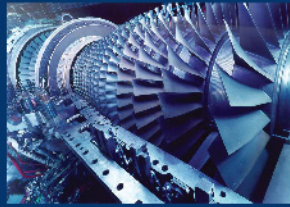




2014 ICEPAG

The Clean Energy Conference



Conference Program

Clean Generation and Clean Utilization

April 1-3, 2014

Radisson Hotel Newport Beach, California

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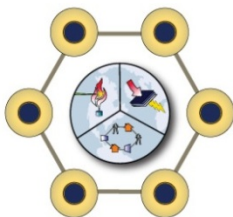
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WELCOME

Thank you for joining us at ICEPAG 2014, our 14th annual Colloquium! We believe that you will find the caliber of speakers and presenters to be enlightening and inspiring and we thank you for joining us. ICEPAG began from a series of biannual meetings of the Pacific Rim Consortium on Energy, Combustion, and the Environment (PARCON). Established in 1992 at Seoul University, with representation by two industries and two universities from countries flanking the Pacific Ocean, PARCON has sought to promote advanced power generation for high efficiency and low criteria pollutant impact, promote communication and dialog not only within the Pacific Rim – but worldwide - and thereby accelerate the development and deployment of advanced technology from distributed generation to central generation.

ICEPAG was conceived by PARCON to:

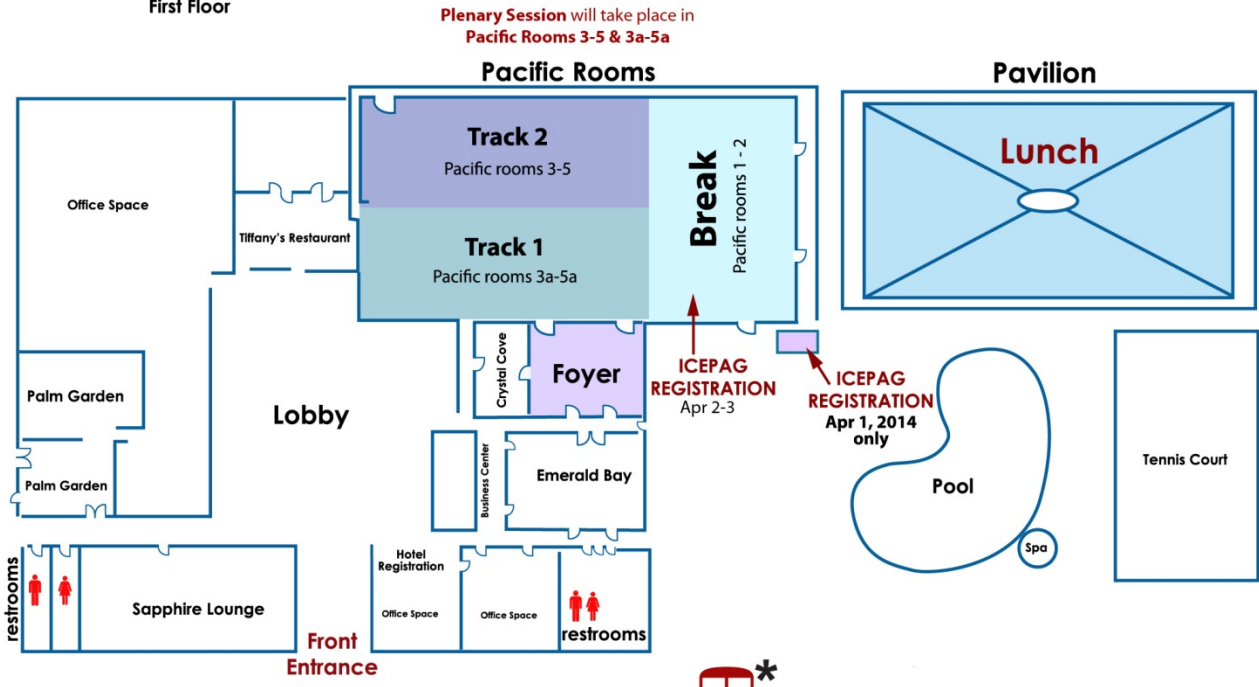
- Facilitate on an annual basis a shared understanding of the various advanced energy technologies under development
- Promote strategic alliances to enhance collaboration among the world's communities
- Inspire students to embrace the challenges and opportunities associated with advanced power generation and environmental quality

ICEPAG is structured on the premise that power generation, distribution, and utilization is comprised of many interconnected and interacting, existing and emerging components that require an understanding in the context of a **system**. Therefore, while ICEPAG includes sessions on component technologies, the overlying theme of ICEPAG is the perspective of the **system** as a whole. However the **system** considered is not limited to power, but also embraces:

- Water resources and water quality
- Agriculture
- Economics
- Socio-political considerations and policy

We trust that you will find the conference enlightening and inspiring, and that the contacts you make during ICEPAG 2014 will further advance the goal toward a more sustainable energy future for the world's community.

