



2022 Minnesota Energy Expo
 Tuesday, November 1st, 2022
 Golden Valley Country Club
 7001 Golden Valley Road, Golden Valley, Minnesota



2022 Minnesota Energy Expo



Time	Session	
7:30 - 8:00am	Registration & Exhibitor Setup	
8:00 - 9:00am	Breakfast	
8:15 - 8:45am	 Welcome & Keynote: Our Buildings are Killing our Planet: Exploring the Carbon Scale from Paper Straws to Shopping Malls <i>David Koerner, 75F</i>	
Track	1	2
9:00 - 10:00am	Virtual Field Trip of Central Heating and Cooling Plant as an Instructional Tool for Mechanical Engineering Education <i>Oai Ha, UW Stout</i>	Commercial & Industrial Electrification: Lessons from the Field <i>Carl Samuelson, Michaels Energy Chris Waltz, Otter Tail Power Company Andrew Wiegand, Michaels Energy</i>
10:00 - 10:30am	Break	
10:30 - 11:30am	Energy Savings Through Proper Filtration and HVAC Maintenance <i>Glen Bergman, G&B Environmental Matthew Gore, G&B Environmental</i>	Hitting the Mark: Compliance with SB 2030 and MN Energy Code <i>Russ Landry, Center for Energy and Environment Patrick Smith, Center for Sustainable Research, University of Minnesota</i>
11:30am - 1:30pm	Lunch	
 12:00pm - 1:00pm	Keynote: Changing Climates and Extreme Weather for Minnesota <i>Dr. Patrick Tebbe, Minnesota State University, Mankato</i>	
1:30 - 2:30pm	Advances in Variable Speed Pumping – EC Motors and Control Strategies <i>Dan Chudecke, Mulcahy</i>	Aquifer Energized Groundwater HVAC Systems – The Next Frontier Towards Net Zero & Decarbonization of the Grid <i>Andrew Steiner, Darcy Solutions Tom Bredesen, Midwest Mechanical Solutions</i>
2:30 - 3:00pm	Break	
3:00 - 4:00pm	FEI: The Measurement of Our Future <i>Mark Barry, Twin City Fan & Blower</i>	Coming Soon to Minnesota Rooftops: Ice, Snow, and a Heat Pump? <i>William Ward, Daikin Applied Americas</i>
4:00PM	Happy Hour	
		


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Session / Time	Session / Presenter(s)
Breakfast Keynote 8:15 - 8:45am	<p><u>Our Buildings are Killing Our Planet: Exploring the Carbon Scale from Paper Straws to Shopping Malls</u></p> <p>In this first-of-it's-kind presentation, we use research from dozens of sources to explore and understand the context of carbon, from the smallest choices to the largest ones. How much energy and carbon are we actually using as we warm up our cars on a cold day, charge our smartphones, or sit at our desks? How many metric tons of carbon does a city emit every day and how can we better visualize what a ton of carbon even is? When we talk about the importance of making buildings more energy efficient, what does that mean and why does it matter?</p> <div data-bbox="376 638 688 993" data-label="Image">  </div> <p>David Koerner <i>VP Marketing, 75F</i></p> <p>David Koerner is on the marketing team at 75F, a. Bloomington-based tech company using smart sensors and controls to deliver the industry's most energy-efficient building automation and control system. A Los Angeles native and Penn State grad, he previously led digital and innovation teams at 3M before moving with his family to Silicon Valley to lead high growth tech startups addressing internet connectivity and financial access in the developing world. He's excited to be back in the twin cities and loves talking with companies of all sizes about ways to improve their business and energy efficiency.</p>
Lunch Keynote 12:00pm	<p><u>Keynote: Changing Climates and Extreme Weather for Minnesota</u></p> <p>Climate change is impacting the design, prediction, and operation of HVAC systems for the built environment, and will continue to do so for the foreseeable future. This presentation reviews climate predictions for the upper Midwest and how they will affect the HVAC industry. Topics such as changing design conditions, extreme weather impact, and increased electrification will be addressed.</p> <div data-bbox="370 1253 662 1627" data-label="Image">  </div> <p>Patrick A. Tebbe, Ph.D., P.E. <i>Director, Undergraduate Research Center Professor, Department of Mechanical and Civil Engineering Minnesota State University, Mankato</i></p> <p>Dr. Patrick Tebbe received his Ph.D., M.S., and B.S. degrees in mechanical engineering from the University of Missouri – Columbia, as well as a second M.S. in nuclear engineering. He taught mechanical engineering at the University of Missouri, The College of New Jersey, and joined Minnesota State University, Mankato in 2004. He served for seven years as Chair for the Department of Mechanical and Civil Engineering, and currently serves as the Director of the Undergraduate Research Center. Dr. Tebbe is an active member of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) where he is the current advisor of the local student chapter, the American Society for Engineering Education (ASEE) where he is a former President of the Energy Conversion and Conservation Division, the American Society of Mechanical Engineers (ASME), and the American Nuclear Society (ANS). Dr. Tebbe conducts research in the thermo-fluids and energy systems area, most recently studying performance of vertical axis wind turbines (VAWTs).</p>

