

POWER PLAYS

GEOHERMAL ENERGY IN OIL AND GAS FIELDS



May 19 - 20, 2015
SMU Geothermal Conference

Roy M. Huffington
Department of Earth Sciences
Dallas, Texas



SMU | **GEOHERMAL
LABORATORY**

Director: David Blackwell
Faculty: Matthew Hornbach
Coordinator: Maria Richards
Project Specialist: Cathy Chickering Pace
Outreach Coordinator: Christine Ferguson

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Texas Renewable Energy Industries Alliance
ThinkGeoEnergy

Conference Agenda

Tuesday, May 19

7:00 AM **Onsite Registration, Coffee and Networking**

8:30 AM **David Blackwell and Maria Richards**

Southern Methodist University

Introduction

8:50 AM **Alan Murphy**

STW Water Process & Technologies

Drinking Water for Oil & Gas Camps or Entire Communities

9:10 AM **Rick Darlow**

GeoTek Energy, LLC

Direct Use of Geothermal Energy in Oil & Gas Fields

9:30 AM **Clotilde Rossi di Schio**

Turboden s.r.l.

Opportunities for ORC Technology in Oil and Gas Fields

9:50 AM **Networking**

10:10 AM **Holly Thomas**

U. S. DOE Geothermal Technologies Office

DOE Low Temperature Geothermal Mineral Recovery and Play Fairway Assessment

10:30 AM **Paul Morgan**

Colorado Geologic Survey

Raton Basin: Recent & Contemporary Seismicity and Plan for Geothermal Power

10:50 AM **Marian Higgins**

Texas A&M University

Community Perceptions: What Does the General Public Think of Geothermal Energy?

11:10 AM **Bernie Karl**

Chena Hot Springs

Columbia Oxy Project - Synchronize Screw Expander

11:30 AM **Lunch and Tours of Water Desalination Equipment**

Conference Agenda

Tuesday, May 19

- 1:00 PM **Heat is Power Panel:** Transferring Technology Successes from Geothermal to Waste Heat to Power Projects
Jessica Lubetsky - *Pew's Clean Energy Program*
Loy Sneary - *Gulf Coast Green Energy*
Michael Newell - *Ener-G-Rotors, Inc.*
- 1:40 PM **Matt Uddenburg**
AltaRock Energy, Inc.
Stimulation Technology: Economics and Application
- 2:00 PM **Networking**
- 2:30 PM **Bruce Marsh**
Johns Hopkins University
A Radiator – EGS System: A Novel Concept for Geothermal Energy Extraction
- 2:50 PM **Kewen Li**
Stanford University / China University of Geosciences
Application of Geothermal Energy from Oil and Gas Fields in China
- 3:10 PM **Kevin Shaw and John Furlow**
Mayer Brown LLP
Geothermal Development Rights: Considerations for the Oil & Gas Operator
- 3:30 PM **Technology Updates**
Kevin Kerlin - *Helidyne, LLC*
New Rotary Expander for High Pressure Natural Gas
Jeff Dye and Dexter Jacobs - *LoCap Energy, LLC*
Shaving Peak Energy Loads: Combining Battery Storage and Geothermal Energy
- 3:50 PM **Networking**
- 4:20 PM **Dave Blackwell**
SMU Geothermal Laboratory
Review of Day
- 4:30 PM **Reception Presenter**
James Wicklund
Credit Suisse - Managing Director-Equity Research
Where to Next? Volatile Economics in the Oil Field

Conference Agenda

Tuesday, May 19

5:00 PM **Poster Session and Reception (5 to 7 PM)**

Preston Tidwell

Texas A&M Global Petroleum Research Institute
Low Temperature Geothermal Waste Heat to Power

Jenna McGrath

Georgia Institute of Technology
Punctuated Equilibrium: Hydraulic Fracturing in Oil & Gas and Enhanced Geothermal Systems

Kris Pudyastuti

Trisakti University, Jakarta
Evaluation and Optimization of Aerated Drilling Well-Z, Geothermal Field-M

Lincoln Schick

Mogul Energy International
Determining Suitable Water Zones from Log Analysis

Bayron Uriel Russell Tejada

iiDEA® Group, National Autonomous University of Mexico
Technical Comparison of Organic Fluids as the Working Fluid of a Binary Cycle of Flash Evaporation

Eduardo Martínez Juárez

iiDEA® Group, National Autonomous University of Mexico
Implications of the Mexican New Regulatory Framework for Geothermal

Miguel Ángel Benítez Torreblanca

iiDEA® Group, National Autonomous University of Mexico
Fault-tolerant Instrumentation System for Flash Evaporation Binary Cycle

Victor Emmanuel Zenón Arroyo

iiDEA® Group, National Autonomous University of Mexico
Design and Manufacture of a Turbine for Low Enthalpy Geothermal Energy Exploitation

Oscar I. Ramos Campos

iiDEA® Group, National Autonomous University of Mexico
Thermal Analysis and Design of a Modular Desalination Plant with Low Enthalpy Resources

Zach Frone and Mert Bolat

SMU Huffington Department of Earth Sciences
Play Fairway Analysis of the Low-Temperature Utilization in the Appalachian Basin

Humberto Ochoa, Hugo Lazo, Fernando Perez

Universidad Nacional de Ingeniería, Peru
Peru Geotermia Project: Use of Hot Water from Oil Wells to Generate Electricity in Jungle Areas

