

Stim-Lab

Well Stimulation and Completion Sciences

Stim-Lab is a leading provider of well stimulation and completion sciences. Our laboratory testing, research and consulting services provide a unique resource for individual companies as well as multi-client consortia. These services include small and medium scale testing as well as one-of-a-kind large scale tests. Stim-Lab testing equipment, protocols and expertise ensure accuracy and integrity for results you can depend on.

Consortia

Stim-Lab multi-client consortia are the resource the industry depends on for highly-focused investigations of critical materials and methodologies. Organized as short and long-duration studies, the consortia represent the interests of a broad selection of industry-leading operators and service companies.

Two major Stim-Lab industry consortia are:

Proppant Consortium

- Established in 1989
- Objective is to characterize all commercially available proppants used in oil and gas well fracture simulation
- Proppant flowback mechanisms and abatement
- Comprised of 30 member companies

Acid Consortium

- Established in 1993
- Objective is to investigate matrix and fracture acidizing in vertical and inclined wells
- Comprised of 10 member companies

These consortia benefit their members in many ways. For example, the Proppant Consortium is the developer of the Predict-K™ production prediction simulator. Based on consortium testing and available only to consortium members, the software allows realistic production prediction with a stand-alone application simulator.

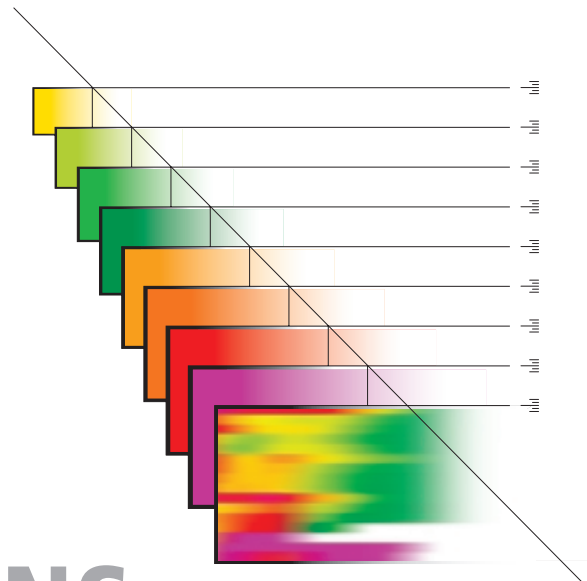
Based on findings from nearly two decades of study, the simulator supports realistic post-frac production prediction by helping engineers systematically evaluate the effects of proppant type and concentration, proppant embedment, non-Darcy flow, multiphase flow and gel cleanup. The Predict-K simulator also includes the industry's most comprehensive database of the physical and performance characteristics of sand and specialty proppants.

Services

Stim-Lab offers extensive, industry-specific laboratory facilities. These facilities are a unique resource for a broad range of laboratory and testing services, including:

- Drilling, cementing and perforating
- Hydraulic fracturing
- Completion engineering
- Other large scale testing
 - Friction reduction testing
 - Large scale tool erosion testing
 - Screen evaluation
- Acidizing
- Quality control
 - Proppant
 - Fluid
- Reservoir analysis
- Core flow testing

MEASURED SOLUTIONS



GOHFER®

Stim-Lab, in association with the industry-recognized stimulation consulting firm of Barree & Associates, offers the GOHFER hydraulic fracturing simulator, the ultimate design tool for creating realistic 3D treatments in complex, heterogeneous reservoirs with vertical, deviated and horizontal wells. Easy-to-use GOHFER software is a complete 3D fracture geometry model and design simulator for:

- Log analysis
- Data management
- Real-time pressure analysis
- Production forecasting
- Treatment economics

