■■■ LAS VEGAS, NEVADA MARCH 18-20, 2012 ■■■

20/20 THE FUTURE IN FOCUS:

RETHINK. RESTORE. REGENERATE.

2012 GLOBAL ENGINEERING CONFERENCE

Building on its tradition of industry leadership, Carrier is bringing together some of the world's thought leaders to create a vision for the future at the 2012 Global Engineering Conference. The event features a mix of keynote addresses and concurrent workshops focused on rethinking current practices, restoring natural resources and developing regenerative initiatives. Keynote speakers include Rick Fedrizzi, president, CEO and founding chair, U.S. Green Building Council (USGBC), David Gottfried, founder of the World Green Building Council, and other leaders of the green building movement.

SIGNIFICANT SAVINGS WHEN YOU REGISTER BY FEBRUARY 25, 2012

Conference Includes:

- Access to all keynote speaker sessions
- Attendance to all of the workshop sessions
- Sunday Welcome Reception with "Legends Tribute Show" entertainment
- Continuing education credits
- Optional training seminars on Sunday, March 18, at no additional cost
- All conference speakers' presentation materials
- All breakfasts, lunches, refreshment breaks and evening receptions

Presented by:

Carrier®

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In partnership with:

HEATING/PIPING/AIR CONDITIONING HPAC ENGINEERING

ES Engineered Systems

CONFERENCE SCHEDULE

Sunday, March 18th

8:30 AM – 5:30 PM	Optional Complimentary Seminars • LEED® BD+C 251: Understanding Building Design+ Construction LEED Rating Systems • Energy Modeling for LEED® Energy & Atmosphere CR-1 Workshop
6:00 PM – 9:00 PM	Welcome Reception with "Legends Tribute Show"

Monday, March 19

7:00 AM – 8:00 AM	Breakfast
8:00 AM – 9:15 AM	**Opening Plenary** • Geraud Darnis – Welcome • People, Planet and Performance, a Conversation with Rick Fedrizzi
9:30 AM – 11:15 AM	**Panel Discussion** Led by David Gottfried – GreenBuild-Tech: Technologies Disrupting the Building Industry by Pushing Performance and Productivity
11:30 AM – 1:00 PM	**Education Session A** • Concurrent Workshops
1:00 PM – 1:45 PM	Luncheon
1:45 PM – 2:30 PM	**Luncheon Address** • Bob Fox – Biophilia: The Instinctive Bond Between Humans and Nature
2:45 PM – 4:15 PM	**Education Session B** • Concurrent Workshops
4:30 PM – 6:00 PM	**Education Session C** • Concurrent Workshops

Tuesday, March 20

7:30 AM – 8:30 AM	Breakfast
8:30 AM – 10:00 AM	**Plenary Session** • Valentine Lehr – Beyond Taipei 101: Implementing New Technology and the Roles People Play • Bill Browning – People Greening the Building and the Bottom Line
10:15 AM – 11:45 AM	**Education Session D** • Concurrent Workshops
11:45 AM – 12:30 PM	Luncheon
12:30 PM – 1:15 PM	**Luncheon Address** • Scott Frank – The Role of People: Let's Not Miss the Opportunity
1:30 PM – 3:00 PM	**Education Session E** • Concurrent Workshops
3:15 PM – 4:45 PM	**Education Session F** • Concurrent Workshops
5:00 PM – 6:00 PM	**Closing Session** • Motivational Speaker

CONFERENCE ATTIRE IS BUSINESS CASUAL

PROGRAM SUBJECT TO CHANGE

OPENING PLENARY

Geraud Darnis

President & CEO, UTC Climate, Controls & Security Systems

At Carrier, we will never rest on our accomplishments, but instead seek ways to continuously improve our products, our environment and our world. With this commitment in mind, I hope you will join us in Las Vegas, March 18-20, 2012 and share your perspectives on how we can rethink, restore and regenerate.

