



Rocky
Mountain
Chapter

Presents its 20th Annual
Technical Conference:

Leadership In
HVAC&R

Friday April 20th, 2012



Register and Pay at www.rockymtnashrae.com
Sheraton Denver West Hotel
360 Union Boulevard
Lakewood, CO 80228



This year's Technical Conference theme is "Leadership in HVAC&R". Our Keynote Speaker will be Ross Montgomery, P.E., ASHRAE-Certified Building Energy Modeling, Building Energy Assessment, and Commissioning Process Management Professional and he is serving his second term as Society Vice President. Ross will be discussing "sustaining ASHRAE through Leadership" which is Society Presidents Ron Jarnagin's theme.

This year's conference will include the Fundamentals Track, Systems and Applications Track (formerly the Advanced Track), the Sustainability Track (formerly the Green Guide), the Building Automation Track, and an Indoor Air Quality Track.

This is the 20th annual ASHRAE Rocky Mountain Chapter Technical Conference. With over 200 people attending last year we have come a long way. The chapter still prides itself on providing quality speakers and presentations to the HVAC&R community. We will be providing PDHs and CEUs as usual, and we will be adding USGBC/GBCI approved sessions to the tracks. Be sure to check out the display boards the day of the conference and watch for update emails on which sessions have been approved by USGBC/GBCI.

THANK YOU for attending year after year and let's keep the Technical Conference going strong for another 20 years.

Thank-you:

This event has been ongoing for 20 years thanks to the efforts of many dedicated individuals that contribute their time by serving on the conference committee. The Rocky Mountain Chapter would therefore like to express its gratitude to these individuals and their respective companies.

Technical Conference Committee:

Michelle Swanson – RMH Group Committee Chair	Adam Bishop – CFM Company
Cay Strother – Denver Water	Jon Rundquist – Johnson Controls
Brian Lynch – Western Mechanical Solutions	Scott Martin - Carrier West
Mike Fulton - Western Mechanical Solutions	Steve Dexter – Air Filter Solutions
Celeste Cizik – Eaton/EMC Engineers	Steve Carver – CFM Company
Bill Mele – Chemistry & Industrial Hygiene, Inc	Trevor Bromberg – McGrath, Inc.
Mike Harrington – Setpoint Systems	Larry Gelin – CFM Company
Ken Nekvasil – FHS Controls	Megan Van Wieren – Eaton/EMC Engineers
Ira Goldschmidt – Goldschmidt Engineering	Tony Anderson – Air Purification
Jessie Jones – RMH Group	Greg Bradshaw- Bradshaw Building Solutions
Craig Wanklyn – M-E Engineers	

We would also like to thank all of our sponsors for this event. Sponsor names will be listed on signage at the conference. We would also like to thank all of speakers. Without everyone's support, this conference would not be possible.

