UPSTREAM

Drilling

Drive efficiencies in drilling operations
Limiting downtime in drilling operations keeps money in your pocket. Always searching for greater efficiency, the industry needs new ways to accelerate drilling speed and eliminate delays.

Baker Hughes, a GE company (BHGE), has transformed project economics with autonomous downhole technologies for decades. Today, we’re pushing for even more radical efficiencies by leveraging GE’s digital industrial capabilities to fast track process automation and lock down predictable performance.

You can trust that BHGE will deliver a quality hole, ready to produce, and placed in your reservoir’s most productive zone.

With BHGE, you can:
• Drill with the speed you need
• Stop tripping and keep drilling
• Proactively manage safety and drilling risks
• Place your well with pinpoint precision
• Finish with a quality wellbore
Drill with the speed you need

Drilling efficiencies are predicated on speed. BHGE combines the industry’s most powerful drilling motors, cutting edge drill bit technology, and mud systems with advanced lubricants to help you achieve penetration rates that will keep you at top drilling performance.

Beat the day-versus-depth curve with the right bit

One of the best ways you can boost rates of penetration (ROP) in tough environments is with BHGE’s Kymera™ hybrid drill bit. The Kymera bit combines a roller cone’s rock-crushing strength with a diamond bit’s continuous shearing action.

Enlarge holes quickly and reliably with the industry’s only on-command digital reamer

Conventional reamers can require multiple runs, and often artificially restrict drilling parameters which slows ROP. With the GaugePro™ Echo on-command digital reamer, you can control and adjust reaming activities and confirm the blades’ position throughout the process. This lets you to enlarge the hole to the desired size — within 15 ft (4.6 m) of total depth (TD) — with superior quality, speed, and confidence.
Eliminate NPT with a bit that works smarter, not harder

The TerrAdapt™ adaptive drill bit increased ROP 27% compared to an offset well where the operator experienced multiple tool failures. The TerrAdapt bit finished a 3,355-ft (1,023-m) section of interbedded shale, limestone, and salt in one run with no tool damage and no NPT.

Get superior drilling motor performance under extreme conditions

Navi-Drill™ X-treme™ Series motors drive ROP with performance unattainable from conventional motors. The motors’ pre-contoured stators increase mechanical and hydraulic efficiency, enabling more than 1,000 horsepower at the bit. And the motor’s minimal elastomer content allows it to operate reliably in higher temperatures with a greater tolerance to the chemicals used in aggressive drilling fluids.

Reduce whole-mud losses with an inventive drilling fluid

Applied during the second year of a multi-year drilling program in highly reactive shale, the MAX-BRIDGE™ advanced bridging solution lowered losses and boosted ROP significantly compared to the conventional polymer drilling product used initially.

By the fourth year, the MAX-BRIDGE solution:
- Reduced average mud losses 74%
- Increased penetration rates 320%

Stop tripping and keep drilling

From detailed pre-well plans that anticipate and address drilling hazards to smart drilling tools that mitigate drilling dysfunctions in real time, BHGE can design and execute the drilling program that delivers the best performance with the least risk. And that means you can stop tripping, keep drilling, and eliminate non-productive time (NPT).
Proactively manage safety and drilling risks

To protect people and the environment, BHGE has developed a proactive approach to safety based on a philosophy of hazard avoidance and incident prevention. Careful planning and real-time answers drive fast, accurate decisions that keep drilling parameters within a safe operational window. And our rugged and reliable blowout preventers (BOP) offer a dependable last line of defense.

Respond quickly with real-time information

During the drilling process, BHGE can leverage SoundTrak™ acoustic logging-while-drilling (LWD) and high-definition StarTrak™ images to identify and help mitigate drilling-induced fractures and wellbore breakout in real time. And the engageDrilling™ portal provides unprecedented access to real-time updates on BHGE equipment — from safety notices and operating instructions to project schedules and order tracking — in a single place for added safety and efficiency.

Get superior drilling motor performance under extreme conditions

One deepwater customer noted that typical deep-sea drilling rigs are unproductive 5-10% of available drilling days due to BOP-related downtime — resulting in up to $35 million USD in annual NPT for a single deepwater well. Through a new Contractual Service Agreement with a rig contractor, BHGE installed and maintained eight BOP stacks on the customer’s drill ships in the Gulf of Mexico. Using advanced software and cloud analytics to predict and prevent downtime, BHGE continues to provide smart, proactive repairs that improve operational safety while lowering NPT risks.
See 100 ft away from the well to navigate precisely

BHGE’s VisiTrak™ reservoir navigation and analysis service incorporates LWD technology that gives you visibility up to 100 ft from the wellbore into the formation — five times farther than conventional sensors. This greater understanding of the reservoir lets you:

- Reduce well costs by eliminating pilot holes
- Pinpoint the most-productive pay and drill it to total depth
- Build a better long-term recovery plan

Navigate within tight boundaries to access the best pay

A North Africa operator drilled a 1,755-ft (535-m) horizontal wellbore that remained entirely within the payzone in a dipping formation with widely ranging thicknesses as narrow as 1.6 ft (0.5 m). BHGE’s Reservoir Navigation services used real-time logging to monitor geologic changes and proactively adjust the AutoTrak™ rotary steerable system to keep the wellpath from prematurely exiting the productive zone.

Place your well with pinpoint precision

Using deep-reading LWD sensors to detect approaching bed boundaries up to 100 ft (30 m) away — and the industry’s only rotary steerable system with continuous proportional steering — BHGE reservoir navigation teams can help you land your well in the most-productive pay and keep it there.
Finish with a quality wellbore

BHGE’s advanced drilling systems and high-performance bits excel at delivering high-quality wellbores that are in line with the planned trajectory so you can avoid complications while installing the completion. And with BHGE’s superior reservoir drill-in and completion fluids, you’ll protect your payzone against damage that may limit production or require costly, time-consuming clean-up.

Deliver a smooth, in-gauge hole with continuous proportional steering

**AutoTrak rotary steerable systems** monitor near-bit inclination every millisecond — making minute (± 0.1° inclination) course adjustments every second — effectively eliminating the risk of high-local doglegs, and laying the groundwork for trouble-free casing and completion runs.

Lower completion costs and enhance production with reservoir drill-in fluids

The **PERFFLOW™ DIF system** is a one-trip drill-in and completion fluid engineered to protect reservoirs ranging from unconsolidated sandstones to fractured limestones. The system delivers consistent and effective drilling fluid properties while depositing a thin, protective filter cake that is easily removed by production flow.
### Drilling

**Drill bits**
- Diamond bits
- Tricone bits
- Hybrid bits
- Drilling engineering solutions

**Drilling services**
- Rotary steerable services
- Drilling motor services
- Reservoir navigation services
- Measurement-while-drilling
- Logging-while-drilling
- Surface logging services
- Coring services
- Casing and liner drilling services
- Hole enlargement services
- Coiled tubing drilling services
- Drilling optimization services

**Drilling and completion fluids**
- Emulsion drilling fluids
- Water-based drilling fluids
- Specialty drilling fluids products
- Reservoir drill-in fluids
- Fluids handling and environmental services
- Completion fluids

**Well construction**
- Liner hanger systems
- Cementing services
- Tubulars
- Rig drilling production systems
- Blowout preventers
- Specialty connectors and pipe
- Wellheads
- Control systems
- Marine riser systems
- Elastomer products, spare parts
- Aftermarket/field services

**Well intervention**
- Fishing services

For more information: bhge.com

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