



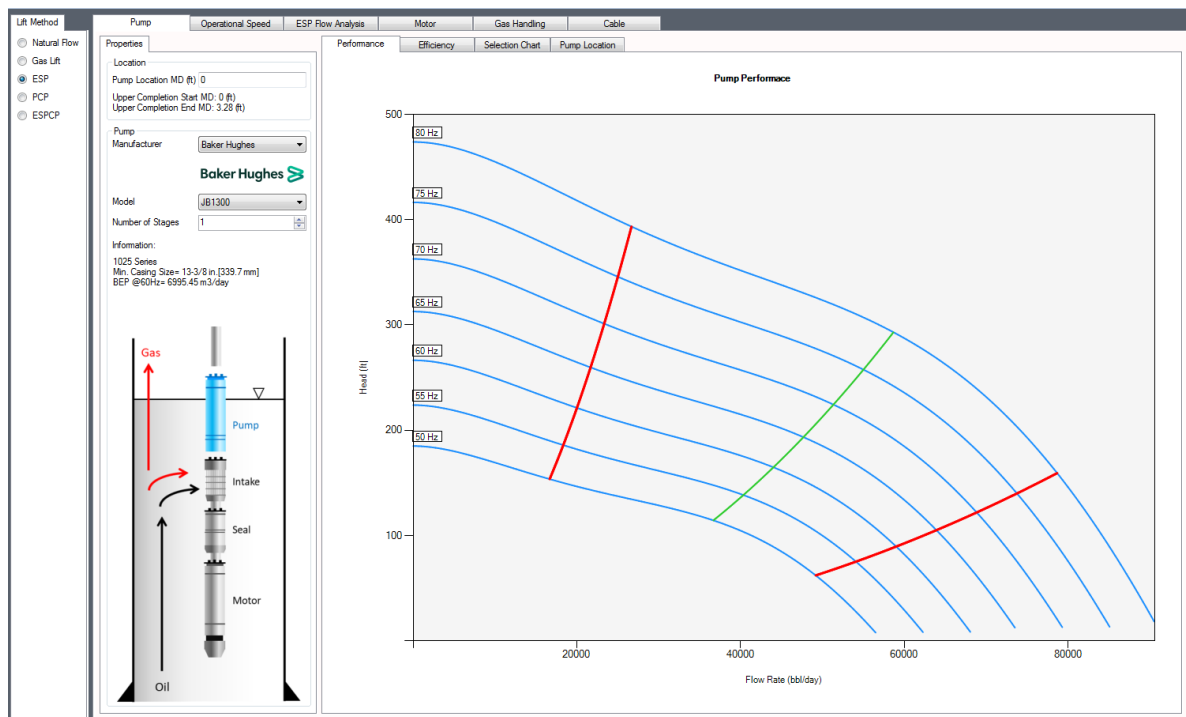
Eushaw Dynamic Simulator-**Thermal**

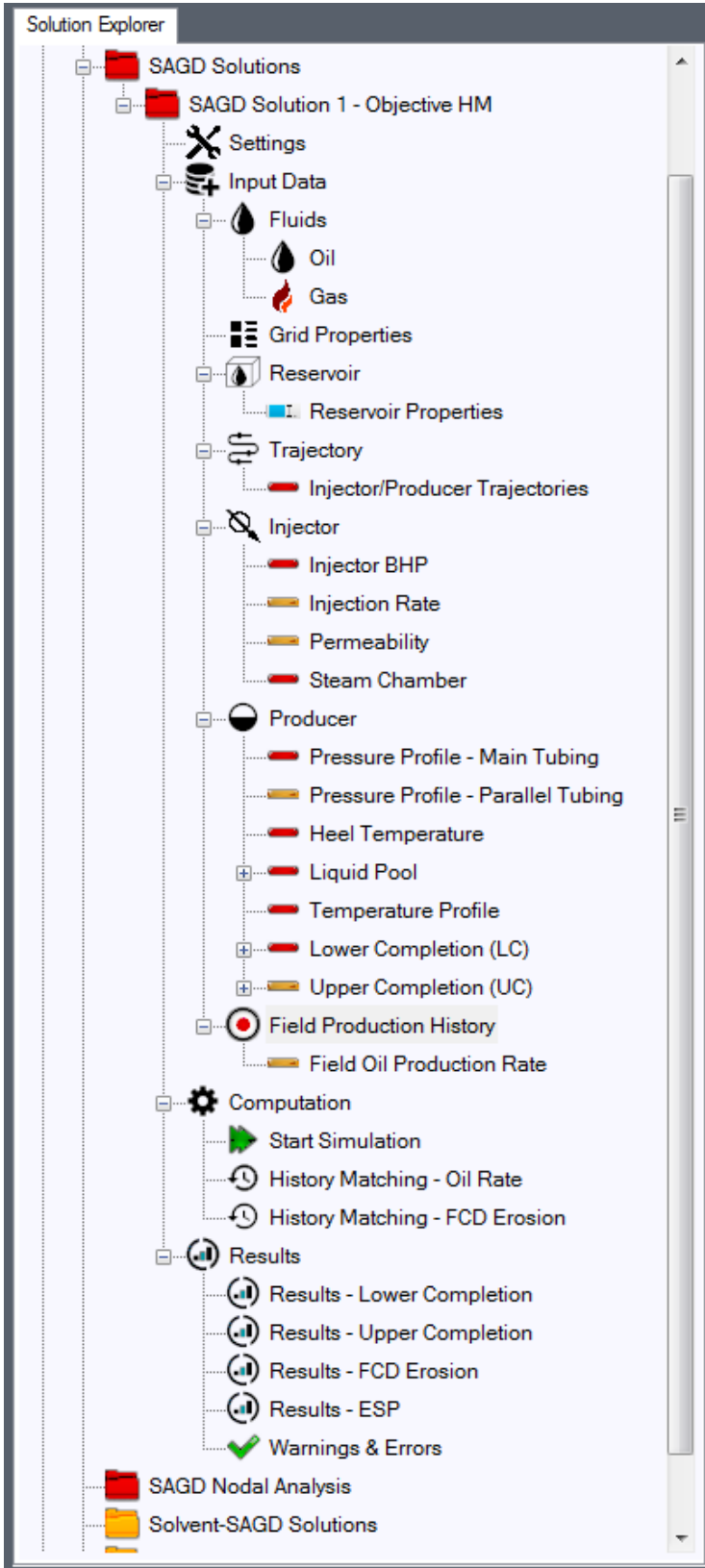
The new generation of multiphase flow simulators

