MATLAB SOFTWARE FOR CONTROL OF VISCOSITY ACTION OF ANTIAGGLOMERANTS INHIBITORS.

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ABSTRACT
The aim of this work was to provide a manageable software tool that gives an immediate answer about the hydrate formation in a oil&gas plant and how to prevent it. In order to estimate the classical thermodynamic conditions of hydrate formation, and the viscosity characteristics of multiphase systems, different algorithms were developed and then implemented in Matlab. Matlab language was used to get a lightweight and easy to manage prediction system. The proposed program is based on several tests of experimental data obtained on anti-agglomerant inhibitors AAs (ammonium quaternary salts and phosphonium quaternary salts). Torque moment was monitored for all AAs added to the solution in different multiphase systems obtained in a stirred reactor at exercise pressure from 40 bar to 60 bar. From the torque moment experimental data was performed a linear regression that took in account the better concentration of each AAs tested. From the comparison of the different AAs linear regressions has been possible to get a value of “efficiency” of each AAs at typical pipeline exercise pressure. The value of “efficiency” elaborated by software indicates when and whether is possible use a thermodynamic or a AAs inhibitors. The proposed software can be actively modified and extended for any other type of AAs following the experimental procedure and obtaining the “efficiency” value from the linear regression.

Keywords: gas hydrates, AAs inhibitors, multiphase system.

INTRODUCTION
The equilibrium thermodynamic conditions for gas hydrate formation are now well characterized [1, 2, 3] but the viscosity of hydrate in multiphase system is not well developed. In the past this has led to flow assurance hydrate formation such as insulation of pipelines and thermodynamic hydrate inhibition (i.e. methanol or mono ethylene glycol). The limits of this two methods are that as exploration and subsequent production go to deeper depths of water hydrate

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