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Stimulating Innovation
Annual forum #01

New technologies for energy
Programme

February 1-2 2007

Minatec
Grenoble - France

- Microsources of energy
- Hydrogen and Fuel cells
- Green house effect
- Solar Energy
- Energy depletion
- Network management
- Platforms
- ...

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Welcome to Stimulating Innovation Annual Forum 01

New technologies for energy

Greenhouse effect, natural resource depletion, sustainable development, oil price volatility; these are now among our primary worldwide concerns. Solutions to these problems have been the topic of research in Grenoble for many years, in fields such as hydrogen and fuel cells, solar heating and photovoltaics, storage and rational use of energy, and network management. Today, Grenoble has both internationally recognized fundamental research and major industrial actors with high quality technological research partnerships in new energies.

In order to present the state of the art, the major research organisations involved in the field of new energies in Grenoble decided to organise an Annual Review to present the recent technological developments to the stakeholders from industry, research and local authorities.

We are happy to welcome you to this first Annual Forum devoted to New Technologies for Energies to be held in Minatec® that brings together research laboratories, training centres and high tech companies.

During this two day forum, you will have the unique opportunity to participate in conferences and exhibitions dedicated to specialists in new technologies for energy, the academic community, research and industrial players and others concerned by progress and innovation.

This annual forum could not have taken place without our partners and sponsors; we are grateful to them.

Jean THERME
Head of the CEA Grenoble
Head of the Technological research of CEA

Paul JACQUET
President of INP Grenoble
President of the GRAVIT consortium





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Programme Annual Forum « New Technologies for Energy »

Thursday February 1st

MORNING (PLENARY SESSION) - MMNT LECTURE HALL

→ **9 : 00 – 9: 15 : Introduction**

• **Introduction** *(Paul JACQUET, Président of National Polytechnic Institute of Grenoble)*

→ **9 : 15 – 10 : 45: Challenges for new energies concerning environment, society and economy**
(Chairman: Bertrand CHATEAU, President - ENERDATA SA)

• **A holistic approach for sustainable energy policy to tackle the climate change** *(Antoine Tristan MOCILNIKAR, Expert consultant in economy of energy areas, Interministerial delegation in sustainable development)*

• **The 7th Framework Programme for research on energy - Addressing energy and policy challenges** *(Maria Rosa VIRDIS, Administrator - DG research energy – European Commission)*

• **Is Technology the Cornerstone for Energy Sustainable development ?** *(Jean Eudes MONCOMBLE, General Secretary – Energy council of France)*

• **Energy, climatic constraints and development of new technologies in 2050** *(Patrick CRIQUI, Research Director - University Pierre Mendès France)*

→ **10:45 – 11:15: Coffee break**

MORNING (PARALLEL THEMATIC SESSIONS)

→ **11:15 – 12: 30: Storage, production and energy network management** - MMNT LECTURE HALL
(Chairman: Roland VIDIL, Director of ENSIEG- National Polytechnic Institute of Grenoble)

• **Hydraulic energy: Pump Storage Plant and Upgrading** *(Maryse FRANÇOIS, Global Vice President R&D and Product - Alstom power)*

• **New concepts of Hydroelectric power farms based on kinetic energy of ocean and river currents** *(Thierry MAITRE, Professor - National Polytechnic Institute of Grenoble)*

• **Polymer electrolytes from lithium batteries to fuel cells. At the height of New Electrochemical Energy Technologies** *(Jean-Yves SANCHEZ, Professor - National Polytechnic Institute of Grenoble)*

• **New Lithium-Ion Technologies : towards high power and high energy** *(Sébastien MARTINET, Head of Laboratory - CEA)*

Or

→ **11:15 – 12:30: Microsources of energy** - ROOM B220, FIRST FLOOR
(Chairman: Mehdi MOUSSAVI, Head of department – LITEN - CEA)

