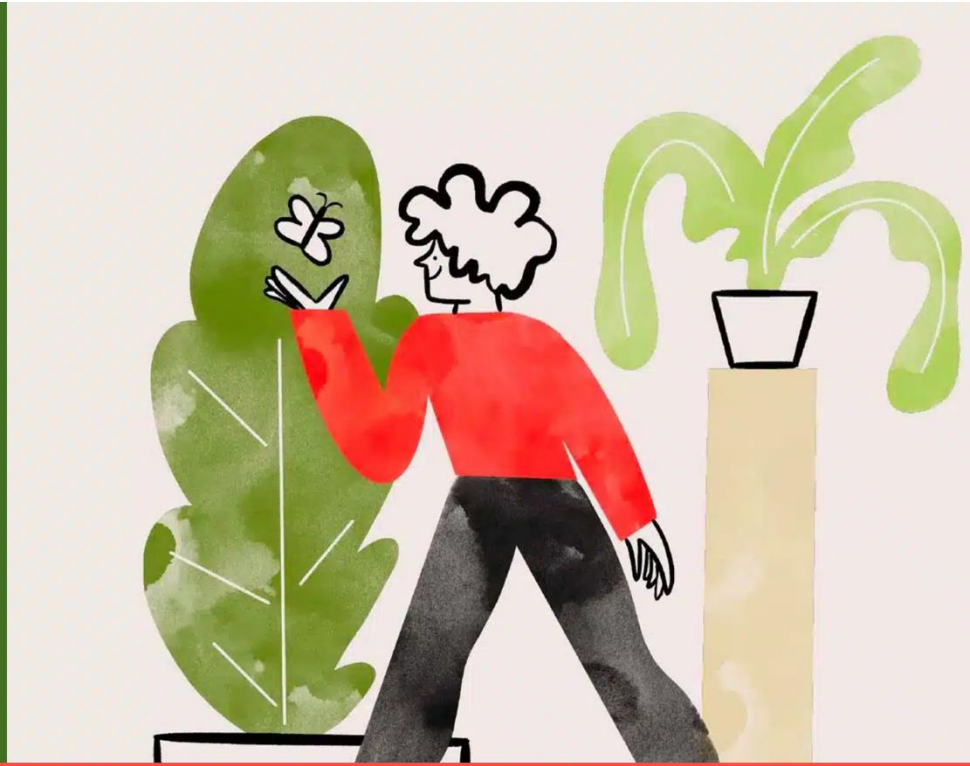
★★★★★

Loved by Museum Professionals

26 - 27 February 2025

BOOK TICKETS

The Virtual Event for Museum Professionals Interested in Sustainability and the Environment



Trusted by leading museums

Kevin Molls

Building Maintenance Engineer
Rock and Roll Hall of Fame and Museum

www.rockhall.com

Kevin Molls has been with the Rock and Roll Hall of Fame organization for the past 12 years. He has experience in multiple departments, starting his career in the gift store, moving to the Visitor Services department where he was promoted to Manager. For the past six years, Kevin has been on the Facilities team, serving as the Building Maintenance Engineer. In this role, he has been involved with projects in electrical, HVAC, plumbing, carpentry, and exhibits, in addition to overseeing aspects of the groundbreaking expansion of the Rock Hall currently underway.

Kevin is a Cleveland native and a graduate of Cuyahoga Community College with a degree in Fire Science and Technology. He received a degree in Construction and Building Maintenance from Remington Trade College in 2019.

Gary Chrismon

Molecular Segment Manager
Camfil USA

www.camfil.com

MCC Applications and Solutions Manager East– Camfil USA

Member of the Camfil USA Team for 13 years. (25 years in the Filtration Industry)

Currently a member of the Camfil Molecular Contamination Control (MCC) Group.

The MCC Group is a worldwide organization with manufacturing facilities in seven primary countries: US, Canada, England, France, Germany, India, Malaysia and Spain. Our desire is to provide world class contamination and corrosion control for the broadest spectrum of applications and situations. Clean Air is a Human Right!

My opportunity is to provide “first in class molecular solutions” for clients that both understand the gaseous contamination issues they are having as well as those who only know they have a problem but do not know why. The most efficient path to accomplishing this goal is to combine the many years of molecular and contamination control experience of the managers as well as the expert knowledge of the chemists we have on staff around the world. We are a close-knit working group and communicate daily on how to arrive at the best solution for any given client.

