



IGA NEWS

Newsletter of the International Geothermal Association

IGA ACTIVITIES

Message from the President

John W. Lund, President

The President was an invited speaker at the Italian Geothermal Union closing ceremony for the celebration of the centenary of the world geothermal-electric industry (1906-2004) in Pisa, Italy, on 10 December 2005. The President presented a talk on the “Present Utilization and Future Prospects of Geothermal Energy Worldwide -2005” and Dr. Ladsy Rybach, former Vice President of IGA, presented an invited paper on “Present and Future Development of Geothermal in Europe.” The IGA received an award “...for their successful activity in joining the efforts of the international community to foster geothermal development worldwide.” The award plaque will be kept at the IGA Secretariat in Iceland. The President and Dr. Rybach also received individual awards for their pioneering work in geothermal energy. My thanks to Dr. Giancarlo Passaleva, President of the Italian Geothermal Union, and to Dr. Raffaele Cataldi (one of the founding members of IGA and former board member) for hosting the conference. Dr. Cataldi published a volume on the *History of Geothermal Energy in Italy* (in Italian) that was presented at the conference. Dr. Cataldi’s report can be found elsewhere in this News.

There have been some changes at the Secretariat. Valgardur Stefansson, the Executive Director, has been diagnosed with cancer and is undergoing treatment. He is therefore on very limited duty at the Secretariat. Arni Ragnarsson has stepped in to take over the major responsibilities together with Gestur Gislason, who has taken over the responsibility of coordinating the publishing and distribution of IGA News. We thank the two Icelanders for stepping in to keep the organization going, and wish Valgardur a speedy recovery.

The IGA Board of Directors met in Brussels, Belgium, on 3-4 April 2006 with a field trip on 5 April. The meeting was organized by Dr. Burkhard Sanner and held at

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<...cut> Branch, plus other member of IGA living or working within the geographical area defined who wish to join. Because the Regional Branch will levy a fee, and more generally because some members of IGA in the region may not wish to participate in the Regional Branch, membership of the Regional Branch will be voluntary rather than automatically including all members of the IGA in the geographical area concerned.

The geographical coverage of the Western Pacific Regional Branch is the area outlined by joining the national boundaries of: Thailand, China, Japan, Samoa, New Zealand, Australia and Indonesia, and all other countries within that area.

There is a strong tradition of co-operation between several of the countries in the region for geothermal development. For example during the period of rapid geothermal development in the 1980s and 1990s, there was a high degree of participation by New Zealand and Japan in geothermal research and development in Indonesia and the Philippines. With the maturing of the geothermal industries in those countries it is now much more of a partnership role, but strong linkages remain.

As well as the five core countries named, formation of a Regional Branch will permit individual members of IGA in countries where there is an interest in geothermal but which do yet have a geothermal association to join. Countries in that category include Papua New Guinea, Fiji, the Solomons, Vanuatu, Taiwan, Thailand, Vietnam and Australia. I understand that Korea and Malaysia do have geothermal associations, but they are not yet affiliated to IGA. People from other countries within the proposed region, such as Cambodia or Samoa are also welcome to join if they have an interest in geothermal.

Currently, all of the five core countries concerned individually hold at least annual geothermal conferences or seminars. It is proposed that, under the aegis of the Regional Branch, one of those conference be named as the Regional Branch Conference for that year, on a rotating basis. That will foster closer relationships and give a boost to international participation in the conferences.

As a group with over 500 members the Regional Branch will be in a better position to attract funding from regional and international agencies than can the individual member associations.

How do you join the Regional Branch ?

If you are in one of the five core founding countries, that have affiliated Geothermal Organisations, you can expect to be contacted by your appointed representative, or send an Email to the following::

China:	Dr. Tingshan Tian:	taints@mail.cigem.gov.cn
New Zealand:	Jim Lawless:	jlawless@skm.co.nz
Japan:	Toshihiro Uchida :	uchida-toshihiro@aist.go.jp
Indonesia:	Alimin Ginting:	aliming@unocal.com
Philippines:	Tony Yee:	ayee@unocal.com.

If you are an IGA member who lives or works within the Western Pacific region, but who is not within one of the above five countries, or have any questions, please send an Email directly to me at the address above.

EUROPE

ENGINE co-ordination action (ENhanced Geothermal Innovative Network for Europe)

P. Ledru, A. Genter, BRGM, France

1. Context

The development of renewable and sustainable energy will have a major impact on world economics and its sustainable development. The challenge defined in the EU's 6th framework programme is to reverse the present pattern of development in order to achieve a truly sustainable energy system, one that preserves the equilibrium of ecosystems and encourages economic development. In line with the Kyoto protocol implementation, an EU directive has been established that aims, by year 2010, to double the contribution of renewable energy to total energy consumption from 6 to 12% and to reduce greenhouse gases and pollutant emission by 15%. Finally, the Green Paper "Towards a European strategy for the security of energy supply," published in 2001, underlines that the EU will become increasingly dependent on external

energy sources (70% in 2030) and that at present it is not in a position to respond to the challenge of climate change and meet its commitments, notably under the Kyoto Protocol. It is also noted that the development of certain renewable energy sources calls for major efforts in terms of research and technological development.