Track 1

<p>Track 1</p> <p>9:00 - 10:00am</p>	<p><u>Virtual Field Trip of Central Heating and Cooling Plant as an Instructional Tool for Mechanical Engineering Education</u></p> <p>This presentation introduces a framework for developing a virtual tour of the central heating and cooling plant at the University of Wisconsin-Stout for teaching and learning Thermodynamics course at the campus. As one of the core courses in mechanical engineering program, this theory-heavy and abstract course is often taught with traditional instructional method with textbook-based lectures, problem solving, and the laboratory experiments. A significant amount of course contents lacks the tangible connections to engineering devices and systems in real-world applications, making the course challenging and uninteresting to many students. Research findings indicated that when students believe the learning materials irrelevant and impractical, they lose motivation and interest in the course, the major, and their university, starting with poor performance and eventually dropping out of the programs.</p> <div data-bbox="370 680 570 926">  </div> <p>Oai Hai <i>Assistant Professor, Engineering & Technology University of Wisconsin, Stout</i></p> <p>Oai Ha is an Assistant Professor in the Department of Engineering and Technology at the University of Wisconsin - Stout, Wisconsin. Prior joining UW-Stout in 2021, he had four years of teaching as an Assistant Professor at Western Carolina University and one year as a postdoctoral researcher at Oregon State University. Courses he have taught include Fluid Powers, Heat Transfer, Mechanics of Materials, Numerical Analysis, Thermodynamics, and Statics. His main research interests include mechanical engineering education, industrial workforce training, and applications of emerging technologies of virtual and augmented reality in engineering education, virtual and remote laboratories. He is a member of the American Society for Engineering Education and the American Society of Heating, Refrigerating and Air-Conditioning Engineers.</p>
<p>Track 1</p> <p>10:30 – 11:30am</p>	<p><u>Energy Savings Through Proper Filtration and HVAC Maintenance</u></p> <p>Based on NAFA's and ASHRAE's guidelines and recommended practices for air filtration and will focus on four principles that should be followed. First, air exchange and the selection of air filters needed based on systems in use, as well as the application they serve, including MERV ratings, pressure drops and change-out intervals. We will also address this filter's attributes with regard to pressure drop, the type of media the manufacturers are utilizing, the importance of filter hardware, proper installation, and the maintenance associated with improvement in HVAC efficiency and overall indoor air quality, which can be easily tested and monitored. We will close the presentation with the discussion of life cycle costing (LCC), in which not changing out a filter when required increases operational and energy costs and negatively impacts the lifespan of any HVAC system.</p> <div data-bbox="370 1493 596 1717">  </div> <p>Glen Bergman <i>President, G&B Environmental</i></p> <p>Glen Bergman started G&B Environmental, Inc., nearly 30 years ago with a vision and second-to-none work ethic to develop innovative and cost-effective filter solutions for enhancing competitiveness, increasing revenues, and improving efficiency, air quality and service for customers. Glen has a Bachelor of Science Degree in Business Administration and is one of only a few certified Air Filter Specialists in the state of Minnesota. With three decades of hands-on experience working with multiple platforms, including food, manufacturing, educational and health care, he is able to successfully analyze a company's critical business requirements. Today, G&B Environmental of Eagan, Minnesota, has grown to include several services and products that help companies become more energy efficient and safer for their customers and employees. Glen lives in his hometown of Grand Rapids, Minnesota, with his wife, Debbie, and two boys, where he enjoys hunting, fishing and golfing.</p>