Thank You,

Michelle Swanson, Committee Chair

2012 Rocky Mountain Chapter ASHRAE Technical Conference “Leadership in HVAC&R”

7:30-8:00 Registration					
Tracks	HVAC&R Fundamentals	HVAC&R Systems & Applications	Sustainability	Building Automation	Indoor Air Quality
Sponsor:	CFM Company	McNevin Company	Johnson Controls Inc.	LONG Building Technologies	Chemistry & Industrial Hygiene Inc.
8:00-8:55	Expansion Loop Fundamentals Jim Clauss Metraflex	Sound and Vibration Control Kelly Stumpf Shen Milsom & Wilke	M&V – Real Results of High Performance Design Ken Urbanek, P.E. MKK Consulting Engineers Matt Cooper, P.E. Group 14 Engineering, Inc.	DDC Basics Dave Kahn, P.E. RMH Group	Earning the LEED IEQ Credit 3.2 Annette Haugh Chemistry & Industrial Hygiene Inc.
9:00-9:55	Energy Use In Refrigeration Systems Scott Martin, P.E. Lohmiller & Co. Carrier West	Reducing Fan Energy Costs Weber Wu PennBerry	Dewpoint Evaporative Comfort Cooling Jesse Dean National Renewable Energy Laboratory	Coordinating BAS and Equipment Vendor Controls Ira Goldschmidt, P.E. Goldschmidt Engineering Solutions Joe Ellison Saunders Construction Brian Barnes Siemens James Murphy LONG Building Tech.	Displacement Ventilation Protocol in a Precious Metal Refining Facility Bill Mele Chemistry & Industrial Hygiene Inc.
9:55-10:10 Morning Break & Vendor Exhibits					
10:10-11:05	Psychrometrics James Murphy LONG Building Technologies	Smoke/Fire Damper Requirements of the International Code Mark Jelinske, P.E. Cator, Ruma & Assoc.	High Performance Data Centers Otto Van Geet, P.E. National Renewable Energy Laboratory	Delivering on the Building Automation System Holy Grail Greg Bradshaw Bradshaw Building Solutions	Energy Recovery for Contaminated Air Streams and High Ventilation Opportunities Lou Grounds ACE Mechanical Equipment, Inc.
11:05-11:30 Vendor Exhibits					
11:30-1:05	Sustaining ASHRAE Through Leadership By: Ross D. Montgomery, P.E. ASHRAE Vice President Sponsored by: Western Mechanical Solutions				
1:05-1:35 Vendor Exhibits					
1:35-2:30	Air Filtration Technology John German Camfil-Farr	Boiler Burner Technology Mike Juhnke Lochinvar	Risk and Reward in the Application of Leading-Edge HVAC Systems Peter D'Antonio PCD Engineering	Cool New Stuff in the Controls World Ken Nekvasil FHS Controls	Using Computational Fluid Dynamics (CFD) to Improve High Contamination Environments Cassidy Strode Chemistry & Industrial Hygiene Inc.
2:35-3:30	Introduction to Fans Weber Wu PennBerry	Steam Systems Chuck Woodruff Steam System Solutions, Inc.	Metering and Energy Retrofits for the GSA Christian Marsh-Frydenlund Eaton Energy Solutions Ron Hardin Eaton	Simple & Sustainable ERV Controls Michael Fulton, P.E. Western Mechanical Solutions	Infection Control in In-Patient Health Care Facilities Cynthia Ellwood PhD Chemistry & Industrial Hygiene Inc.
3:35-4:30	Displacement Ventilation Jim Aswegan Titus	Trouble-Free Methods of Applying Evaporative Cooling for Energy Conservation Rick Phillips, P.E. RMH Group	Commercial Ground Loop Heat Pump Systems: Design Economics Alan Niles Water Furnace Intl.	Commissioning How to Improve the Cx Process Jarrell Wenger Engineering Economics Dan Shepardson Sr. Murphy Company Jeff Strickland D.R. Associates Brian Lynch Western Mechanical Solutions Tom Poeling Eaton Energy Solutions	Nanoparticle Exposure, Monitoring, and Control at NIST Michael K. Blumer National Institute of Standards (NIST)
4:30-5:00 Conference Conclusion and Cash Bar					

Please note - Speakers and Topics Subject to Change – Some titles on this sheet are condensed for space purposes.

www.rockymtnashrae.com

“Leadership In HVAC&R”

For Whom:

Presentations for entry level and senior level engineers, architects, designers, students, salespersons, manufacturers, contractors, building officials, building owners, and building managers and operators.

When:

Friday, April 20, 2011

Your Cost:

(Early registration before April 6th)

½ day: \$ 125 (lunch included)

Full day: \$ 175 (lunch included)

(10% discount to companies sending 5 or more)

Cost for late registration after April 6th

½ day: \$ 150 (lunch included)

Full day: \$ 190 (lunch included)

Professional Development Hours (PDH):

A form will be available at the registration desk to document your participation in the Technical Conference, which assigns the appropriate PDHs to each session. The Chapter is working on GBCI credits. Please check the website for updates.

7:30 - 8:00: Check-In / Registration

Luncheon Keynote Address:

Sponsored by: Western Mechanical Solutions

Sustaining ASHRAE Through Leadership

ASHRAE focuses on its members. Often too much emphasis is put on the President, a high profile position which carries with it a lot of responsibility. Ross D. Montgomery, P.E. ASHRAE Vice-President will share his thoughts on how leadership must be demonstrated not just declared. Leadership is 50% having the vision to see where the organization should be going and 50% ensuring that the membership understands and follows. For ASHRAE to continue its leadership position it must do some courageous things...and that means it must take some risks.

Ross D. Montgomery, P.E., ASHRAE-Certified Building Energy Modeling, Building Energy Assessment and Commissioning Process Management Professional, is owner of Quality Systems and Technology, Inc., Palmetto, Fla.

As vice president, Montgomery is a member of the Board of Directors and the Executive committee and serves as chair of Technology Council.

Montgomery is serving his second term as vice president. Montgomery is a recipient of an Exceptional Service Award, Distinguished Service Award, the John James International Award, an ASHRAE Technology Award and the Lincoln Bouillon Membership Award.

He received his Bachelor of Science in mechanical engineering from the University of South Florida. He also maintains a Florida professional engineering license, a Florida state certified mechanical and electrical contracting license and certifications in energy management, IAQ and green building engineering.



Track 1 – HVAC&R Fundamentals

Sponsored by: CFM Company

8:00 – 8:55: Expansion Loop Fundamentals

We will be talking about different methods of compensating for pipe movement looking at pros and cons of each method.

Speaker: Jim Clauss has over 30 years of practical piping experience, holding positions including Technical Service, Project Engineer and Production Manager. He has been ASTM Task Group Chairman and has written and co-written standards and codes for expansion joints, insulated pipe, pipe and fittings. He is currently Vice President for The Metraflex Company

9:00 – 9:55: Energy Use in Refrigeration Systems

The concept of mechanical refrigeration has been around for 100 years. Although systems have advanced over this time period, they all follow basic principles common to all systems. This presentation will cover the basic concepts of a refrigeration system. We will discuss refrigerant properties and their impact on the environment and systems. After this session you will be able to identify which system design parameters increase system energy. You will understand typical accessories and their uses. We will discuss piping and sizing. An example of a system with calculations will be presented.

