





2021 Minnesota Energy Expo
 Monday, September 29th, 2021
 Golden Valley Country Club
 7001 Golden Valley Road, Golden Valley, Minnesota

2021 Minnesota Energy Expo


Time	Session	
7:30 - 8:00am	Vendor Setup & Registration	
8:00 - 9:00am	Registration & Breakfast	
Track	1	2
9:00 - 10:00am	Commercial Boiler Controls Tune-Ups Proven Out Through Local CARD Research <i>Russ Landry, CEE</i>	Coalition 4 Smarter Buildings <i>Rick Justis, 75F</i>
10:00 - 10:30am	Break	
10:30 - 11:30am	Fan Systems: Optimizing Energy Efficiency and Cost <i>Rad Ganesh, Twin City Fan Companies</i> <i>Jason Meinke, Twin City Fan Companies</i>	HVAC Building System Decarbonization <i>Mike Patterson, Trane</i>
11:30am - 1:00pm	Lunch Keynote: ECO Act <i>Anthony Fryer, Minnesota Department of Commerce</i>	
1:00 - 2:00pm	Pumping System Efficiency <i>Tony Furst, Armstrong Fluid Technology</i>	Facility Modernization <i>Amanda Nonnemacher, Willdan</i> <i>Jane Opoien, Willdan</i> <i>Annaria Barnds, Willdan</i>
2:00 - 2:30pm	Break	
2:30 - 3:30pm	Advanced Groundwater-Enabled Geothermal Heating and Cooling <i>Brian Larson, Darcy Solutions</i> <i>Scott Alexander, Darcy Solutions</i>	Transportation Electrification <i>Matt Haakenstad, World Kinect Energy Services</i>
3:30pm	Happy Hour	



Time	Track	Session	Presenter(s)
12:00pm	Keynote	<p><u>Minnesota's ECO Act</u> The Energy Conservation and Optimization (ECO) Act passed both the House and Senate and was signed by Governor Walz on May 25th, 2021. The legislation seeks to modernize the Conservation Improvement Program (CIP), which has governed utility efficiency in Minnesota for nearly forty years. The Next Generation Energy Act of 2007 codified utility energy savings goals under CIP, which had a relatively narrow scope of what could be counted toward utilities' energy savings. The ECO Act expands what counts as energy savings by including load management and beneficial electrification. This offers utilities more ways to achieve energy savings, while also recognizing the shift toward innovative technologies.</p>	 <p>Anthony Fryer <i>Conservation Improvement Program Coordinator</i> Minnesota Department of Commerce</p> <p>Anthony is the Conservation Improvement Program (CIP) Coordinator. He provides oversight and regulation of over 180 natural gas and electric utility demand-side management programs to ensure achievement of Minnesota's 1.5% energy efficiency resource standard. In support of utility energy efficiency efforts, his work also includes management of the Department's Conservation and Applied Research Development (CARD) grant program, the Minnesota Technical Reference Manual, and the Energy Savings Platform.</p>
9:00 - 10:00am	1	<p><u>Commercial Boiler Controls Tune-Ups Proven Out Through Local CARD Research</u> Commercial condensing boiler and conventional boiler tune-up measures are well-established industry standards. However, research shows that condensing boilers offer additional savings opportunities through tune-ups, and condensing boiler market penetration in existing buildings has now increased to a significant level—approximately 25% of commercial boilers in Minnesota—to provide a large new energy savings and program opportunity. Boiler tune-ups have historically limited their focus to burner adjustments, but the operating efficiency of condensing boilers is far more sensitive to the boiler water temperature and part-load control variations. This presentation summarizes a CARD project that developed a protocol for commercial boiler controls tune-ups and proved out the viability of the service through field-testing at 17 buildings.</p>	 <p>Russ Landry <i>Senior Mechanical Engineer</i> Center for Energy and Environment</p> <p>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.</p>

