

Geothermal ENERGY

Accelerating Asia's Geothermal Development

7 – 10 December 2009
Sheraton Towers, Singapore

Special Government Highlight:

Dr. Bambang Setiawan

*Director General of Mineral, Coal & Geothermal,
Ministry of Energy & Mineral Resources Indonesia*

Featuring Keynote Speakers from Leading Edge Geothermal Operators:

Yoram Bronicki, *President & Director, COO, Ormat Technologies*

Gudmundur Sigurjonsson, *President & CEO, Envent Holdings Philippines*

Fazil Alfitri, *President Director, Medco Power Indonesia*

Sanusi Satar, *Vice President, External Relations, Star Energy*

Terry Kallis, *Managing Director, Petratherm*

Lambertus De Graaf, *Managing Director, Panax Geothermal*

David Baldwin, *Managing Director, Contact Energy*

Mark Miller, *Managing Director, Greenerth Energy*

Plus Finance & Power Experts:

Joel Laykin

Secretary General, Independent Power Producers Forum (IPPF)

Bala Kamallakharan

Managing Partner, Mira Capital LLC

Migara Jayawardena

*Senior Infrastructure Economist,
World Bank*

Adam Sack

Country Manager, IFC

Dr Mike Allen

Chairman, ReEx Capital Asia

Pablo Fernandez

*Southeast Asia Regional Implementation
Manager, EcoSecurities*

Topics to be discussed include:

- Special focus on Indonesia policies, risks & developments in their electricity crash program to establish an additional 10,000MW capacity by 2014, with 48% or 4,733 MW coming from geothermal resources
- Current legal, regulatory & project updates on Indonesia, the Philippines & India
- Key learnings & project updates from US, Australia, New Zealand & Europe
- Leveraging on project finance, private equity & carbon credit trading potential

PLUS Pre & Post Workshops!

- ▶ **Workshop: Monday 7 December 2009 9am – 5pm**
Appraising & Developing Geothermal Reservoirs for Maximum Geothermal Recovery
- ▶ **Workshop: Thursday 10 December 2009 9am – 5pm**
Sustainable Production of Geothermal Energy

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9.00 **Chairman's Opening Remarks**

Joel Laykin, *Secretary General, Independent Power Producers Forum (IPPF)*

Global Energy Outlook & The Rise Of Geothermal Energy

9.10 **Energy Demand in the Region & the Impact of Geothermal Energy**

- The impact of the economic crisis on the power sector
- Renewable energy demand and trends versus conventional sources
- Meeting the energy needs in Asia – Where does geothermal energy fit into the energy mix?
- Short and mid-term trends and dynamics
- IPP perspective- what are IPP's looking for before investing in renewable/geothermal energy?

Joel Laykin, *Secretary General, Independent Power Producers Forum (IPPF)*

Achieving 27 000MW Of Geothermal Potential In Indonesia: Policies, Risks & Partnerships

9.50 **Policy Updates on Geothermal Field & Power Developments in Indonesia**

Government Highlight

- Investment program to establish 10 000MW capacity by 2014, with 45% from geothermal resources
- Current update on legal and regulatory principles for geothermal development under the Indonesian Geothermal Law No. 27/2003
- Clarifying the structure and regulatory framework for foreign investment in geothermal resources in Indonesia
- Incentives for attracting private investments in the upstream geothermal sector
- Role of provincial and local Government to regulate, supervise and license geothermal energy developments

Dr. Bambang Setiawan, *Director General of Mineral, Coal & Geothermal, Ministry of Energy & Mineral Resources Indonesia*

10.30 **Morning Networking & Refreshment Break**

11.00 **Establishing Partnerships with Government, Communities & Third Parties in Indonesia**

- Understanding Indonesian requirements for geothermal resources
- Key considerations for developing successful partnerships with the Indonesian Government, local communities and third parties
- Actively engaging with national and local communities
- Overcoming the legal, financial and technical challenges associated with local partnerships and geothermal development