Prior to joining the MCC Team, I was the Inside Sales and Customer Service Manager for Camfil in Washington NC. This gave me the opportunity to work with the full range of Camfil product as well as the experience of how best to accommodate changes and everyday issues that arise across the product lines. My experience extends to 12 years with Flanders Filters as the Inside Sales Manager and Large Systems Project Manager.

During my tenure at Flanders and Camfil I have had the opportunity to manage and facilitate the largest containment filtration projects in North America: the Mixed Oxide Fuel Fabrication Facility at Savannah River SC (total of projects $30M), and the National Agro-Bio Facility in Manhattan, KS (Phil Chearmonte was the project lead and facilitator from inception of this $15M project).

My family consists of my best friend and wife Sandy, four children, five grandchildren and two dachshunds. I enjoy Freemasonry, trout fishing, turkey hunting, and long-range shooting.

2030 Cultural Heritage Molecular Filtration Camfil MCC Division

February 5, 2025

Gary Chrismon
Molecular Applications and Solutions

camfil
CLEAN AIR SOLUTIONS

CULTURAL HERITAGE

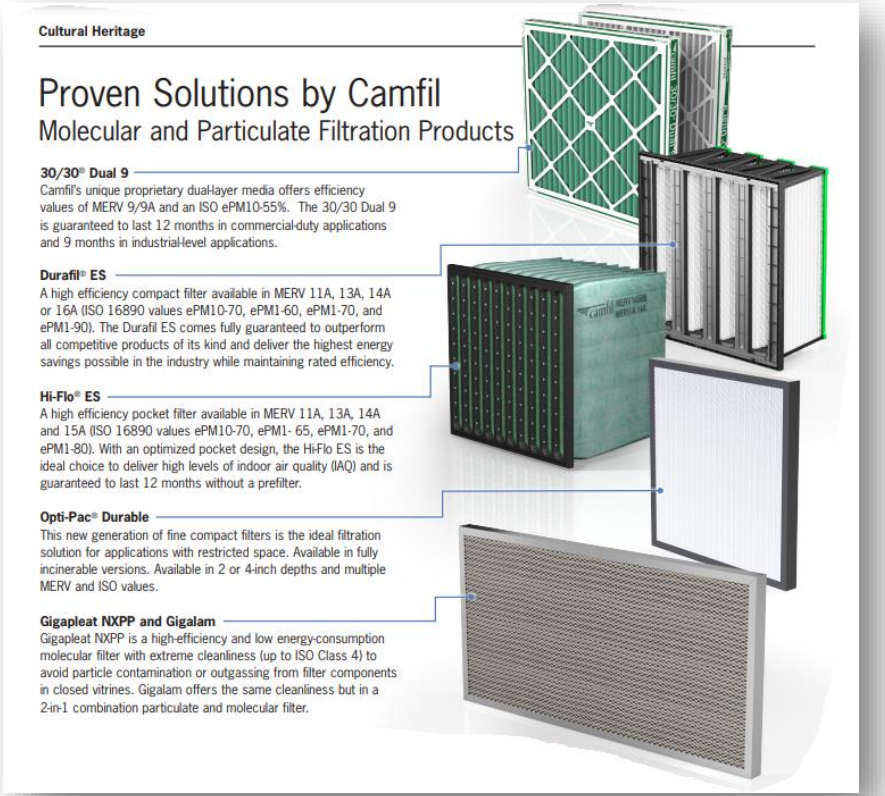
PARTICULATE & MOLECULAR FILTRATION FOR INDOOR AIR QUALITY

PARTICULATE POLLUTANTS

MOLECULAR FILTRATION AND INDOOR AIR QUALITY

PARTICULATE FILTRATION AND INDOOR AIR QUALITY

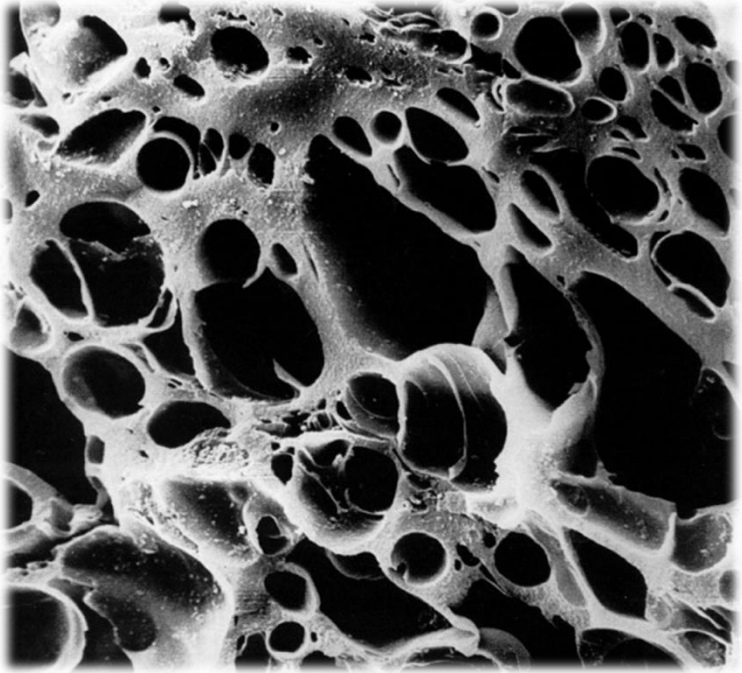
PARTICULATE FILTRATION SOLUTIONS



