TORRENT Frac-Pack Solution
Create and maintain high-conductivity fractures for improved recovery
High-conductivity frac-pack operations can enhance production...

but, too often, stimulation programs are designed around equipment, rather than your pay zone.

In low-permeability reservoirs or formations with drilling-induced damage, creating large, high-conductivity fractures can increase production and lead to more profitable wells.

Achieving optimal fracture geometries and increasing reservoir contact often require high pump rates and large proppant volumes across long intervals. While these aggressive program designs have the potential to unlock more production, the effectiveness of a frac-pack job is ultimately dictated by the capability of vessels, equipment, and frac fluids. If any one of those items fails to deliver the necessary performance, it can compromise short- and long-term production performance and diminish recovery factors, while driving up intervention costs:

- Inadequate vessel storage capacity creates nonproductive time associated with trips to shore, along with re-loading downtime.
- Insufficient pumping capabilities can limit the effectiveness of stimulation treatments.
- Frac fluids can shear under higher pump rates and fail to deliver proppant, or cause screenouts.
- High pump rates can erode frac-pack equipment and casing, leading to failures.

You need a solution that can extract the most value from your pay zone.
The TORRENT™ frac-pack solution leverages our extensive experience and technology offerings in sand control and pressure pumping to help operators plan and execute holistic, reservoir-driven frac-pack programs. This approach helps create and maintain high-conductivity fractures, using pre-job modeling and real-time monitoring and analysis, high-performance downhole tools, advanced stimulation vessels and equipment, customized frac fluids, and proactive flow assurance technology.

The result: More efficient, effective operations—and increased return on investment

Design the optimal stimulation program based on reservoir properties

The planning phase of a TORRENT frac-pack job begins with your pay zone. Baker Hughes experts use our proven MFrac™ fracture modeling and design simulation suite to target the most productive zones while avoiding trouble spots. The program reliably models frac-pack propagation so we can determine the best fracture treatment design. Every TORRENT fracture fluid program is engineered to match reservoir properties and pumping requirements, and also leverages customized crosslink and break times for maximum effectiveness.
Create high-conductivity fractures and increase reservoir contact

Once the optimal stimulation program has been developed, the frac fluid is delivered via our high-performance SC-XP™ tools and the most advanced fleet of stimulation vessels in the industry.

**Improve operational reliability and efficiency**

The SC-XP platform covers a wide operating envelope, supporting high pump rates and large proppant volumes for enhanced fracturing. The system offers several performance tiers so equipment can be selected based on job requirements for added flexibility. Robust construction provides reliable operation, even in high-pressure/high-temperature environments. Our SC-XP tools’ erosion-resistant ports can withstand the most extreme pump rates and volumes, ensuring a high-quality pack, while protecting the casing from damage.

When running in hole, the SC-XP system offers fast conveyance rates because of its ISO V0-rated seal element packer, which also allows for high-rate circulation prior to the job for effective wellbore cleanup. During the stimulation treatment, the tool supports set-down weight in all positions, enabling positive location for added reliability. And, if desired, SC-XP tools permit the effective treatment of multiple zones or long intervals for maximum reservoir coverage.

The SC-XP system also doubles as an isolation device, reliably sealing off the lower completion without the need for a straddle seal assembly. A sliding sleeve mechanism and seal surfaces located in the frac-pack extension are isolated from the slurry during treatment, and, once closed, the sleeve locks in place to prevent unintentional opening.

_The SC-XP tool can handle screenout pressures as high as 15,000 psi (1034 bar) and reliably deliver up to 1.6 million lb (725,748 kg) of proppant at 65-bpm pump rates._
SpectraStar fracturing fluid uses advanced crosslinker technology that helps keep proppant in solution until it reaches its intended destination, even when traveling at high velocities through small flow paths.

The TORRENT frac-pack solution uses SpectraStar™ fracturing fluid, which features proprietary organoborate crosslinker and breaker technology. The fluid offers superior shear recovery to ensure reliable delivery of proppant into the formation—even at high rates and volumes—to create large, high-conductivity fractures and increase flow area. The quick-healing bonds of the specialized crosslinker technology also help avoid premature screenouts.

Once pumped, enzymes and other breakers customized to meet well conditions effectively break down the fluid so it can easily flow back, leaving behind no production-inhibiting residue for maximum regain conductivity—and maximum hydrocarbon flow.

Ensure superior shear recovery and maximum regain conductivity
Baker Hughes has the most advanced fleet of stimulation vessels in the industry. Huge dry and liquid storage capacities paired with extreme pumping capabilities help support the most demanding jobs.

These vessels, built to exacting specifications, feature rugged equipment and redundant systems to provide the reliability you need for uninterrupted, efficient pumping operations.

Our StimFORCE™ modular stimulation system, designed to fit on common supply vessels, features customized, skid-based pumping equipment. This cost-effective and operationally flexible pumping package completes our fleet, allowing us to meet your most demanding sand control pumping requirements, anywhere in the world.

During frac-pack operations, our JobMaster™ monitoring software and EZTreat™ analysis and treatment control are used to view job progress in real time. This provides the insight needed to make on-the-fly adjustments to operational parameters to optimize the treatment. Data can be remotely accessed and displayed on any Internet-connected device, whether you are at the office or on the go.
Maintain full hydrocarbon flow and reduce intervention costs

Preserving your high-conductivity fractures starts before the stimulation program begins. To prevent fines from migrating within the formation, we pump our SandChek™ fines stabilization agent with the acid treatment to keep fines in-situ during the frac-pack job.

Our ConFINE™ fines fixing agent captures loose fines and prevents them from migrating to the near-wellbore area to help increase long-term production. ConFINE proppant treatment uses a proprietary nanoparticle technology that creates a high surface force attraction to capture migrating fines, rather than relying on oily, sticky, or tacky filming agents for fines fixation. This solution maintains proppant permeability and helps prevent completions plugging, equipment erosion, and surface facility clogging.

And for multi-year, proactive flow assurance, our Sorb™ Ultra solid inhibitor technology effectively prevents scale, paraffin, and asphaltenes from forming in the near-wellbore area. Sorb Ultra is a chemical-infused proppant added to the fracturing fluid that essentially functions as intermediate-strength proppant. The particles keep production flowing, and help to delay or even eliminate costly production interruptions, workovers, and well interventions. Sorb Ultra technology also helps to prolong the effectiveness of squeeze jobs by absorbing more inhibitor chemicals, or “recharging,” to ensure maximum sustained production and increase the longevity of squeeze jobs.

Contact your Baker Hughes representative today or visit www.bakerhughes.com/TORRENTFP to learn more about how our TORRENT frac-pack solution can help you create and maintain high-conductivity fractures and maximize long-term production on your next frac-pack job.