	 <p>Matthew Gore <i>Director of Marketing & Sales, G&B Environmental</i></p> <p>Matthew Gore has been with G&B Environmental for a decade, helping to grow the company with new products and services, particularly in the area of indoor air quality, in an ever-changing world. Matt has a bachelor's and master's degree in communications and has helped Glen establish even greater customer-focused attention and service during a time when the public needs more education and easy-to-comprehend information on HVAC efficiency and indoor air quality. He lives in Plymouth, Minnesota, and is an avid runner and fitness enthusiast who enjoys spending the warmer months waterskiing behind his boat.</p>
<p>Track 1 1:30 - 2:30pm</p>	<p><u>Advances in Variable Speed Pumping – EC Motors and Control Strategies</u> Beyond Premium Efficiency – The AC induction motor has been a staple of mechanical systems and these motors have reached their practical limit for efficiency. Newer Electrically Commutated (EC) motors can offer greater efficiency and flexibility for equipment. These motors are being commercially applied to fans and pumps in real world systems. The presentation will cover the different motor types and application possibilities in addition to how they fit with the MN energy code.</p>  <p>Dan Chudecke <i>Director of Business Development, Mulcahy</i></p> <p>Dan has worked at Mulcahy Company since 1993 and is currently the Director of Business Development. Mulcahy Co. is a 90+ year old manufacturers rep firm in the HVAC, plumbing, industrial, and wastewater markets. In addition to his company wide business development activities, Dan is responsible for the training and education of Mulcahy personnel and customers regarding their products and services. Other responsibilities include field trouble shooting and assisting factories in development of future products and design manuals. Dan is a past president of the Minnesota Chapter of ASHRAE, serves on Technical Committee 6.1 and is currently on the ASHRAE Executive Committee for Membership Promotion. He has also presented many seminars on HVAC system design and installation to ASHRAE, ASPE, NEBB, and other local organizations. He is a graduate of Purdue University.</p>
<p>Track 1 3:00 - 4:00pm</p>	<p><u>FEI: The Measurement of Our Future</u> The future of specifying HVAC equipment is about to radically change. With global pressure on energy efficiency and building occupancy safety; significant federal and state code changes are rapidly taking effect. The days of specifying and sourcing the lowest-cost products are coming to an end. The Fan Efficiency Grade will be the foundation for product selections across the entire system. Join us to discuss what may be the biggest change in the HVAC industry in the last 50 years.</p>  <p>Mark Barry <i>Sales Manager, Twin City Fan & Blower</i></p> <p>Mark knows what a crucial time it is for the entire HVAC industry. With stricter regulations already in effect or on the horizon, he believes manufacturers need to focus on innovation and training. His passion is educating the HVAC community on the positive effects of smart selections, such as energy efficiency, reliability, and quality. Mark started at Twin City Fan Companies in 2021 and has since held several roles. He came armed with a multitude of information to help in many areas, including manufacturing, scheduling, and helping sales representatives earn new business. Mark serves as a board member for NextGen, and is involved in AMCA, MANA, with the Minnesota ASHRAE chapter, serving as the Chair of the Sustainable and Resilient Building Committee. Mark graduated from Hofstra University.</p>