**Radisson Hotel
Newport Beach, California**
First Floor



parking

- * **Wednesday, April 2th at 4:45pm:** Bus loads here for the networking reception
- Thursday, April 3rd at 12:15 pm:** Bus loads here for the Orange County Sanitation District tour

ICEPAG

THE CLEAN ENERGY CONFERENCE

Clean Generation and Clean Utilization

PROGRAM

TUESDAY, APRIL 1 | DAY 1

7:00 a.m. **REGISTRATION AND A HEARTY CONTINENTAL BREAKFAST**

Keynote, Plenary, and Signature Panel Session

8:30 a.m. **Welcome**
Scott Samuelsen, Colloquium Program Chair
Director, National Fuel Cell Research Center and Advanced Power and Energy Program
University of California, Irvine

8:35 a.m. **Keynote**
The Future of Fossil Fuel Powered Advanced Power Systems
Regis Conrad
Director, Advanced Energy Systems
Office of Fossil Energy
U.S. Department of Energy

9:15 a.m. **Signature Panel:**
Exporting Clean Tech: Federal Sources for Funding and Success
Organized by the U.S. Trade and Development Agency

10:15 a.m. **MORNING BREAK**

10:45 a.m. **Plenary Lecture**
Natural Gas Can Support Future Advanced Electric Generation, Combustion, and Transportation
Patrick Lee
Senior Vice President
Customer Service, Innovation, Business Strategy and Chief Environmental Compliance Officer
Southern California Gas Company

11:30 a.m. **LUNCH**

TUESDAY, APRIL 1 | DAY 1

Technical Sessions

1:00 p.m.

AFTERNOON PARALLEL SESSIONS

TRACK 1	TRACK 2
Clean Generation	Clean Utilization
SESSION 1-1 DG: Fuel Cell Systems Co-Chairs: <i>Shailesh Vora, NETL</i> <i>Jack Brouwer, UCI</i>	SESSION 2-1 Smart Energy, Power: Electric Vehicle Fueling Chair: <i>Brendan Shaffer, UCI</i>

1:00 p.m.

Solid State Energy Conversion Alliance:
Program Overview and Status

Shailesh Vora
NETL

Hydrogen Infrastructure:
Planning

Kersey Manlicic
APEP

1:30 p.m.

Fuel Cell Markets in California and Korea

Tony Leo
FuelCell Energy

Hydrogen Infrastructure:
Deployment

Tim Brown
FirstElement Fuel

2:00 p.m.

Fuel Cell Markets in Telecommunications

Dave Anderson
ClearEdge Power

Hydrogen Infrastructure:
Generation

Pete Willette
APEP

2:30 p.m.

AFTERNOON BREAK

TUESDAY, APRIL 1 | DAY 1

	TRACK 1 <i>Clean Generation</i>	TRACK 2 <i>Clean Utilization</i>
	SESSION 1-1 Fuel Cell Systems <i>Co-Chairs:</i> <i>Shallesh Vora, NETL</i> <i>Jack Brouwer, UCI</i>	SESSION 2-1 Smart Energy, Power: Electric Vehicle Fueling Chair: <i>Brendan Shaffer, UCI</i>
3:00 p.m.	Fuel Cell Systems Fed by Biogenous Fuels Massimo Santarelli Polytechnical University of Torino	Electric Charging: Planning Li Zhang APEP
3:30 p.m.	Solid Oxide Fuel Cell Gas Turbine Hybrid Power Plant Moritz Henke German Aerospace Center (DLR)	Electric Charging: Protocol Logan Grizzel Toyota
4:00 p.m.	Experimental Investigation of Anode/Cathode Pressure Differences for a Solid Oxide Fuel Cell Gas Turbine Hybrid Power Plant Mike Steilen German Aerospace Center (DLR)	Electric Charging: Impact on Secondary Circuits Renee Cinar APEP
4:30 p.m.	DAY 1 TECHNICAL PROGRAM CONCLUDES DINNER ON YOUR OWN	

WEDNESDAY, APRIL 2 | DAY 2

7:00 a.m.