Sanusi Satar, *Vice President, External Relations, Star Energy*

11.40 **Strategies to Lower Risk Perception to Commercialize the Geothermal Sector**

- Common stakeholder high risk perceptions and uncertainties for development
- Examining key geological, technical and commercial risks
- Strategies for mitigating risk and lowering current high risk perceptions: pricing, information etiquette and enhancing accountability, transparency and fairness in procurement transaction
- Best international practice and experiences for managing the risks involved in the geothermal sector

Fazil Alfitri, *President Director, Medco Power Indonesia*

12.20 **Networking Lunch**

1.30 **Addressing the Key Barriers to Mobilizing Financing for Geothermal Investment in Indonesia**

- Policy framework: improving the investment climate
- Pricing and incentives: addressing incremental costs
- Institutional capacity for credible geothermal transaction tenders
- Options for managing geothermal risks
- Benefiting from climate change incentives

Migara Jayawardena, *Senior Infrastructure Economist, East Asia & Pacific Region Infrastructure Department (Energy & Mining), The World Bank*

Current Updates On The Philippines, Australia, India & European Geothermal Markets

2.10 **Examining the Renewable Energy Law – Republic Act 9513 2008 & Framework for Geothermal Exploration & Utilization in the Philippines**

- Overview of the geothermal sector in the Philippines, role of Government & development of IPPs
- Assessing the Renewable Energy Law – its implementation and impact on geothermal development in the Philippines
- Evaluating the fiscal and non-fiscal incentives under the Act for establishing new geothermal prospects
- Current development of geothermal projects since the implementation of the renewable energy law
- Current update on geothermal power projects in the Philippines

Gudmundur Sigurjonsson, *President & CEO, Envent Holdings Philippines*

2.50 **Afternoon Networking & Refreshment Break**

3.20 **Opportunities & Challenges for Geothermal Development in India**

- Evaluating the Indian geothermal sector, role of Government and development of renewable energy
- Reviewing the economics of geothermal in India
- Potential locations for development in India
- Challenges for entering this market and suggested solutions
- What are the initiatives and support for the development of geothermal power in India?

Bala Kamallakharan, *Managing Partner, Mira Capital LLC*

4.00 **Panax's Geothermal Projects in Australia, Asia & Europe**

- Comparing geothermal systems
- The Penola Project, South Australia – a hot sedimentary aquifer – a case history
- Conventional geothermal projects in India, Kyrgyzstan and Slovakia

Lambertus de Graaf, *Managing Director, Panax Geothermal*

4.40 **Chairman's Summary Remarks & End of Day One**

9.00 Chairman's Opening Remarks

Joel Laykin, *Secretary General, Independent Power Producers Forum (IPPF)*

Global Geothermal Industry

9.10 Overview of the Global Geothermal Industry in the Current Economic Climate

- Examining the global geothermal market and emerging markets
- Geothermal energy consumption in target markets
- Kyoto protocol and renewable energy
- Key issues in Asian geothermal markets
- Future outlook for the geothermal sector

Yoram Bronicki, *President & Director, COO, Ormat Technologies*

Current Project Updates From Australia, Spain, China & New Zealand

9.50 Developing a Portfolio of Geothermal Projects in Australia, Spain & China

- Exploration strategy for projects in different geothermal technologies and markets
- Overview of geothermal energy technologies
- Current update on projects
- Australia – Paralana Hot Rocks Project
- Spain – Madrid District Heating
- Spain – Tenerife Conventional Volcanic Geothermal
- Spain – EGS (Madrid and Barcelona)
- China – Applications on Mainland China

Terry Kallis, *Managing Director, Petratherm*

10.30 Morning Networking & Refreshment Break

11.00 Developing Quality & Commercially Sustainable Geothermal Energy Projects-Case Study from New Zealand

- Evaluating market conditions and key experiences in New Zealand
- Overview of policies and investment environment to develop geothermal power
- Current update on projects
- Future plans for development