William D. Browning

Principal, Terrapin Bright Green, LLC

PEOPLE GREENING THE BUILDING AND THE BOTTOM LINE

William D. Browning, Terrapin Bright Green LLC, received a bachelor's of environmental design from the University of Colorado and a master's in real estate development from MIT. In 1991, Browning founded Rocky Mountain Institute's Green Development Services, which was awarded the 1999 President's Council for Sustainable Development/Renew America Prize. In 2006, he became a principal in Terrapin Bright Green, LLC, which crafts environmental strategies for corporations, government agencies and large-scale developments. Browning's clients include Wal-Mart's Eco-mart, Starwood, Yellowstone National Park, Lucasfilm's Letterman Digital Arts Center, New Songdo City, Bank of America's One Bryant Park, the White House, and the Sydney 2000 Olympic Village. He coauthored Green Development: Integrating Ecology and Real Estate, Green Developments (CD-ROM), A Primer on Sustainable Building, and Greening the Building and the Bottom Line. Browning was named one of five people "Making a Difference" by Buildings *magazine, and an honorary member of the American Institute of Architects. He was a founding member of US Green Building Council's Board of Directors, and is the Chair of the Greening America Board of Directors. He served on the Department of Defense's Science Board Energy Task Force and the State Department's Industry Advisory Panel.*

Richard Fedrizzi

President, CEO and Founding Chair, U.S. Green Building Council

PEOPLE, PLANET AND PERFORMANCE, A CONVERSATION WITH RICK FEDRIZZI

Rick Fedrizzi was named President and CEO of the U.S. Green Building Council (USGBC) in 2004, after a distinguished 25-year career at United Technologies subsidiary Carrier Corporation. Under his leadership, more than 100,000 residential and commercial buildings and communities in 129 countries are participating in USGBC's market-leading Leadership in Energy and Environmental Design (LEED) green building program, and more than 170,000 individuals hold LEED Professional Credentials. Of all its diverse programs, The Center for Green Schools at USGBC is Rick's passion, with its goal of every child being in a green school within this generation. Rick serves on numerous boards and advisory committees, including the Center for Health and the Global Environment at Harvard Medical School and the American Architectural Foundation. He is chair of the Scaling Sustainable Buildings Action Network of the Clinton Global Initiative. Rick has been honored with the Charles H. Percy Award for Public Service from the Alliance to Save Energy and the prestigious Olmsted Award from the American Society of Landscape Architects.

Robert F. Fox, Jr., AIA

Partner, Cook+Fox Architects, Terrapin Bright Green, LLC

BIOPHILIA: THE INSTINCTIVE BOND BETWEEN HUMANS AND NATURE

Bob Fox is one of New York City's most highly respected leaders in the green building movement and has been honored with many awards. He is an advisor to Mayor Michael Bloomberg's Office of Long-Term Planning and Sustainability and was the Founding Chair of the US Green Building Council/NY Chapter. He is a General Services Administration (GSA) Peer Reviewer, part of the GSA Green Building Advisory Committee, and a member of the Interface Dream Green Team.

A founding partner of Fox & Fowle Architects, Bob's work there includes the influential 4 Times Square/Condé Nast Headquarters. In 2003, Bob joined with Rick Cook to form Cook+Fox Architects, a firm devoted to creating beautiful, environmentally responsible high-performance buildings, including the LEED Platinum Bank of America Tower at One Bryant Park. In the summer of 2006, Bob and Rick joined Bill Browning and Chris Garvin to form Terrapin Bright Green, a strategic consulting firm that crafts high-performance environmental strategies for clients such as Interface, Google and the National Geographic Society.

Scott E. Frank

Partner, Jaros Baum & Bolles

THE ROLE OF PEOPLE: LET'S NOT MISS THE OPPORTUNITY

Scott Frank is a partner with the firm of Jaros Baum & Bolles (JB&B), a full-service mechanical and electrical consulting engineering firm based in New York City and specializing in the design of large commercial and institutional projects located throughout the world. Since joining the firm in 1987, Scott has served as principal mechanical engineer for numerous new construction and retrofit project located within the United States and abroad.

Scott currently directs the sustainable design practice at JB&B, including in-house energy and CFD modeling functions and has been involved with several significant green building projects, including Bank of America Tower at One Bryant Park, 30 Hudson Street, 7 World Trade Center and World Trade Center Towers 1 through 4.

Scott holds bachelor's and master's of engineering degrees from Cornell University, is a licensed Professional Engineer, a LEED Accredited Professional and is a founding and current board member of the Urban Green Council (NY Chapter of the US Green Building Council).

