Halliburton Completion Tools

A SOLUTIONS OVERVIEW FROM THE GLOBAL LEADER IN COMPLETIONS
The oil industry is one of the toughest businesses in the world. It’s remote, it’s gritty, and it’s constantly evolving. There is a reason why, year over year, even in a tough economic climate, Halliburton is still the No. 1 service company for well completions and production. We adapt, we pioneer, and we blaze new trails to further our technologies and efficiencies. Our tactical approach, along with our commitment to health, safety, and environment (HSE) and service quality, are what keep us in our position as the completions market leader.

Helping our customers reduce costs and increase production for projects in even the toughest of circumstances has been, and always will be, our priority. With our complete portfolio of technologies, capabilities, and experience, we continue to stay one step ahead.

When the going gets tough, you don’t have to know how to solve your completion challenges. You just have to know who to call.
Making a Difference.
Maximizing Efficiencies.
Improving Ultimate Recovery.

**MAKING A DIFFERENCE IN DEEP WATER**

Halliburton offers completion solutions and equipment designed to improve efficiencies in tough deepwater completions. Through innovative, reliable solutions and reservoir-focused technologies, Halliburton can help operators reduce rig time and maximize reservoir performance.

- eMotion®-LV Remotely Operated Isolation Barrier Valve
- LinX® Monitoring Systems
- Enhanced Single-Trip Multizone (ESTMZ™) System
- DepthStar® and SP™ Tubing-Retrievable Safety Valves
- Imperium™ Reservoir Management Platform
- XtremeGrip™ Expandable Liner Hanger
- CleanWell® Technology
- FlexRite® Isolated Tieback Multilateral System
- Endurance Hydraulic Screen®
- EcoStar™ Electric TRSV
- VersaFlex® Big Bore System
- Perma-Series® Permanent & X-Trieve™ Retrievable Production Packers

**MAXIMIZING EFFICIENCIES IN UNCONVENTIONAL RESERVOIRS**

In unconventional plays like shale, margins tend to be razor thin. To assure long-term success, it is important that operators make the best possible decisions in order to maximize the return on their investments. Halliburton offers innovative unconventional completion solutions that reduce overall completion cost, remove risks, and increase speed to production through accelerated development of technologies.

- Fas Drill® and Obsidian® Frac Plugs
- Illusion® Dissolvable Frac Plug
- RapidStage® Multistage Stimulation Systems
- Elect™ Monobore Frac Sleeve Systems
- Swellpacker® Isolation Systems
- ZoneGuard® Openhole Isolation Packers
- VersaStim® Expandable Liner Hanger System

**IMPROVING ULTIMATE RECOVERY FROM MATURE FIELDS**

Mature fields account for more than 70% of the world’s oil and gas production. With so much volume coming from decreasingly produced reservoirs, it is vitally important that operators maximize recovery and extend the producing life of mature wells.

Halliburton offers completion solutions for mature fields designed to help customers improve oil and gas production while minimizing water cut. Additionally, thanks to the broadest offering of products and services in the industry, operators can benefit from greater equipment reliability and improved lifetime performance of mature wells.

- EquiFlow® Autonomous Inflow Control Device
- SmartPlex® Downhole Control System
- Evo-RED® Bridge Plug
- DataSphere® Permanent Monitoring Suite
- Swellpacker® Isolation System
- XtremeGrip™ Low ECD System
- LatchRite® Pre-milled Window Multilateral System
- Intercept® Retrievable Bridge Plug
- Perma-Lach® PHL Packers
- NE™ Tubing-Retrievable Safety Valve
Liner Hanger Systems

Running liners is not without risk, especially with wellbores that are often challenging to liner deployment. Wells with high-pressure differentials and extreme temperature ranges can threaten tool integrity. This can lead to non-productive time (NPT), which drives up cost. These extreme environments require liner system solutions that can effectively manage the liner to total depth, while mitigating risks and withstanding severe conditions.
Liner Hanger Systems

OPERATIONAL SIMPLICITY AND RELIABILITY

Expandable Liner Hanger Systems
Our expandable liner hanger (ELH) systems have been run more than 10,000 times since they were first deployed in 2001. These hangers are specifically designed for medium to heavy-duty applications, and are field-proven to improve circulation rates, installation times, and wellbore integrity. This system helps operators achieve high-performance wells faster, with less risk and at lower costs.