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Conference Agenda

Wednesday, May 20

7:00 AM **Onsite Registration, Coffee and Networking**

8:30 AM *Southern Methodist University*
Welcome and recap

8:40 AM **Ian Deighton**

TGS

Basin Temperature Modeling Using Large Bottom Hole
Temperature Datasets

9:00 AM **Ravi Krishnamurthy**

Blade Energy Partners

Assisted Cracking of Production, Intermediate & Surface Casing
in a Geothermal Application

9:20 AM **Brian Stump**

SMU Huffington Department of Earth Sciences

Learning from Induced Seismicity in the Dallas-Fort Worth Area

9:40 AM **Networking**

10:10 AM **Flare Gas Panel:** North Dakota Project - Multiple Commodity
Streams for Wells

Loy Sneary - *Gulf Coast Green Energy*

Bernard Groce - *Hess Corporation*

Satish Ravindran - *HARC*

10:50 AM **Seyed Ali Ghoreishi-Madiseh**

McGill University

Sustainability of Heat Extraction from Decommissioned
Petroleum Wells

11:10 AM **Tim Reinhardt**

U.S. DOE Geothermal Technologies Office

Progress and Outlook for the Department of Energy's
Geothermal Technology Program

11:30 AM **Lunch and Tours of Water Desalinization Equipment**

1:00 PM **Matt Hornbach**

SMU Huffington Department of Earth Sciences

ENAM - Finding New Plays Off-shore the Carolinas

1:20 PM **Bodo von Düring and Cedric von Düring**

CLEAG AG, Luzern / Switzerland

CHP Generation Forming a Closed Loop GEOTHERMAE / Kroatien

Conference Agenda

Wednesday, May 20

- 1:40 PM **Kris Pudyastuti**
Trisakti University, Jakarta
PTS Surveys to Determine Production Capacity by Using Well-bore Simulator
- 2:00 PM **Nikola Lalic**
Geothermal Worldwide, Inc.
Harnessing Energy and Water in the Salton Sea
- 2:20 PM **Wade Williams**
Joule Sales
High Temperature Electronics for Downhole Environments
- 2:40 PM **Dave Blackwell**
SMU Geothermal Laboratory
Concluding Remarks
- 3:00 PM **Close of Conference**
You may continue to use the Collins Center for private meetings until 5 pm.

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Alaska

Biosketch of Presenters

(Alphabetical order following Reception Speaker)



James Wicklund

Credit Suisse

James K. Wicklund is a Managing Director at Credit Suisse Group in the Investment Banking Division where he is responsible for covering the U.S. oilfield equipment and services sector. Prior to joining Credit Suisse Group, Mr. Wicklund spent the last four years at Carlson Capital running a diversified energy portfolio. Before moving to the buy side, Mr. Wicklund spent 15 years as an Oilfield Services Analyst, beginning at Rauscher Pierce and moving on to Banc of America Securities, where he was ranked number one in the Institutional Investor and Greenwich Associates surveys over multiple years. He is a member of both the Society of Petroleum Engineers and the Society of Exploration Geophysicists. Mr. Wicklund holds Bachelor's degrees in both physics and business administration and finance from Southern Methodist University.

THANKS TO WORKSHOP INSTRUCTORS



Joe Batir

SMU Geothermal Lab



Mert Bolat

SMU Geothermal Lab



Casey Brokaw

SMU Geothermal Lab



Ramsey Kweik

SMU Geothermal Lab



Miguel Ángel Benítez Torreblanca

iiDEA® Group, National Autonomous University of Mexico

Miguel Ángel Benítez Torreblanca is a graduate student of the Faculty of Engineering, in the National Autonomous University of Mexico (UNAM).

Currently working on his graduate thesis (Mechatronics Engineering), Miguel has been part of the iiDEA® Group for almost two years. iiDEA® is a multidisciplinary applied research group, with aims on the technological development for low and medium enthalpy geothermal energy in Mexico.

His thesis is based on the implementation of a fault-tolerant instrumentation system for a Flash Evaporation Binary Cycle (FEBC), which is a modified version of a Conventional Binary Cycle. His approach to the fault-tolerant system could be used not only on the FEBC, but also on the other two projects of the group: a Geothermal Food Dehydrator, and a Geothermal Desalination Modular Unit.



David Blackwell

SMU Geothermal Laboratory

David Blackwell's research involves the thermal state of the lithosphere. Current projects deal with the thermal structure of sedimentary basins, heat flow and plate tectonics, especially the temperature structure in subduction zones and its geodynamic implications, thermal regime of geothermal systems, at a local and regional focus for geothermal resource evaluation within the United States. He has received over \$10 M in grants and contracts, most recently from the USDOE, National Labs, Google.org, and TXSECO. An active member of Geothermal Resources Council he was President in 1991-92. In 2009 he received the GRC Joseph W. Aidlin Award for outstanding contributions to the development of geothermal energy. Under his direction, the SMU Geothermal Lab produced the AAPG Geothermal Map of North America, the resource chapter in the 2006 Future of Geothermal Energy Report, the 3 to 10 km U.S. Temperature Maps for Google.org, and the SMU Node of the National Geothermal Data System. Although Emeritus, he continues to actively research. He has a Ph.D. from Harvard and BS from SMU!



Rahmi (Mert) Bolat

SMU Geothermal Laboratory

Rahmi Mert Bolat is a M.S. student at Southern Methodist University majoring in Geophysics. For his undergraduate degree, he completed double majors in geology and geophysics from Istanbul University, Turkey. He obtained a scholarship from Turkish Petroleum Corporation, and is currently pursuing a Master's degree focused on 3D heat flow and geophysical analysis of the Northern Appalachian Basin.