HEARTY CONTINENTAL BREAKFAST

TRACK 1

Clean Generation

SESSION 1-2

DG: Gas Turbine Systems

Co-Chairs:
Dave Teraji, Solar Turbines
Vince McDonell, UCI

TRACK 2

Clean Utilization

SESSION 2-2

**Smart Energy, Power:
Utility Grid Technologies**

Co-Chairs:
Russ Neal, Power Innovation Consultants
Brendan Shaffer, UCI

8:00 a.m.

Low Swirl Burner for Fuel Flexibility for Gas Turbines

Robert Cheng
LBNL

Utility Grid Simulation and Control

Tanuj Khandelwal
ETAP

8:30 a.m.

The Development of a Next Generation High Performance Micro Turbine Power Generation System

Robert McKeirnan
Capstone Turbine Corp

Combination of Compressed Air Energy Storage Systems with NGCC

T.S. Kim
Inha University
J. L. Sohn
Korea Institute of Machinery & Materials

9:00 a.m.

Gas Turbine SCR Optimization and Management

Brent Spang
Fossil Energy Research Corp

Regenerative Air Energy Storage System (RAES)

Amir Pourmousa
LightSail Energy

9:30 a.m.

MORNING BREAK

WEDNESDAY, APRIL 2 | DAY 2

	TRACK 1 <i>Clean Generation</i>	TRACK 2 <i>Clean Utilization</i>
	SESSION 1-2 DG: Gas Turbine Systems Co-Chairs: <i>Dave Teraji, Solar Turbines</i> <i>Vince McDonell, UCI</i>	SESSION 2-2 Smart Energy, Power: Utility Grid Technologies Co-Chairs: <i>Russ Neal, Power Innovation Consultants</i> <i>Brendan Shaffer, UCI</i>
10:00 a.m.	Economic Evaluation of Using Biogas in Gas Turbine CHP Systems T.S. Kim Inha University	Electricity Market Valuation for Fuel Cells and Electrolyzers Josh Eichman NREL
10:30 a.m.	Fine PM Emission Factors and Gas Turbine Engines Glenn England ENVIRON	Irvine Smart Grid Demonstration Project Ed Kamiab Southern California Edison
11:00 a.m.	Concentrated Solar Power Hybrid Gas Turbine Demonstration Test Results David Teraji Solar Turbines, Inc.	Holistic Sustainability Analyses: Evaluating Pathways to Meet California's 2050 Greenhouse Gas Reduction and Water Supply Security Goals Brian Tarroja APEP
11:30 a.m.	LUNCH	

WEDNESDAY, APRIL 2 | DAY 2

1:00 p.m.

AFTERNOON PARALLEL SESSIONS

<p>TRACK 1</p> <p><i>Clean Generation</i></p>	<p>TRACK 2</p> <p><i>Clean Utilization</i></p>
<p>SESSION 1-3</p> <p>DG: Applications and Systems Integration</p> <p>Chair: <i>Rich Hack UCI</i></p>	<p>SESSION 2-3</p> <p>Smart Energy, Power: Microgrid Technologies</p> <p>Co-Chairs: <i>Michel Kamel, MelRok Brendan Shaffer, UCI</i></p>

1:00 p.m.

Laboratory CHP Study/Large Scale DG/CHP for Shanghai Tourist Destination

Lucas Hyman
Goss Engineering

UCI Microgrid: Capabilities and Performance

Matt Gudorf
UCI Facilities

1:30 p.m.

John Wayne Airport, Orange County Central Plant: Operational Experience in the South Coast Air Basin

Larry Serafini
John Wayne/Orange County Airport

UCI Microgrid: Dynamic Control and Modeling

Fei Gu
APEP

2:00 p.m.

TIGER Stations Transmission Integrated Grid Energy Resource

Brendan Shaffer
APEP

UCI Microgrid: Next Generation Grid Monitoring

Nicholaus Halecky
MelRok

2:30 p.m.