VersaFlex® Big Bore Systems are designed specifically for deepwater and subsea markets, and are ideal for complex well conditions. They do not require landing in a predetermined profile, thus helping to eliminate complications common to positioning in mudline/casing wellhead profiles.

VersaFlex High-Torque Systems allow drill-in with liner capabilities by providing high torque ratings, compressive and tensile loading, and high circulation rates.

VersaFlex Breech Lock Systems enable operators to deploy a custom-tailored solution specifically for extended-reach and long openhole horizontal completions.

XtremeGrip™ Systems are metal-to-metal expandable liner hangers that are ideal for use in deepwater and offshore applications and wherever long liners are deployed. These systems are designed to mitigate risks and maintain hang-weight capabilities at elevated temperatures.

MINIMIZE RISK AND MODULAR DESIGN CHALLENGES

Conventional Liner Hanger Systems
Regardless of system selection, the goal is always to get the liner to bottom as effectively and efficiently as possible. Our MatchSet™ liner hanger systems allow for all aspects of a standard liner hanger installation.

MatchSet™ Conventional Liner Hanger Systems consist of slip type liner hangers including mechanical or hydraulic-set options coupled with a full range of integrated liner-top packers, tieback receptacles, and other complementary components required for a variety of applications.

Case Study
XTREMEGRIP™ SYSTEM OFFERS METAL-TO-METAL SOLUTION FOR COMPLEX DEEPWATER WELL
An operator in the Gulf of Mexico had just finished drilling the final section of its most recent deepwater well. A liner hanger was required to reliably run approximately 4,000 feet (1,219 meters) of 7¾-inch. production liner to depth, cement the liner hole annulus to isolate the production sand, and hang the liner with a liner-top anchor/seal package – a feat that had not been performed without issue when using conventional equipment.

Over 4,000 feet of casing was run to the bottom of the deviated well, which reached a maximum deviation of 50 degrees. Halliburton performed the cement job, isolated the formation, and set the hanger. The hanger expanded under pressure very close to what our modeling engineers predicted. The job was a success with zero NPT, and the customer has placed more orders for the XtremeGrip™ system for its future Gulf of Mexico jobs.

Proven Success
Halliburton expandable liner hangers have been run more than 10,000 times since they were first deployed in 2001. These liner hangers are not just field tested – they are field proven.
Wellbore Service Tools

Halliburton offers a complete line of wellbore service tools worldwide, incorporating the most advanced technology in tool design, materials, and deliveries, and including a broad portfolio of retrievable service tools and wellbore cleaning technology.

Our leadership in tools, along with our close customer collaboration and uniquely customized solutions, have helped lead the way in keeping Halliburton as the worldwide leader in completions.
Wellbore Service Tools

EFFICIENT WELLBORE CLEANUP AND DISPLACEMENT

CleanWell® tools can help operators dramatically improve performance and efficiency during the critical wellbore cleanup and displacement phase of well construction.

With high torsion and tension limits, many CleanWell tools can be run as a rotary bottomhole assembly, eliminating the need for a motor when drilling out cement. Advanced tools such as the InflowTech® test packer, BristleTech® brush and ValiTech® filter are designed to work quickly and efficiently to reduce rig time and expensive dedicated runs.

Single-Trip Solutions for Drilling

Drilling applications are common in preparation for plug and abandonment, window mill cutting runs, and pre-liner running cleanout trips. CleanWell tools can help operators get the wellbore ready for production quickly.

During plug and abandonment operations or to prepare for liner hangers, the DrillTech® scraper can remove debris from the wellbore for a reliable packer or liner hanger seal. Additionally, PowerMag® and MagTech® magnet tools are designed to retrieve ferrous debris during drilling and milling runs, so operators will not need to make a dedicated trip downhole.

Improving Fishing Runs

Many CleanWell tools are ideal for fishing applications, when efficient removal of debris is needed before operations can continue. The CleanWell VacTech® system can efficiently retrieve larger debris than would be possible with reverse circulation alone. Additionally, Mag Tech magnets and Vali Tech junk baskets can be run alongside conventional fishing tools to increase the chance of recovery.