Richard (Rick) Darlow

GeoTek Energy, LLC

As Vice President of Business Development, Rick Darlow leads GeoTek Energy's business development and strategic partner acquisition efforts. Rick has held leadership positions in engineering, sales, and global business development, rising to general management. Starting his career with a major consulting engineering firm on design/build power plant projects, Rick has worked in early stage as well as international high tech and energy companies. He also served as President of advanced technology divisions of Nippon Sanso, Pacific Scientific and L-3 Communications. He holds a BS in Civil Engineering from the University of Florida and attended the Stanford University Executive Institute.



Ian Deighton

TGS

Ian Deighton is a Principal Geoscientist with TGS with 30 years of experience in the application of both paleowater depth modeling and assessment of new maturity techniques to burial and thermal geohistory analysis (aka basin modeling). This skill is applied in frontier basin exploration scenarios using a lithosphere stretching based approach to thermal modeling to aid TGS multi-client seismic project de-risking. His recent focus has been on onshore USA thermal modeling using very large BHT datasets. He is a member of PESGB, SEAPEX and PESA.



Jeff Dye

LoCap Energy LLC

Jeff Dye is the Chief Executive Officer of LoCap Energy LLC, a startup Energy company based in Dallas, Texas. Jeff graduated from Southern Methodist University in 2012 with a degree in Environmental Studies/Sustainability and a minor in Business from the Cox School of Business. Jeff worked with Maria Richards in the SMU Geothermal Lab during his undergraduate years and this experience has ignited a passion for renewable energy with a focus on heat-to-energy applications. His strengths are especially apparent in networking, marketing and sales. Jeff has spent time in two business development roles after graduation and is currently employed in a sales/operational role at Earth Day Texas, a 501(c)(3) located in Dallas, Texas. Earth Day Texas provides a unique stage where Business, Non-Profit, Government, and Academia converge over a three-day weekend to present their organizations' sustainable initiatives, network across all channels, and prospect for viable opportunities. (<http://www.earthdaytx.org>)



Zachary Frone

SMU Huffington Department of Earth Sciences

Zachary Frone has just completed his Ph.D. in Geophysics in the Huffington Department of Earth Sciences at Southern Methodist University (SMU), where he studied under Dr. David Blackwell and Matthew Hornbach. During his time at SMU he worked on various projects related to heat flow and geothermal exploration. In 2011, along with others in the Geothermal Laboratory, he completed a national level heat flow mapping project that incorporated tens of 1000s of new heat flow values from oil and gas wells. The focus of his research is on heat flow modeling of the Appalachian Basin in West Virginia and modeling the temperature effects of repeated magmatic intrusions beneath Newberry Volcano in Central Oregon. Zach received his Bachelor of Science degree in Geology from Binghamton University in New York.



John Furlow

Mayer Brown LLP

John D. Furlow is an associate in the Houston office of law firm of Mayer Brown LLP. John advises clients on corporate governance, transactional and securities law matters with a principal focus on the energy and technology industries. With a background in energy law and policy, John brings an in-depth understanding of the complex legal and regulatory challenges facing the energy industry today and is the author or co-author of over 20 articles on legal issues and trends impacting the energy industry, which have appeared in publications such as the Houston Business Journal, Texas Journal of Oil, Gas, and Energy Law, Pipeline & Gas Journal, Unconventional Oil & Gas Report, AIPN Advisor, the Rocky Mountain Mineral Law Foundation's Mineral Law Newsletter and the State Bar of Texas Corporate Counsel Section Newsletter, among others.

John earned his JD from The University of Texas School of Law and a BA in History and Corporate Strategy from Vanderbilt University. While in law school, John served as a senior associate editor for the Texas Journal of Oil, Gas, and Energy Law and worked in the Texas Venture Labs program, a startup accelerator at the McCombs School of Business.



Seyed Ali Ghoreishi-Madiseh

McGill University

Dr. Ghoreishi-Madiseh has a PhD in Mechanical Engineering from McGill University, Canada. He is currently a postdoctoral fellow at the Earth/Mine Energy Research Group (EMERG) of McGill University. Dr. Ghoreishi-Madiseh has 8 years of experience in the fields of thermo-fluid systems, energy systems, computational fluid dynamics and heat transfer modeling and experimental studies of heat transfer and fluid flow systems. His main research interest is renewable energies, especially geothermal heat/power production. His works have been published in more than 35 scientific articles.



Bernard Groce

Hess Corporation

Bernard Groce is an EHS Advisor – Process Safety with Hess Corporation in Houston, Texas. He has a BS in Chemical Engineering from Texas A&M University and a MBA from University of Houston – Clear Lake. His career has included process engineering, technical development, technical sales and marketing, engineering and product management and process safety in the chemical, petrochemical and oil industries. Bernard is a registered professional engineer in Texas.



Marian Higgins

Texas A&M University

Marian Higgins is a Ph.D. Candidate at Texas A&M University in the Department of Ecosystem Science and Management, where she is a member of Dr. Urs Kreuter's human dimensions lab. Her work focuses on the area where energy, the environment, and people come together. She is currently researching community perceptions of energy development in an environmentally sensitive area, with an emphasis on low-temperature geothermal energy. She received a grant for this research from the Houston Advanced Research Center (HARC) through their Coastal Impacts Technology Program (CITP) funded through the Texas General Land Office (GLO).

Marian earned her M.S. degree in Wildlife Fisheries & Sciences from Texas A&M and her B.A. degree in Psychology from the University of Wisconsin – Madison. Before beginning graduate school, she was self-employed for many years as an Internet Content Manager for various businesses within the oil and gas industry.