2. Objectives of the ENGINE project (ENhanced Geothermal Innovative Network for Europe)

The contribution of geothermal energy is a key factor to the successful achievement of the objectives of the European Commission concerning the development of renewable and sustainable energy. The concept of Unconventional Geothermal Resources and in particular Enhanced Geothermal Systems examines ways of increasing the potential of geothermal power generation through (i) exploring new types of reservoirs for heat exchange (Hot Dry Rock, supercritical fluids..), (ii) enlarging the extent of productive geothermal fields by stimulating permeability, (iii) enhancing the viability of current and potential hydrothermal areas by stimulation technology and improving thermodynamic cycles.

The ENGINE project (ENhanced Geothermal Innovative Network for Europe) is a co-ordination action supported by the 6th Research and Development framework of the European Union. Its main objective is the co-ordination of the present R&D initiatives for Unconventional Geothermal Resources and Enhanced Geothermal Systems, from resource investigation and assessment stage through to exploitation monitoring. The Co-ordination Action will provide (1) an updated framework of activities concerning geothermal energy in Europe, including the integration of scientific and technical know-how and practices, and the evaluation of socio-economic and environmental impacts; (2) the definition of innovative concepts for investigation and use of Unconventional Geothermal Resources and Enhanced Geothermal Systems; groups of experts will present a “Best Practice Handbook”; (3) a scientific and technical “European Reference Manual” including the information and dissemination systems developed during the Co-ordination Action.

The links established between research and development teams, national development programmes, industrial partners and international agencies will be used to promote geothermal energy as a major renewable and sustainable source of energy and to propose innovative high-level medium- to longer-term research projects

3. Organisation of the ENGINE co-ordination action

To promote an efficient network of geothermal activities, the Co-ordination Action will define, organise and manage joint and common initiatives through :

- an Integration Phase, i.e. a bottom-up and federative strategy aimed at providing an updated framework of activities concerning geothermal energy in Europe and developing motivation within the scientific and technical community by exchanging experiences and sharing practices;
- a Synthesis Phase; i.e. an expertise strategy for defining the best practices and priorities for research investment. The expert groups will perform specific studies and strengthen links between the geothermal community and financial and political institutions.

The breakdown structure of the project is presented (Fig. 1). Its duration is estimated to 30 months and it has been funded with € 2 million. Among the main actions, 3 general conferences (launching, mid-term and final) will be organised and 7 specialised workshops will present the most innovative concepts, review the best practices, identify gaps and barriers and define new projects on the following items:

- *Defining, exploring, imaging and assessing reservoirs for potential heat exchange*
- *Exploring Supercritical fluid reservoir: a new challenge for geothermal energy*
- *Stimulation of reservoir and induced microseismicity*
- *Drilling cost effectiveness and feasibility of high-temperature drilling*
- *Electricity generation, combined heat and power*
- *Increasing policy makers awareness and the public acceptance*
- *Risk analysis for development of geothermal energy*

All information collected during the preparation and realisation of these meetings will be available on the web site of the co-ordination action at <http://engine.brgm.fr/> .

BRGM, represented by P. Ledru and A. Genter, is the coordinator of the project. The management of the project will involve an Executive Group, chaired by C. Fouillac, Research Director (BRGM), and composed of S. Cloetingh (VUA), E. Elewaut (TNO), R Emmermann (GFZ), O. Flovenz (ISOR), E. Huenges (GFZ), P. Ledru (BRGM), A. Manzella(CNR-IGG), J. Maas (Shell), L. Rybach (GEOWATT AG). J. Schuppers (EC DG Research) is an invited participant as a representative of the European Commission. A Steering Committee, in charge of the organisation of the main conferences and workshops, is composed of the work package leaders, chaired by E. Huenges (GFZ) with the assistance of

A. Manzella(CNR-IGG), and composed of P. Calcagno (BRGM), A. Genter (BRGM), M. Kaltschmitt (IE), C. Karytsas (CRES), T. Kohl (GEOWATT), P. Ledru (BRGM), A. Lokhorst (TNO), S. Thorhallsson (ISOR)

The ENGINE co-ordination action is composed of 31 partners representing 16 European countries and including 6 private companies. The first group of partner has a broad knowledge covering large aspects of the geothermal energy. It comprises **BRGM** (France), co-ordinator of the ENGINE project, **CFG SERVICES** (France), **GeoForschungsZentrum Potsdam** (GFZ, Germany), **ISlenskar ORkurannsóknir** (ISOR, Iceland GeoSurvey), **Centre for Renewable Energy Source** (CRES, Greece), **the Geological Survey of Denmark and Greenland** (GEUS, Denmark), **Shell International Exploration and Production B.V.** (SIEP B.V., Netherlands).

