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# CO<sub>2</sub> Capture and Storage: Can the Oil and Gas Industry Support this Development and Deployment?

Application  
Deadline:  
15 May  
2009

With the increasing world reliance on use of fossil fuels to meet energy demand, emissions are forecasted to reach levels that are unsustainable. The IEA World Energy Outlook forecasts under its reference scenario that emissions will be increased by more than 55% in 2030 compared to today's levels. CO<sub>2</sub> capture and geological storage is a major CO<sub>2</sub> abatement option, with a potential to provide 20% of the total reduction needed to stay at the IPCC stabilisation levels. The oil and gas industry provides the leading source of expertise for subsurface injection of CO<sub>2</sub>, for enhanced hydrocarbon recovery or long-term storage.

This forum addresses the challenges related to the potential development of a CO<sub>2</sub> capture and storage activity that would be several orders of magnitude larger than the current demonstration projects.

**Who should attend?**

Geoscientists and Geoscience Managers, Reservoir Engineers and Managers, Well Engineers and Managers, Petroleum Engineers and Managers, Production Engineers and Managers, Process and Facilities Engineers and Managers, Asset and Business Managers, Engineers and Managers in Power Generation Equipment and Operation, Engineers and Managers in the Alternative / Green Energy Industries

## SPE Forums: Innovative Thought and Accelerated Results

SPE Forums offer an exclusive opportunity to discuss complex industry challenges with top technologists, innovators, and managers. The forums' limited size and intensive format maximise your opportunity to contribute. The objective is to stimulate thought, accelerate innovation, and inspire the development of new technology.

To create a cohesive group in which discussion is free flowing, only applicants who have applied and are selected to attend can participate. Participants are encouraged to come prepared to contribute their experience and knowledge, not to be spectators or students.

If you have a role to play in meeting the challenges of tomorrow head-on, apply today. Participants will be selected based on their ability to contribute to the discussion and to represent their stakeholder group.

## How Participation Benefits You—and Your Organisation

- Learn in days what would usually takes months, even years, of research to learn.
- Effectively focus on a topic that directly relates to your work.
- Gain insight and perspective through conversations with peers who share your same interests.
- Meet with other experts from international companies, research institutes, and universities in an off-the-record format.
- Form professional relationships that will continue after the forum has ended.



## CO<sub>2</sub> Capture and Storage: Can the Oil and Gas Industry Support this Development and Deployment?

These exciting topics will be discussed in an open setting designed for optimal input from all participants.

### Session 1: Defining the Challenges

**Session Managers:** Gustavo Galliano  
Francois Kalaydjian

CO<sub>2</sub> capture and storage is one of the solutions for combating climate change for which time is of essence. What are the early opportunities? How fast can CCS be deployed? What will be its expected contribution to reduce the CO<sub>2</sub> emissions in the next decades? Can the CO<sub>2</sub> capture technologies be implemented fast and economically enough in large stationary emission sites? Are the storage capacities large, known and sure enough to meet the target? Will the scientific and technical community be committed enough for maintaining a research and development effort over the years?

### Session 2: Public Awareness

**Session Managers:** Luc de Marliave  
Peter Frykman

The general public is unaware of this technology, so how will they react when we have to rush decisions and construction during the next very few years? Will they be comforted by gaining basic geological insight? Will they trust the engineering and technology solutions? Will they accept CCS as a valuable asset for certain communities, creating employment, activity, and sense of contributing to a solution? Can we show positive analog cases where leaks or blowouts have been tamed and controlled, to show that mitigation is possible? Who will take care of the educational challenge—schools, parents, public, press, politicians—a mixed audience to address.

### Session 3: Business Models

**Session Managers:** Martin Blunt  
Brian Williams

Understanding and clarifying alternative business models (e.g., subsidy, direct taxation, cap-and-trade, market-based, etc), and developing realistic expectations for how governments and society may support and pay for implementation of CCS, are critical considerations facing the emerging carbon management industry. Regulatory frameworks (local, national or global) will have a fundamental impact on how business models will be shaped. Issues of risk vs. reward and of the transition of long-term liability for storage of CO<sub>2</sub> will also be important considerations in the definition of motivating models. Finally, the early pace of growth and the ultimate scale of the potential industry will likely establish if and how rapidly fully market-based models are able to develop.

### Session 4: Capture and Transport

**Session Managers:** Nils Rokke  
Luc de Marliave

Many gas fields under consideration contain more sour gas than hydrocarbons and new thinking is required to make such field more attractive for utilisation. The first session will cover the challenges related to sour gas treatment and new options for co-treatment of many substances like H<sub>2</sub>S and CO<sub>2</sub>. Transport of CO<sub>2</sub> is often considered a done deal, however it has emerged as a true culprit in the development of new capture plants and the requirements of purity can have a significant effect on the economics of CCS. The

*(continued overleaf)*

## Application Information

Participants at SPE Forums are selected by a steering committee on the basis of ability to contribute to the discussion of the topic. You can apply via the web, mail, or fax. You must apply by **15 May 2009** to be considered.