Matthew Hornbach

SMU Huffington Department of Earth Sciences

Matt Hornbach earned a degree in physics from Hamilton College in 1998 and a degree in geophysics from the University of Wyoming in 2004. He was a post-doctoral researcher at the Institute for Geophysics at the University of Texas at Austin from 2005-2006, and a research associate and lecturer at the University of Texas at Austin from 2006-2011. Since 2011, Matt has been an associate professor in SMU's Huffington Department of Earth Sciences. His research focuses on marine geophysics, with special emphasis on methane hydrate systems, geofluids, and quantitative geohazard analysis. His research is funded both by private industry and the U.S. government. Hornbach currently maintains active projects off Alaska's North Slope, The Caribbean, and multiple deep-water provinces off the U.S. eastern and western seaboards. His research has been highlighted in such journals as *The Leading Edge*, *Geophysics*, *Geology*, and *Nature*. In addition to the Dallas Geological Society, he is a member of the Geological Society of America, the American Geophysical Union, SEG, and The Tsunami Society.



Dexter Jacobs
LoCap Energy

Dexter Jacobs is the CEO of LoCap Energy and has experience as an engineering consultant in project management and mechanical/aerospace systems. Dexter has developed a keen sense for design. He became interested in sustainable energy systems during his senior year at Southern Methodist University when discussing projects with LoCap Energy co-founder Jeff Dye. Since then, the two have done extensive research into geothermal co-generation and other forms of waste energy harvesting technology to develop the LoCap Energy peak shaving solution. Dexter graduated from SMU in 2011 with degrees in Mathematics and Mechanical Engineering.



Bernie Karl
Chena Hot Springs Resort

Bernie Karl is the sixth of sixteen children growing up on a farm in Peoria, Illinois. At 20, with itchy feet and a dream of making it big, Bernie ventured north to the Last Frontier. While employed on the trans-Alaska pipeline, he met his wife Connie and in 1984 established K&K Recycling, the largest recycling facility in Alaska. In addition, Bernie and Connie own Kodiak Narrow Cape Lodge, Chena Power, and Chena Hot Springs Resort. Within a week of owning the resort, Bernie drilled the property's first geothermal well for district heating. In January 2004, the Aurora Ice Museum was built at Chena Hot Springs Resort. It was to be the first year-round ice structure in the world. Unfortunately, it melted that summer, leading Forbes magazine to name it "Dumbest Business Idea of the Year." Undaunted, the Aurora Ice Museum was rebuilt with new technology in Fall '04 and is still standing. Bernie has focused his attention on making Chena Hot Springs a sustainable community by establishing three greenhouses, all of which are heated by geothermal energy. This provides fresh grown produce for the resort's restaurant even in the cold winter months. He has also constructed and installed the first geothermal power plant in Alaska which provides all of the resort's electricity and operates on the lowest water temperature of any geothermal power plant in the world, 160°F. Given Bernie's history in recycling and leading geothermal technology research, he could very well be considered Alaska's green energy pioneer.



Kevin Kerlin

Helidyne, LLC

Kevin Kerlin co-founded Helidyne in 2008 with the goal to develop and commercialize the planetary rotor expander concept. He began his career in 2003 working as a Mechanical Engineer at Raser Technologies within their R&D department. Learning from his experience at Raser, Kevin became expert in CAD/CAM programming and CNC machining to better facilitate prototyping efforts at Helidyne. As Helidyne matured, he was responsible for raising the first round of equity capital in 2012, as well as retaining its first customer contract in 2013. As CEO, his focus is team building, strategic planning, raising growth capital, and increasing revenue. Kevin holds a B.S. degree in Mechanical Engineering from the University of Utah and a MBA from Southern Utah University.



Ravi Krishnamurthy

Blade Energy Partners

Ravi Krishnamurthy is Executive Vice President Mechanics, Materials and Corrosion of Blade Energy Partners. Ravi has over 22 years of experience in the upstream and downstream oil and gas industry, especially in metallurgical engineering, fracture mechanics, sour service design, pipeline integrity and corrosion engineering. His multidisciplinary industry breadth includes drilling, completion, reservoir and production. Throughout his career, Ravi has combined his core skills in engineering mechanics, metallurgy, chemistry, electrochemistry and fracture mechanics with a deep understanding of energy industry challenges, to develop creative and unique solutions for drilling, completion and pipeline integrity applications under extreme conditions of stress and environment. He has been instrumental in the engineering, design, testing and analysis of connections and materials for X-HPHT and geothermal applications. He is a member of the National Association of Corrosion Engineers, American Society of Metals and American Society of Testing Materials. Ravi holds several patents and has authored or co-authored over 30 archival publications. Ravi received his Ph.D in Materials Science from the University of Virginia.



Nikola Lakic

Geothermal Worldwide, Inc.

Nikola Lakic is an inventor of the “Self Contained In-Ground Geothermal Generators” (SCI-GGG System) and a Graduate Engineer Architect. His career began as an Engineer in Podgorica, Montenegro, (previous Yugoslavia). He graduated from the School of Architecture, University Cyril and Methodius, Skopje, Macedonia in 1982. In 1983 he immigrated to the United States to study at the Frank Lloyd Wright School of Architecture, Taliesin West in Arizona and Taliesin East in Wisconsin. He has worked as a Designer and Project Manager in several Civil Engineering offices in and around Palm Springs, California.

Mr. Lakic holds a dozen U.S. patents related to footwear and is now developing geothermal solutions. He has several patent applications (still pending) and one issued patent regarding SCI-GGG methodology (Self Contained In-Ground Geothermal Generator). He also has patent applications regarding new technology for drilling deeper and wider well bores.

