SPE Workshop

Thriving in the Energy **Transition by Stepping Up** on Emissions Management

15 - 16 SEPTEMBER 2020 | BRISBANE, AUSTRALIA



As we stand on the threshold of the new decade, it is certain that the future will look very different from the past. In the last 10 years, Australia and the Asia Pacific region have focused on building a world-leading oil and gas industry based around multiple modern, technologically advanced upstream and LNG operations. However, despite much heralding as a greener, "bridging fuel", LNG's environmental credentials are now under massive scrutiny. Oil faces even more challenges and peak oil demand is being discussed openly by CEOs of major oil and gas companies. We are in the throes of an energy transition as our energy system is evolving rapidly and diversifying, decarbonising and decentralising.

Companies are facing intense and increasing investor scrutiny around environmental, social and corporate governance (ESG) factors. Emissions, once the domain of the environmental engineers and sustainability and reporting groups, has become a boardroom and AGM topic, propelled by high-profile initiatives like the Task Force on Climate-related Financial Disclosure and increased transparency around Scope 1, 2 and 3 emissions. Investor and customer pressure on companies to deliver cleaner, lower emissions energy is ramping up. Changing regulation compounds the situation, making management and reporting of emissions even more complex to manage. The imperative for emissions reduction is not just around CO2, it extends to powerful greenhouse gases including methane, SOx, NOx, and other gases as well as water and other wastes. Our industry must work together, through the application of science, technology, creativity and innovation, to create solutions - or we will be viewed as the source of the problem.

In SPE's first workshop on emissions management in this region, we will explore how companies are measuring, monitoring, controlling and ultimately reducing emissions of all types. Topics that will be addressed include - energy use and generation in oil and gas development and operations, the use of renewable energy in power generation and supply chains, carbon capture utilisation and storage as well as emerging technologies and how these can play a significant role in emissions reduction. We will also consider the process, technology and data implications of emissions management, what companies are doing from an organisational perspective to better respond to this high-profile topic and how companies are re-evaluating and reshaping their portfolios to reduce emissions.

In addition to a focus on what operators are doing, we will also hear from regulators, governmental officials, supply chain companies and customers on their strategies and actions around emissions. We invite you to join in, share experiences and participate in this critical dialogue to help our industry step up its game on emissions management and reduction.

Session Highlights

Energy Efficiency and Low Emissions Power Generation in Oil and Gas Operations

Reducing Flaring through Innovative Operations and Gas Management

Carbon Capture. Utilisation and Storage

Executive Panel Session: Redefining Business Model in the Context of Sustainability

Regulation as an Enabler for **Emissions Reduction**

New Technologies to Measure, Monitor and Reduce Emissions

GROUP REGISTRATIONS AVAILABLE! Contact us at spekl@spe.org to arrange your group.





Who Should Attend

Professionals involved in:

- Academic and Research
- · Asset Management
- Carbon Capture, Utilisation and Storage (CCUS)
- EngineeringExternal Affairs Government Reporting
- Financial/Banking Institutions and Project Investments
- Governmental Departments/ Agencies, Regulators
- Health, Safety, Security and Environment (HSSE)
 Regulatory Reporting
 Social Performance
- Corporate Governance

- IT and Data Analytics
- Media and Communications
- Operations Management
- Portfolio Management and Strategy
- Production and Process
- Management Project Delivery
- Purchasing and Procurement
- Quality Assurance
- Risk Management
- Toxicology

Technical Programme Committee

CO-CHAIRS

Brett Doherty Group Executive Health, Safety, Environment and Risk **Beach Energy Limited**

Bernadette Cullinane Partner and Australian Oil, Gas & Chemicals Leader **Deloitte Consulting Pty Ltd**

COMMITTEE MEMBERS

Nathan Blundell Surat Front End Development Manager

Arrow Energy

John G. Kaldi Professor; SA State Chair of Carbon Capture & Storage: CO2CRC Distinguished Scientist