Track 2

Track 2

9:00 - 10:00am

Commercial & Industrial Electrification: Lessons from the Field

Electrification is a buzz these days, but all the benefits of carbon reductions, cost savings, and environmental impacts all come down to customers choosing to change a fossil fuel-driven process into an electric process. In the Midwest, that still comes down to a question of customer choice, reliability, seasonal impacts, and cost. This session will share lessons learned from conducting electrification feasibility studies for industrial and commercial customers in Minnesota, South Dakota, North Dakota, and Iowa. We'll cover some high-level take aways, discuss specific technology applications, and dig into the importance of rates and the opportunity for utilities to enable electrification for their customers.



Chris Waltz

Sales and Economic Development Manager, Otter Tail Power Company
 Chris Waltz is the Sales and Economic Development Manager at Otter Tail Power Company. Chris has been in the energy industry for 15 years, the past seven of those with Otter Tail Power. He is a graduate of the University of Minnesota, Crookston with a B.S. in Wildlife Management, and the University of Minnesota, Twin Cities campus, with a M.S. in Science, Technology, and Environmental Policy. He is also a Certified Energy Manager. He and his wife Marie have 3 girls and he loves spending time at their 16-acre home on German Lake in Underwood, MN. He calls it his "big kid" sandbox.



Andrew Wiegand

Programs Engineering Lead, Michaels Energy
 Andrew G. Wiegand, P.E., LEED AP, is Programs Engineering Lead for Michaels Energy. He has 15 years of engineering experience and is a registered mechanical engineer in Wisconsin and Iowa. Andrew provides custom efficiency program support, and measurement and verification for Alliant Energy, CenterPoint, and Xcel Energy large C&I programs. He conducts energy audits and investment grade energy analyses for large C&I end users. He performs field investigations, data acquisition with permanent and temporary equipment, data analysis, and energy model calibration to support research and impact evaluation. Andrew's education includes a B.S. degree in Mechanical Engineering from the University of Southern Illinois.



Carl Samuelson

Product Manager, Michaels Energy
 Carl W. Samuelson, C.E.M., is a Product Manager for Michaels Energy overseeing program implementation in Minnesota and Colorado. Mr. Samuelson has 14 years of experience in energy efficiency and is a Certified Energy Manager. Over his career, he has developed an ability to clearly communicate technical information in an engaging manner. He works closely with both end-users and utilities to develop and implement solutions that meet their business needs - strategic energy management, business energy efficiency programs, research, marketing, recruitment, and program design. Mr. Samuelson holds a B.A. in Political Science from St. Olaf College, and is a graduate of Green Corps, the national field school for environmental organizing. He currently serves as Secretary of the board of the Midwest Chapter of AESP and serves on the board for the Midwest Energy Efficiency Alliance (MEEA).

Track 2

10:30-11:30 am

Hitting the Mark: Compliance with SB 2030 and MN Energy Code

This presentation will provide both a high-level overview and actionable detailed information about SB 2030 program compliance. New policies and procedures that make it more important than ever to engage with SB 2030 program targets and staff early will be outlined. We will also provide many practical tips on compliance based on what has caused other projects to have to submit multiple times and/or do late-stage changes to designs.



Russ Landry

Senior Mechanical Engineer, Center for Energy and Environment

Russ Landry has been an engineer and researcher with CEE for 32 years. His research and engineering roles have included: field research of space-heating boilers, overseeing energy audits and retrofits of multifamily buildings, recommissioning studies of commercial buildings, new construction plan review, building energy analysis, market studies, and design and support of utility efficiency programs. Russ has also been a leader in the Minnesota chapter of ASHRAE and contributed to the development of Standard 155P, Method of Testing for Rating Commercial Space Heating Boiler Systems.