Nikola is interested in networking with professionals planning or developing new geothermal projects.



Kewen Li

Stanford University / China University of Geosciences

Kewen Li is Senior Research Engineer and Research Manager in the Department of Energy Resources Engineering at Stanford University. He is also Professor at China University of Geosciences, Beijing. Previously Kewen served as Director and Senior Engineer of Core Analysis Division, Research Institute of Petroleum Exploration and Development, CNPC from 1992-1995. His research interests include improved oil recovery, prediction of production, multi-phase flow in porous media, and geothermal reservoir engineering. He has published over 100 papers and two books. He is the recipient of the 1995 CNPC Distinguished Principal Scientist Award. He has received four Best Paper Awards from the Geothermal Resources Council (GRC). In 2003, he received the Outstanding Technical Editor Award from SPE.



Jessica Lubetsky

Pew's Clean Energy Program

Jessica Frohman Lubetsky is an Officer with Pew's Clean Energy Program, which advocates for national policies that promote the economic, environmental and national security benefits of the clean energy economy. Lubetsky manages Pew's work on industrial energy efficiency and oversees the editing and production of the program's investment and finance research reports. She coordinated Pew's Clean Energy Business Network, boasting 4,000 members from its inception until July, 2013. She joined the Pew Charitable Trusts in 2009.

Before joining Pew, Jessica served as Campaign Director for Kelley Campaigns, creating and implementing media and policy strategies for national and internationally recognized organizations and businesses. She has nearly a decade and a half of grassroots issue campaign experience relating to policies at the federal, state and local levels.

Jessica serves as the Secretary of the National Board of Directors for EcoWomen, a non-profit organization devoted to providing opportunities for networking, collaboration and professional development to women in the environmental sector. She is the past-president of the Executive Board of the Washington DC chapter of the organization.

Lubetsky holds a Master's degree in the Study of Environmental Law (MSEL) from Vermont Law School in South Royalton, Vermont and a Bachelors of Arts in Environmental Studies from The George Washington University in Washington, DC.



Bruce Marsh

Johns Hopkins University

Bruce Marsh has been at Johns Hopkins since 1974 where he studies and teaches on all aspects of the geology, physics, and chemistry of magma and magmatic processes. His principal field areas have been the Aleutian Islands, Iceland, Central Africa, Sudbury, Ontario, and for the past twenty years the McMurdo Dry Valleys of Antarctica. He has also been involved tangentially and sometimes directly on understanding the dynamics of geothermal systems since 1973. Bruce Marsh holds a PhD from the University of California, Berkeley.



Eduardo Martínez Juárez

iiDEA® Group, National Autonomous University of Mexico

Eduardo Martínez Juárez is a mechanical engineer with a degree from the National Autonomous University of Mexico (UNAM) where his studies have addressed the issue of alternative energy, the use of natural resources and the generation, transformation and regulation on the use of electricity.

He is currently a Master's student in energy economics and a Fellow of the Institute of Engineering, both at UNAM. Other professional experience includes planning and purchase of computer gasification and biogas generation equipment and implementation support services for a biogas plant.



Jenna McGrath

Georgia Institute of Technology

Jenna McGrath is a Ph.D. student in the School of Public Policy with a focus on energy and environmental policy at the Georgia Institute of Technology. Jenna is currently a National Sciences Foundation Integrative Graduate Education and Research Traineeship (IGERT) Fellow in Nanomaterials for Energy Storage and Conversion (NESAC). Jenna's research at Georgia Tech focuses on geothermal drilling and the oil and gas industry, particularly studying the economic implications of hydraulic fracturing. She received her Bachelor's degree in Environmental Policy and Analysis in 2011 and Master's degree in Energy Analysis in 2012, both from Boston University. Prior to beginning at Georgia Tech, Jenna worked for two years in research and business development at an energy storage start-up company in Boston, and was previously a Fellow at the Massachusetts Clean Energy Center.



Paul Morgan

Colorado Geologic Survey

Paul Morgan started his geothermal career in the United States as Dave Blackwell's first post-doc at SMU. His formal education was in Great Britain, but he learned most of what he needed to know, and much of what he did not need to know in the US. He has carried out geothermal work on five of the seven continents (with extended time off for bad behavior in Australia) and three of the eight (or nine) planets and the Moon. He is a member of the science team for the next NASA lander mission to Mars, InSIGHT, which will be measuring heat flow and seismicity on Mars. InSIGHT will be the first robotic mission to drill into another planet. However, this all comes back to gaining a better understanding of geothermal on Planet Earth. He is currently continuing his geothermal work in Colorado with the Colorado Geological Survey.



Alan Murphy

STW Water Process & Technologies

Alan Murphy is President of STW Water Process & Technologies. A water industry expert, Mr. Murphy joined STW from the engineering firm of Bob Johnson & Associates. Alan brings 20+ years of extensive industry experience to various municipal, industrial and commercial water & waste water treatment facilities in consulting, design, engineering, procurement, operations, management and complete project oversight and construction throughout the State of Texas. He has in-depth technical knowledge about various innovative technologies, especially different types of membrane filtration systems, thermal technologies, Water Recovery, Reuse, Reclamation Processes, brine discharge treatment systems and others. Murphy has been involved in the “hands-on” design, build and/or maintenance of over 300 water reclamation and municipal facilities in Texas and over 700 systems worldwide. Alan has been intimately involved with the Texas Commission on Environmental Quality (TCEQ) in co-developing pilot policies and procedures. Alan is a TCEQ Certified Level 3 Water Treatment Specialist. Alan also has established relationships with top tier engineering firms.