David Gottfried

David Gottfried, CEO of Regenerative Ventures and Regenerative Network and Founder of the USGBC and WorldGBC

GREENBUILD-TECH: TECHNOLOGIES DISRUPTING THE BUILDING INDUSTRY BY PUSHING PERFORMANCE AND PRODUCTIVITY

Venture capitalists are aggressively investing in green building-related cleantech companies. In a historically static industry, we are now seeing quantum leaps in performance as these startup companies bring their hi-tech backgrounds and their ethic of speed and disruption into the building industry, and push our industry to change. They enable greater efficiencies, comfort, adaptability, productivity, higher performance, higher ROI, and other significant environmental and social benefits than traditional technologies and practices. David Gottfried, CEO of Regenerative Ventures and Regenerative Network and founder of the USGBC and WorldGBC, calls this emerging area GreenBuild-Tech (GBT). In this session, David will lead a talk-show type panel of GreenBuild-Tech executives in a dynamic discussion about how they are changing our world.

Panelists: Four Greenbuild-Tech Executives:

- *Enlighted – Zach Gentry, VP Marketing & Product Management*
- *Clear Edge Power – Mike Upp, VP Marketing*
- *SClenergy – Dave Winerth, Executive Vice President*
- *Soladigm – Erich Klawhun, VP Business Development*

Valentine A. Lehr, P.E. , F.ASHRAE, F.ASCE, LEED AP

Senior Partner, Lehr Consultants International

BEYOND TAIPEI 101: IMPLEMENTING NEW TECHNOLOGY AND THE ROLES PEOPLE PLAY

Valentine Lehr is a senior partner of Lehr Consultants International and founding partner of its precursor formed in 1969. He is licensed in 26 states and territories. Val is also a Chartered Engineer in the United Kingdom and a licensed professional engineer in Australia. His experience covers projects on six continents. Noted for innovation in high-rise construction, hotel design and master planning of complex projects, he is also dedicated to environmentally responsive sustainable design and has led the design efforts in numerous award winning environmental projects. Val is also a noted keynote speaker having delivered seven keynote addresses at the Global Engineering Conference, as well as other major engineering gatherings. He is particularly noted for his insight in cutting-edge technology and future directions for the building industry.

Howard Alderson, P.E.

PRACTICAL APPLICATIONS OF GEOTHERMAL HEAT PUMP SYSTEMS AND DESIGN CHOICES

This presentation on geothermal systems will give engineers and architects a basic understanding of design considerations and concerns. The participant will understand the wide range of applications, the financial benefits, case studies, considerations of well field layout, and equipment selection. Emphasis will be on the practical by utilizing actual case studies.

Howard is a Philadelphia area consulting engineer and president of his own firm, Alderson Engineering, Inc. Howard has been a consulting engineer in private practice since 1981. He has been responsible for the design of over 42,000 tons of closed loop geothermal heat pumps installed and over 13,000 boreholes in northern climates. Howard is frequently a guest speaker at various conferences, with expertise in the area of ground source heat pump systems. He served as the national director of the Consulting Engineering Council (CEC) of Pennsylvania after having served as president of the organization.

George Berbari

ACCELERATING CITYWIDE EFFICIENCY IMPROVEMENT BY SHOCK TREATMENT AND A NEW ECONOMIC ENVIRONMENT THAT SELF FINANCES THE CHANGE

This session will focus on new electric utility pricing and the partnership between a city, town or municipality and an electric utility service provider that will come up with a revolutionary electric, water and district energy utility structure. It rewards the efficient building that consumes less KWh/m2/month with lower tariff and will penalize the inefficient building with a higher tariff. The penalty will be retained by the municipality to finance improving envelopes, heat recovery, and district energy and tri-generation renewables via well planned rebate.

George Berbari is the CEO and founder of DC Pro Engineering, which is an electro mechanical consultancy firm specialized in district energy services and green buildings MEP design. He has 26 years of extensive HVAC experience in the Middle East where he played a major role in transferring District Cooling technology in 1995. Mr. Berbari has transferred more than 20 technologies to the Middle East and pioneered six new applications in the field of air conditioning and power generation.