Post-Perforation Debris and Packer Removal

CleanWell tools are frequently used to help ensure reliable well operation and reduce the risk of damage to other equipment after perforating the well. The Drill Tech deburring tool allows packers and other relatively fragile completion equipment to be safely run through perforation zones.

To help operators save time and money, the CleanWell Vac Tech system is run with other plug retrieval tools to create a single-trip solution to remove debris and retrieve packers simultaneously.
Unconventional Completions


Halliburton provides unconventional completion technology to help operators always stay one step ahead in improving efficiencies and trimming costs. Doing more with less isn’t a pipe dream – it’s something we do every day.
Halliburton Completion Tools

Unconventional Completions

DO MORE WITH LESS

Multistage Frac Sleeves
Halliburton RapidSuite® systems are designed to reduce stimulation time and improve stimulation performance in unconventional wells. RapidSuite technologies use activated sleeves that can open on demand to enable fast and accurate stimulation.

Elect® Frac Sleeve Systems are intelligent, programmable frac sleeves that offer unlimited stages, a fullbore inside diameter (ID), and more operational options – all without intervention.

RapidStage® Frac Sleeve Systems optimize the completion of multistage wellbores by enabling highly accurate placement of stimulation treatments without intervention.

RapidStart® Initiator CT (Casing Test) Sleeves provide an interventionless means of establishing a flow path at the toe of a completion during multizone fracturing or plug-and-perf operations.

Drillable Tools
As an industry leader in composite material products, Halliburton is well suited to deliver high-performance drillable tools for wellbore isolation, stimulation, remedial cementing, and plug and abandonment operations.

Fas Drill® and Obsidian® Composite Plugs provide reliable zonal isolation for standard and high-pressure/high-temperature (HP/HT) conditions.

Openhole Zonal Isolation Systems
Halliburton offers solutions that provide reliable, secure zonal isolation for well operations. These state-of-the-art systems use advanced technologies to help operators mitigate risks and improve efficiency.

Swellpacker® Isolation Systems provide a single-trip solution for effective zonal isolation in the well construction and completion process.

ZoneGuard® Packers are designed to deliver optimal sealing performance in a wide range of openhole conditions for stimulation, fracturing, or general production operations.

Dissolvable Tools
With more than 10,000 plugs in the ground in both full-wellbore and extended-reach laterals, Halliburton dissolvable tools have proven they can significantly reduce time to first production.

Illusion® Dissolvable Frac Plugs help reduce the risks and costs associated with conventional plug removal and, upon complete dissolution, provide an entire wellbore ID for future operations.

Case Study
RAPIDSTAGE® SYSTEM SAVES USD 1 MILLION FOR OPERATOR IN EAGLE FORD SHALE PLAY
A major operator in the Eagle Ford shale play was looking for the most cost-effective way to achieve a multizone interventionless stimulation, while effectively compartmentalizing the intervals.

Due to challenging well conditions, Halliburton customized a unique solution that included RapidStage® sleeves, a VersaFlex® expandable liner hanger, and Swellpacker® oil-swelling (OS) high-temperature (HT) packers.

The completion assembly was run to total depth in less than 18 hours, and the operator was able to continue 24-hour pumping operations and to interventionlessly stimulate multiple zones in less than two days. Compared to previous wells in the field, Halliburton saved the operator USD 1 million on this well.
Conventional Completions

For over 60 years, our industry-leading downhole completion tools have been toughing it out in the harshest oilfield conditions. Subsurface flow control tools, safety valves, and production packers are commonplace for operators when completing their wells.

Industry staples like Otis® X® and R® landing nipples and lock mandrels haven’t stayed relevant for so long because of a clever name or gimmick. It’s because Halliburton conventional completion tools are tough, reliable, and effective. Our tools and our people have a job to do – and our customers know that we get it done.
Conventional Completions

MAXIMUM EFFICIENCY AND PERFORMANCE

Award-Winning Safety Valves
Halliburton offers a full line of highly reliable and field-proven tubing-retrievable safety valves (TRSVs).

DepthStar® TRSVs operate at lower pressures than traditional systems, and have metal-to-metal seal construction that improves reliability in deepwater, ultra-deepwater, and HP/HT environments.