The Eushaw Dynamic Simulator is Parallel-Dynamic Software that handles the complex non-linear flow surrounding the producer in all applications. Eushaw-**Thermal** can solve most of the challenges associated with Flow-Control-Device modelling and design. The Eushaw-**Thermal** simulator is continuously improved and many modules in Eushaw-**Thermal** are state-of-art, and in many respects, it is 10-20 years ahead of competitors.

Key Features

- The simple completion data input interface is designed on the basis of segments/joints mostly used by completion engineers
- FCD library
- Heat-transfer analysis along the liquid pool to calculate the onset of flashing
- Automated history matching
- Circulation and bull-heading options for SAGD
- Simple Nodal analysis module for quick understanding of the FCD
- Erosion material library for Vickers hardness, impingement effect for ductile and brittle materials
- PSD library for erosion evaluation





Eushaw-**Thermal** is Parallel-Dynamic software that handles the complex non-linear flow surrounding the producer in all applications. Eushaw-**Thermal** can solve most of the challenges associated with Flow-Control-Device modelling and design. Modelling options include predictions of steam flashing-breakthrough (Coning I and II); bitumen viscosity-temperature dependency; heat-loss at the base of the liquid-pool; FCD erosion (Oka-erosion module); and automated history-matching.

Complete System Simulation

Eushaw-**Thermal** provides a platform for operators to keep all their data in a digital format and to easily analyze and model their wells with a state-of-art simulation engine. This helps to integrate complex modules and modeling into all areas of a business.

Such digital transformation fundamentally changes how you operate and deliver value to share-holders. It is also a cultural change into comfortable manner. The software that keeps the operator data, all service providers tools and most recent researches in academia into fully parallelized software, and user have access to such platform in a fraction of a second.

The structure in Eushaw-**Thermal** is structured to guide the user to ensure all data needed for modelling are input. The user immediately knows which part to modify as more data become available.

Properties

FCD Device Information

Material: Tungsten-Carbide

Grade: C6 (WC-Co)

General PSD Library

Formation: Inclined-Heterolithic-Stratification

Type: Rich-Clay IHS

Particle D: 10 Guide

Particle Size Distribution

The graph displays several curves representing different particle size distributions. The y-axis is labeled 'Particle Diameter (microns)' and ranges from 0 to 500. The x-axis is labeled 'Frequency (%)' and ranges from 0 to 100. One curve is highlighted in red, showing a distribution that is heavily skewed towards smaller particle diameters, with most of the frequency concentrated below 100 microns.

Advanced Physics

- The Eushaw Dynamic Simulator is only software that can handle erosion and use history matching to calculate the FCD half-life. This unique capability enables proactive planning and a unique way to understand their FCD capability in long run.
 - An extensive library of PSD data for different types of formations in Athabasca and all of the materials used in Thermal-FCD applications is available in the software to help the user to model and analyze completions with limited knowledge of erosion modelling.
 - Instability modelling for steam coning
- The Eushaw Solvent module includes multiple EoS models: Peng-Robinson and Soave-Redlich-Kwong. The Solvent module also includes the linear solution (Flory-Huggins Theory) and PC-SAFT EoS to model Asphaltene Phase Behaviour.
- The Eushaw user can calculate the “Azeotropic Point” for every steam chamber pressure.
 - The user also can predict or match the Asphaltene Yield

