Methane Production through Combined Depressurization + Hydrate Swapping method in the Sandy Porous Medium under Permafrost Temperature Conditions

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1- Introduction

Methane gas production recovery from gas hydrates
• Depends on the characteristic of porous media
• Production techniques.
In this work,
• Combined pressure reduction and Flue gas injection
• Permafrost temperature conditions (-1°C to -5°C)
• Different porous medium
Objectives
- To analysis effect of temperature on methane recovery
- To analysis effect of methane self-preservation on CH₄-CO₂ swapping
- To analysis the effect of sediments on CH₄ recovery in permafrost conditions.

2- Background Information

- Permafrost gas hydrate deposits are metastable state, represent mainly gas hydrate system and hard to distinct from ice.
- Gas hydrate particle covered with thin ice films which prevent further hydrate dissociation.
- Presence of clay particle inhibits hydrate crystal growths. Methane hydrate formation, stabilization and preservation in frozen clay is unclear.
- Conversion of pore ice to hydrate is quite rapid below 273K.

3- Experimental Setup

4- Experimental Data Processing

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<th>Exp 1</th>
<th>26</th>
<th>0</th>
<th>10% CO₂</th>
<th>101</th>
<th>-2.36</th>
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<td>10% CO₂</td>
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</tbody>
</table>

6- References


CERE
Center for Energy Resources Engineering