Speaker: Scott Martin, PE, LEED AP is a Sales Engineer at Lohmiller & Company - Carrier West and has 19 years of diverse experience in sales and consulting here in the Colorado construction market. Much of his experience is in low energy systems for institutional and commercial buildings. He is a past president of the Rocky Mountain Chapter of ASHRAE.

10:10–11:05: Psychrometrics

An introduction to the Psychrometric chart. Starting with basic reading of and plotting points on the Chart. Moving into modeling cooling and heating systems with the Psychrometric chart, along with trouble shooting systems by using Psychrometrics.

Speaker: James Murphy, Sales Engineer, LONG Building Technologies, BSME Vanderbilt University '98, 13 Years Applied Equipment Sales Specializing in Chillers, Custom Air handling units, Applied Product, focusing mainly on engineering.

1:35 – 2:30: Air Filtration Technology

Air filtration serves a major role when it comes to protecting human health and equipment and it will be the focus of this presentation. How filters are tested and what do MERV & MERV A ratings mean? What are the differences between fine fiber and coarse fiber filtration media? What is the energy impact of using air filters? How to achieve the lowest total cost of ownership thru Life Cycle Cost.

Speakers: John German is Central Regional Sales Manager for Camfil Farr. John has been with Camfil Farr for 34 years. John started in 1977 as Los Angeles Branch salesman; he then opened up the San Diego branch office as branch manager until 1980 when he moved to St. Louis to become central region sales manager. John has covered 26 states as Regional manager and conducted educational training for air filtration in Africa, the Pacific Rim and Europe. He specializes in LCC Life Cycle Cost and TCO total cost of ownership.

2:35 – 3:30: Introduction to Fans

This session provides the fundamental information necessary to select fans and design fan systems. Basic terminology, fan concepts, and key certifications and governing bodies will be discussed. Then, the presentation will convey how this information can be applied towards designing application appropriate systems.

Speaker: Weber Wu is currently a Regional Sales Manager with PennBarry. He initially started in PennBarry's design engineering department in 2007 and transferred to the sales group in 2009. In this capacity, he travels to develop and understand industry needs and promote fan knowledge. Weber has a Bachelor's degree in Mechanical Engineering from Duke University.

3:35 – 4:30: Displacement Ventilation

You will be introduced to Thermal Displacement Ventilation (DV) and how it works. You will be introduced to the equipment used for DV. You will learn where and how to use DV systems.

Speaker: Jim Aswegan has completed more than forty-six years of service at Titus. He is currently Senior Chief Engineer. He earned his Bachelor of Science degree from the University of Texas at Dallas. He is a member of USGBC, ASHRAE and the local Dallas chapter of ASHRAE. For ASHRAE, he is currently serving as Liaison for the 2013 Fundamentals Handbook.

Track 2 – HVAC&R Systems & Applications

Sponsored by: McNevin Company

8:00 – 8:55: Sound and Vibration Control

Building mechanical systems are often the major contributor to the amount of background noise and vibration in a project and can have a dramatic effect on the ability to hear speech and audio programs. The acoustics presentation will be a general overview of acoustical terms, design criteria, and characteristics of sound. Discussion points will include acoustical input on mechanical design concepts, vibration isolation of mechanical equipment, and the effect of LEED requirements on acoustical recommendations for mechanical systems in education and healthcare projects.

Speaker: Kelly Stumpf is an associate with Shen Milsom & Wilke, LLC. She received a B.S. in Engineering with an emphasis in Acoustics from the University of Hartford. She has been active in the acoustics discipline for over 10 years with significant experience with mechanical system noise control, vibration, environmental noise control, and LEED requirements. Kelly has consulted on a wide variety of project types within the construction industry including Performing Arts Facilities, Convention Centers, Healthcare Institutions, Research Laboratories, Civic Facilities, Residential/Hotels, Museums, Places of Worship and a wide range of Educational Institutions.

9:00 – 9:55: Reducing Fan Energy Costs

The trend in the fan industry towards higher efficiency and lowering energy consumption is discussed. Attendees will gain an understanding of recent and upcoming requirement changes, and the roles that manufacturers, contractors, and engineers play in meeting these requirements and lowering energy costs.