MOLECULAR POLLUTANTS

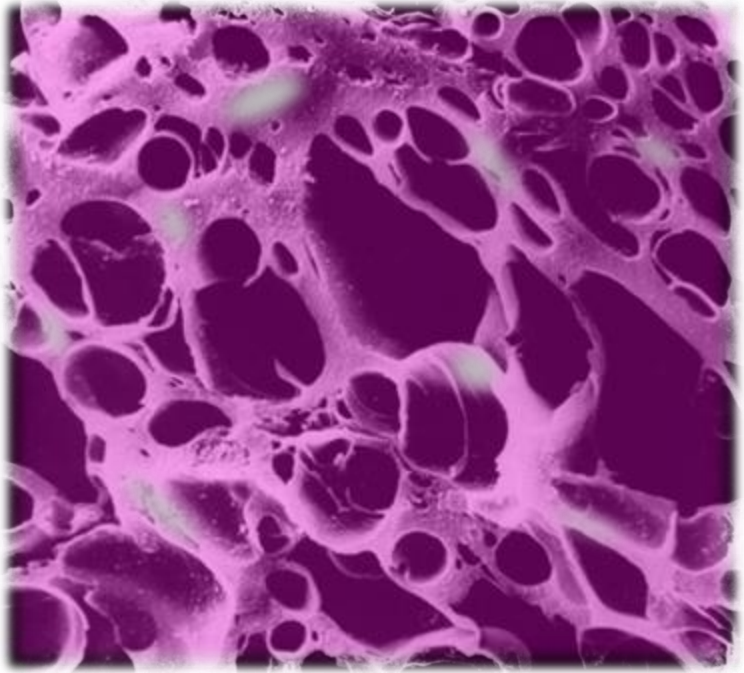
MOLECULAR POLLUTANTS

MOLECULAR MEDIA



ADSORPTION PRINCIPLE

MOLECULAR MEDIA



MOLECULAR MUSEUM ISSUES

PROTECTING THE COLLECTION

- In the Vitrines
- The Collected Works
- The Gallery
- The Visitor Spaces

Current Recommended Target Levels for Key Gaseous Pollutants (in ppb, unless otherwise indicated)

	Contaminant	Formula	Suggested Pollutant Limits for Collections		Reference Concentrations		
			Sensitive Materials	General Collections	Natural Background Levels	Acute Toxicity Level for 1h Exposure	EPA Clean Air Act Limits
Outdoor Gases	Nitrogen dioxide	NO_2	< .05 to 2.6	2 to 10	.05 to 4.9	5,000	50 (1 yr)
	Ozone	O_3	< .05	.5 to 5	1 to 100	100	120 (1 h)
	Sulfur dioxide	SO_2	< .04 to .4	.4 to 2	6 to 10	5,000	30 (1 yr)
	Hydrogen Sulfide	H_2S	< .01	< .1	.005 to 10	10,000	-
Indoor Gases	Acetic acid	CH_3COOH	< 5	40 to 280	.1 to 4	10,000	-
	Formic acid	HCOOH	< 5	42 to 78	.05 to 4	5,000	-
	Formaldehyde	HCHO	< .1 to 5	10 to 20	.4 to 1.6	750	-

MCCLD SOFTWARE

CALCULATE A SOLUTION

- Camfil CLD Software
- Use the data available to develop a solution
  - *CFM*
  - *Contaminate*
  - *Concentration*

camfil

MCCLD Comparison Report for Museum

Customer Site Information

Company	MOA Museum
Contact / Phone	Jane Smith /
Email	
Site	Mall
Building / Room	

Camfil Authorized Distributor

Rep / Dist / RSM	Camfil USA Inc.
Phone	+1 (252) 975-1141
Email	Gary.Chrismon@camfil.com