Australian School of Petroleum; CO2CRC Limited

Tim Flowers Head of Environment **Beach Energy Limited**

Michael Wood Director - Sustainability **Deloitte Risk Advisory** Ptv Ltd

Kevin Young Principal Consultant & Group

DNV GL Australia Pty Ltd

Craig Nicol Chief Executive Officer **Graphene Manufacturing Group Pty Ltd**

Roger Van Hoek Manager Asset Development INPEX

Vinita Rao Senior Petroleum Engineer **Origin Energy**

Ying Luo Project & Strategy Lead **Santos Limited**

Mariana Michael **Environment Manager** Sarawak Shell Berhad

Siti Fatimah Abdul Aziz Country HSE Manager Schlumberger WTA (M) Sdn Bhd

Andrew Garnett Director of UQ Centre for Natural Gas The University of Queensland

WORKSHOP ADVISORS

Helena Wu Team Leader New Development **Santos Limited** Member, SPE Asia Pacific Regional Technical Advisory Committee

Trey Shaffer Senior Partner **Environmental Resources** Management (ERM)

Workshop Objectives

The workshop objectives are to educate participants on the topic of emissions reduction, provide a workshop environment to learn from others in a variety of sessions and formats to better understand what other companies are doing across the energy value chain, and become more knowledgeable on technologies and solutions in managing and reducing emissions.

WORKSHOP STATISTICS



hours of peer-to-peer networking opportunities



30+hours of knowledge sharing and technical discussion



30expert-led technical discussion topics



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Non-member full workshop attendees can join SPE at no additional cost. Look for your exclusive offer by email shortly after the event.

LEAGUE OF VOLUNTEERS



Engage • Support • Contribute

Join our league of dedicated members who provide the energy that makes our society work.

- Enhance your leadership skills
- Contribute to programmes and activities with your knowledge and experience
- Meet and network with members near you and around the globe
- Demonstrate thought leadership in your area of expertise and interest at both local and international levels

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Technical Programme Preview

TUESDAY, 15 SEPTEMBER 2020

0800 - 0850 Arrival of Delegates, Registration and Welcome Refreshments

0850 - 0900 Safety Announcement by Hotel

0900 - 1000 Session 1: Acknowledgemen

Session 1: Acknowledgement of Country, Welcome and Introduction, Keynote Address

Co-Chairs: Brett Doherty, **Beach Energy Limited**; Bernadette Cullinane, **Deloitte Consulting Pty Ltd**

1000 - 1030 Group Photo / Coffee and Tea Break

1030 – 1230 Session 2: Energy Efficiency and L

Session 2: Energy Efficiency and Low Emissions Power Generation in Oil and Gas Operations

Session Managers: Nathan Blundell, **Arrow Energy**; Roger Van Hoek, **INPEX**; Ying Luo, **Santos Limited**

This session will discuss how oil and gas producers can approach energy usage and self-power generation to lower emissions intensity and improve energy efficiency across the value chain from well to end-customer. Historically, energy efficiency projects involved traditional activities such as process optimisation and waste heat recovery. Today, the use of renewable energy and energy storage can also contribute by reducing fuel consumption and emissions associated with power generation. This session will highlight the recent successes in reducing emissions intensity while still achieving production and cost management targets.

1230 - 1330 Networking Luncheon

1330 – 1530 Session 3: Reducing Flaring through Innovative Operations and Gas Management

Session Managers: Nathan Blundell, **Arrow Energy**; Vinita Rao, **Origin Energy**

This session will discuss new approaches to flare management that enable oil and gas producers to reduce emissions intensity. Whilst the use of flaring for traditional process safety events is an accepted practice, flaring for reservoir preservation and well management face a more challenging future against the ever-tightening expectations of government and communities. Flaring has a two-fold impact in a carbon constrained world - it increases emissions and reduces product available to be sold. When viewed through this lens, there is a strong business case to significantly reduce and/or eliminate flaring. The session will cover current and emerging methods of wells management during downstream shutdowns and how distressed gas or excess gas production could be used more efficiently.