EcoStar™ TRSVs are the world’s first all-electric TRSVs, eliminating hydraulic fluid to enable an all-electric completion system and minimizing the risk of exposing electronics to produced wellbore fluids while retaining the same safety mechanism as today’s conventional safety valves.

HP/HT Completion Solutions
From our solid foundation in HP/HT, our ultra-HP/HT offerings include the SRH plugging system, SP TRSVs, and Perma-Series packers – all rated to 20,000+ psi and 450°F (232°C) and above, for the extreme challenges that today’s operators face.

Perma-Series® Packers are some of the most advanced permanent packers in the industry. Ideal for single or multizone completions, they feature a contoured slip design that maximizes casing contact.

Intervention Solutions
Halliburton intervention solutions include a huge variety of packers, plugs, and straddle systems designed to keep production online and postpone the need for expensive workover operations.

Evo-Trieve® Packer and Straddle Systems are high-performance, retrievable packoff devices that can be set at a predetermined point anywhere in the tubing or casing.

Evo-RED® Bridge Plugs provide a unique and highly efficient method of deploying and retrieving a downhole barrier. What make these plugs unique is that they incorporate a computer-controlled ball valve that can be remotely opened and closed multiple times without the need for any control lines or interventions.

Case Study

INDUSTRY’S FIRST ALL-ELECTRIC SAFETY VALVE HELPS REDUCE DEEPWATER CAPEX AND OPEX COSTS

Halliburton and Total E&P worked closely on the development of the first electric tubing-retrievable safety valve, solving a 30-year industry challenge to remove hydraulic actuation and its limitations from the subsea architecture. The constraints of hydrostatics, along with the fluid friction required to close a valve quickly in the event of an emergency, are both removed. This enables a fully electric completion system that has zero risk of exposing electronics to produced wellbore fluids – and no negative environmental effects.

Once proven, the EcoStar® e-DHSV was installed in well KS-F3 offshore Netherlands in conjunction with an electric subsea tree. This successful installation allowed Total to realize the world’s first all-electric control system installation with a downhole safety valve.

Over 97% Reliability Rate

That’s why our subsurface safety equipment is found around the globe. Since 1990, over 30,000 Halliburton safety valves have been installed.
Advanced Completions

The Advanced Completions holistic platform leverages Halliburton’s core completion strengths to drive a step change in efficiency for our customers.

We have brought together the technology capabilities of our Multilateral Systems, Sand Control, and Intelligent Completions in a variety of configurations, to offer the best possible solutions for the life of the well and the reservoir – in other words, to help operators maximize well performance and lower their cost per barrel.

» Optimize reservoir contact with Multilateral Systems
» Control unwanted fluids and solids with Sand Control Systems
» Manage downhole reservoirs with Intelligent Completions
Advanced Completions – Multilateral Systems

INCREASE RECOVERY AND ECONOMIC VIABILITY

Halliburton leads the industry in multilateral technology, with the widest array of systems for casing exit creation and wellbore completion.

Casing Exit Systems
Halliburton offers casing exit systems to suit any new or existing well application, with a focus on providing precise window geometry, eliminating steel debris and minimizing trips.

LatchRite® Pre-Milled Window Multilateral Systems are the industry’s most run, and most reliable, TAML 4 cemented junction construction system, featuring full-gauge mainbore access.

MillRite® Milled Exit Multilateral Systems are consistent, repeatable, and geometrically controlled exit windows that save time and can eliminate costly “roll-off” problems common with conventional milling systems.

Multilateral Completion Systems
FlexRite® Multibranch Inflow Control Systems enable subsurface control and monitoring of three or more laterals. They also allow a multilateral well to be completed with our sand screens, swellable packers, inflow control devices (ICDs), and interval control valves (ICVs) to help maximize production from each multilateral leg.

FloRite® Multilateral Completion Systems provide complete multilateral junction pressure isolation and enable through-tubing lateral access throughout the life of the well.

IsoRite® Systems provide through-completion mechanical control and intervention access to both laterals. No de-completion for workover operations is required.

Case Study
MULTILATERAL TECHNOLOGY SAVES USD 90 MILLION IN FIELD DEVELOPMENT COSTS
An operator developing a deepwater field off the Northwest Shelf of Western Australia required a minimal subsea infrastructure with tight lateral spacing in an environmentally sensitive area. Seventeen laterals were planned from seven wells targeting a sandstone reservoir. To manage production, these laterals were to be completed with sand screens and inflow control devices.