<p>10:30 – 11:30am</p>	<p>1</p>	<p><u>Fan Systems: Optimizing Energy Efficiency and Cost</u></p> <p>Optimizing fan sizes and selections for commercial applications will cost-effectively reduce power consumption and carbon emissions while improving acoustic, comfort, indoor air quality and service calls. With many types of fans, motors, and drives available in the market, evaluating multiple fan/motor/drive combinations can be a daunting task. This presentation will guide owners, engineers, and contractors on several factors to consider before making the final selection for a given application.</p>	<div data-bbox="862 262 1073 554" data-label="Image"> </div> <div data-bbox="1096 262 1429 357" data-label="Caption"> <p>Rad Ganesh, Ph.D., PE <i>Director, Product Applications</i> Twin City Fan Companies</p> </div> <div data-bbox="1096 394 1502 583" data-label="Text"> <p>Dr. Ganesh has over 34 years of experience in Air Moving (HVAC and Fan) industries. For the past 20 years in TCFC, he has held several responsibilities including Applications Engineering, Sales and Product</p> </div> <div data-bbox="862 590 1510 1165" data-label="Text"> <p>Management, R&D, lab management, customer training, fan systems regulatory compliance, product development and customer testing. He assists sales in the order acquisition process and manufacturing, service in the order fulfillment process. Prior to TCFC he spent 11 years in product development at the Trane Company. He has 7 patents to his credit along with 4 more pending patent applications. He has made worldwide presentations for ASHRAE, AMCA and in company training seminars. He received the AMCA Distinguished Service Award in 2019. He has served on several AMCA committees including Fan Engineering Committee, 211 (Current Chair), 205, 207, 208, 210 and 301. His ASHRAE contributions included TC 5.1 Fans, TC 2.6 Sound and Vibration and TC 1.4 Control Theory and Application. He received his Ph.D. in Mechanical Engineering from the Missouri University of Science and Technology in 1987. He is a registered Professional Engineer (P.E) in WI.</p> </div> <div data-bbox="862 1203 1081 1509" data-label="Image"> </div> <div data-bbox="1101 1203 1429 1327" data-label="Caption"> <p>Jason Meinke <i>Director of Sales, Commercial Products</i> Twin City Fan Companies</p> </div> <div data-bbox="1101 1362 1502 1520" data-label="Text"> <p>Jason 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</p> </div> <div data-bbox="862 1526 1510 1715" data-label="Text"> <p>innovation and training. Educating the HVAC community on the positive effects of smart selections, such as energy efficiency, reliability, and quality is his passion. Moving forward he and the Twin City Fan team will rely on their many partners in the field to help them steer the industry in a positive direction.</p> </div> <div data-bbox="862 1722 1510 1974" data-label="Text"> <p>Jason has over eight years of experience in the HVAC industry as an engineer and sales leader. During this time, his main focuses have been on new business, channel development, and building teams. To support the growth of the industry he has previously participated on several AMCA committees. Additionally, Jason spent two years in the commercial recreation industry as a sales leader and market development educator. Throughout his career he has</p> </div>
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			<p>presented on numerous topics ranging from energy efficiency regulations to the cognitive development of our global youth.</p> <p>Jason holds a BS in Civil Engineering from the University of Minnesota Twin Cities.</p>
		<p><u>Pumping System Efficiency</u> Selecting pumps to operate at maximum efficiency at their duty point has been the industry standard but does that really produce the best efficiency across the entire operating range. What about the Preferred Operating Range as defined by ANSI & the Hydraulics Institute? Selecting pumps based solely on duty point and the best efficiency at the duty point doesn't guarantee that your selection will meet the requirements of ASHRAE 90.1, this program will show you how to achieve greater performance and reduced energy costs while improving hydronic system performance.</p>	 <p>Tony Furst <i>Manager, Application Engineering</i> Armstrong Fluid Technology</p> <p>In his role, Tony works with the regional sales managers across all US business units to drive complex technical solutions utilizing all of Armstrong's products in controls and equipment. Additionally, he provides high level technical applications support and training to our channel partners.</p> <p>Tony holds a Bachelor of Science in Mechanical Engineering and a Master of Science in Education and has earned his Certified in Plumbing Design credential from the American Society of Plumbing Engineers as well as being a USGBC LEED AP. Tony is extremely active in ASPE at the local and society level and ASHRAE at the local level.</p> <p>Tony has extensive knowledge in large commercial chilled water systems from his years with Trane Company as a failure analysis and applications engineer in applied systems. He was also a senior forensic engineer specializing in system analysis and performance evaluation for a large Midwest consulting engineering firm, along with experience as a design build engineer with a large mechanical contractor.</p>
2:30 - 3:30pm	1	<p><u>Advanced Groundwater-Enabled Geothermal Heating and Cooling</u> Building heating and cooling is the next sector of the economy, following electricity generation and transportation, poised for de-carbonization. Geothermal, or ground source, heat pumps represent the most environmentally friendly and energy efficient heating and cooling technology. Its advantages appeal to end users and utilities alike. However, paybacks for these projects are typically too long for most customers to justify the investment or site footprint constraints limit project feasibility. Darcy Solutions novel approach utilizes the superior of</p>	<p>Brian Larson <i>Co-Founder and CEO</i> Darcy Solutions</p>  <p>Brian Larson is the co-founder and CEO of Darcy Solutions, a cleantech company that uses groundwater in a novel geothermal/ground-source heating and cooling technology. His responsibilities at Darcy include business development, sales, and marketing. Brian has 32 years of business experience including Chevron, McKinsey & Co., and Cargill. His experience encompasses commercial executive leadership, including CEO of a renewable energy start-up, leadership of joint ventures, alliances, and mergers & acquisitions; Brian also led development and</p>