Speaker: Weber Wu is currently a Regional Sales Manager with PennBarry. He initially started in PennBarry's design engineering department in 2007 and transferred to the sales group in 2009. In this capacity, he travels to develop and understand industry needs and promote fan knowledge. Weber has a Bachelor's degree in Mechanical Engineering from Duke University

10:10–11:05: Dealing with Dampers - Smoke / Fire Damper Requirements of the International Code

This seminar will discuss the requirements contained in the IBC and IMC for the locations of fire and smoke dampers in HVAC ducts and transfer air openings. This presentation will identify the locations where Fire Resistive Construction is required, identify requirements for HVAC systems penetrating Fire Resistive construction, and discuss common areas of confusion, including where dampers are NOT required.

Speaker: Mark Jelinske is a Senior Associate at Cator, Ruma, and Associates and has over 25 years of experience with mechanical building systems. Mark is involved in the codes and standards development process of NFPA and ICC documents as well as healthcare specific standards. He is an ASHRAE member and past president of the Rocky Mountain Chapter, is the Colorado Chapter Code Advocate for the American Society of Healthcare Engineering, and is a member of the NFPA and the International Code Council.

1:35 – 2:30: Boiler Burner Technology

This session will discuss the different burner technologies employed in the Boiler/Water Heater industry. We will discuss the evolution of the

combustion systems leading up from the open atmospheric, to FVIR, to Fan Assisted, to Negative Regulation with modulation. We will discuss the materials utilized and the methods of control.

Speaker: Mike Juhnke is responsible for Product Management at Lochinvar and has been with Lochinvar for 11 years. Mike has 19 years of industry experience. He received a B.S. in Mechanical Engineering and an M.S. in Business Management. Mike is a veteran of the U.S. Air Force. He spent 8 years with Rheem Manufacturing as a Senior Design Engineer and Product Manager before joining Lochinvar in 2001. Mike is a member of ASME.

2:35 – 3:30: Steam Systems

An overview of steam systems for heating systems in buildings will be presented. Design guidelines will be given for sizing of steam lines, PRV stations, and overall good piping practice, along with selection and sizing of traps. Processes for successful modulating steam systems will be presented both for steam as a source (conversion to hot water heat) and as a heating terminal (steam coils in AHU's and ducts). Finally, strategies for handling condensate will be presented.

Speaker: Chuck Woodruff is President of Steam System Solutions Inc and has 35 years experience in steam system design, operation and equipment application. He has equipment design and fabrication experience and currently does project consultation, conceptualization and oversight. Mr. Woodruff has a degree from Aquinas College and was a manufacturer's representative for 27 years.

3:35 – 4:30: Trouble-Free Methods of Applying Evaporative Cooling for Energy Conservation

Evaporative cooling can provide a significant amount of the cooling needs in this climate, but it has developed a reputation as being problematic, and consequently is not used as much as it should for high-end commercial applications. This talk will cover the performance of evaporative cooling systems, debunk the myths and explain how it can be applied so that problems are minimized. When applied in conjunction with chilled water cooling, energy savings of 30% can be achieved, which can provide four LEED points. Case histories of successful projects will be presented.

Speakers: Rick Phillips is a Senior Engineer with the RMH Group. He has more than 25 years experience in the HVAC industry; including 6 years as a facilities engineer for the University of Colorado at Boulder, 5 years as a design engineer for in-house construction crews at the CU Medical Center, and 15 years as a consultant.

Track 3 – Sustainability

Sponsored by: Johnson Controls, Inc.

8:00 – 8:55: M&V – Real Results of High Performance Design

Measurement and Verification (M&V) has often been discussed in numerous high performance building designs yet rarely is it fully implemented. This session will give the attendee a rare look at a local high performance building where M&V is currently taking place. In addition to reviewing the current results and actions of the M&V process the attendees will also get a chance to hear about how M&V was included early in the design process. Specifically the attendees will hear about what does and does not need to be included in the design construction documents.

Speakers: Ken Urbanek, PE, ASHRAE HBDP, LEED AP is the Director of Engineering at MKK Consulting Engineers, Inc. Ken received a B.S. degree in Architectural Engineering from the University of Wyoming where he specialized in Building Mechanical Systems. Ken has extensive experience working in high performance building design including the design and construction of the Denver Department of Human Services Eastside Facility which is a LEED Gold building currently implementing Measurement & Verification. This building makes use of an under floor air distribution system in addition to a variable refrigerant flow heat pump system. Ken is also a Rocky Mountain ASHRAE Chapter Past-President. Matt Cooper, PE, HBDP, BEMP, LEED AP is the Commissioning Manager at Group14 Engineering, Inc. Matt received a B.S. degree in

Architectural Engineering from Kansas State University where he specialized in Building Mechanical Systems. Matt has extensive experience designing and commissioning high performance buildings with measurement and verification systems, including the Denver Department of Human Services Eastside Facility.

9:00 – 9:05: Dewpoint Evaporative Comfort Cooling

An internally manifolded indirect evaporative cooler designed by Coolerado has made dewpoint temperature rather than wetbulb, the new low temperature limit for evaporative cooling. DOE lab testing has proven their ability to supply air at or below ambient wetbulb temperature (100 percent-120 percent wetbulb effectiveness (WBE)), surpassing state-of-the-art indirect coolers (~70 WBE) and even swamp coolers (~90 WBE) without adding any humidity to the supply air. The results of a new technology demonstration project will be provided, which tested 20 Coolerado units over a two year period. Performance results and design guidelines will be presented.

