MFrac Suite

Enhanced hydraulic fracturing design and analysis
Hydraulic fracturing design and analysis software enables you to target the most productive zones, determine effective fracture treatments, and monitor reservoir stimulation in real-time. MFrac Suite software enables you to create and execute efficient well stimulation designs in both conventional and unconventional plays to maximize production and extend the life of your well. By managing your planning process more effectively and integrating real-time data, minifracs, hydraulic fracturing, well production and economics, you gain confidence in your treatment plan and arrive at more meaningful reserves estimates.
MFrac Suite Hydraulic Fracturing Software

MFrac Suite hydraulic fracturing software is field proven and trusted. It makes it easy to design your treatment plan using established engineering design principles to increase your recovery, target your most productive plays while avoiding trouble zones, and optimize your treatment schedules.

For more than 25 years, engineers have trusted MFrac Suite software to provide reliable hydraulic fracturing predictions for enhanced investment decisions, better well placements, optimized stimulation treatments, and increased ultimate recovery.

MFrac Suite software is available in English, Russian, and simplified Chinese editions.
Design and Evaluation Simulator

The comprehensive MFrac™ hydraulic fracturing 3D design and evaluation simulator offers a wide variety of options including 3D fracture geometry and auto design features as well as integrated proppant, acid and foam treatment solutions. The fully coupled proppant transport and heat transfer routines, together with a flexible user interface and object-oriented development approach, enable you to easily use the program for fracture design, treatment analysis, and parametric analyses. With a fully incorporated log analysis module, generate rock properties from logs such as Gamma Ray, Neutron and Sonic using various correlations for more accurate fracture design.

Precise hydraulic fracture placement and spacing
The MFrac simulator incorporates easy-to-use tools for importing, manipulation, and analysis to optimize hydraulic stimulation design and treatment to improve well performance, and optimize stimulation treatment.

Real-time or replay analysis
Simulation input data can include a variety of acquired parameters, such as pump rates, bottomhole and surface pressures, proppant concentrations, and nitrogen and carbon dioxide injection rates versus time.
Discrete Fracture Network (DFN) Simulator

The MShale™ simulator predicts fracture propagation and its extent in fractured and naturally fractured reservoirs. The program offers user-specified DFN characteristics where the fracture network spacing, aperture, and aspect ratios are input and deterministic DFN characteristics where the stress differences (i.e., \( \sigma_2-\sigma_3 \) and \( \sigma_1-\sigma_3 \)) and network properties are input. Proppant transport also is unique: the proppant distribution can be uniform, all in the dominant fracture, or calculated according to a user-specified minimum allocation in the dominant x-z fracture plane.

Volume estimates in fractured and naturally fractured reservoirs

Quickly analyze the activation of natural fractures in your shale and coalbed methane reservoirs to better estimate stimulated reservoir volume.
MiniFrac Design and Analysis

The MinFrac™ minifrac diagnostic tool implements the latest fracture-injection and pressure decline theory. Use the results of minifrac analysis to derive hydraulic fracturing and reservoir characteristics, and to design and refine your primary hydraulic fracturing treatment. MinFrac can be used for pump-in/shut-in, steprate and pressure-decline analysis, along with history matching of geomechanical properties.

Real-time rate and pressure data during and after injection

MinFrac can determine instantaneous shut-in pressure, closure pressure, fracture efficiency, individual fracture geometry, leakoff coefficients, near wellbore friction, and permeability.
Data Management

The MView™ real-time data management application is simple and reliable. Its flexible structure enables you to use the application as a general data management system. MView allows you to share real-time data or replay the dataset with the MinFrac™ minifrac application, the MFrac™ hydraulic fracturing simulator, the MShale™ natural fractures simulator, the MFrac- Lite™ hydraulic fracturing simulator, and the MWell™ wellbore hydraulics simulator for use as simulation input. These data can include pump rates, bottomhole and surface pressures, proppant concentrations, and nitrogen or carbon dioxide injection rates versus time.

Produced-Water Reinjection Simulator

Our MPwri™ produced-water reinjection simulator is used for predicting hydraulic fracture pressure and geometry associated with produced-water reinjection and water flooding. The application was specifically designed for evaluating the effects of injecting large volumes of fluid over long periods of time with fracture efficiencies approaching zero. Major features include: 1) thermal and poroelastic stresses, 2) layered thermal and water fronts, and 3) numerous internal and external filtration resistance mechanisms.
Wellbore Hydraulics Simulator

The MWell™ wellbore hydraulics simulator calculates surface and/or bottomhole pressures, gravitational head, restrictions, transport times, and hydraulic power requirements in the wellbore. Near-wellbore and perforation pressure losses can also be calculated to determine the bottomhole treating pressure in the formation.

The application was designed for real-time analysis to calculate bottomhole treating pressure from surface conditions. You can also use the application as a design tool for determining wellbore pressure characteristics prior to treatment.

2D Fracturing Simulator

Our easy-to-use MFast™ analytical 2D fracturing simulator for Geertsma-de Klerk (GDK), Perkins-Kern/Nordgren (PKN), and ellipsoidal geometries performs parametric and model comparison studies quickly.

The methodology used in the MFast simulator is comparable to a lumped analogy: The simulator uses constant coefficients derived from our MFrac™ design and evaluation simulator, applying steady boundary conditions in a homogeneous formation.
Production Modeling

MProd™ is a single-phase analytical production modeling application that assesses the production for a variety of treatment scenarios using a comparison with unfractured wells. With data imported from our MFrac™ design and evaluation simulator, the MProd numerical results are used by our MNpv™ application for forecasting the fractured well’s net present value or return on investment. This application enables you to simultaneously simulate reservoirs with different fracture lengths to determine optimum fracture geometries.

Forecasts NPV and ROI

MNpv™ economic treatment optimization compares the revenue benefits and cost penalties associated with your operations. As a result, you can maximize stimulation profitability and optimize hydraulic fracture conductivity and length. In particular, it forecasts the net present value (NPV) and return on investment (ROI) of your stimulated wells. With MNpv software, you can manage your planning process more effectively to improve the economics of your stimulation treatment.