Dr. Gregory Dobbs

OPPORTUNITIES FOR COST EFFECTIVE RENOVATIONS AND SMART GRID INTEGRATION

The mission of the Greater Philadelphia Innovation Cluster for Energy-Efficient Buildings, a Department of Energy Innovation Hub, is to increase efficiencies in the building design and delivery process for smaller commercial buildings so that a deeper green renovation can be done than otherwise could not have been afforded. This five year multi-organization research program is being conducted at the Navy Yard in Philadelphia, which is a mixed-use urban redevelopment area that has over 250 buildings that could be renovated and where an unregulated microgram provides power. Coupling the optimized renovated building's energy management system to the smart grid can lead to additional revenue streams from demand reduction or ancillary services that can help pay for an even deeper green renovation.

Greg Dobbs is a member of the engineering faculty of Penn State University. He is the Director of Distributed Generation Research and Education and directs the DOE GridSTAR SmartGrid Research and Education Center. Prior to that, he was a principal Scientist/Engineer at United Technologies Research Center with a focus on energy efficient equipment and green buildings. He is on the board of directors of the International Building Performance Simulation Association and the USGBC Research Advisory Committee.

Markus Dochantschi

DESIGN METHODOLOGIES FOR ACTIVE AND PASSIVE SUSTAINABILITY

studioMDA has been focusing on implementing new building technologies, while designing passive sustainability strategies. The presentation will included a recently completed school in Congo, a school in Malawi, a Center For Advanced Mobility in Germany, as well as a mixed used Tower in Brooklyn, New York.

Markus Dochantschi is the founder and principal of studioMDA in New York. Before opening studioMDA *in New York in 2002, he worked with Arata Isozaki and Fumihiko Maki in Tokyo, and as a Director for Zaha Hadid in London. He taught the Advanced Studio at Yale University with Zaha Hadid, Stefan Behnisch and Gerald Hines, and has been teaching the Advanced Studio at Columbia University, GSAPP since 2008. He was a Guest Lecturer at the GSD, at Harvard University. He has been guest critic at the AA London; Columbia University, NY; The Cooper Union, NY; University of Pennsylvania, Philadelphia; Princeton University, Princeton; the ETH Zurich, Switzerland; the Hochschule für Angewandte Kunst Vienna, Austria. Markus was serving on The Green Codes Committee, created to make recommendations for New York City Building Code revisions for greening our environment.*

Ahmed Abdul Ghani

REVIEW OF PRACTICES IN THE DISTRICT COOLING SYSTEMS AND PUMPING SCHEMES TO MANAGE THE IMPACT ON ENERGY – BURJ KHALIFA CASE STUDY

District cooling systems face several challenges. These include reliability of plant design and distribution systems and associated energy running cost. This workshop discusses the different alternatives considered in the Burj Khalifa Project and its relevant case study. It also examines various thermal energy storage techniques and reasoning for adopted design.

Ahmed is currently chairman of Allied Consultants. He is currently writing the ASHRAE chapter on District Cooling. He has extensive experience in writing building codes within Egypt, including Egyptian Fire Protection Code, Arab Fire Protection Code, Standard Specification Code, Building Fire Inspector Training Code, Egyptian District Cooling System Code and Egyptian HVAC Code.

Michel Grabon

DEVELOPING NEAR-ZERO ENERGY SYSTEMS WITH DYNAMIC MODELING

A Smart Office Tower Building in the La Defense Business District outside of Paris will be an extremely low energy usage building (25 kW/m^2-yr) when it is finished in 2013. To achieve its low-energy signature, many advanced design elements were used and dynamically modeled from the earliest phase of design. Extensive use was made of energy recovery, storage and transfer features. New building-wide system architecture controls dynamic chilled beams supplied from a new design central DOAS heat recovery unit. Small-zone water-to-water heat pumps (W2WHP) deliver the needed heating or cooling capacity to the spaces. After modeling was completed, an 8-zone beta test facility was installed and run at Carrier's Montluel Engineering Design Center, validating the potential of this unique system.

Michel Grabon is director of Carrier's AdvanTE^{3}C Solution Center and is a Carrier Fellow with more than 20 years of engineering experience. He has run the Engineering for Commercial Applied Global Platform and directed the Montluel, France Engineering Design Center.

Robert Middlebrooks

UNDERSTANDING EXISTING BUILDINGS THOUGH BIM: REALITY CAPTURE, MONITORING, SIMULATION AND ANALYSIS

Experts agree that buildings are the biggest source of emissions and energy consumption both in the U.S and around the globe. Research shows that over 50 percent of commercial buildings built prior to 1980 (when energy codes largely did not exist) have not had any energy related renovation. Understanding these existing buildings, such that intelligent decisions about use, renovation and energy retrofitting can be made, is the key to a significant reduction in building energy consumption. Capturing the existing conditions and creating a model platform for monitoring their use is the first step, but the real value then comes from simulating use and the analysis of options and alternatives.