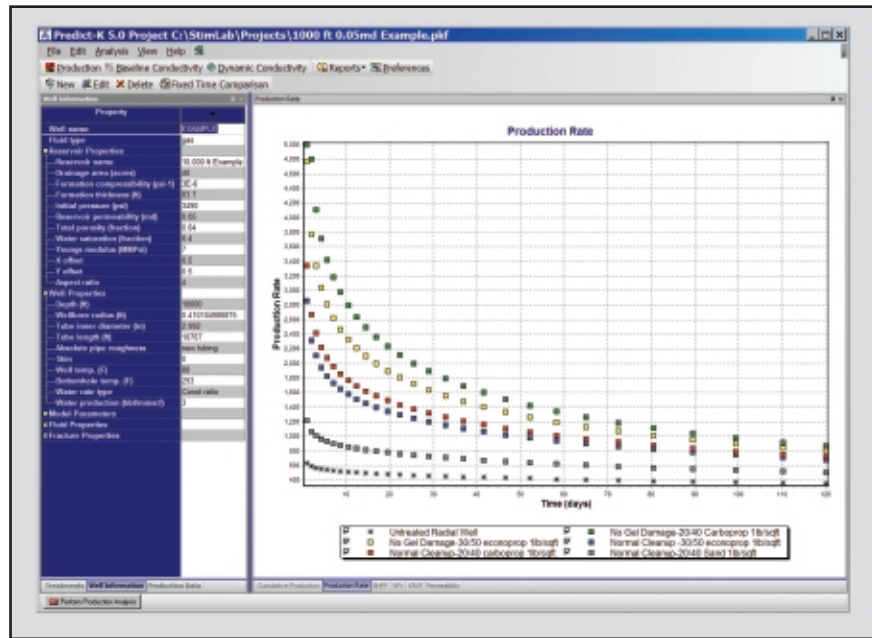
The new GOHFER 2005 software builds on 15 years of continuous expansion and refinement employing established formulations verified in the laboratory and the field. The GOHFER 2005 simulator is a flexible tool that provides users with "quick-look" job design capability and the power of unlimited data integration.

Stim-Lab also provides support for the GOHFER hydraulic fracturing simulator with scheduled courses as well as training at your site.

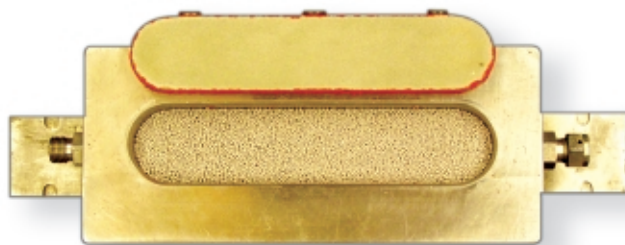
Completion Engineering Services

Stim-Lab provides an extensive range of completion consulting services, from single wells to field and regional studies. These services are enhanced by the resources of Integrated Reservoir Solutions (IRS), a Core Laboratory Reservoir Management division that

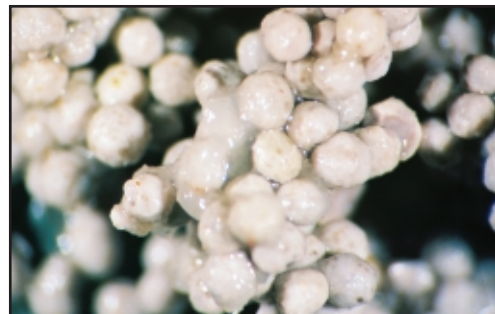
conducts specialized reservoir optimization projects. IRS conducts multi-client geological and petrophysical studies and rock property databases used in single well, field, regional and basin-specific applications. Two key studies (with over 35 member companies each) are the Deepwater Gulf of Mexico Regional Core and Biostratigraphic Study and the Worldwide Rock Catalog™.



Post-frac production prediction from Predict-K software for variations on proppant type and fracture fluid cleanup



API conductivity cell packed at 2lb/ft with ceramic proppant



Gel residue left in proppant pack (20X)

For more information, please visit our website at:

www.corelab.com/protechnics
www.corelab.com/stimlab



PROMORE

Downhole Sensor Technologies

PROMORE provides “Your Eyes to the Reservoir” with innovative HP/HT downhole sensor technology. Our sophisticated surface electronics and proprietary electronic resonating diaphragm (ERD™) sensor technology eliminate downhole electronics. The absence of downhole electronics results in unequalled reliability in HP/HT operating environments.

PROMORE ERD technology features:

- No downhole electronics
- Industry leading reliability (+95%)
- Industry’s highest temperature rating (480°F)
- Flexibility in design and use
- Best-in-class resolution (+/- .00005% of full scale)

Permanent downhole monitoring systems allow for improved well productivity, reduced operating costs and increased reservoir performance on a real-time basis for the life of the well.