AFTERNOON BREAK

WEDNESDAY, APRIL 2 | DAY 2

	TRACK 1 <i>Clean Generation</i>	TRACK 2 <i>Clean Utilization</i>
	SESSION 1-3 DG: Applications and Systems Integration Chair: <i>Rich Hack UCI</i>	SESSION 2-3 Smart Energy, Power: Microgrid Technologies Co-Chairs: <i>Michel Kamel, MelRok Brendan Shaffer, UCI</i>
3:00 p.m.	Operational Performance of the Largest Bio-Gas Powered Molten Carbonate Fuel Cell/CHP System in the World Pere Margalef FuelCell Energy	Developing a Renewable Energy Portfolio Comprised of Solar, Wind, and a Biogas Fuel Cell as a Public Agency Jesse Pompa Inland Empire Utilities Agency
3:30 p.m.	Advancement of a Distributed Adaptive Mobile Ocean Energy Recovery System Andrew Gizara Integrated Power Technology Corporation	Electric Infrastructure Capabilities Required for Next-Generation Microgrids James Lee Scheinder Electric
4:00 p.m.	Opportunities of Biomass to Power in the SMUD Region Valentino M. Tiangco Sacramento Municipal Utilities District	Data Center Design for Best Use of Fuel Cell Combined Heat and Power Sean James Microsoft

4:30 p.m.

DAY 2 TECHNICAL PROGRAM CONCLUDES

4:45 p.m.
5:00 p.m.
7:30 p.m.
7:45 p.m.
8:00 p.m.
8:15 p.m.

RECEPTION: ENVIRONMENTAL NATURE CENTER, NEWPORT BEACH

Buses Depart Hotel
Buses Arrive Reception
Bus #1 Departs Reception
Bus #1 Arrives Hotel
Bus #2 Departs Reception
Bus #2 Arrives Hotel

THURSDAY, APRIL 3 | DAY 3

7:00 a.m.

HEARTY CONTINENTAL BREAKFAST

TRACK 1

Clean Generation

SESSION 1-4

CP: Natural Gas, Coal, Biomass –
Brayton, Rankine, and Fuel Cell Cycles

Co-Chairs:
Robin Ames, DOE
Ashok Rao, UCI

TRACK 2

Clean Utilization

SESSION 2-4

Smart Energy, Power:
Nanogrid Technologies

Co-Chairs:
Jim Meacham, Altura Associates
Brendan Shaffer, UCI

8:00 a.m.

Turbine and System Developments on GE Power & Water's DOE Advanced Syngas/Hydrogen Gas Turbine Technology Program

Roger Schonewald
GE Power & Water

Building Operation Optimization (I/III):
The Designer

Jim Meacham
Altura Associates

8:30 a.m.

An Overview, Assessment, and Thermodynamic Analysis of Indirect (closed) Supercritical CO₂ (SCO₂) Power Cycle Configurations

Wally Shelton
NETL

Building Operation Optimization (II/III):
The Implementer

Scot Duncan
Enerliance

9:00 a.m.

Identifying Pathways for Efficient Generation of Low Carbon Power from Fossil Fuels

Michael Matuszewski
NETL

Building Operation Optimization (III/III):
Distributed Generation

Robert Flores
APEP

9:30 a.m.

MORNING BREAK

THURSDAY, APRIL 3 | DAY 3

	<p>TRACK 1</p> <p><i>Clean Generation</i></p> <hr/> <p>SESSION 1-4</p> <p>CP: Natural Gas, Coal, Biomass – Brayton, Rankine, and Fuel Cell Cycles</p> <p>Co-Chairs: <i>Robin Ames, DOE</i> <i>Ashok Rao, UCI</i></p>	<p>TRACK 2</p> <p><i>Clean Utilization</i></p> <hr/> <p>SESSION 2-4</p> <p>Smart Energy, Power: Nanogrid Technologies</p> <p>Co-Chairs: <i>Jim Meacham, Altura Associates</i> <i>Brendan Shaffer, UCI</i></p>
10:00 a.m.	<p>Cost and Performance of Retrofitting Natural Gas Combined Cycle (NGCC) Power Plants with a Post-Combustion Solvent Process</p> <p>Wally Shelton NETL</p>	<p>Dynamics of Data Center Distributed Generation</p> <p>Li Zhao APEP</p>
10:30 a.m.	<p>Highly Efficient Pre-Combustion Sorbent Based Carbon Capture System</p> <p>Ambal Jayaraman TDA</p>	<p>A Risk-based Data Driven Approach for Modeling Industrial Load Dynamics</p> <p>Mohsen Jafari Rutgers University</p>
11:00 a.m.	<p>Solid Sorbent Based Post-Combustion CO₂ Capture in Coal-Fired Power Plant</p> <p>Qin Chen APEP</p>	<p>Next-Generation Building Energy Control</p> <p>Jack Brouwer APEP</p>
11:30 a.m.	Lunch	
12:15 p.m.	Bus Departs for Orange Coast Sanitation District (OCSD) Tri-Generation Plant Tour	
2:15 p.m.	Bus Returns From OCSD Tour	