• **Thermal management for electronic components** *(Christian SCHAEFFER, CIME Nanotech Director - National Polytechnic Institute of Grenoble)*

• **Nanofluids for electronic cooling** *(Anton GRUSS, Project manager – LITEN - CEA)*

• **Innovative micro-devices for energy harvesting and storage** (Raphael SALOT, Ingenior - CEA)

• **PowerMEMS** *(Jérôme DELAMARE, Professor - National Polytechnic Institute of Grenoble)*

→ **12 :30 – 14 :00 : Lunch**

AFTERNOON (PARALLEL THEMATIC SESSIONS, CONTINUED)

→ **14:00 – 15:45 : Storage, production and energy network management (continued)** - MMNT LECTURE HALL

• **Building Energy Management and grid** *(Seddik BACHA, Professor - National Polytechnic Institute of Grenoble)*

• **Insertion of decentralised energy resources in electrical networks: problems and solutions** *(Christophe KIENY, Vice Director of IDEA/G2E lab - National Polytechnic Institute of Grenoble)*

• **Numerical software for the optimization of electrical production** *(Claude LEMARECHAL, Director of research - French National Institute of Research for Computer Science and Control)*

• **Energy management of wide multi setting heritage** *(Emmanuel COLLET, Energy consultant- H3C énergies)*

• **New technologies for energy storage : the UPS application case** *(Guillaume LEFEVRE - MGE-UPS)*

Or

→ **14:00 – 15:30: Microsources of energy (continued)** - ROOM B220, FIRST FLOOR

- **Polymer micro fuel cells** (Francis CARDOT, Project manager - CSEM)
- **Embedded microsources of energy, what interest for the paper industry ?** *(Henri MAGNIN, Director - ARJO WIGGINS)*
- **Innovative Power Models for Electronic Systems** *(Ghislain KAISER, Director and co-founder - DOCEA POWER)*
- **µFuelCell for portable applications** *(Mathieu ROY, R&D Advanced Programs Manager - ST Microelectronics)*

→ **15:30 / 15:45 - 16:00: Coffee break**

AFTERNOON (PLENARY SESSION) - MMNT LECTURE HALL

→ **16: 00 – 17:45: The strategy of local authorities (Chairman, Martin VANIER, Professor - UJF)**

- **Région Rhône-Alpes** *(Roger FOUGÈRES, Education and Research Vice-President)*
- **Énergies renouvelables au Conseil Général de l'Isère** *(Serge REVEL, Energy Vice Président)*
- **Métro, Greater Grenoble Area** *(to be confirmed)*
- **City of Grenoble** *(François PEYRONNET, City Council)*

→ **19: 00 : COCKTAIL IN THE GRENOBLE MUSEUM OFFERED BY GRENOBLE TOWN COUNCIL**

- **Speech by Alain PILAUD, City Council of Grenoble**

Friday February 2nd

MORNING (PARALLEL THEMATIC SESSIONS)

→ **9:00 – 10:30: Hydrogen and Fuel Cell (Chairman: Paul LUCCHESE, Project Manager - CEA)** - MMNT LECTURE HALL

- **Hydrogen reversible stocking on activated magnesium** *(Daniel FRUCHART, Research Director- CNRS)*
- **Towards sustainable processes for H2 Production** (François LE NAOUR, H2 Production Program Manager - CEA)
- **Key role of materials in a Fuel Cell: Where are the problems?** *(Eric VIEIL, Laboratory Director - National Polytechnic Institute of Grenoble)*
- **CEA LITEN contribution to the realisation of power PEFC prototypes** *(Jean-Philippe POIROT-CROUVEZIER, Professor – LITEN - CEA)*

Or

→ **9:00 – 10:30 : Solar energy and housing** - ROOM B220, FIRST FLOOR
(Chairman: Jean-Pierre JOLY, Head of department solar technologies - CEA)

