

Energy Colloquium

Advances in avoiding gas hydrate problems

Prof. Bahman Tohidi

Heriot Watt University

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ABSTRACT:

Gas hydrates are crystalline compounds that can form when water and suitably sized molecules of gas are brought together under favorable conditions, usually at low temperatures and elevated pressures. They resemble ice but unlike ice can form at temperatures much higher than 0 °C. Gas hydrates could form in numerous hydrocarbon production and processing operations, causing blockage and serious operational and safety concerns. Gas hydrate problems can be avoided by various techniques, including dehydration, insulation and/or heating, injection of thermodynamic inhibitors, use of low dosage hydrate inhibitors, or a combination of the above. However, offshore/deep-water/arctic, high water-cut, and environmental concerns demand more efficient and cost effective solutions. The Centre for Gas Hydrate Research at Heriot-Watt University has been active in gas hydrate research since 1986. The Centre has developed extensive test facilities; thermodynamic modelling and technical expertise in addressing various gas hydrate challenges, through various Joint Industry Project and government funding. In this presentation we report the latest developments associated with avoiding gas hydrate problems, including; techniques for monitoring gas hydrate safety margin and detecting early signs of hydrate formation, including some case studies.

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