Several conveyance methods allow the best-suited system for the application and completion design:

- Tubing Conveyed (MORE™)
- Casing Conveyed (MORE^C™)
- Coil-Tubing Conveyed (CT-MORE™)

The MORE^T monitoring system is conveyed on production tubing and can measure single- or multi-point pressure and temperature

The MORE^C monitoring system is conveyed on the exterior of the production casing with the use of custom-engineered mandrels and sensor housings. Communication to the wellbore and/or reservoir is provided through internal and external pressure ports. For reservoir pressure monitoring in observation wells, the MORE^CEX system marries the Owen retrievable tubing gun (RTG) perforating assembly with the MORE^C system. The result is added assurance of sensor communication to the reservoir.

Once in place, the MORE^C system begins transmitting vital pressure and temperature data through out all stages in the life of the well. Continuous real-time data are available during cementing, underbalanced drilling and perforating, and fracturing operations. The MORE^C system provides vital information for reservoir analysis and production optimization even during workover operations that take most systems out of service. Routine workover operations provide excellent opportunities for build-up tests and provide quicker return to production.

The patented CT-MORE monitoring system is built fit-for-purpose. Custom-engineered solutions include ERD sensors, distributed temperature sensors (DTS), and capillary pressure control lines and thermocouples – all within a dry environment inside the coil tubing.

Surface Data Acquisition

The PROVision DSP™ data acquisition system provides the latest in sophisticated surface electronics. Combining a user-friendly interface with leading-edge digital signal processing (DSP) results in one of the most powerful stand-alone remote terminal units (RTU) available.

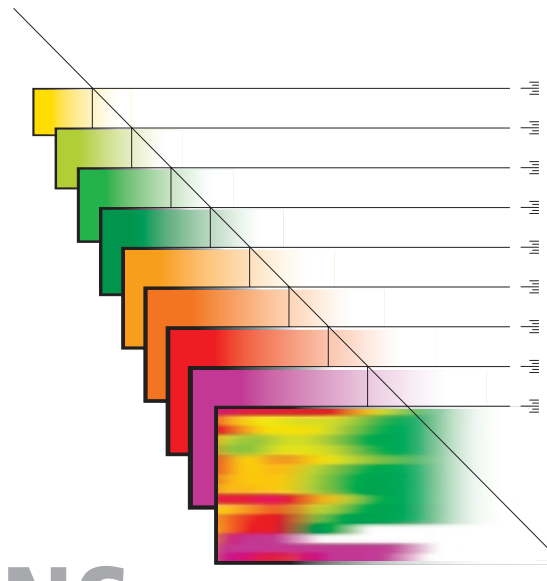
Monitoring Services

Fiber Optic Distributed Temperature

The FibreNET™ system acquires distributed temperature profiles in vertical and horizontal wellbores, and in low and extreme temperature environments using the industry’s widest range of deployment options.

Fracture Stimulation Monitoring

The PROFRac™ system allows hydraulic fracture operations to be optimized with real-time bottomhole pressure and temperature. Confidence in the accuracy of



MEASURED SOLUTIONS

real-time bottomhole frac treating pressure allows engineers to maximize proppant placement by avoiding a premature flush. Equally important, post-treatment bottomhole pressure (BHP) history matches for fracture geometry determination are greatly improved with measured BHP instead of surface-calculated BHP.

Production Enhancement

PROMORE permanent downhole monitor (PDM) systems optimize field profits and enhance production by allowing continuous assessment of the downhole producing environment. Benefits include:

- Artificial Lift Control – Monitor the intake and discharge of ESP, PCP, or Rod Pump systems to optimize production, prevent premature pump failure, and determine pump efficiency and performance
- Jet Pump Optimization – Monitor the intake of a jet pump on a real-time basis to ensure maximum drawdown and production
- Gas Lift Optimization – Monitor drawdown below the bottom valve and temperature at each valve

Enhanced Oil Recovery

Permanent downhole monitoring provides valuable data needed to implement and maintain optimized EOR project production and injection profiles. In pilot and commercial flood project stages, PDM data is used by the reservoir engineering team to compare simulated reservoir models to the actual field data for more accurate flood analysis. Many different types of projects benefit from PDM solutions, including:

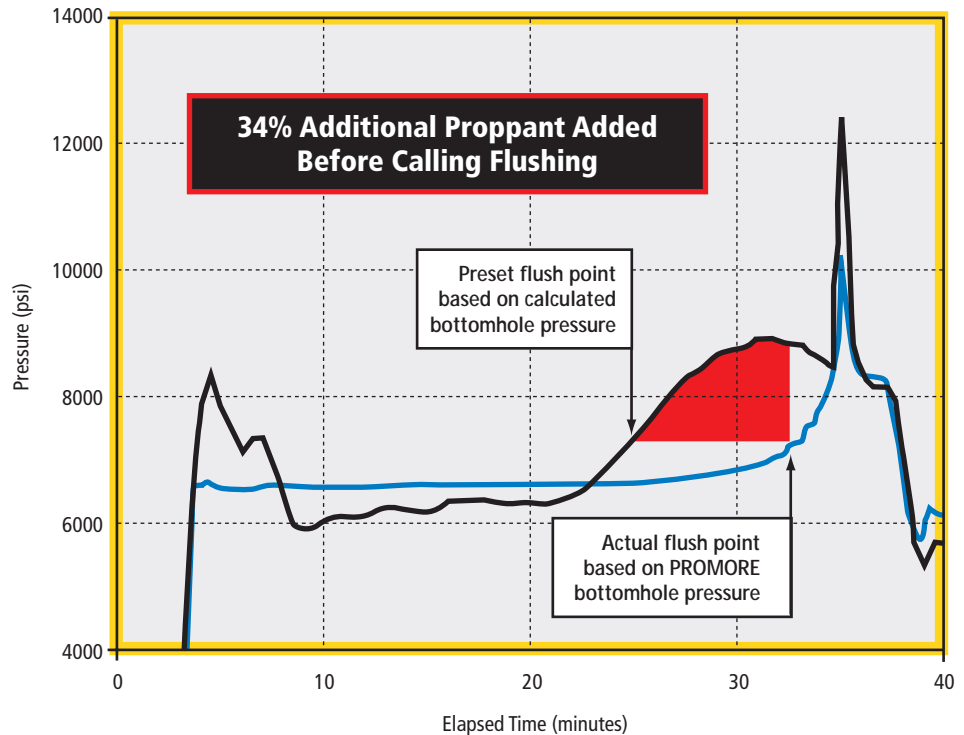
- Water and CO₂ floods
- WAG (Water Alternating Gas) floods
- Miscible floods
- SAGD (Steam Assisted Gravity Drainage)
- Cyclic steam floods

For more information, please visit our website at:

www.corelab.com/protechnics
www.corelab.com/promore

Hydraulic Fracture Stimulation Monitoring

PROMORE Real-Time BHP vs. Calculated BHP



— Real-Time Bottomhole Pressure — Calculated Bottomhole Pressure



2 7/8 in., 6.5lb More^T sensor



Owen Oil Tools

Perforating Systems and Specialty Tools

Owen Oil Tools provides perforating systems and specialty tools for production enhancement. Our specialized gravel pack systems and deep-penetrating technology overcome formation damage and reduce breakdown pressures during fracturing operations.

With over 300 uniquely shaped charge designs, Owen offers the industry's widest range of perforating systems and associated equipment. As a result, your production benefits from precise application of the correct technology.

This advanced technology includes:

- **Raptor™** perforating systems – a family of high-performance, deep-penetrating guns that includes the advanced HERO™ (high efficiency reservoir optimization) system
- **Spiral Shogun™** system – the leading multi-phased exposed gun system
- **Phantom™** perforating systems – providing gravel pack applications with big-hole, low-debris perforating
- **StimGun™** system – produces a high-pressure gas pulse immediately after the perforation event; results in perforation breakdown and extends fractures along the plane of the perforation
- **StimTube™** system – propellant-assisted perforation breakdown and near-wellbore stimulation through tubing applications

- TCP systems – a complete line of tubing-conveyed perforating tools, specialized systems and technical support

Pipe Recovery

Owen provides a full range of pipe recovery devices designed to maximize performance, minimize damage to tubulars and make fishing attempts easier, including:

- Split Shot®
- Coil tubing cutters
- Tubing/Drill pipe cutters
- Super tubing cutters
- Segmented casing cutters
- Wafer-type casing cutters
- Severing tools

Specialty Tools

Specialty tools from Owen provide solutions for challenging applications.