Speaker: Jesse Dean is an engineer at the National Renewable Energy Laboratory (NREL) in the Integrated Applications Office (IAO). His primary areas of expertise include commercial building retrofit analysis, solar energy systems, and building energy modeling. He led the development of a weeklong Energy Assessment Training Course for the Federal Energy Management Program (FEMP). He currently serves as a technical lead for a series of new technology demonstration projects with the GSA Green Proving Ground and DOD Environmental Security Technology Certification Program (ESTCP).

10:10–11:05: High Performance Data Centers

This session will cover energy efficient data center design and best practices. ASHRAE Thermal Guidelines for data centers will be presented and the energy savings from advanced data center cooling strategies will be covered. Over the past decade, energy use associated with data centers has nearly quadrupled and data centers consume an estimated 2-3% of US electricity. Studies show that about half of the energy used in data centers is for “overhead” loads such as cooling and power distribution and that significant energy savings opportunities exist. Results from two recent energy efficient data centers in Colorado will be presented.

Speaker: Otto Van Geet, PE, CEM, LEED AP, is a Principal Engineer at the National Renewable Energy Laboratory (NREL), where he has worked for the past 21 years on the design, construction, and operation of energy efficient research facilities such as labs and data centers as well as office and general use facilities. Mr. Van Geet was one of the founding members of the Labs21 program and provides technical guidance for the program. His experience also includes renewables assessments, passive solar building design, use of design tools, photovoltaic (PV) system design, energy audits, and minimizing energy use.

1:35 – 2:30: Minimizing Risk and Maximizing Reward in The Application of Leading-Edge HVAC Systems

Discover the top underutilized energy saving technologies and how to best apply them cost-effectively on projects. This session will focus on research and case-studies of technologies that are both good for customers and utilities and can help supplement your design tool-box.

Speaker: Peter D’Antonio is president of PCD Engineering Services, an award-winning provider of building energy analysis, mechanical/electrical design and commissioning. His work has been recognized with design and service awards from organizations such as the US Environmental Protection Agency, US Green Building Council, Colorado Governor’s Energy Office and Colorado Renewable Energy Society. Peter’s industry and community involvement includes service as board member for the United States Green Building Council and the Association of Energy Engineers Colorado Chapters.

2:35 – 3:30: Metering and Energy Retrofits for the GSA

Two years ago the US Government General Services Administration (GSA) Region 6 embarked on energy reduction projects and upgrades to the building automation systems and building energy metering

infrastructure. The GSA building automation system upgrades and energy metering programs will be presented and some of the designed and installed solutions will be shared with the audience. The second half of the session will present “low lying fruit” and “hidden fruit” energy retrofits recommended for the GSA. Retrofits include optimized control strategies, water conservation opportunities, and O&M enhancements.

Speaker: Christian Marsh-Frydenlund is a project manager for Eaton’s Energy Solutions Group and has actively provided retro-commissioning services throughout the western US and Japan. She holds a BS in Chemical Engineering from the Colorado School of Mines along with a MS in Engineering and Technology Management from Mines. Erik Jeannette has been in the HVAC industry for 17 years and he is a licensed mechanical engineer and a senior engineer at Eaton’s Energy Solutions. There he manages existing building and new construction commissioning projects, as well as metering and controls design projects.

Ron Hardin has been in the HVAC industry for 17 years as an engineer and manager of design-build projects. He holds a BS in Architectural Engineering from Kansas State University. He has spent the past 5 years with Eaton Energy Solutions where he manages design-build and performance contracting projects.

3:35 – 4:30: Commercial Ground Loop Heat Pump Systems: Design Economics

This presentation begins with a quick overview of the components of the GLHP System, basic design and installation information, and then concentrates on the economic impact of decisions made (or sometimes not made) by the design engineer and how defining these details can greatly reduce both the first cost and the operating cost. Also discussed are hybrid system designs and the opportunities where they can reduce the first cost even further.

Speaker: Alan Niles earned his BSME at the University of Oklahoma in 1987 and has been in the commercial water source heat pump industry his entire career. Since 2009, Alan has been the Regional Commercial Sales Manager at WaterFurnace International – a manufacturer of Water Loop and Ground Loop Heat Pumps. For 11 years, Alan had been the Regional Commercial Sales Manager at FHP Manufacturing – also a manufacturer of Water Loop and Ground Loop Heat Pumps. And for 10 years before that, Alan had been a Commercial Sales Engineer at Climate Master – also a manufacturer of Water Loop and Ground Loop Heat Pumps.