		<p>properties of groundwater as the exchange medium for its geothermal technology to overcome these historical challenges.</p>	<p>introduction of new products and services across a wide variety of industries, including energy.</p> <p>Scott Alexander <i>Chief Geologist and Co-Inventor</i> Darcy Solutions</p>  <p>Scott Alexander is the co-inventor of Darcy Solution’s novel technology and its Chief Geologist. He has 30+ years as a research scientist in the Earth & Environmental Sciences Department at the University of Minnesota. Scott has specific experience in the application of hydrostratigraphic analysis to aquifers combined with development of tools for analysis of pumping tests and borehole geophysical data. Scott and Dr. Jimmy Randolph began working together in 2010 at the University of Minnesota with Dr. Martin Saar, leading to the development of a patent for borehole geothermal heat exchange systems and eventually to the formation of Darcy Solutions. Scott formally joined Darcy Solutions in 2021 after working as an advisor and consultant since its formation.</p>
<p>9:00 - 10:00am</p>	<p>2</p>	<p><u>Coalition 4 Smarter Buildings</u> The Coalition 4 Smarter Buildings is a 501(c)3 trade association representing the leaders in the Smart Buildings sector focused on aligning with various government agencies, NGO’s and private sector to promote more rapid adoption of smart building technology. Current efforts include:</p> <ul style="list-style-type: none"> • Workforce Development Committee. Helping to define new job skills, career tracks, and training and education curriculum. • Specification Development. Creating templates and documents to be used by suppliers and customers. • Policy and Legislation Support. Working to support City, State, and Federal initiative to advance Smarter Infrastructure. 	<p>Rick Justis <i>[Title]</i> 75F</p>

<p>1:00 - 2:00pm</p>	<p>2</p>	<p><u>HVAC Building System Decarbonization</u> With a global focus on climate change, many are looking for practical actions that can be taken to make a difference. During this presentation, we will investigate what decarbonization means and solutions that are available to us today to help decarbonize our built environment.</p>	<p>Mike Patterson Systems Sales Leader Trane</p>  <p>Mike Patterson is the Systems Sales Leader for Minnesota & Western Wisconsin. Since joining Trane, Mike has held several positions: Marketing Engineer with Trane’s C.D.S. group, Instructor in Trane’s Graduate Training Program, CenTraVac Product Support Team Member, and Strategic Chiller Systems Engineer. Prior to his current role, he was the Centrifugal Product Manager responsible for the development and growth of Trane’s centrifugal chiller portfolio. Mike graduated from the United States Air Force Academy with a Bachelor of Science in Engineering Mechanics. He continued his education at Regis University with a Master’s in Business Administration. Outside of Trane, Mike has been a member of ASHRAE since 2007 and currently is a voting member of SSPC 90.1 Energy Efficient Design of New Buildings and a voting member on the ECB Sub-Committee.</p>
<p>10:30 – 11:30am</p>	<p>2</p>	<p><u>Facility Modernization</u> Building owners, developers, and their investors are faced with facility and campus modernization challenges that typically require multiple layers of required goals. These modernization projects must still address extension of service life and reduction of operating expenses. Recent requirements add new goals such as decarbonization and resilience to the many scopes of modernization. This session provides a process overview, steps for success, and case studies to address more complex integrated goals for facility modernization projects.</p>	<p>Amanda Nonnemacher Program Outreach Specialist Willdan</p> <p><i>Amanda Nonnemacher, LEED AP BD+C, is a Program Outreach Specialist at Willdan. She joined the company in 2021 and works out of the Minnetonka office. Amanda helps clients plan sustainability and energy performance for new and existing building projects. Prior to joining Willdan, Amanda worked for HGA and McGough where her primary focus was managing third-party environmental certifications and working with building owners to understand their sustainability goals to codevelop custom approaches to sustainability for complex projects. Amanda has a Bachelor of Arts from the University of Minnesota- Twin Cities. She has presented at the AIA Minnesota Conference on Architecture, participated in many industry panels, and facilitated sustainable materials workshops for a national organization that supports developers, architects, and contractors.</i></p> <p>Jane Opoien Energy Specialist Willdan</p> <p><i>Jane Opoien, is an Energy Specialist at Willdan. She joined the company in 2015 and works out of the Minnetonka office. Jane provides detailed option analysis to clients to optimize the performance of new and retrofit project</i></p>