Halliburton recommended a simplified installation process, using the FlexRite® isolated tieback multilateral system with an innovative all-aluminum window joint, in order to reduce well construction time. As a result, the operator was able to achieve an estimated reduction of 80 days in rig time for this field development, for an estimated overall cost savings of USD 90 million, compared to a single-lateral development scenario.

Most Installations
Highest Reliability
Halliburton has constructed and completed more multilateral wells than any other service provider. At 99%, our installation reliability is the highest in the industry.

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Advanced Completions – Sand Control

MAXIMIZE RESERVOIR PRODUCIBILITY

Sand can present major obstacles to well production through reduced production rates, erosion of equipment, sand disposal and removal, and potential production loss. Halliburton offers dedicated equipment and services for gravel packing, high-rate water packs, frac-pack treatments, horizontal screen-only completions, and horizontal gravel packs – all of which can be supported with computer-simulated designs.

Multizone Systems
Our multizone system portfolio is based on over 25 years of experience with more than 3,000 zones treated with the STMZ™ and ESTMZ™ systems. They are proven to save days of rig time; capture short, low-reserve intervals that would normally be bypassed; and reduce risk by helping to eliminate running and retrieving packer plugs.

ESTMZ™ Enhanced Single-Trip Multizone Systems enable multizone isolation and the industry’s highest frac and proppant rating in a single trip. Ideal for deep- and ultra-deepwater completions, these systems have the potential to save not just days, but weeks of rig time.

Downhole Tools
Our downhole tools are based on customer needs and on many years of experience in designing and manufacturing downhole equipment such as packers, screens, and fluid-loss devices. Comprehensive research in the areas of metallurgy, elastomers, and erosion for our service tools are frequently conducted.

Liner-Conveyed Gravel Pack (LCGP) Systems improve drilling and completion efficiency by running the liner and screens, then gravel-packing all in a single workstring trip. This sandface solution helps reduce overall well costs.

Screens
Highly advanced Halliburton screens offer operators every conceivable advantage: precise particle size control, high strength and durability, excellent corrosion resistance, high-pressure tolerance, increased containment capacity, superior erosion resistance, and excellent backwash efficiency – all this, along with the advantages of our manufacturing process and commitment to continuous improvement and quality assurance.

Case Study

Halliburton Sets Industry Record for Jack/St. Malo Project

With wells reaching depths of 29,000 feet (8,839 meters), the Jack/St. Malo project in the Gulf of Mexico relied on state-of-the-art technology from Halliburton to save time and money.

The Halliburton enhanced single-trip multizone (ESTMZ™) completion system saved 25 days of rig time and improved time to production. To help save rig time, Halliburton fractured up to six zones in a single trip, placing more than two million pounds of proppant.

Robust and Efficient Solutions to Address Sand Control Challenges

As a technology leader, our sand control solutions have captured the best value of the assets with reliable, long-lasting completions.

Endurance Hydraulic Screen is a compliant screen that offers an alternative to traditional gravel-packing operations. The screen closes the annular gap between the screen and the formation in response to surface-applied pressure and provides active reservoir support.

EquiFlow® Autonomous Inflow Control Device (AICD) uses advanced fluid dynamics to significantly reduce unwanted water or gas production autonomously and with no moving parts.

PetroGuard® Shunt Screens enhance long-interval gravel packs with an improved shunt system.
Advanced Completions – Intelligent Completions

OPTIMIZE PRODUCTION WITHOUT COSTLY WELL INTERVENTION

SmartWell® Intelligent Completion Systems
Halliburton SmartWell intelligent completion technology allows operators to collect, transmit, and analyze downhole data; remotely control selected reservoir zones; and maximize reservoir efficiency in the short term and long term without intervention.

Imperium™ Reservoir Management Platform allows for remote access to real-time reservoir data with variable zonal and overall system health monitoring, as well as contingency options.

SmartPlex® Downhole Control System remotely actuates downhole control devices, providing simple and reliable zonal control of up to 12 interval control valves in a single wellbore, with a minimum number of the control lines.

