SAGD Downhole Flow Control JIP

The Steam Assisted Gravity Drainage (SAGD) Downhole Flow Control - Joint Industry Project (JIP) was initiated in 2008 by C-FER Technologies in conjunction with several SAGD operators. The objective of the JIP is to advance and gain a better understanding of the experience, state-of-the-art and performance of downhole steam injection outflow control devices (OCDs) and production inflow control devices (ICDs) in SAGD applications.

Two Phases of the JIP have been completed. Phase I focused on steam injection control devices and methods and Phase II focused more on production inflow control devices. The JIP Participants are currently considering the work scope for Phase III, where potential areas of focus include full or scaled testing of selected devices to validate Phase II work and further advancement of the steam injection simulator.

Phase I: Steam Injection Control

Phase I was completed in 2012 and consisted of the following two main work programs:

- A state-of-the-art review of SAGD steam injection control devices and methods, plus in-well and reservoir monitoring technologies.
- A numerical assessment of the thermal-hydraulic behaviour of various steam injection control completion alternatives, specifically investigating the key factors which may affect performance (well depth, horizontal length, device type, etc.). A steam injection simulator was developed to conduct the numerical assessment.

Phase II: Production Inflow Control

Phase II was completed in 2015 and consisted of the following four main work programs:

- An investigation of the performance (through analytical and CFD modelling) of an ICD that is tailored for the operating conditions and control objectives of SAGD production wells.
- Advancement of the Phase I steam injection simulator into a desktop version (i.e. fast computing time) that participants can use.
- An update of the state-of-the-art review, but with focus on both steam injection and production inflow control devices and methods.
- Project meetings and workshops to provide participants with the opportunity to share their experience (insights, challenges, lab testing results, field results, etc.) related to SAGD downhole flow control.

Examples:

Tubing–Deployed Steam Injection Devices & Methods

Liner–Deployed Production Inflow Control Devices & Methods