Track 4 – Building Automation

Sponsored by: LONG Building Technologies

8:00 – 8:55: DDC Basics

This presentation discusses the fundamental components and concepts used in modern temperature control systems. Selection and proper installation of field devices, including valves, dampers, temperature and pressure sensors as well as the safety devices will be covered. Basic control concepts, including two position and modulation with PID, will be presented with examples. BAS panel types, operator interfaces and different programming languages will also be covered. The presentation will conclude with an overview of the ASHRAE publications that provide additional information on specifying DDC equipment and developing sequences of operation.

Speaker: Dave Kahn is the Chief Mechanical Engineer with The RMH Group, Inc., with over 20 years’ experience designing HVAC and control systems for a wide variety of facilities. He also has 10 years’ experience as a controls contractor. Dave has served as chair of ASHRAE Technical Committee 1.4, Control Theory and Application, is Vice-Chair of SGPC 13 “Specifying Direct Digital Control Systems”, and is an ICC plans examiner for the International Building Code.

9:00 – 9:55: Coordinating BAS and Equipment Vendor Controls

This presentation will include a discussion from the panel members on their experience in reducing the problems associated with mixing equipment and vendor controls. This session will allow the audience to

pose questions on this topic to the panel members for additional discussion.

Speakers: Ira Goldschmidt has over 30 years experience in the building design and construction industry. He co-authored the BACnet[®] standard and focuses on the application of BAS's for intelligently-integrated and energy-efficient control.

Joe Ellison with Saunders Construction has many years experience in the construction industry. He is an MEP coordinator for Saunders Construction. Joe recently worked on the UCAR data center project which included controls integration to HVAC, electrical equipment and specialty systems such as fuel oil delivery.

Brian Barnes is currently an Area Technical Specialist for Siemens. His roles includes teaching Siemens technicians how to integrate to third party devices in addition to being the resource for large scale and complicated integrations to equipment such as HVAC, electrical, fire life safety and security systems.

James Murphy, Sales Engineer, LONG Building Technologies, BSME Vanderbilt University '98, 13 Years Applied Equipment Sales Specializing in Chillers, Custom Air handling units, Applied Product, focusing mainly on engineering.

10:10 – 11:05: Delivering on the Building Automation System Holy Grail

Building Automation Systems, one of the most important features of any facility, is sometimes less than it could be once the owner "takes possession". In the end, the owner wants a BAS that is provided by one vendor with fair pricing and great service. How do we help the owner achieve this *Holy Grail*? This seminar will review how to decide, with the owners input, what is really important and what choices are available. The subjects will include technology, open systems, software, energy, comfort and maintenance concerns, interfaces to other building systems, submittals, commissioning, training and contractor qualifications. We will also present methods to provide protection for the owner in future pricing and technological advances, which is rarely part of the scope of the project.

Speaker: Greg Bradshaw, owner of Bradshaw Building Solutions, has 45 years experience in the construction industry, the last 35 years focusing on re-commissioning, building automation systems, energy management, energy retrofits and smoke control systems. Greg has worked with controls/integration companies, a mechanical design/build firm, a BAS manufacturer as regional manager, an engineering firm specializing in commissioning & retro-commissioning. Greg now has his own company focusing on re-commissioning, smoke control & building automation system consulting. Greg has spoken many times about a number of subjects, including Re-Commissioning & Commissioning, Energy Management Systems, Web-based BAS, Building Systems Interoperability, Energy Retrofits, Control Strategies, Smoke Control Systems and Networks & the BAS.

1:35 – 2:30: Cool New Stuff in the Controls World

This presentation will cover exciting new technologies and products in the building industry such as wireless, BACnet and others.

Speaker: Ken Nekvasil has a graduate degree from Colorado State University and an MBA from the University of Phoenix. He has worked in the HVAC Controls and Equipment industry for 27 years mostly specializing in controls. Before becoming a partner in his current firm Ken was the critical environment market vertical specialist at Siemens in Colorado. He has a lot of experience in data center, hospital and BSL lab solutions as well as general HVAC solutions. Currently he is running the controls division of FHS Controls and is hard at work developing a Building Automation Software Solution.

2:35-3:30: Simple, Sexy & Sustainable ERV or Controls

This presentation will discuss control strategies for Energy Recovery Ventilators (ERV's). Items covered will include maximizing heat recovery, minimizing energy use, how to control in frost conditions, economizer, control of different types of heat recovery, trouble shooting, and building pressure control problems.

Speaker: Michael Fulton, P.E. founded Western Mechanical Solutions to focus on minimizing the energy use of buildings through innovative application of engineering. WMS represents various

energy recovery products. Mike has 24 years' experience in equipment sales, consulting and construction. He graduated from the University of Maine with a degree in Mechanical Engineering. He is actively involved with ASHRAE, past president of the Rocky Mountain Chapter (2002-2003), has been involved with the local ASHRAE tech conference since 1996, and has been the north section (Fort Collins) chair since 2008.

