EFrac

A Compositional Fracturing Simulator for Complex Fracturing Fluids

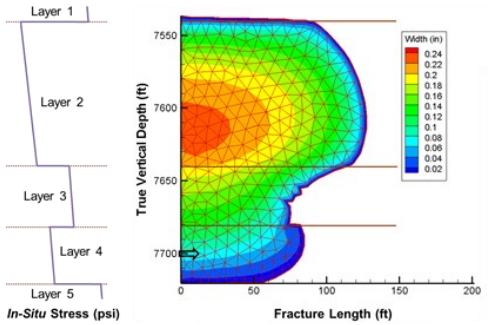
What is EFrac?

A Three-Dimensional, Compositional Hydraulic Fracturing Simulator

EFrac is a simulator (with combined fracture, well productivity and wellbore models) for designing and optimizing energized fracturing treatments. Fracture model solves five, partial differential equations that govern pressure, proppant concentration, fluid saturation, temperature and fracture width on a dynamic unstructured mesh

Motivation behind EFrac

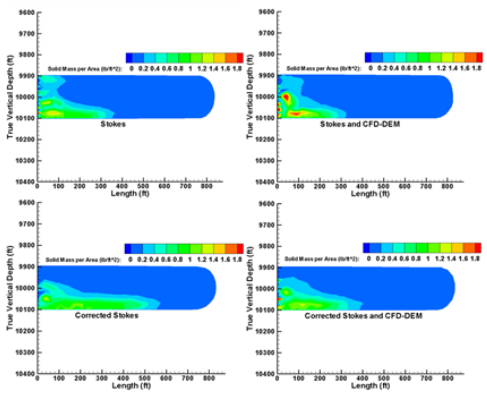
Current practices in energized treatments, using gases such as N_2, CO_2 and foams, remain rudimentary in comparison to other fracturing fluid technologies. None of the available 3-D fracturing models are able to capture the thermal and compositional effects that are important



when using energized fluids.

Truly Unique Capabilities

- A wellbore model which relates bottom-hole and surface variables (pressure, temperature, proppant concentration and rates).
- A well productivity model that allows a comparison of different frac fluids and fracture designs.
- Accurate proppant transport model which considers hindered settling and proppant retardation effects.
- Thermal and fluid compressibility effects are considered to model compressible fracturing fluids.
- Multiple layers with different stress and mechanical properties to estimate height growth.



Simple, Intuitive User Experience

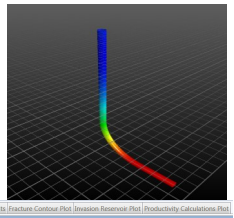
A standardized, easy to use and flexible interface.

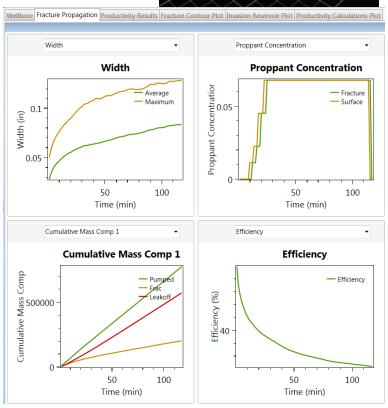
INPUTS – Entering various inputs has been simplified and user can switch between various systems of units. The input requirements are:



- Geological Properties
- Pumping Schedule
- Fluid/Proppant Properties
- Reservoir Properties
- Wellbore Properties
- Simulator Settings.

RESULTS – A standout feature with the EFrac interface is its emphasis on results – both their interpretation and visualization. Our interface offers an integrative comparative analysis. The simulation results consist of graphs, charts, values, contour plots and animation videos that are organized into several sections. They are:





- Wellbore
- Fracture Propagation
- Productivity results
- Fracture Contour
- Invasion Reservoir
- Productivity

Consulting and Training Services

Infuse your project with our customized solutions.

At any stage-gate of your project, we can furnish customized solutions for your fracture treatment design and fluid selection problems.

About Us

The methodology underlying EFrac is developed by Dr. Lionel Ribeiro, Deepen Gala and Dr. Mukul Sharma. Our goal is to systematically design energized fracturing treatments and compare different frac fluids from a well performance and cost perspective.

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