- **PHOTOSIL - Simplified production of Solar Silicon from Metallurgical Silicon** *(Jed KRAEIM, Project Manager - Appolon Solar)*
- **Innovation in silicon cells technology** *(Claude JAUSSAUD, Ingenior - LITEN - CEA)*
- **Research activities on solar photovoltaic system** *(Jens MERTEN, Head of laboratory, National Institute of solar energy)*
- **The PV market: a fantastic opportunity for the industry** *(Eric LABORDE, President - Photowatt)*

→ **10:30 - 11:00: Coffee break**

→ **11:00 – 12:30 : Hydrogen and Fuel Cell (continued)** - MMNT LECTURE HALL

- **Development and field testing of full scale anaerobic fuel cell backup power systems** *(Pascal EYRIES and Serge BESSE, Ingeniors - HELION)*
- **Axane the development of regional industry in hydrogen and fuel cells** *(Philippe PAULMIER, Marketing Director AXANE)*
- **Fuel Cell for Automotive Application : A challenge for the Car Manufacturer** *(Jean-Pierre LISSE, Head of sector – PSA Peugeot Citroën)*
- **Planar fuel cells for portable applications** *(Renaut MOSDALE, President - Paxitech)*

Or

→ **11:00 – 12:30: Solar energy and housing (continued)** - ROOM B220, FIRST FLOOR

- **Self-sufficient house in energy** *(Etienne WURTZ, Research Director, National Institute of solar energy)*
- **The contribution of active thermal solar systems in the building** *(Philippe PAPILLON, Head of project - French National Institute of solar energy - INES)*
- **Advanced Technologies for Energy Efficiency of Building Envelopes** *(Daniel QUENARD - CSTB)*
- **HOMES Project :** *(Schneider Electric, to be confirmed)*

→ **12:30 – 14:00: Lunch**

AFTERNOON (PLENARY CESSION) - MMNT LECTURE HALL

→ **14:00 – 15:30: Collaboration programmes and common platforms**
(Chairman: François SAVOIE, Ingenior – ADEME Rhône-Alpes)

- GRETH, a Technology Resource Centre for Heat Exchangers and Thermal Systems *(André MANIFICAT and Bernard THONON - Association GRETH)*
- INES, the new French institute on solar energy : objectives & perspectives *(Philippe MALBRANCHE, Vice head of solar technology department - CEA)*
- PREDIS: a centre of innovation and formation on delivered energy *(Roland VIDIL, Director of ENSIEG-National Polytechnic Institute of Grenoble)*
- Energy Cluster *(Yves BRUNET, Laboratory Director - National Polytechnic Institute of Grenoble)*
- Tenerrdis: leveraging partnerships on New technologies for energy *(Laurent COUSSEDIERE, Head of delegation "Planification Stratégique R&D" - TENERRDIS)*

→ **15:30 – 16:00: Coffee break**

→ **16:00 – 16:45: Collaboration programmes and common platforms (continued)**

- FP7 : ICT for energy efficiency challenges *(Brice LEPAPE, Head of sector Information Society and Media – European Commission)*
- Financing hydrogen photovoltaics and CO2 capture storage at the National and European Level *(Bernard FROIS, ANR - National Research Agency)*

→ **16 :45 – 17 :15 : Conclusion**

Conclusion of the forum and perspectives *(Jean THERME, Head of CEA Grenoble and head of the Technological research of CEA)*

Exhibition & poster - MMNT- GREAT HALL-Ground Floor

POSTER CESSION

•• Hydrogen and fuel cell

1 > Multicriteria Evaluation-Aiding methods, a help for R&D evaluation and orientation
Florent MONTIGNAC, LITEN-CEA

2 > Energetical and thermomechanical simulations for the Genhepis EHT stack
Magali REYTIER, Christian PERRET, LITEN-CEA

3 > Hydrogen storage using Metal Hybrides in a Stationary Cogeneration System
Maxime BOTZUNG, Serge CHAUDOURNE, LITEN-CEA