3:35-4:30: Commissioning - Lessons Learned or How to improve the Cx Process

This presentation will include a discussion from the panel members on their experiences in commissioning various types of projects and methods and techniques for improving the process. The panel members will be sharing experiences from many years in the Cx field about what has gone right and what has gone wrong. With this diverse group that includes Cx agents, an MEP coordinator, a BAS contractor & an equipment supplier, it should make for a very interesting & informative discussion.

Speakers: In 28 years of HVAC engineering, Jarrell Wenger has developed expertise in energy efficiency, controls and IAQ, currently applied through commissioning as a principal with Engineering Economics, Inc.

Dan Shepardson, Sr. Engineer, Murphy Company, has 29 years of experience in the construction industry. Dan has worked as a consulting engineer for an MEP firm, a temperature controls application engineer, and as a design-build engineer inside two prominent front range mechanical design build companies.

Jeff Strickland – Technology Manager D.R. Associates, has 31 years of experience in the temperature control industry. Various roles including - Control systems design, Project Management, various technical roles, training and system integration.

Brian Lynch, HBDP, LEED-AP, is a partner with Western Mechanical Solutions, a manufacturer's representative focused on minimizing buildings energy use through the use of energy efficiency technologies and energy recovery.

Tom Poeling is the Mountain Region Operations Manager for Eaton Energy Solutions, Inc. and a senior commissioning engineer with over 18 years of experience. Tom's numerous commissioning projects have included university and K-12 facilities, commercial, institutional, and healthcare buildings on a worldwide scale.

Track 5 – Indoor Air Quality

Sponsored by: Chemistry & Industrial Hygiene, Inc.

8:00 – 8:55: Earning the LEED IEQ Credit 3.2

LEED 2009 Green Building Design and Construction, the rating system for new construction and major renovations, has a number of credits that can be earned for indoor environmental quality (IEQ), including the creation of a construction indoor air quality management plan, before occupancy. IEQ Credit 3.2 offers two options to demonstrate that the indoor air quality problems resulting from construction or renovation have been reduced. This presentation will explore the options to flush-out a building and to conduct air testing and highlight challenges and benefits of each option.

Speaker: Annette Haugh is an Environmental Scientist at Chemistry & Industrial Hygiene, Inc. (C&IH). She holds a Bachelor of Science in Biology from San Diego State University and a Master of Science in Environmental Policy and Management with a concentration in Natural Resource Management from the University of Denver. Mrs. Haugh is a LEED AP with a specialty in Building Design and Construction. As an Environmental Scientist at C&IH, Annette provides project management and technical support for projects involving indoor air quality, natural resource management, and ecological sustainability and risk assessment.

9:00 – 9:55: Case Study: The Application of a Positive Displacement Ventilation Protocol in an Industrial Precious Metal Refining Facility.

An industrial Hygiene and engineering assessment of a precious metals refinery operation revealed employee exposures and ambient levels of

airborne silver dust and fume above the MSHA PEL. A combination of local exhaust and turbulent flow general dilution exhaust was employed in an attempt to reduce employee exposures but exposure levels still exceeded the MSHA PEL. Utilizing approximately the same volume of air as the original ventilation system, a new positive displacement ventilation protocol was developed and installed in the facility and employee exposure levels were reduced to below the PEL.

Speaker: Bill Mele has been employed in the HVAC industry in Denver for over 38 years spending time as a contractor, wholesale supplier, and as a consultant and is currently with Chemistry and Industrial Hygiene Inc. He has extensive experience in building mechanical systems, air filtration systems and contamination control applications along with numerous indoor air quality and microbial investigations. He is a long time member of the Rocky Mountain Chapter of ASHRAE, a member of AIHA, a past president of the Building Operator's Association of Colorado, and is currently the Director of the Colorado Chapter of the Indoor Air Quality Association. He holds a Denver Class A Heating and Ventilating Certificate, is a EPA Certified Universal Refrigerant Handler, a NATE certified AC technician, a Council-Certified Indoor Environmental Consultant and is also an adjunct instructor at Red Rocks Community College in Lakewood Colorado.

10:10 – 11:05: Energy Recovery for Contaminated Air Streams and High Ventilation Opportunities

Energy cost and codes give rise to Energy Recovery for exhaust air streams. Manufacturers of HRV's have responded with numerous products to recovery energy such as run around coils, plate heat exchangers, and heat pipe and wheel devices. Each type will be presented with pro's and cons. We will review the standards ASHRAE and other organizations have developed to help Engineers to determine when to utilize energy recovery and determine what is acceptable contamination and when you should have "zero" cross contamination. Local, State and Federal codes for Energy Recovery will be reviewed as well as Institutional and Military codes.