1530 - 1545 Coffee and Tea Break

POSTER SOLICITATION & INFORMATION

All participants are encouraged to prepare a poster for the Workshop. Presentations on both research and field experience are welcomed. Posters, including unconfirmed / partial results, are to be presented at an assigned time and are open for discussion. Posters will be on display for the entire Workshop period. When preparing your poster:

- Avoid commercialism. No mention of trademarks / product name
- $\bullet\,$ Poster size should be approximately 0.8m x 1.2m (W x H) or size A0 in portrait layout
- · Identify topic by title, affiliation, address, and phone number
- Include a brief abstract that summarises the technology to be addressed
 Make the display as self-explanatory as possible
- Place the information in sequence: beginning with the main idea or problem, method used, results, etc.
- (Draw a plan keeping the size and number of illustrations in mind)
 Keep illustrations simple by using charts, graphs, drawings, and pictures to create interest and visually explain a point
- Use contrasting colours
- Use large print for narrative materials. (We suggest a minimum of 24 points or 3" high letters for the title)

*Note that the Workshop Programme Committee will review all poster abstracts / materials prior to display, and reserves the right to refuse permission to display any poster considered to be commercial in nature. If you are interested to participate, please email your proposed topic with a short abstract (between 200-300 words) to Renee Narellyn Wong at rwong@spe.org by Tuesday, 30 June 2020.

The Society of Petroleum Engineers (SPE) is a not-for-profit organisation. Income from this event will be invested back into SPE to support many other Society programmes. When you attend an SPE event, you help provide even more opportunities for industry professionals to enhance their technical and professional competence. Scholarships, certification, the Distinguished Lecturer programmes, and SPE's energy education programmes Energy4me are just a few examples of programmes that are supported by SPE.

1545 - 1745 Session 4: Carbon Capture, Utilisation and Storage

Session Managers: John G. Kaldi, CO2CRC Limited, Australian School of Petroleum; Ying Luo, Santos Limited; Andrew Garnett, The University of Queensland Centre for

The use of carbon capture utilisation and storage (CCUS) will likely need to be accelerated in order for oil and gas to continue to play a role in the future energy mix. Today, there are currently 18 large-scale carbon capture and storage projects in operation worldwide, storing a total of 40 million tonnes of carbon dioxide per year. The International Energy Agency estimates that by 2040, 2 billion tonnes of carbon dioxide will need to be stored every year to meet global climate goals. The scale of the challenge is huge. This session will discuss the actions required to deliver commercial, large-scale CCUS projects across Australia and Asia Pacific.

1745 - 1845 **Session 5: Poster Session**

1845 onwards Welcome Dinner

WEDNESDAY, 16 SEPTEMBER 2020

0900 - 1100

Session 6: Executive Panel Session: Redefining Business Model in the Context of Sustainability

Session Managers: Siti Fatimah Abdul Aziz, Schlumberger

Executives in this Panel Session will discuss how companies are redefining business models to meet the world's increasing appetite for energy while simultaneously reducing emissions. To thrive in the energy transition, companies will need to balance the increasingly challenging demands of a range of stakeholders including investors, regulators and customers. This panel session will also explore how executives are addressing and managing the changing perspectives towards the industry, the role of sustainability reporting and transparency in communication of progress towards a lower-carbon portfolio and how companies are reshaping their business models to achieve emissions targets and be positioned for the future.

1100 - 1115

Coffee and Tea Break

1115 - 1315

Session 7: Regulation as an Enabler for Emissions Reduction

Session Managers: Tim Flowers, Beach Energy Limited; Michael Wood, **Deloitte Risk Advisory Pty Ltd**; Mariana Michael, Sarawak Shell Berhad

Regulation is an essential mechanism to encourage emissions reduction in line with climate science and global commitments such as The Paris Agreement. Regulation can take many forms, from prescriptive license to operate

requirements to advanced market-based mechanisms such as emissions trading schemes.

Many participants in the oil and gas sector are seeking clear, consistent and long-term regulations to increase investor confidence in long-term, capital intensive projects. This is at odds with the current policy environment where interpretation of the Paris Agreement through regulations has come under heavy scrutiny by parts of society, magnified by significant media attention. Energy and climate change policies are at risk of becoming political footballs, that change with each government.

From market-based incentives that encourage new technology, to command and control approaches, this session will explore what is in the armory of policy makers and how they can influence oil and gas operators. Beyond the direct impact on operations, consideration will also be given to regulations impacting downstream customers.

