

Evaluation of New Low Dosage Hydrate Inhibitors

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Low dosage hydrate inhibitors (LDHIs) are part of a recently developed hydrate control technology, which can be more cost-effective than traditional practices such as the use of large quantities of thermodynamic inhibitors, e.g. methanol and glycols. Two classes of LDHIs are under study in several laboratories, one of them is called kinetic inhibitors (KHIs) and the other one is known as antiagglomerants (AAs). Several different specific LDHIs are already being successfully used in the field. This work presents results on the performance evaluation of four new compounds that have been synthesized as part of a long term research program. The experiments to determine the performance of the new polymeric compounds were carried out in a device that has a high-pressure stainless steel cell with sapphire windows and temperature and pressure probes to continuously monitor over several days the appearance of hydrates. The device is based on the absorption of hydrocarbons from a natural gas into water to form the corresponding clathrate hydrate and to determine by comparison with a reference system, in diagrams temperature vs. time and pressure vs. time, the efficiency of the new low dosage inhibitors at known concentrations, at the initial pressure of 5 MPa and in the range of (290.15 to 276.15) K. The experimental results indicate a positive performance as LDHIs for some of the new compounds in the concentration range (0.01 to 1.0) mass %.