Speaker: Lou Grounds has over 35 years experience working in the HVAC industry. He is the recipient of the Arizona Governors Energy Award, ASHRAE regional paper award-system design, (Sunny Crest Animal Hospital, California), and a former member of ASHRAE TC 5.5, Heat Recovery and TC 5.7 Evaporative Cooling and is the author of numerous articles for the Denver Business Journal. He is a graduate of HVCC Tech, in Troy, New York, attended Syracuse University and RPI and holds an Industrial Ventilation certificate from the ACGIH in Lansing, Michigan. Lou is currently with ACE Mechanical Equipment

1:35 – 2:30: Using Computational Fluid Dynamics (CFD) to Improve Engineering Controls in High Contamination Environments.

Computational Fluid Dynamics (CFD) is an extremely powerful tool for designing engineering controls especially in indoor air quality. It can be used to model current systems to identify system weaknesses and quickly alter the parameters of current systems repair issues. CFD's ability to calculate ventilation parameters and provide visual representations of air flow can help create an effective ventilation system in almost any environment. This talk will give an overview of what parameters are required to run CFD, what data is calculated, and how CFD's visual tools can help design more effective ventilation systems and engineering controls.

Speaker: Cassidy Strode is a Computational Fluid Dynamics (CFD) Specialist and Industrial Hygienist for Chemistry & Industrial Hygiene. He graduated from the University of Colorado Boulder with a Bachelor of Arts in Physics. He also provides CFD-related project support for the design and validation of exposure mitigation systems. Prior to joining C&IH, Mr. Strode worked as a geoscientist performing geophysical surveys for environmental and mining exploration.

2:35-3:30: Infection Control in In-Patient Health Care Facilities

Healthcare associated infections (HAIs) continue to be related to construction and renovation activities in healthcare facilities. The

Centers for Disease Control, the Joint Commission and American Institutes of Architects have published infection prevention guidelines for construction in healthcare. This session will present 1) practical infection control practices that can easily be implemented during healthcare construction activities, and 2) tools used to evaluate and document infection control effectiveness.

Speaker: Cynthia Ellwood is the owner and Principal Industrial Hygienist at Associates in Occupational + Environmental Health, an industrial hygiene and safety consulting firm. Cynthia has provided industrial hygiene consulting services for 27 years and infection prevention services during construction in healthcare in the Denver metro area for over 6 years. She specializes in designing infection prevention controls and implementing evaluation strategies and plans to determine the effectiveness of infection prevention controls.

3:35-4:30: Nanoparticle Exposure, Exposure Monitoring, and Control at the National Institute of Standards and Technology (NIST)

Researchers at the National Institute of Standards and Technology (NIST) work with a wide variety of engineered nanomaterials within laboratory settings. This presentation will discuss NIST's approach to developing a nanomaterial safety program, to measuring actual exposure levels, and to evaluating and implementing control measures.

Speaker: Michael K. Blumer is a Certified Industrial Hygienist with over 25 years of experience in industrial hygiene and safety. Most of his career has been in private consulting, but he has also worked in OSHA compliance, OSHA consulting, private industry, and government. He is currently the Industrial Hygienist at the National Institute of Standards and Technology (NIST) in Boulder, Colorado, where he spends most of his time performing hands-on industrial hygiene in cutting-edge research laboratories.



REGISTRATION FORM

20th Annual Technical Conference
Friday, April 20, 2012
Sheraton Hotel Denver West – 360 Union Boulevard, Lakewood CO 80228

“Leadership in HVAC”

Presented by:

The ASHRAE Rocky Mountain Chapter

Register by April 6th, 2012 to ensure space availability.

Checks received after April 6th or walk-ins the day of the seminar will be accommodated pending space availability.

Please photocopy this form for additional attendees and for your records.

Individual Registration:

Your Name _____ Title _____

Company _____

Mailing Address _____

Phone _____ Fax _____

Company Registration:

Company _____

Mailing Address _____

Phone _____ Fax _____

Seminar Preference: (This is for space allocation only. You may attend any seminar during the conference.)

Check Your First and Second Preference

HVACR Fundamentals

HVACR Advanced

Sustainability

Building Automation

Indoor Air Quality

Are you a Member of ASHRAE IAQA USGBC Other _____

Please register me for...

Please register my company for... _____ passes. 10% Discount for 5 or more

Company Passes if Registered before April 6th.

Check Your Preference

Full day @ \$175.00, (Lunch included), (Total Number) _____

1/2 day at \$125.00, (Lunch included), (Total Number) _____

Morning Session Afternoon Session

Late Registration, received after April 6, 2012, will be:

\$190.00, (includes lunch), \$150.00 1/2 day, (includes lunch)

Enclosed please find a check for: \$ _____

Please Make Checks payable to Rocky Mountain Chapter ASHRAE

Payments with Master Card or Visa can be made at the Chapter's Website: www.rockymtnashrae.com

Please note day of registrants must pay in cash or check.

Please mail check and registration form to:

Mike Harrington-Set Point Systems

8167 South Park Circle

Littleton, CO 80210

Phone: 303-733-2300

e-mail: mharrington@setpointsystems.com

For questions please contact:

Michelle Swanson, MSwanson@rmhgroup.com, 303-239-2724