1315 - 1415 Networking Luncheon

1415 - 1615

Session 8: New Technologies to Measure, Monitor and **Reduce Emissions**

Session Managers: Kevin Young, DNV GL Australia Pty Ltd; Craig Nicol, Graphene Manufacturing **Group Pty Ltd**

Technologies and approaches to emissions measurement, monitoring and mitigation are rapidly evolving. These new technologies have the potential to also increase safety and enhance operational efficiency. While cost-effective mitigation methods are already being employed across exploration, development and operations, additional monitoring and measurement technologies including advanced sensors coupled with data analytics are now being employed. Furthermore, the use of external monitoring technologies, like drones and satellites equipped to measure emissions, are being deployed by a range of third parties including governments, NGOs and private companies.

This session will discuss both traditional and innovative approaches to measure, monitor and reduce emissions including inspection and repair techniques, proactive maintenance of process equipment and advanced sensing technologies that could revolutionise the detection and monitoring of emissions.

1615 - 1630

Coffee and Tea Break

1630 - 1700

Session 9: Workshop Summary and Closing Remarks

Co-Chairs: Brett Doherty, Beach Energy Limited; Bernadette Cullinane, Deloitte Consulting Pty Ltd

Review of session summaries

SPONSORSHIP SUPPORT INFORMATION

Sponsorship support of the event helps offset the cost of producing workshops and allows SPE to keep the attendance price within reach of operation-level individuals, those who benefit most from these technical workshops.

Supporters benefit both directly and indirectly by having their names associated with a specific workshop. While SPE prohibits any type of commercialism within the workshop room itself, the Society recognises that supporting companies offer valuable information to attendees outside the technical sessions

SPONSORSHIP CATEGORIES

Sponsorship categories are offered on a first-come basis. Please contact SPE to enquire and verify the availability of categories. Existing supporters have the opportunity to renew the same level of support for annual workshops.

SPONSORSHIP BENEFITS

In addition to onsite recognition, SPE will recognise sponsors on the SPE website and in all printed materials for the workshop. Based on the category selected, supporting companies also receive logo visibility on promotional workshop items.

FOR MORE INFORMATION

For a detailed list of available sponsorship opportunities. including benefits and pricing, contact contact Renee Narellyn Wong at rwong@spe.org.

GENERAL INFORMATION

DOCUMENTATION

- Proceedings will not be published; therefore, formal papers and handouts are not expected from speakers.
- Work-in-progress, new ideas, and interesting projects are sought.
- Note-taking by attendees is encouraged. However, to ensure free and open discussions, no formal records will be kept.

WORKSHOP DELIVERABLES

- The committee will prepare a full report containing highlights of the Workshop and the report will be circulated to all attendees.
- Powerpoint presentations will be posted online and provided to attendees after the Workshop. Provision of the materials by Discussion Leaders will signify their permission for SPE to do so.

COMMERCIALISM

In keeping with the Workshop objectives and the SPE mission, excessive commercialism in posters or presentations is not permitted. Company logos must be limited to the title slide and used only to indicate the affiliation of the presenter.

ATTENDANCE CERTIFICATE

All attendees will receive a Workshop attendance certificate. This certificate will be provided in exchange for a complete Attendee Survey Form.

CONTINUING EDUCATION UNITS

This Workshop qualifies for SPE Continuing Education Units (CEU) at the rate of 0.1 CEU per hour of the Workshop.

TRAVEL/VISA

Attendees are advised to book their airline tickets early. All travellers must be in possession of passports valid for at least six (6) months with proof of onward passage. Contact your local travel agent for information on visa requirements.

DRESS CODE

Business casual clothing is recommended. The Workshop atmosphere is informal.

REGISTRATION FEE

- Registration fee ONLY includes all workshop sessions, coffee breaks and luncheons for the registrant. Accommodation is NOT included.
- SPE will provide details of recommended hotels upon receipt of your registration.
- Taxes: Registration Fees are made free and clear of, and without any deduction or withholding for and on account of, any taxes, duties or other deductions. Any such deduction or withholding, if required by the laws of any country are the sole responsibility of the Participant.

REGISTRATION POLICY

- Registration fee MUST be paid in advance for attending the Workshop.
- Full fixed fee is charged regardless of the length of time the registrant attends the Workshop, and cannot be prorated or reduced for anyone.