4 > Hydrogen embrittlement of high strength steels: simulation and experimental procedures
Laurent BRIOTTET, Isabelle MORO, LITEN-CEA

5 > UNDERSTANDING MEA PERFORMANCE AND DURABILITY: DEDICATED INNOVATIVE EXPERIMENTATION AND MODELLING
Joël PAUCHET, LITEN-CEA

6 > Membrane Electrodes Assemblies: developments and experimental studies
Sylvie ESCRIBANO, LITEN-CEA

7 > Modelling of a SOFC directly fed under methane: Thermo-electrochemical and mechanical aspects
Jérôme LAURENCIN, LITEN-CEA

8 > Modelling of a SOFC fuelled by methane: from direct internal reforming to gradual internal reforming
Y. BUTTEL, LEPMI – INPG

9 > From components to systems. Bipolar plates, stacks and system: from design to fabrication.
Jean-Philippe POIROT, LITEN-CEA

10 > EPICEA, a 2 kW PEMFC system
Daniel CHATROUX, LITEN-CEA

11 > A Comparison Method for Bipolar Plates Material Choice.
Jean-Philippe POIROT, LITEN-CEA

12 > Alternative fuel gas for Solid Oxide Fuel Cell
Marie PETITJEAN, LITEN-CEA

13 > Power Electronics Interface for Fuel Cell applications
J.P FERIEUX, LEG – INPG

14 > Investigation of Mass and Charge Transports at the air Cathode of a Self-Breathing Fuel Cell
Y. BUTTEL, LEPMI - INPG

•• Solar energy and housing

15 > Use of new technologies to reach Energy efficient buildings
Jean-Louis SIX, LITEN-CEA

16 > A new test bench for Solar Combisystems at INES
Philippe PAPILLON, INES- CEA

17 > PRISMES: The INES micro-grid platform
Franck BARRUEL, Laboratoire des systèmes solaires – INES - CEA

18 > Outdoor testing PV module performance
Antoine GUERIN de Montgareuil, Laboratoire des systèmes solaires – INES- CEA

19 > Advanced battery management strategies for renewable energy systems.
Florence MATTERA, Laboratoire des systèmes solaires- INES - CEA

20 > RESTAURE: a facility for the development of industrial photovoltaic silicon cells
Claude JAUSSAUD, LITEN-CEA

21 > PHARE project: Development of high efficiency photovoltaic silicon cells for industrial transfer
Claude JAUSSAUD, LITEN-CEA

22 > PV nanocomposite
Stéphane GUILLEREZ, LITEN-CEA

•• Microsources of energy

23 > Energy scavenging systems - Thermoelectrics and Nanomaterials
Marc PLISSONNIER, LITEN-CEA

24 > MicroBattery : Integrated energy storage for autonomous applications
Raphael SALOT, LITEN-CEA

25 > Battery components processing Platform
Sébastien MARTINET, LITEN-CEA

26 > New development of nanomaterial for catalyst application
Sophie MAILLEY, LITEN-CEA

•• Storage, production and energy network management

27 > Management support tools for the Distribution Network Operators
IDEA GIE - INPG

28 > Load control to contribute to network services
IDEA GIE - INPG

29 > Power Electronics tool for meshed distribution grids
IDEA GIE - INPG

30 > Power Flow Control and short circuit current limitation
IDEA GIE - INPG

31 > Fault location in high DG inserted distribution networks
IDEA GIE - INPG

32 > Dynamic stability analysis and reduction method of distribution network
IDEA GIE - INPG

33 > YBCO Coated Conductor tapes elaborated by chemical routes (MOCVD and MOD)
F. WEISS, C. JIMÉNEZ, A.CAVALLARO, T. CAROFF, A GIRARD, Z.M. YU, P. ODIER, X. CHAUD, P. TIXADOR LMGP, Institut Louis Néel/CRETA – INPG, CNRS