Today's technologies including the rapid acceptance of both photogrammetry and laser scanning for reality capture and Building Information Modeling (BIM) become the central repository of the existing buildings shared information and the backbone to a digital workflow. Recording and analyzing the existing buildings use, creating an energy model and ultimately exploring the building potentials is the second step and the basis for decision-making. Creating "what if" and design scenarios can then be evaluated for esthetics, energy performance and even O&M. The further development of cloud based infinite computing will allow the processes to be even further accelerated to near real time, allowing for visualization, simulation, and analysis to be integral part of the decision making process. This faster understanding of issues and concepts also invigorates owners and public participants that normally cannot fully understand the impact. Ultimately this BIM workflow allows for teams to make better, more informed decisions, with great levels of predictability, less assumptions and reduced risk.

Robert E. Middlebrooks, AIA, is an Industry Program Manager for Buildings with Autodesk, Inc. specializing in BIM, Sustainable Design and IPD adoption. Bob is an Architect with over 28 years experience as a former principal of Clark Nexsen. Robert is a past AIA National Board Member, currently serving on the AIA Contract Documents Committee, co-authored of many of the new IPD documents. As a member of the Industry Strategy and Relations Team he focuses on future practice change along with special projects, research, and key industry group collaboration, including rapid energy modeling, laser scanning, energy retrofit strategies and BIM enabled sustainable analysis.

Mark Modera

TECHNOLOGY TWEAKS TO INNOVATE HVAC OPTIONS

The Western Cooling Efficiency Center (WCC) was started approximately five years ago as the cornerstone of the Energy Efficiency Center at the University of California at Davis. The mission of the center is to effect change in the energy performance of cooling systems in hot dry climates like California, in particular on the peak electricity demand. Rooftop units are used on a large percentage of commercial buildings for cooling and heating throughout the country. This presentation describes the rationale and technical basis for the Western Cooling Challenge (WCC), which targets rooftop unit's performance that is roughly 50% better than DOE 2010 minimum standards on peak demand and energy use in western climates. Results of laboratory and field tests on WCC equipment will be presented, as will a related initiative to improve the performance of rooftop units that are not old enough to replace. These efficiency improvements often include the use of water evaporation and recent research on the management of water use will also be presented. Finally, some innovative research initiatives at the center will be discussed, including the use of encapsulated phase change materials in hydronic distribution systems and the application of an aerosol-based technology for sealing leaks in building envelopes.

Mark P. Modera is a Professor in Civil and Environmental Engineering, as well as Mechanical and Aerospace Engineering, and holds the Sempra Energy Chair in Energy Efficiency, all at UC Davis. Professor Modera is also the Director of the UC Davis Western Cooling Efficiency Center (WCEC) at UC Davis. Dr. Modera joined the WCEC from Carrier Corp., and from Lawrence Berkeley National Laboratory (LBNL). At LBNL, Dr. Modera was a Principal Investigator on many research projects, and developed a new research program focused on thermal energy distribution in buildings.

Brian Monk, P.Eng., ASHRAE DL

DESIGN CONCEPTS IN DOAS: BALANCING IAQ AND ENERGY

With most of the United States adopting ASHRAE Standard 90.1-2010 as code, it is now more important than ever to understand how Dedicated Outdoor Air Systems (DOAS)can be designed to save energy for high performing buildings. This presentation will focus on the design of Custom DOAS units with respect to providing adequate outdoor air, and considering the indoor air quality procedure when the reduction of outdoor air pollutants is a concern. A system approach to combining DOAS units with chilled beam technology will be reviewed. Particular focus will be given to this combined strategy's energy savings potential as it is applied the Energy and Atmosphere credit within the LEED rating systems.

