

## GENERAL INFORMATION

### INTERMITTENT ENERGIES STORAGE VIA CHEMICALS

#### Registration

<b>Industrial</b>	<b>240 €</b> (VAT 19.6 % included)
<b>Academic or FFC Member</b>	<b>180 €</b> (VAT 19.6 % included)
<b>Student</b>	<b>70 €</b> (VAT 19.6 % included)

Registration fees include admission to all conference sessions and poster presentations, book of abstracts, detailed program, list of participants, coffee-breaks, lunch, visit of INES Research centre.

#### Cancellation

In order to be entitled to a 50% refund on registration fees, all cancellation requests must be received by registered letter on or **by June 15<sup>th</sup>, 2009**. No refunds will be granted after this date. No cancellation sent through mail, fax or phone will be accepted. If you do not come to the conference you cannot ask for a refund, whatever the causes might be.

#### Venue

Amphithéâtre du Nivolet (opposite University Reception)  
Université de Savoie - Rue du Lac de la Thuile - Technopôle Savoie Technolac  
73375 Le Bourget-du-Lac cedex (Access map on: [www.univ-savoie.fr](http://www.univ-savoie.fr))

#### Contacts

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#### More information

You will find additional information (registration form, payment conditions...) on the website: [www.ffc-asso.fr/energies-storage](http://www.ffc-asso.fr/energies-storage) which will be regularly updated.



La Fédération Française pour les sciences de la Chimie (FFC)  
with the collaboration of  
l'Institut National de l'énergie solaire (INES)

## INTERMITTENT ENERGIES STORAGE VIA CHEMICALS



**Le Bourget-du-Lac, France**

**1-2 July 2009**

## PROGRAM

**[www.ffc-asso.fr/energies-storage](http://www.ffc-asso.fr/energies-storage)**



In a near future, yields above 40% from solar energy can be envisaged with photovoltaic cells. The industrial production of solar panels and cells is increasing strongly.

Wind turbines are already a noticeable source of electricity in Europe.

However, significant R&D progress is required in efficient means of storing intermittent and renewable energy. This energy storage is a key process to best fit the needs of users such as manufacturers, electricity network managers, individuals.

**It is the objective of this symposium to present and assess the various feasible technologies used to store intermittent energy mainly via a chemical route, electrolysis being one of them.**

The various sessions will enable participants from scientific and industry communities:

- To identify thematic research and industrial applications of electrolysis to produce and store fuel elements (hydrogen, hydrocarbons) or intermediate products,

- To know the latest developments in thermic storage,

- To compare the different modes of storage and electricity whether developed or under development (eg Redox batteries, sodium / sulphur batteries, compressed air).

Through presentations, posters and discussions, French and international researchers and manufacturers will be able to review processes, assess their economic and technological potential, and identify scientific and technical challenges to be faced.

**More information are available  
on the web regularly updated:**

**[www.ffc-asso.fr/energies-storage](http://www.ffc-asso.fr/energies-storage)**

**WEDNESDAY 1 JULY 2009**

15:00 • **Visit of INES Research Center.**

**THURSDAY 2 JULY 2009**

8:30 • Registration.

9:00 • Welcome.

9:10 • **Questioning storage needs for intermittent energy (solar or wind).**  
Energy efficiency, availability of resources, processes cost.

9:40 • **Chemical challenges in intermittent energy utilization.**  
*Gilbert CAZENOBE, SGN.*

**Session 1: Energy Storage through electrolysis (Pilot: Didier MAYER)**

10:00 • **Recent advances in PEM electrolysis technology at HELION and application to renewable energy storage.**

*Serge BESSE, HELION / Groupe AREVA.*

- **Energy efficiency of hydrogen production by High Temperature Electrolysis.**  
*Rodrigo RIVERA, Energie Research Center of The Netherlands.*

- **Electrolysis of CO<sub>2</sub>, H<sub>2</sub>O and co-electrolysis of CO<sub>2</sub> and H<sub>2</sub>O in Solid Oxide Cells.** *Sune D EBBESEN, Risø Institut DK.*

11:05 • Questions & Answers.

11:25 • Break. Posters.

**Session 2: Thermal energy storage (Pilot: Gilles FLAMANT)**

11:45 • **Heating and refreshing process by solid-gas reaction using thermal solar plant.** *Sylvain MAURAN, PROMES.*

- **Application of conductive PCM composites to solar processes, from solar cooling to central receiver solar power plants.**  
*Xavier PY, PROMES.*

- **Interseasonal solar thermal energy storage for house heating through LiBr / H<sub>2</sub>O absorption process preliminary feasibility study.**  
*Lingai LUO, LOCIE-INES.*

- **Thermal storage for industrial applications.**  
*Jean-François FOURMIGUE, CEA.*

12:45 • Questions & Answers.

13:05 • Lunch.

**Session 3: Storage of electricity (Pilot: Marion PERRIN)**

14:15 • **Batteries Sodium / sulfur high-capacity** (advantages & disadvantages, technical maturity, economy). *Akimishi OKIMOTO & Tomio TAMAKOSHI, NGK.*

- **Redox-flow batteries for intermittent energy storage.**  
*Dominik SCHULTE, RWTH Aachen Germany.*

- **Electricity storage based on compressed air for the grid integration of renewable energy.** *Stefan ZUNFT, DLR.*

- **Other Batteries (Li for small storage, Pb).**  
*Jean-François FAUVARQUE, CNAM, Paris.*

15:35 • Questions & Answers.

15:55 • Break.

16:15 • **Roundtable: Prospective & Conclusion.**

*Chairman: Philippe MALBRANCHE, INES.*

*With the participation of AREVA, AXELERA, G2Elab INPG, GDF Suez, RHODIA.*

17:30 • End of the congress.