Michael Newell

Ener-G-Rotors, Inc.

Michael Newell is CEO of Ener-G-Rotors, Inc. an early stage company commercializing products for converting heat into electricity in industrial processes, solar thermal, geothermal, and biomass installations. Mr. Newell has years of experience in sales, marketing, and general management for technology based industrial products in new businesses and new markets. He participated in his first start up in 1984 when he helped start U.S. Analytical Instruments for US Leasing. In 1992, he was General Manager of the business when AT&T Capital sold the business to Quantum Linc. After the sale of the business he led an initiative for AT&T Capital to create an asset management business for industrial and computer companies. In 1994, Michael led the worldwide sales and marketing development of a new division for Leybold, Inc. that was commercializing portable GC/MS technology for homeland and military security, environmental monitoring, and industrial hygiene. From 1998 to 2007 he held various business development positions for Rheodyne and then IDEX Health and Science Technologies (HST) when Rheodyne was purchased by IDEX in 2002, including market strategy and development in China and Japan, Vice President World Wide Sales HST, and Director of Business Development working on mergers and acquisitions for IDEX HST.

Michael received a BS in Chemistry in three years at Union College, Schenectady, New York. He is a member of the Board of Trustees of Union College and Union Graduate College (and past Chair), a member of the Board of Directors of the Heat is Power Association, a member of the Board of the Schenectady County Chamber of Commerce, an Executive Committee Member of the Union College Alumni Council, and a member of the American Chemical Society. He has served as a Technical Entrepreneur in Residence for the New York State Small Business Development Center, a Severino Fellow for the Lally School of Management and Technology at Rensselaer, and as a mentor at the UStart Incubator in Schenectady, New York.



Kris Pudyastuti

Trisakti University, Jakarta

Kris Pudyastuti Dra. MSc. MM. is a faculty member of the Earth Technology and Energy, Department Petroleum Engineering, Trisakti University, Jakarta, Indonesia. Kris has experience in areas of liquid hydrocarbon (crude oil/condensate, LPG/LNG) commercial, EP Assets portfolio, business plan, performance management, applied geophysics, and geothermal reservoir engineering. She is currently an advisor for PERTAMINA International EP, having worked with them since 1993. Her Master's degree is from the Institut Teknologi Bandung (ITB) in Applied Geophysics, Geothermal Reservoir.



Oscar Inti Ramos Campos

iiDEA® Group, National Autonomous University of Mexico

Oscar Inti E. Ramos Campos is a graduate student of School of Engineering, Universidad Nacional Autónoma de México, UNAM (National Autonomous University of Mexico). He is a leader of Material Engineering Area working on protecting against corrosion and fouling of equipment in contact with salt and geothermal resources. He is Vice-President of student chapter UNAM of American Society of Mechanical Engineering (ASME). His interests are in developing clean technologies for energy generation. As a hard worker, he is always proactive, positive and an excellent team member; very committed to his responsibilities and values. Oscar has a BA in Mechanical Engineering (2006-2011) Universidad Nacional Autónoma de México and a MS in Materials Engineering (2013-2015) from the Materials Research Institute UNAM.



Satish Ravindran

HARC

Satish Ravindran joined the Houston Advanced Research Center (HARC) as a Research Associate in February 2013. He graduated with his Master's degree in Industrial Engineering from Texas A&M University, College Station in 2009. Satish is a registered Professional Engineer in the State of Texas and also a Certified Energy Manager. He works primarily on Combined Heat and Power (CHP) projects and provides technical support to the Gulf Coast Clean Energy Application Center. He conducts feasibility studies and analysis related to CHP, district heating and waste heat recovery. He also works on other energy efficiency and City of Houston projects.

Satish has over three and a half years of experience as a project engineer for various utility companies in Texas, including Nexant and Oncor. His expertise includes Retro-commissioning and energy auditing of facility systems, and performing engineering and energy analysis calculations, including those for HVAC systems. At Nexant, he worked on CenterPoint Energy's Retro-Commissioning program and was involved in its program design and development. He was an energy auditor in the Oncor Commercial Energy Audit Program in Dallas, Texas and worked with the audit team in recommending comprehensive energy efficiency measures.



Tim Reinhardt

US DOE Geothermal Technologies Office

Tim Reinhardt is Program Manager for the Systems Analysis and Low-Temperature, Coproduced and Geopressured Resources Programs within the U.S. Dept. of Energy (DOE) Geothermal Technologies Office. As a physical scientist and technology manager Tim provides oversight for existing demonstration projects, as well as guidance and direction for future low temperature geothermal projects and activities. He received his Bachelor's degree from Northwestern University in Environmental Sciences. Tim then joined the US Navy as an officer, serving for nine years as a Naval Aviator. He has a Master's degree from the University of Oklahoma in Human Resources, and a Master's degree in Energy and Earth Resources from the University of Texas at Austin.



Maria Richards

SMU Geothermal Laboratory

Maria Richards is the SMU Geothermal Laboratory Coordinator in the Huffington Department of Earth Sciences. Her research is on geothermal resources and energy development. Projects vary from computer generated temperature-depth maps for Google.org to on-site geothermal exploration of the volcanic islands in the Northern Mariana Islands. Currently her concentration is on the conversion of oil/gas wells into geothermal energy producers. Along with Cathy Chickering Pace, she coordinates the SMU Node of the National Geothermal Data System funded by the Department of Energy.

Past research includes the Eastern Texas Geothermal Assessment, Geothermal Map of North America, Dixie Valley Synthesis, and the resource assessment for the MIT Report on the Future of Geothermal Energy.