David Baldwin, *Managing Director, Contact Energy*

11.40 Geothermal Energy Development Roadmap for the Hot Sedimentary Aquifer (HSA) Geelong Geothermal Power Project

- Project objectives, model and dynamics
- Current update on resource assessment and estimations
- Capital expenditure and raising finance
- Overview of technologies and solutions used
- Future direction for Greenearth Energy- including Indonesia geothermal development

Mark Miller, *Managing Director, Greenearth Energy*

12.20 Networking Lunch

Estimating Geothermal Resources & Reserves

1.30 Creating a Resource Index Map for Geothermal Exploration, Assessment & Production

- Combined use of multiple geological and geophysical measurements to locate highly productive zones for targeting exploratory, assessment, and production drilling
- Type of data used to create a resource index map
- Analysing geothermal fields to create a map that combines responses to a sought after property in a single "joint geophysical image"
- Interpreting the image in terms of the desired resource index, with high index values corresponding to high likelihood of useable geothermal resources
- Demonstrating the success of this method in locating high-production/injection wells with examples from Kenya, Iceland, and the US

Professor Peter Malin, *Director, Institute of Earth Science & Engineering, University of Auckland, New Zealand*

Finance & Investments In Geothermal Projects Under Current Market Conditions

2.10 Attracting Private Sector Participation in the Geothermal Sector

- Trends in private equity financing in the geothermal sector
- An investor perspective on the geothermal sector in emerging economies
- Strategies for attracting private equity capital
- Approaches to mitigating early stage risks involved in IPP geothermal developments.

Dr Mike Allen, *Chairman, ReEx Capital Asia*

2.50 Afternoon Networking & Refreshment Break

3.20 Opportunities & Challenges in Private Sector Geothermal Financing

- Examining pros and cons of geothermal power
- Development challenges of geothermal power
- Financing options for geothermal projects at different phases on its development
- Key challenges in financing geothermal projects in Indonesia

Adam Sack, *Country Manager, IFC*

4.00 Carbon Credit Trading Potential from Geothermal Power Generation

- Potential to receive carbon credits
- How Carbon Credits can support the feasibility of geothermal power projects?
- What are the main requirements for power producers?
- What are the deal models and its impact on the power sector in Asia?

Pablo Fernandez, *Southeast Asia Regional Implementation Manager, EcoSecurities*

4.40 Chairman's Summary & End of Conference

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Pre-Conference Workshop: 7 December 2009 | 9am – 5pm

Appraising & Developing Geothermal Reservoirs for Maximum Geothermal Recovery

9:00-10:30	Geothermal Exploration & Drilling	Prof. Peter Malin
10:30-11:00	Morning tea	
11:00 -12:30	Resource Assessment: size of resource, possible uses, regulatory framework, environmental considerations, local community issues	Prof. Michael O'Sullivan
12:30-1:30	Lunch	
1:30-3:00	Project Planning & Operation: type of plant, cascade use, production & injection strategies, likely operational difficulties	Prof. Michael O'Sullivan
3:00-3:30	Afternoon tea	
3:30-5:00	New Directions in Geothermal R&D: Deep drilling, down hole seismics, shear-wave splitting, combined MT & seismics, dating of rocks, Automated model calibration	Prof. Peter Malin



Professor Peter Malin
 Director, Institute of Earth Science & Engineering
 University of Auckland, New Zealand

Peter has an extensive background in crustal seismology and geophysics. He has published more than 80 refereed papers on subjects such as the propagation of seismic waves in complicated geological settings, including geothermal systems, and the geological interpretation of geophysical measurements. Borehole seismic instruments and data analysis methods developed by him and in his laboratories have been used to research the structure and processes in places like Krafla, Iceland; Basel, Switzerland; Puna, Hawaii; and along California's San Andreas Fault. His current research interest is in the combined use of seismic and potential field measurements for determining the physical state and structure of hydrothermal and volcanic systems. Before joining the University of Auckland as IESE Director, he was Full Professor at Duke University in the US, and earlier, Associate Research Scientist at the University of California, Santa Barbara. He holds the PhD degree from Princeton University, and BS and MS degrees from Stanford University.