CALCULATE A SOLUTION

- Camfil CLD Software
- Use the data available to develop a solution
  - *CFM*
  - *Contaminate*
  - *Concentration*
- Select potential solutions

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Air Info

Air Flow	2,000 CFM	Temperature	73 °F
Atm. Pressure	1,013 inHg	Relative Humidity	50 %

Comparison of Chemicals

	Solution 1	Solution 2	Solution 3
Toluene [120.000 ppb]			

Comparison of Filters

	Solution 1	Solution 2	Solution 3
	CamCarb CamCarb XG 3500	CamCarb CamCarb XG 3500	CamCarb CamCarb XG 3500
Filter	VOC_O3_NO2_SO2	VOC (3 mm)	VOC_O3_Acid_H2S
Total No. of Filters	16	16	16
Number of Stages	1	1	1
Number of Filters per Stage	16	16	16
Media Weight	71.96 lbs	70.55 lbs	95.24 lbs
Total Weight	93.16 lbs	91.75 lbs	116.44 lbs
Front Velocity	499.44 FPM	499.44 FPM	499.44 FPM
Contact Time	0.07 sec	0.07 sec	0.07 sec

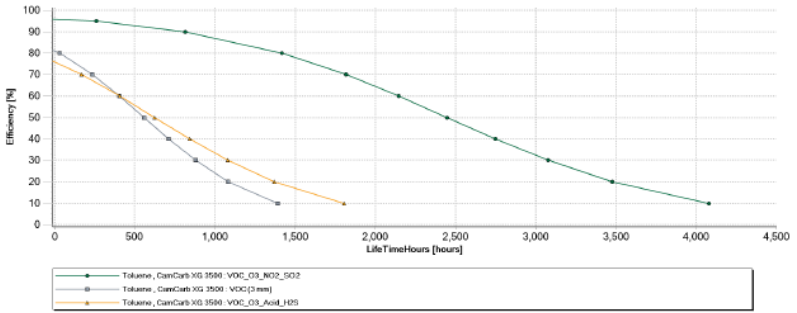
CALCULATE A SOLUTION

- Camfil CLD Software
- Use the data available to develop a solution
  - *CFM*
  - *Contaminate*
  - *Concentration*
- Select potential solutions
- Review for estimated life of media

	Solution 1	Solution 2	Solution 3
Informative Header			
Contamination	Toluene [120.000 ppb]	Toluene [120.000 ppb]	Toluene [120.000 ppb]
	CamCarb CamCarb XG 3500	CamCarb CamCarb XG 3500	CamCarb CamCarb XG 3500
Filter	VOC_O3_NO2_SO2	VOC (3 mm)	VOC_O3_Acid_H2S

Efficiency vs LifeTime

Efficiency [%]	Lifetime [hours]	Efficiency [%]	Lifetime [hours]	Efficiency [%]	Lifetime [hours]
95.00	260	80.00	32	70.00	168
90.00	815	70.00	236	60.00	406
80.00	1,417	60.00	404	50.00	624
70.00	1,817	50.00	557	40.00	842
60.00	2,146	40.00	711	30.00	1,079
50.00	2,447	30.00	879	20.00	1,369
40.00	2,748	20.00	1,083	10.00	1,805
30.00	3,076	10.00	1,391		
20.00	3,477				
10.00	4,079				



MOLECULAR SOLUTIONS

Actual Museum Study

- TMP-ol Crystal Growth
  - Crystals growing on artifacts
  - Due to adhesives in the Vitrines
  - Lengthy and dangerous cleaning required
  - Potential to contaminate all artifacts
  - Needed a custom solution due to the expense of the vitrines
- CCGIGA and GigaPleat Filter
  - Worked with the Museum for over 3 years
  - Did independent testing with TD Tubes
  - Developed a specific filter to address the issues
  - 15 to 18 month estimated life

SOLUTION IN FINAL VERIFICATION

SOLUTIONS

- Intake of outside air
- Recirculation in the Visitor Space
- Storage
- The Vitrines

TESTING OF MEDIA AND SPACES

Are My Filters Still Good

- Magnehelic Gages work for Particulate Filters Only

Lab Services

- Media analysis
- Coupon Analysis
- Corrosion Control Monitor
- *Air Sampling*

QUESTIONS

Gary Chrismon
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252-721-8029

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