Brian Monk is vice president of Annexair Inc., Montreal, Canada, specializing in design and manufacturing of dedicated outdoor air systems with energy recovery. Previously Mr. Monk was director of Sales/Marketing for Carrier Corporation's custom air handling division. Mr. Monk was previously vice president of Sales/Marketing for Dectron International Inc. He is a Registered Professional Engineer with the Province of Quebec, Canada, and the Association of Professional Engineers and Geoscientists of British Columbia, Canada. Mr. Monk is an ASHRAE Distinguished Lecturer, Member of Committee TC 2.3 Gaseous Air Contaminant Removal Equipment, and TG HVAC Security.

Rohan Parikh

INFOSYS BREAKS THE EFFICIENCY BARRIER *(SPEAKING WITH PETER RUMSEY)*

Infosys is one of India's software giants, recently building India's most significant low energy building in the City of Hyderabad. The 200,000 sq ft building uses 70% less energy than their existing building stock and cost less to build than the standard Variable Air Volume (VAV) system. A German university conducted a study of the building and found its energy use to be 19 kBtu/sf/yr. The building was built with two different cooling systems, radiant and VAV, which provided an unprecedented large scale side-by-side comparison. The occupant satisfaction with the radiant system and the low energy consumption has given Infosys the confidence to proceed with a large scale building program based on radiant and chilled beam cooling systems.

Rohan M. Parikh heads the Green Initiatives and Infrastructure team at Infosys. The Green Initiatives team is a strategy and R&D team focused on setting global benchmarks in corporate environmental sustainability. He is responsible for driving these goals which include reducing the per capita energy consumption by 50%, sourcing 100% of the electricity from renewable sources, becoming carbon neutral including transportation related emissions, becoming water neutral, recycling organic waste, preserving and promoting biodiversity and engaging employees in all of the above goals. The Green Initiatives team is driving the design of the next generation of high performance smart buildings and campuses for Infosys. Mr Parikh holds a master's degree in Civil engineering from University of Illinois at Urbana Champaign.

Peter Rumsey

(SPEAKING WITH ROHAN PARIKH) SEE ABOVE

Peter Rumsey is the West Coast director of Integral Group and the managing director of the Oakland, California office of Integral Group. He has worked in engineering and energy consulting since the mid 1980's and is recognized as a global player in energy efficiency and sustainable building design. He is a senior fellow of the Rocky Mountain Institute, a Certified Energy Manager and a member of the ASHRAE Cleanrooms Committee.

Dan Probst, LEED® AP

HOW MACRO TRENDS IN SUSTAINABILITY AFFECT PROPERTY AND FACILITY STRATEGIES

President Obama's Better Buildings Initiative, the Clinton Global Initiative and the World Economic Forum at its annual Davos Summit are all focused on ways to improve energy efficiency in buildings as a key strategy in combating climate change. In this session, a PE and chairman of energy and sustainability at a leading global property services firm connects the dots, from macro regulatory and institutional investment trends to key drivers for owners and occupiers to opportunities and obstacles involved in energy retrofits. Find out about the worldwide surge in renewable energy installations, the emergence of intelligent buildings and portfolios, and the role of certification in differentiating buildings.

Dan Probst is chairman of Energy and Sustainability Services globally for Jones Lang LaSalle. He is a founding and current member of Jones Lang LaSalle's Global Environmental Sustainability Board. He also oversees the firm's Engineering & Operations team across the Americas region. Dan is co-author of the book "Six Sigma for Sustainability," and is a registered Professional Engineer and LEED Accredited Professional.

Rajan Rajendran

AN UPDATE ON REFRIGERANTS OF THE FUTURE

Many new lower GWP refrigerant candidates are becoming available for air conditioning and heat pump applications. Minimizing a system's life cycle impact on the environment should be the goal in narrowing options. Learn the pros and cons of the refrigerants being considered in the industry today and how these choices can affect the direct emissions and energy consumption. The presentation will present the most recent developments in testing and analysis of the next generation refrigerants and how adopting these refrigerants can impact our industry.

Rajan Rajendran is director of Engineering Services for Emerson Climate Control Technologies Inc. He has more than 20 years of experience in the research, development, and application of compressor products in refrigeration systems. He is coordinator of the next generation of refrigerants work being done at Emerson and is knowledgeable in alternate refrigerants work in Air conditioners, heat pump and refrigeration systems in the United States, Europe, and Asia. He serves on committees at AHRI and UL, the area of Low GWP Alternative Refrigerants.