34 > ARCELOR Project
UPMF

35 > Heat transfer enhancement in convective flows with phase change.
André BONTEMPS, Nadia CANEY, Sébastien FERROUILLAT, Jérémie MALLE, Philippe MARTY (ADEME/CEA), LEGI – CNRS, UJF, INPG

36 > New concepts of hydroelectric power farms based on kinetic energy of ocean and river currents
Jean-Luc Achard, T. Maitre, D.Imbault, D. Roye, LEGI, 3S-R, LEG – CNRS, UJF, INPG

37 > Cavitating flows in turbomachineries
N. GONZALO-FLORES, J. ROLLAND, E. GONCALVÈS, R. FORTÈS-PATELLA, LEGI – CNRS, UJF, INPG C. REBATTET, CREMHyG

Exhibitors - MMNT + GREAT HALL-Ground Floor

PaxiTech

H3C énergies

tenerdis

A_PI

City Map



Scientific Committee



• **Yves Brunet, INP Grenoble**
President of the INP Grenoble of 1997 to 2002. Currently, Director of the Laboratory of Electrical engineering of Grenoble – INPG/UJF/CNRS, and Scientific Responsible for Cluster Research "Energy" of Rhône-Alpes.



• **Claude Lemaréchal, INRIA**
Director of Research at INRIA. Internationally renowned for his works on operations research and nonlinear optimization. Most significant results obtained in geophysics (meteorology) and production management (electrical energy).



• **Laurent Coussedière, TENERRDIS**
In charge of strategic planning, knowledge management and Partnerships in R&D department of MGE UPS SYSTEMS. Operational manager of the Tenerrdis Energy Cluster on renewable energies and new technologies for energy in Rhône-Alpes.



• **Thierry Priem, CEA**
Engineer from high schools "Ecole Polytechnique" and "Ecole Nationale Supérieure des Mines de Paris". Former head of a service involved in new energies (hydrogen and fuel cells, photovoltaics...). Experience in technology transfer. The CEA representative for the GRAVIT Consortium.



• **Patrick Criqui, UPMF**
Senior Researcher CNRS at LEPII. Graduate of the École des Hautes Études Commerciales. Doctor in energy economics from the University of Grenoble. Long experiment of research in energy.



• **Etienne Wurtz, Université de Savoie**
Director of research at the NATIONAL INSTITUTE Of SOLAR ENERGY. Renowned for his works about modelisation in object oriented environment, thermal building, renewable energy and geothermy.



• **Bertrand Fillon, CEA**
Senior Program Manager from 2003 to 2005 at CEA about the polymer and ceramic micro-process technology with the emphasis on _-power sources (micro fuel cell, micro batteries, solar cells, etc.). Currently program Manager of LITEN.

GRAVIT: Stimulating innovation

Founded in January 2006, by the CEA Grenoble, the CNRS Alpes, the National Polytechnic Institute of Grenoble (INPG), the French National Institute of Research for Computer Science and Control (INRIA), the University Joseph Fourier and the University Pierre Mendès France, associated to their technology transfer operators, GRAVIT, Grenoble Alpes Valorisation Innovation Technologies, is a tool for the benefit of researchers and industrials.

Its main purposes are:

- → to stimulate and facilitate the process of transfer of research results by supporting their technico-economic development and their introduction on the innovation market.
- → to offer a better visibility to industries of the technological offer issued from Grenoble Savoie laboratories.

The activity of GRAVIT is articulated around three annual events: a call for proposal "Focus Innovation", a thematic annual forum and a cycle of seminars about heightening awareness to marketing of research projects.

For more information:

http://www.gravit-innovation.org

Partners & sponsors

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Scientific contribution from : cea, CNRS Centre National de la Recherche Scientifique, INP Grenoble, upmf, INRIA, Université Joseph Fourier, Université de Savoie

Supported by : ANR, RhôneAlpes, isère, AEPI, MINATEC

Conception : SUPERNOVA - www.supnov.com