designs within the available budget. In addition to her Willdan work, Jane is an officer with the MN ASHRAE Chapter, has served and spoken at regional and local conferences, and provided mentorship into the clean energy industry for students at Minnesota State University, Mankato and the University of Minnesota. Jane has a Bachelors Degree in Mechanical Engineering from Minnesota State University, Mankato.

Annaria Barnds
Director
Willdan

Annaria Barnds, Ph.D., is a Director at Willdan. She joined the company in 2016 and works out of the Lawrence, KS, office. Annaria has provided campus modernization process leadership for campus clients in five states and has been instrumental in developing depth of Willdan projects to develop both sustainability and resilience metrics. Prior to joining us, Annaria worked for a device startup and the University of Kansas. Annaria’s past work included managing research and development of new engineering technologies and advancing innovative services through integrated technology. Annaria holds a Doctorate of Biomechanical Engineering from the University of Kansas and is a frequent national presenter on topics related to energy efficiency and energy analysis at industry events, as well as directly to design firms.

1:00 -
2:00pm

2

Transportation Electrification

One of the major transitions of our lifetime is underway as the transportation sector transitions from fossil fuel based engines to battery powered electric motors. Reducing carbon emissions is clearly a key driver, but performance and reduced maintenance are providing a magnetic pull that entices consumers and fleet vehicle operators. This transformation will impact not just drivers and automotive and oil companies, but the power grid and the utility industry as well. It will enhance the movement toward Distributed Energy Resources (DERs) and Distributed Generation, and it has the potential to improve electric reliability and resilience for businesses, organizations, and homeowners. But purchasing the vehicle is just one element. This paper will outline other key considerations, including:



Matt Haakenstad
Senior Director, Electric Services
and Emerging Technologies
World Kinect Energy Services

World Kinect Energy assists customers in analyzing Transportation Electrification, self-generation, combined heat and power (CHP), and grid interconnection of renewable energy projects such as wind or biomass resources. The World Kinect Team also optimizes DER (Distributed Energy Resource) projects for clients, including assessing the economics of a microgrid at their facility. Finally, the Team analyzes opportunities to enhance energy efficiency, plant site selection alternatives, competitive electric power market dynamics, CNG and biogas/RNG opportunities, and opportunities for sustainability and energy efficiency projects at client facilities. Prior to re-joining Kinect Energy (formerly U.S. Energy), Matt was an Associate Director in Navigant Consulting’s Energy Practice managing energy efficiency evaluations, M&V analyses, benchmarking



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		<ul style="list-style-type: none">• Total costs involved, including purchase price and available incentives• The critical differences between hybrids, plug-in hybrids, and EVs• Electric charging costs, at home or work plus on the road• Range anxiety - What to consider when determining required vehicle range• Changes needed to electric infrastructure• The impact of Zero Emission Delivery Zones on Fleet vehicles• Renewable energy? How to ensure power taken from the grid is green	<p>studies, and related projects. Prior to joining Navigant, he was a Director of Account management at US Energy Services, Inc., where he managed a team of account executives that assisted clients with plant site development, energy procurement, price risk management and energy efficiency and sustainability services for natural gas, electricity and other fuel sources. He also has extensive experience in industrial energy studies and re-commissioning analyses, and power industry forecasting software management and development.</p>
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Exhibitor Listing & Floor Plan

Booth	Exhibitor	Booth	Exhibitor
1		7	
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4		10	
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