Dan Sullivan

DATA CENTERS: A LOOK AT SYSTEM DESIGN STRATEGIES REQUIRING MORE ACCURATE CONTROL TO ASSURE THE MOST RELIABLE OPERATION

Over the past couple of decades a change in the data center energy environment has created concern about energy operating costs. Historically data centers did not consider the energy required to maintain reliability. With the ever increasing costs of energy, the drive towards green buildings and social pressure to reduce energy costs, data centers are now experiencing pressure to reduce their carbon footprint. This requires new mechanical designs as well as more accurate control of these heat rejection systems.

Mr Sullivan is manager of the mission critical controls design department for HP/EYP. He has been working on the construction, design and service of mission critical facilities since the early 1980's. His experience ranges from providing emergency response, to installing critical control systems. He has overseen or directly been involved in the design, implementation and strategic discussions for approximately 150 mission critical facilities ranging from "Tier II to Tier IV".

Vincent Tse, C.Eng., ASHRAE DL

THEMED ENVIRONMENTS: SUSTAINABLE DESIGN OF ASIA'S LARGEST ENTERTAINMENT RESORTS

The presentation will cover the recent development of several mega entertainment resort complex in Macau and Singapore. Brief description and case studies of both passive and active sustainable design (including HVAC system, mega district cooling plant of over 50,000 tons and heat pump plant of over 8000kW, etc) will present several mega entertainment resorts in Asia, including Singapore Marina Bay Sands Resort, Macau Venetian Resort, Macau Sheraton and Conrad Resort

Vincent is managing director of Parsons Brinckerhoff, Building MEP, China Region. He has over 33 years of experience in design of many major projects in Asia. His expertise is in green and energy system design of super tall and mega buildings. His major projects include Hong Kong Convention and Exhibtion Center, Singapore International Convention Center and Suntec City, Singapore Marina Bay Sands Resort.

WORKSHOP SPEAKERS

Craig Walker

ADVANCED BUILDING SYSTEMS: GUARANTEED HIGH PERFORMANCE FROM DESIGN THROUGH OPERATION

Because more than 40% of the world's energy consumption occurs in the built environment, delivering dramatic energy use reduction in a broad cross section of buildings holds the promise to significantly reduce our energy footprint. Despite the existence of a few examples demonstrating lower energy use, the goal of developing solutions that are viable in a large fraction of the built environment remains elusive. This talk will identify some of the key technical and economic barriers to delivering and sustaining energy performance over the lifecycle of a building. It will also describe several innovative systems technologies that have recently been developed and demonstrated by the United Technologies Research Center to contribute to the ability to predict and then deliver energy performance over the building's lifecycle.

Craig Walker is Director, UTC Energy Systems Program including Integrated Buildings and Renewable Energy Systems. In addition, Craig leads External Resource Development at the United Technologies Research Center. He has held this position since February 2003. In this role he leads maturation of advanced onsite power and heat utilization technologies resulting in the launch of two product families (PureComfort and PureCycle). He is responsible for maturation of technologies that take advantage of component and subsystem integration to deliver differentiated value in building and district performance and energy use as well as solar, wind, geothermal, and both electrical energy and hydrogen storage technologies. Craig holds an M.S. and B.S. in Materials Science and Engineering, University of Florida and graduated from the Program for Management Development at Harvard Business School.

Ron Wilkinson

BUILDING COMMISSIONING QUALITY ASSURANCE—IT IS ALL ABOUT THE PEOPLE

The cooperation of the commissioning team spells the success or failure of this quality assurance process. Commissioning (Cx) is a collaborative process that allows the participants to succeed, rather than forcing them to documents. When it is employed completely and rigorously, it is impossible to build a bad facility. Unfortunately, the onslaught of certification programs and legal requirements has led to poor or incomplete Cx, done only to get the credit. This is often accompanied by reverse-engineered Cx documents that add expense instead of being valuable project tools. This seminar teaches the people factor in Cx. It covers roles, responsibilities and motivating factors that add up to a Cx job well done.

Ron Wilkinson is a Commissioning Authority in New York City. He is the author of the first USGBC LEED training program, ASHRAE Distinguished Lecturer and adjunct faculty member of New York University. Ron is founding chair of the AIA Committee on the Environment (COTE) Cx sub-committee, and reviewer for the Cx provisions of the International Green Construction Code. Mr. Wilkinson is a LEED AP, ASHRAE CPMP, PE, Jersey City, NJ.

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