Patrick Smith

Center for Sustainable Research, University of Minnesota

Patrick Smith is a Senior Research Fellow at the Center for Sustainable Building Research at the University of Minnesota and project manager for the B3 Guidelines and SB 2030 Program. His area of focus is development and implementation of sustainable building programs and multi-scalar energy use and carbon emission reduction efforts. His research experience includes building performance auditing, affordable housing sustainable program development and implementation, building performance benchmarking, and whole building life cycle assessment. He teaches environmental technology in the undergraduate and graduate architecture programs at the University of Minnesota.

Track 2

1:30 – 2:30pm

Aquifer Energized Groundwater HVAC Systems – The Next Frontier Towards Net Zero & Decarbonization of the Grid



Innovative and cost-effective groundwater-based aquifer heat transfer technology presents the opportunity to significantly reduce energy consumption in commercial and industrial buildings by up to 70%, and project footprint requirements by up to 95%. Novel heat transfer devices and accompanying geological studies were developed in conjunction with research grants at the University of Minnesota, and financially endorsed by the U.S. Department of Energy and the National Science Foundation. Applied engineering solutions exist to interface directly with localized industrial stainless steel heat exchangers within the thermal confines of the Earth’s geological formations. Energy transfer occurs with conventional HVAC equipment to produce the lowest possible energy consumption for buildings.



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Chief Development Officer, Darcy Solutions

Andrew Steiner is Darcy Solutions’ chief development officer, responsible for customers and growth. Prior to Darcy, he was most recently president of Aramark’s Canadian uniform services division. Andrew’s career has included leadership roles across marketing, strategy, sales, customer service and IT. Andrew loves being part of organizations where the culture is customer-focused, the team is engaged and having fun, and the mission is important. He is delighted to have joined Darcy where, as he tells his daughters, “I’m helping save our planet.” Andrew’s educational background includes an MBA, a BSE in electrical engineering, and a certificate in financing and deploying clean energy. He has served on the boards of Minnesota Center for Environmental Advocacy from 2013-2022 and the Quetico Superior Foundation since 2003.

	 <p>Tom Bredesent <i>Director of Business Development, Midwest Mechanical Solutions</i> Tom is a graduate of Valparaiso University with a Bachelor of Science Degree in Mechanical Engineering, and a Masters of Business Administration with a Specialization in Energy Management from the University of Saint Thomas. He was previously employed as a Trane Sales Engineer from 1977- 1997. He is the co-founder of Midwest Mechanical Solutions, Inc., an HVAC manufacturer’s representative firm located in Golden Valley, Minnesota. Currently Tom is Director of Business Development and is involved in promoting energy efficient HVAC solutions.</p>
<p>Track 2 3:00 – 4:00pm</p>	<p><u>Coming Soon to Minnesota Rooftops: Ice, Snow, and a Heat Pump?</u> This presentation will discuss decarbonization as it pertains to the general HVAC market and specifically to packaged rooftop units for heating and cooling. Ward will cover the fundamentals of heat pump operation and the various types available in the market before digging into more specific details on packaged rooftop heat pump equipment. Topics for further discussion will include the benefits and challenges of using rooftop heat pumps and some solutions that will address these new hurdles as the building industry transitions to a decarbonized future.</p>  <p>William Ward <i>Product Manager, Daikin Applied Americas</i> William Ward is the product manager of commercial rooftop units at Daikin Applied Americas, a role he has held for the past three years. Will joined Daikin in 2014 as an applications engineer working on packaged rooftop systems. Will holds a Bachelor of Science in mechanical engineering from the University of Minnesota-Twin Cities and currently resides in Coon Rapids, Minnesota.</p>

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Exhibitor Listing & Floor Plan

Booth	Exhibitor	Booth	Exhibitor
1	RM Cotton	8	Midwest Maintenance & Mechanical, Inc.
2	Pump and Meter Service, Inc	9	NAC
3	SVL	10	Xcel Energy
4	75F	11	Michaels Energy
5	Midwest Mechanical Solutions	12	Sustainable Energy Savings, Inc.
6	Minnesota Air, Inc.	13	TMS Johnson
7	ArKco Sales, Inc.		Registration