Maria is President-Elect of the Geothermal Resources Council Board of Directors and was chair of the outreach committee in 2011-12. She holds a Master of Science degree in Physical Geography from University of Tennessee, Knoxville and a BS in Environmental Geography from Michigan State University.

Clotilde Rossi di Schio

Turboden s.r.l.

Clotilde Rossi di Schio holds a M.Sc. in Industrial/Mechanical engineering from Vienna University of Technology and an MBA from Columbia Business School. After 2 years at the management consulting firm McKinsey & Co., where she focused mostly on oil and gas and chemical companies, she joined the Turboden American team as Manager for Sales and Business development.



Bayron Uriel Russell Tejada

iiDEA® Group, National Autonomous University of Mexico

Bayron Uriel Russell Tejada is a graduate student of the Faculty of Engineering at the National Autonomous, University of Mexico with a profound interest in renewable energies and in particular, geothermal energy.

Currently he is completing his Master's degree in processes and efficient energy use. At the same time he collaborates in research and technological development in the iiDEA® Group, which he has been part for almost four years. The iiDEA® Group is a multidisciplinary applied research group with aims on the technological development for the use of low-enthalpy geothermal energy in Mexico.

Uriel Russell is the coordinator of one of the three projects which has been developed in this research group. It is a binary cycle flash evaporation (CBEI from its acronym in Spanish). In addition, he has developed models for the design of separation equipment for two-phase flows and thermal design of the cooling system of the binary cycle.



Lincoln Schick

Mogul Energy International Inc.

Lincoln Schick joined Mogul Energy International Inc. in October 2014 as a Geologist Intern, and then in January 2015 was hired as a Geologist. He is responsible for subsurface mapping, reserve estimations, prospect evaluation, and assists with well completions. Prior to Mogul Energy, Lincoln worked in the SMU Geothermal Lab where he conducted thermal conductivity measurements of core samples, created geologic maps related to geothermal energy prospects, and compiled geophysical data and well log data for the SMU Geothermal Database. For his Senior Thesis research, Lincoln focused on arguing for a polygonal fault system in the Austin Chalk. He graduated with a B.S. in Geology from the Huffington Department of Earth Sciences, Southern Methodist University.



Kevin Shaw

Mayer Brown LLP

Kevin Shaw is a partner in the law firm of Mayer Brown LLP. His practice emphasizes transactions involving energy projects and companies, as well as the mining industry. He practices in the Houston, Texas and Los Angeles, California offices of the firm. He practiced in Denver, Colorado from 1981 to 1988. He began his legal career with Shell Oil Company in its Western Exploration and Production division, in Houston, Texas.

In addition to other articles and papers, Kevin co-authored a paper for the 45th Annual Institute of the Rocky Mountain Mineral Law Foundation entitled "Idle and Deserted Wells: Who Plugs and Who Pays?" He received his B.A. in 1976 from the University of Texas and his J.D. in 1980 from the University of Houston. He is a member of the State Bar of California, Colorado Bar Association and State Bar of Texas. He has served as the President of the Denver Association of Oil and Gas Title Lawyers (1986-87), and the Southern California Chairman of the Natural Resources Subsection of the State Bar of California (1994-1997).



Loy Sneary

Gulf Coast Green Energy

Loy E. Sneary is President/Chief Executive Officer (CEO) of Gulf Coast Green Energy (GCGE). He joined GCGE in December, 2007. He was so impressed with the commercial/environmental promise of the Green Machine and the opportunity to help companies convert waste heat to electricity, he left his successful fundraising and consulting practice so he could focus on leading GCGE full time. A life-long farmer/rancher and successful businessman, Loy has always been an early adopter of innovative cost saving technologies. His desire to create win-win situations is evident by the fact that he has spent much of his career at the nexus of industry and government, promoting economic development and improving the dialogue between community groups, business organizations, and government. He has a distinguished history of public service and community involvement at the local, regional and national level including serving five years as the Matagorda County Judge and as a committee appointee for the U.S. Secretary of Agriculture.



Brian Stump

SMU Huffington Dept of Earth Sciences

Brian Stump is the Albritton Chair of Geological Sciences in the Huffington Department of Earth Sciences in SMU's Dedman College. In 2014 Brian became the 5th SMU professor at SMU to be recognized as an American Association for the Advancement of Science (AAAS) Fellow for distinguished contributions to his field, particularly in the area of seismic monitoring in support of the Comprehensive Nuclear-Test-Ban Treaty. Brian is well known regionally for his continued work researching the increase of small earthquakes occurring in North Texas since 2008. His work in detecting ground motion from explosions has for more than 20 years proved invaluable to the U.S government in ensuring that the world's nuclear powers abide by their agreements related to underground nuclear testing.

Brian has chaired the Air Force Technical Applications Center Seismic Review Panel, which provides a review of federally funded efforts in nuclear monitoring. He served on the National Academy of Sciences Committee on Seismology and Continental Dynamics from 2007 through 2012, and recently completed a term as board chair for Incorporated Research Institutions for Seismology (IRIS), a consortium of more than 100 universities funded by the National Science Foundation.

In 1983 Brian joined SMU from the Seismology Section of the Air Force Weapons Laboratory at Kirtland Air Force Base in New Mexico. He graduated summa cum laude from Linfield College in McMinnville, Oregon with a BA in Physics in 1974, received a MA from the University of California at Berkeley in 1975 and his Ph.D. in Geophysics from the University of California at Berkeley in 1979, with thesis titled Investigation of Seismic Sources by the Linear Inversion of Seismograms.