The second group of partners has knowledge covering mainly exploration, drilling and reservoir assessment: the **Instituto di Geoscienze e Georisorse** (IGG, Italy), the **Department of Geophysics of the Eotvos University** (ELTE, Hungary), the Institute of Earth Sciences, Dept. of Tectonics, of the **Vrije Universiteit Amsterdam** (VUA, Netherlands), the **Groupement Européen d'Intérêt Economique "Exploitation Minière de la Chaleur"** (GEIE "EMC", an international consortium operating on the site of Soultz-sous-Forêts, France), the **Panstwowy Instytut Geologiczny** (PGI, Polish Geological Institute, Poland), **Tsentr geoelektromagnitnykh issledovaniy Instituta fiziki zemli Rossijskoi akademii nauk** (GEMRC IPE RAS, GEOelectromagnetic Research Center of the Institute of the Physics of the Earth, Russian Academy of Sciences , Russian Federation), the **Geologijos Ir Geografijos Institutas** (IGGL, Institute of Geology and Geography, Lithuania).

A further group of partners has a large experience in drilling and reservoir assessment, exploitation and impact of the geothermal energy. It is composed of the

Netherlands Organisation For Applied Scientific Research (TNO, Netherlands), ten laboratories of the French **CNRS** (France) involved in the HDR Soultz experiment, **Geoproduction Consultants** (GPC, France), the Chemical Process Engineering Research Institute (CPERI) of the **Center for Research and Technology-Hellas** (CERTH), the Environmental Research Laboratory of the **National Centre for Scientific Research "Demokritos"** (NCSR, Greece), the **Institutt for Energiteknikk** (IFE, Institute for Energy Technology, Norway), the **Deep Heat Mining Association** (DHMA, Internatioanl Consortium), The company **Geowatt AG**, the **Instituto Geológico y Minero de España** (IGME Geological and Mining Institute of Spain, Spain), the **Leibniz Institute for Applied Geosciences** (GGA-Institute, Germany), the **University of Oradea** (UOR, University of Oradea, Romania).

Another group of partners are mainly involved in the development and management of exploitation and in impact studies of the geothermal energy: the **Institut für Energetik und Umwelt GmbH** (IE, Institute for Energy and Environment, Germany), the **Institut vysokikh temperatur Rossijskoi akademii nauk** (IVTRAN, Institute for high temperatures, Russian Academy of Sciences, Russian Federation), the **Institute for Geothermal Research of the Daghestan Scientific Centre of Russian Academy of Sciences** (IGR DSC RAS, Russian Federation) and 3 private firms, **ORME JEOTERMAL A.S.**, operating in Turkey, **Intergeotherm-M Stock Company** (Intergeotherm-M SC, Russian Federation), involved in the construction of geothermal plants worldwide and **MeSy GeoMessSysteme GmbH** (MeSy, Germany) partner of the European HDR Soultz-sous-Forêts project. <cut...>

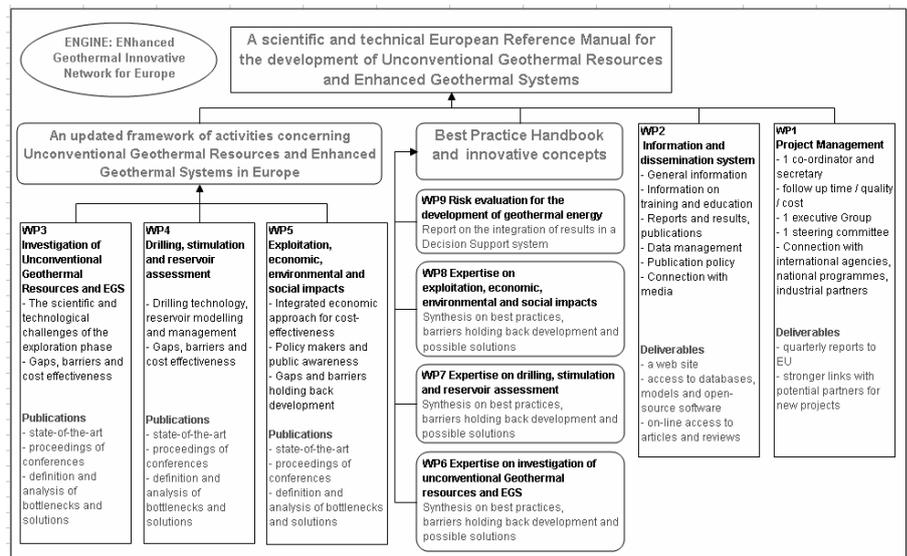


Figure 1. Breakdown of the ENGINE structure, brief description of Workpackages