DataSphere® Permanent Monitoring Suite
This suite encompasses the latest downhole pressure, temperature, flow, and density sensing technology, while helping to optimize production and validating reservoir models.

DataSphere® Array System is a reliable, permanent, multi-point reservoir monitoring system that provides distributed pressure and temperature sensing in single-zone and multi-zone land and subsea applications.

DataSphere LinX® Monitoring System uses sensors and an inductive coupler to enable accurate data collection, through casing, in real time, without halting production.

Remote Open Close Technology (ROCT)
Our range of ROCT products is designed to simplify well operations by removing wireline runs, thus helping reduce risk and increasing efficiency.

eMotion® Remotely Operated Downhole Control Unit is a computer-controlled, downhole hydraulic power unit that can be permanently deployed as part of the tubing for repeated remote actuation of a broad spectrum of downhole completion devices without control lines to surface.

Case Study
INTEGRATED SOLUTION MORE THAN DOUBLES RESERVOIR CONTACT

An operator wanted to increase reservoir contact in order to realize an immediate increase in oil production. Halliburton recommended an integrated solution that included both multilateral services and intelligent completion technology. The MillRite® milled exit multilateral system and SmartWell® interval control valve helped maximize reservoir exposure and increased production of the well.

As a result, the dual-lateral well more than doubled its reservoir contact, helping maximize the production rate. The immediate increase in production was coupled with an increase in the longevity of the well, since, for both laterals, the well could now be remotely controlled and monitored from the surface.

The Most Installations in the Industry
As the pioneer and leader in intelligent completions, Halliburton has installed more intelligent completions than any other service company. We have experience in virtually every type of well, environment, and reservoir.

Chemical Injection
Halliburton chemical injection provides operators with precise wellbore chemistry management designed to help promote flow assurance, optimize production performance, and reduce expensive intervention.

CheckStream® Downhole Chemical Injection System enables the safe and reliable delivery of chemicals to the wellbore, allowing continuous hydrocarbon production and wellbore integrity assurance.
We’ve Been Here. We’ll Be Here.

IT’S NOT JUST THAT HALLIBURTON IS THE COMPLETIONS LEADER. IT’S WHY.

Unparalleled Efficiencies and Results
We’ve given you dozens of examples of how Halliburton puts our technology and experience into action. For instance:

The world’s first electric tubing-retrievable safety valve, the EcoStar™ e-TRSV, solves a 30-year industry challenge to remove hydraulic actuation and its limitations from the subsea architecture.

Halliburton pioneered SmartWell technology in 1997, and has installed more intelligent completions than any other company in the world. They are proven to radically increase oil recovery for the life of the well.

CleanWell tools are built to enable single-trip operations, saving millions of dollars – and outperforming the competition.

The breakthrough Elect monobore frac sleeve system enables unlimited stages with fullbore ID, dramatically increasing recoverable reserves and changing the way people think about electronic systems.

VersaFlex and XtremeGrip expandable liner hangers have become the market-leading expandable liner hanger system, and these systems have been run more than 10,000 times since they were first released in 2001.

Unique EquiFlow autonomous inflow control devices restrict the flow of unwanted water/gas relative to oil – with no moving parts. They delay water breakthrough to maximize field recovery factors. Nothing in the industry can match their reliability or performance.

We have toughened up and tightened up to ensure that we offer the most reliable and efficient completion solutions.

Our dedication to continuous improvement, service excellence, global support, and collaboration with customers brings unparalleled efficiencies to clients worldwide.

Manufacturing and Technology Centers

LEADING IN RELIABILITY

Commitment to Service Excellence and Collaboration
No matter what your challenge, our unparalleled range of completion technologies and know-how can help. With a global completions presence in 55 different countries, and more than 3,500 employees who have an average of nine years of Halliburton experience, our professionals have deep experience in every type of environment, formation, and reservoir.

We’re committed to service excellence, continuous improvement, best-in-class performance, and “doing it right the first time.”

Halliburton doesn’t just sell tools – we also solve challenges. We lead the completions industry because we’re fast learners, and collaboration is part of our DNA.

What are your completion challenges? Let us help you begin solving these challenges today.
Sales of Halliburton products and services will be in accord solely with the terms and conditions contained in the contract between Halliburton and the customer that is applicable to the sale.