Holly Thomas

US DOE Geothermal Technologies Office

Holly Thomas is a Technical Project Officer and Physical Scientist with the U.S. Department of Energy in Geothermal Technologies Office in the Energy Efficiency and Renewable Energy Office. The Geothermal Technologies Office supports research and development in innovative technologies that reduce the risk and costs of bringing geothermal power online, in partnership with industry, academia, and DOE's national laboratories. Holly manages Play Fairway Analysis projects in the Hydrology Program, Critical Materials Recovery projects in the Low Temperature Program, and research at national laboratories including geothermal/hybrid projects. Her experience includes managing projects up to \$40 million ranging from basic research in nano-materials to integrating renewable resources with the grid and evaluating improved heat transfer materials. Prior to government service, Holly assessed resource availability, energy pricing and risk in geothermal and precious metals projects. Her degrees include a B.S. in Biological Science and Chemistry from Colorado State University and an M.S. in Mineral Economics from the Colorado School of Mines.

Preston Tidwell

Texas A&M Global Petroleum Research Institute

Preston Tidwell grew up in Oak Point, Texas and attended Legacy Christian Academy in Frisco, Texas. Preston currently is a Petroleum Engineering Major at Texas A&M University and is a member of the Senior Graduating Class of 2015. Preston selected Texas A&M due to its strong Petroleum Engineering program and desire to be part of the Aggie family. He was drawn to engineering at an early age by his desire to combine math and science to solve today's problems with innovative solutions. In addition to his course studies, Preston has fueled his passion by involving himself in numerous projects and organizations including his work with the Global Petroleum Research Institute in College Station.



Matt Uddenberg
AltaRock Energy, Inc.

Matthew Uddenberg joined AltaRock Energy as an intern in 2012 and is now a Geologist. Matt assists with both technical operations and economic analysis on AltaRock Energy projects. He was introduced to the industry while working with a geothermal well drilling operation at the Coso Geothermal Field near Owens Lake, California. Matt has worked in the geothermal industry as a rig site geologist, geology intern, and as a graduate research assistant in the Bureau of Economic Geology while at the University of Texas. During his time at the University of Texas, Matt studied economics, operations research, and petroleum engineering in an effort to improve valuation techniques in the energy space, including valuations for many different geothermal prospects throughout Texas. Matt has a Master's Degree in Energy and Earth Resources, 2012 (Assessing the viability of geothermal production in Texas). He spent a year at the University of Adelaide taking honors year classes in igneous and metamorphic petrology, 2008. His B.S. in Earth Science is from the University of California at Santa Cruz, 2007.



Bodo von Düring
CLEAG AG, Luzern /Switzerland

Bodo von Düring is the owner of von Düring Management AG located in Zürich Switzerland. He is working on innovative geothermal plants with lower costs and higher returns with the first demonstration in Croatia. Bodo is currently on the board of Impact Systems, and a past board member of iO Adria Ltd. His degree is from Universität St. Gallen-Hochschule für Wirtschafts-, Rechts- und Sozialwissenschaften.



Wade Williams

Joule Sales

Wade Williams is the President of Joule Sales & Marketing since 2011 where his focus is on high temperature electronics, including down hole energy storage systems. He was responsible for Strategic Business Development for Trendsetter Electronics. Wade is a graduate of Texas Tech University. Joule Sales specializes in High temperature component and PCB characterization and aging.



Victor Emmanuel Zenón Arroyo

iiDEA® Group, National Autonomous University of Mexico

Victor Emmanuel Zenón Arroyo is a Mexican engineer with a Bachelor's degree in Mechanical Engineering (National Autonomous University of Mexico) 2005-2008. Currently, he is working in the Engineering Institute as the manager of the manufacture and design area of the iiDEA® Group. Victor is also the manager responsible for the modified binary cycle. He is completing his second Bachelor's degree, this time in Industrial Engineering (National Autonomous University of Mexico) 2012-2015. His thesis project is based on the Economical Evaluation of the Modified Binary Cycle. Other previous activities include the testing of craniofacial distractors springs for the National Institute of Pediatric and the leader of design and manufacturing of the unsuspended mass suspension system for the Formula SAE® (a student engineering competition) in 2012.



SMU | GEOTHERMAL LABORATORY

The SMU Geothermal Lab was established in 1970 by Dr. David Blackwell. We are a self-funded research facility, with a variety of ongoing geothermal resource projects. Our faculty, staff, and students strive to broaden the understanding and use of geothermal energy, from the simplest form, geothermal heat pumps for buildings, to the large-scale deployment of geothermal power plants providing energy for our cities. Our research also explores opportunities to integrate renewable geothermal projects in an oil and gas setting.

Our expertise includes:

- Academic research by faculty, staff, and students
- Data integration into maps such as the Geothermal Map of North America
- National Geothermal Data System Node at <http://geothermal.smu.edu/gtda/>
- Research projects such as Enhanced Geothermal Potential of the Cascades, Geothermal Synthesis of Dixie Valley, Nevada, well temperature logs for climate change indicators, and the stability of methane hydrates along continental shelves
- Well logging with high precision temperature measurements
- Rock sample analysis of thermal conductivity for research and commercial clients

The Lab assists the public through:

- Hosting a Geothermal Energy Utilization conference: Power Plays
- Teacher and student educational classroom materials
- A monthly newsletter for the geothermal, oil/gas, and energy industries, along with information for the public on events, funding, and research opportunities
- Presentations, news articles, and press releases
- Suggested publications and papers for those interested in learning more

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