Professor Michael O'Sullivan
 Institute of Earth Science & Engineering
 University of Auckland, New Zealand

Mike O'Sullivan is a Professor in Engineering Science at the University of Auckland. He is interested in computational fluid dynamics applied to environmental fluids problems and specialises in modeling the behaviour of geothermal reservoirs. He acts as a consultant for Contact Energy Ltd. on modeling Wairakei and Ohaaki geothermal fields and has acted for Mighty River Power Ltd. on modeling Mokai. He has worked with PB Power on geothermal projects in Indonesia, Japan, Kenya, Mexico and USA. His secondary research interests are in modeling tidal flows and the dispersion of pollutants in rivers and estuaries, coal-bed methane extraction and carbon dioxide sequestration. He holds degrees in Civil Engineering and Mathematics from the University of Auckland and a PhD in Applied Mechanics from California Institute of Technology. He is a Fellow of IPENZ.

Post-Conference Workshop: 10 December 2009 | 9am – 5pm

Sustainable Production of Geothermal Energy

9:00-10:30	Engineering Economics of Geothermal Power Production
10:30-11:00	Morning Tea
11:00-12:30	Conceptual Design of Geothermal Power Systems: from reservoir to generator
12:30-1:30	Lunch
1:30-3:00	Sustainable Reservoir Production Management
3:00-3:30	Afternoon Tea
3:30-5:00	Case Studies: success, failure & recommendations



Mike Timlin is the CEO of TerraThermal, a provider of advanced field services to geothermal power producers in exploration, development, and production. He is a geothermal reservoir engineer who studied geothermal exploration geoscience and earned the Post Graduate Certificate in Geothermal Energy Technology at the Geothermal Institute, University of Auckland, New Zealand. Previously, he studied geothermal reservoir engineering and earned the Master of Science in Mechanical Engineering at Stanford University. His technical education also includes a Hertz Foundation Fellowship (Doctoral Fellowship) and a Bachelor of Science (Electrical and Mechanical Engineering), from the United States Military, West Point, NY.

He is a technically sophisticated executive with a consistent, results-proven background bringing worldwide sales campaigns to fruition, defeating the competition, sealing major business deals, and driving revenue and profit growth. He is also a deeply accomplished sales, marketing, and operations executive with 20 years of documented achievement complemented by multiple advanced degrees in mechanical and electrical engineering. He has worldwide experience in large public companies (AMD and LSI Logic), heading turnaround of failing companies (IMI and Palmchip), launching successful new business ventures (eASIC and WaferYield), and successful IPO (ARC). He is a veteran of the United States Army.

Geothermal Energy is a must attend event that focuses on developing the largely untapped geothermal resources in the region, particularly in Indonesia, home to the world's largest geothermal resources. With a renewed commitment to contribute a larger percentage of electricity generated from renewable energy resources, Indonesia is positioning itself to accelerate geothermal electricity generation. This conference will provide a timely platform to announce the significant efforts taken by the Indonesian Government to establish a stable legal and regulatory framework with attractive incentives to enable a business environment for geothermal development.



Geothermal Energy will have a special focus on Indonesia's political, legal, commercial and technical environment for geothermal development; raising project finance and capital; and the latest country and project updates from key geothermal power players and experts both in Asia and internationally.

Conference Highlights:

- A global event that focuses on developing geothermal energy projects in Asia
- Special focus on Indonesia's current policies and changes to the geothermal and electricity laws governing geothermal development
- Brings together key geothermal authorities, foreign & local geothermal energy producers as well as investors
- Examines project finance, private equity & carbon credit potential
- Key learnings & project updates from Australia, the Philippines, New Zealand, Europe & the US

Who Should Attend:

- Government
- International Energy Companies
- Geothermal Owners & Developers
- Independent Power Producers (IPPs)
- Engineering, Procurement & Construction Companies (EPCs)
- Equipment & Technology Providers
- Financial Institutions
- Law Firms
- Power & Energy Consultants

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