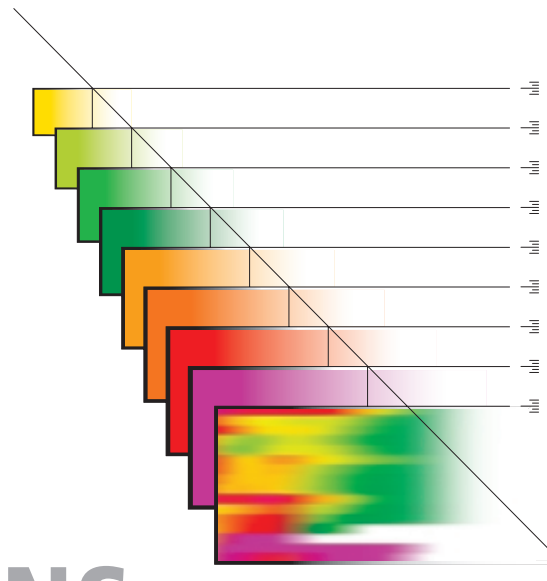
- The GT X-Span™ system is a multi-dimensional, gas-tight casing and tubing patch technology. Metal-to-metal seals with gas-tight elastomers are rated for all well temperatures and conditions. The result is the highest burst and collapse pressure ratings in the industry.

- Owen PrismSM slickline firing systems provide a safer, cost-effective means of conveyance for Owen explosive products
- Safe Fire initiating systems offer the industry's safest firing systems for many applications, including perforating, pipe recovery and setting bridge plugs

Safety Training

Owen conducts safety seminars that provide ongoing training for operator and service company personnel. The one-day courses focus on safety in the use and handling of oil and gas industry explosive devices. Based on API RP-67 (Recommend Practices for Oilfield Explosive Safety), the courses are intended for all industry personnel who may work with or be around explosives at the wellsite, from the operating company engineer or rig foreman to the experienced service company explosive user.

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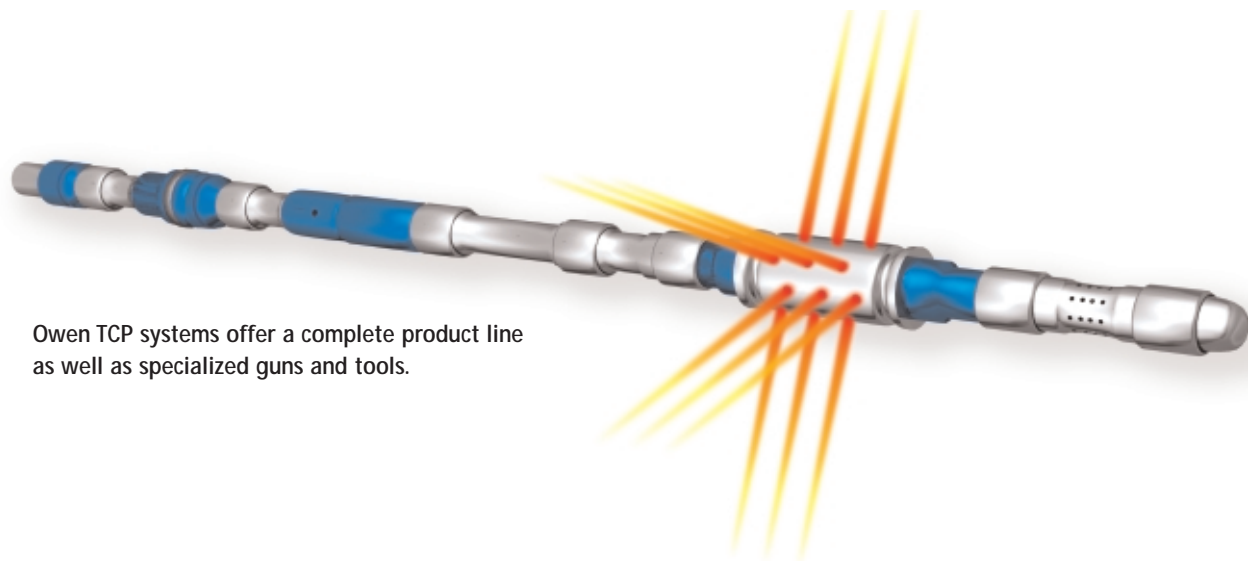




Perforation testing ensures optimal performance.



Cutaway of GTX-Span set in 4 1/2 in. 12.6 lb casing.



Owen TCP systems offer a complete product line as well as specialized guns and tools.

For more information, please visit our website at:

www.corelab.com/protechnics

www.corelab.com/owen

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