Online: [www.spe.org/events/09fse3](http://www.spe.org/events/09fse3)

Mail: SPE FORUM SERIES, First Floor, Threeways House, 40/44 Clipstone Street, London, W1W 5DW UK

Fax: +44 (0) 207 299 3300

Email: [formslondon@spe.org](mailto:formslondon@spe.org)

An electronic version of the printed application form is available for downloading and printing at [www.spe.org/events/09fse3](http://www.spe.org/events/09fse3). You may also contact SPE at +44 (0) 207 299 3300 or [formslondon@spe.org](mailto:formslondon@spe.org) to receive a printed registration form via mail, fax, or email.

Please obtain appropriate approvals from your supervisor PRIOR to applying to the forum. Include enough information about your experience and knowledge to enable the steering committee to evaluate your potential contribution to the forum.

session will encourage new solutions and the effect of relaxation of the purity requirements, why should we be so concerned about the purity, can EOR operations also relax on the requirements and what is the true obstacle—the compression train, the liquefaction stage, materials, HSE or the receiving geological formation?

### Session 5: Use of CO<sub>2</sub> and CCS in Unconventional Reservoirs

**Session Managers:** Mehran Sohrabi  
Nils Rokke

Using CO<sub>2</sub> in processes like enhanced hydrocarbon (oil and gas) recovery can potentially partially offset the cost of CCS projects while extending the life of hydrocarbon reservoirs. CCS can also play an essential role in the sustainable development of unconventional reserves (e.g. heavy oil, shale oil, etc). This session will explore possible ways that CO<sub>2</sub> can be used to facilitate CCS projects and the issues around some of these applications. Potential application of CCS in integrated unconventional hydrocarbon recovery projects will also be discussed.

### Session 6: Site Selection

**Session Managers:** Michel Verliac  
Philip Ringrose  
Fred Santarelli

What are the criteria that qualify a site for CO<sub>2</sub> Storage? And how much information do you need to gather in order to start detailed site characterisation and qualification? This session will discuss the main requirements and challenges for site selection. To what extent can we use the oil & gas exploration model, or do we need a new fit-for-purpose work flow for characterising CO<sub>2</sub> storage sites? Issues include:

- Saline Aquifers—poorly known, with uncertain confinement
- Depleted reservoirs—What additional information is needed, especially in the cap rock?
- Capacity and injectivity—How to define these?

### Session 7: Storage Integrity

**Session Managers:** Fred Santarelli  
Michel Verliac

Ensuring the integrity of CO<sub>2</sub> storage is an essential step in the industrial deployment of the methodology. In turn the leakage of fluid out of the intended injection zone can occur along three paths—i.e. along wells, along unconfined hydraulic fractures and along natural fractures. The immediate consequence is that ensuring storage integrity is necessarily a multidisciplinary exercise.

### Session 8: Monitoring and Modelling

**Session Managers:** Peter Frykman  
Martin Blunt

Safe storage is a major public concern. At present this can only be demonstrated through monitoring combined with predictive flow simulations. In addition modelling is needed to assess storage integrity, efficiency and ultimately economics. How do we select the tools that are best for these different purposes and for different audiences? How do we use monitoring data to improve our flow predictions?

### Session 9: What Does the Oil and Gas Industry Have to Offer?

**Session Managers:** Francois Kalaydjian  
Brian Williams

The final session of the forum will collate the ideas discussed and look at ways of closing the gaps that have been identified during the week.

If the committee accepts your application, you will receive registration materials, including more detailed information on housing, transportation, and fees. If your application is placed on a waiting list, you will receive notification of that fact. After notification of acceptance, your registration form with payment must be returned by **31 July 2009** to ensure your place in the forum.

#### The forum fee is 1585 GBP + 16% Spanish VAT, and includes

- Registration to attend all nine forum sessions
- Five nights of hotel accommodation based on single occupancy
- Sunday evening welcome reception and dinner
- Daily breakfast buffet and lunches (Mon-Thurs)
- Thursday farewell reception and dinner
- Morning and afternoon continuous coffee breaks throughout the duration of the forum

**Please note:** The base registration fee does not include accompanying persons. The registration fee is not transferable. The full fixed fee is charged regardless of the length of time a registrant attends the forum. Attendees are expected to attend the entire forum.

## The Forum Series Format

The SPE Forum Series provides nine alternate morning, afternoon, and evening sessions of scheduled and unscheduled presentations with maximum time available for informal discussions and exchange of experience. Presentations are generally limited to three or four slides. Breakout sessions for discussions are common. A short, written summary of major issues and consensus arising from the forum may be prepared and distributed to attendees after the forum at the discretion of the programme committee and with appropriate SPE approval.

## Forum Guidelines

- Participants are expected to attend every session.
- Lengthy, formal presentations are discouraged to promote maximum discussion.
- SPE Forums are conducted off the record to support the free interchange of information and ideas.
- Written papers are prohibited, and extensive note taking is not allowed.
- Mechanical recording of any portion of the forum in any form (photographic, electronic, etc.) is prohibited.
- Information disclosed at a forum may not be used publicly without the originator's permission.
- Participants are requested to omit reference to forum proceedings in any subsequent published work or oral presentation.

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