Methane Emission Measurement & Mitigation (MEMM)

14 September 2020 | Brisbane, Australia

Course Description

This one-day session features view on best practices for Carbon Management with a focus on fugitive methane reduction. It will include global and local examples of Carbon Regulations as well as give tools for de-risking regulatory compliances and field-proven methane reduction technology cases. It will be introduced within the framework of the UN's Sustainable Development Goals (SDGs) and regional Environmental and Social Metrics as proposed by governments or regulators. This is especially relevant to oil and gas production and the consequent action/strategies producers need to have in place for Regulators, Banks, Investors and Governments. In particular, the session will include two technical discussions regarding the most time-critical components of methane management compliance - fugitive emission leak detection and compressor seal vent gas measurement. The session will also look at the typical data management requirements. It will also cover strategic planning, emissions quantification methodologies, facility design, data management, pneumatics, compression, leak detection and flaring.

Objectives

Inform senior leaders and technical practitioners of the immediate actions required, and solutions available, to manage methane emissions. Promote currently available technologies to achieve practical and cost-effective methane mitigation solutions as well as basic Carbon accounting which satisfies the needs of investors or bankers.

Your Instructors



Darcy Spady is an Independent Director and Technical Advisor, and was the 2018 SPE International President. His theme during his Presidency was Community Consensus and he has a focus on Methane measurement and reduction. He has a 33 year career in the Conventional Oil, Heavy Oil and Unconventional Gvas business on both the

operator and service sector of our industry. He is also an active grain farmer on surface land above the Lone Pine Creek field in Central Alberta. He is a graduate in Petroleum Engineering from the University of Alberta in Canada, and a Professional Engineer in the Province of Alberta.



Jackson Hegland is the Executive Director of the Methane Emissions Leadership Alliance: an industry association composed of methane reduction technology and service providers from throughout Canada and the United States. He is also President of Modern West Advisory, a strategic consulting firm working with oil and gas

industry, government, and clean technology providers on emission reduction & management activities. Jackson has over 12 years of experience as an oil and gas professional building carbon management strategies, collaborating with industry and government on climate change policy design, and evaluating & executing greenhouse gas emission reduction projects throughout Western Canada. He graduated from Princeton University with a degree in Environmental Economics.

Daily Technical Programme

MONDAY, 14 SEPTEMBER 2020

0900 - 1030 Session 1: Plan & De-risk Regulatory Compliance

This session will introduce the Global Requirements within the framework of the Paris Climate Accord and adherence to the UN SDGs. Also, we will examine planning steps to identify & quantify fugitive emissions, and some technologies on the market to employ.

- Strategic Planning
- Emissions Quantification
- Methodologies
- Regulatory Program Oversight Examples

1030 - 1045 Coffee Break and Discussion

Session 2: Facility Planning & Data Collection 1045-1200

This session will highlight the discussion of modern design in production operations to minimise fugitive emissions, and how to set up the architecture to collect the data. It will also examine some key issues and common pitfalls.

- Strategic Planning
- New Facility Design
- Data Management

1200 - 1330 **Networking Luncheon**

1330 - 1515 **Session 3: Design & Verify**

This session will outline specific design parameters on production & field related devices, and new technologies that are available as well as older methods for production operations.

- Pneumatics
- Compressors
- Dehydrators

1515 - 1530 Coffee Break and Discussion

1530 - 1700 **Session 4: Detection & Operations**

This session will examine the importance of leak detection and accurate ways to identify and measure. It will look at drilling operations, completion operation and decisions in the process, and workovers with a view to minimising emissions. Some global limits on flaring volumes will be discussed, as well as alternatives to flaring. To summarise we will look at how the compiled data is reported, and the importance of carbon accounting for both carbon markets and investor "social license" issues.

- Leak Detection (LDAR)
- Drilling, Completions & Workovers
- Flaring (Example Flare Limits)
- Production of methane/black carbon
- · Data compilation & carbon accounting



SPE WORKSHOP: Thriving in the Energy Transition by Stepping Up on **Emissions Management**

15 – 16 September 2020 | Brisbane, Australia



Yes		No	Membership	p Number			
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Society of Petroleum Engineers

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