

TeleCoil intelligent coiled tubing milling and cleanout services

Efficiently clean the wellbore and accelerate recovery

Most wells require a degree of intervention to improve or restore declining production over time. Whether declines are caused by the inflow of sand or solids buildup, intervention can help extend the economic life of a well. The goal with any wellbore cleanout operation is to leave a clean wellbore as efficiently, effectively, and economically as possible.

Designed to eliminate downhole obstructions that impair production, the **TeleCoil™ intelligent milling and cleanout service** uses real-time operational data to clean the wellbore efficiently and quickly, helping restore production and accelerate recovery.

TeleCoil intelligent coiled tubing services add certainty at all stages of well intervention by providing live communication between the bottomhole assembly (BHA) and the surface. Real-time tension, compression, and torque (TCT) data—along with pressure, temperature, and depth correlation readings—provide a clear picture of what is happening downhole, and can be used with **CIRCA™ REAL-TIME (RT) on-the-job modeling software** to dynamically update safety and operational parameters during the

job. The TeleCoil intelligent milling and cleanout service combines TeleCoil real-time data capabilities with a broad offering of milling and cleanout technologies from Baker Hughes to provide clean wellbores, efficiently and cost effectively.

Mill with intelligence

Using downhole data to direct milling operations can save time and decrease safety risks for surface personnel.

Used with **Xtreme Performance series (XP™) motors** and **METAL MUNCHER™ advanced milling technology**, the TeleCoil milling and cleanout service can be used to mill even the toughest downhole obstructions. Torque monitoring enables the coiled tubing crew to manage weight on bit (WOB), which improves and enhances the milling process while significantly extending motor life. Variances in torque can also be used to differentiate between plugs, stumps, washing sand, and other obstructions.

By providing real-time pressure readings, the TeleCoil intelligent milling and cleanout service indicates when pressure equalizes across downhole obstructions, helping prevent well kicks. In addition, depth correlation and plug-

Applications

- Plug milling
- Wellbore cleanouts
- Scale removal
- Extended-reach cleanouts

Features and Benefits

- Real-time feedback from BHA sensors
 - Delivers depth correlation, pressure, temperature, axial force, and torque data to the surface
 - Differentiates between wellbore obstructions and friction lock-up
 - Identifies top of sand in deviated wells
- CIRCA and CIRCA RT modeling software
 - Updates simulations on-the-fly
 - Delivers advice and warnings based on real-time data
- Quick tool change capabilities
 - Supports plug-and-play BHA changes between runs
 - Accommodates milling, cleanout, fishing, and logging operations with a single intelligent coiled tubing reel
 - Reduces footprint and NPT
 - Decreases HSE risk exposure

and-play BHAs enable quick switch-outs between milling and camera services to verify success.

CIRCA RT software displays a virtual gauge clearly delineating safety and operational limits as they correspond to the actual depth and time, and continuous calculations provide live updates to the remaining fatigue life of the coiled tubing string. The combined result is a safe milling operation with fewer runs, fewer complications, and increased success.

Perform reliable, efficient cleanouts

Cleanouts can be a challenge in difficult wellbore conditions. Before work begins, the Baker Hughes team collects existing well data. This data is fed into our proprietary CIRCA simulation software—

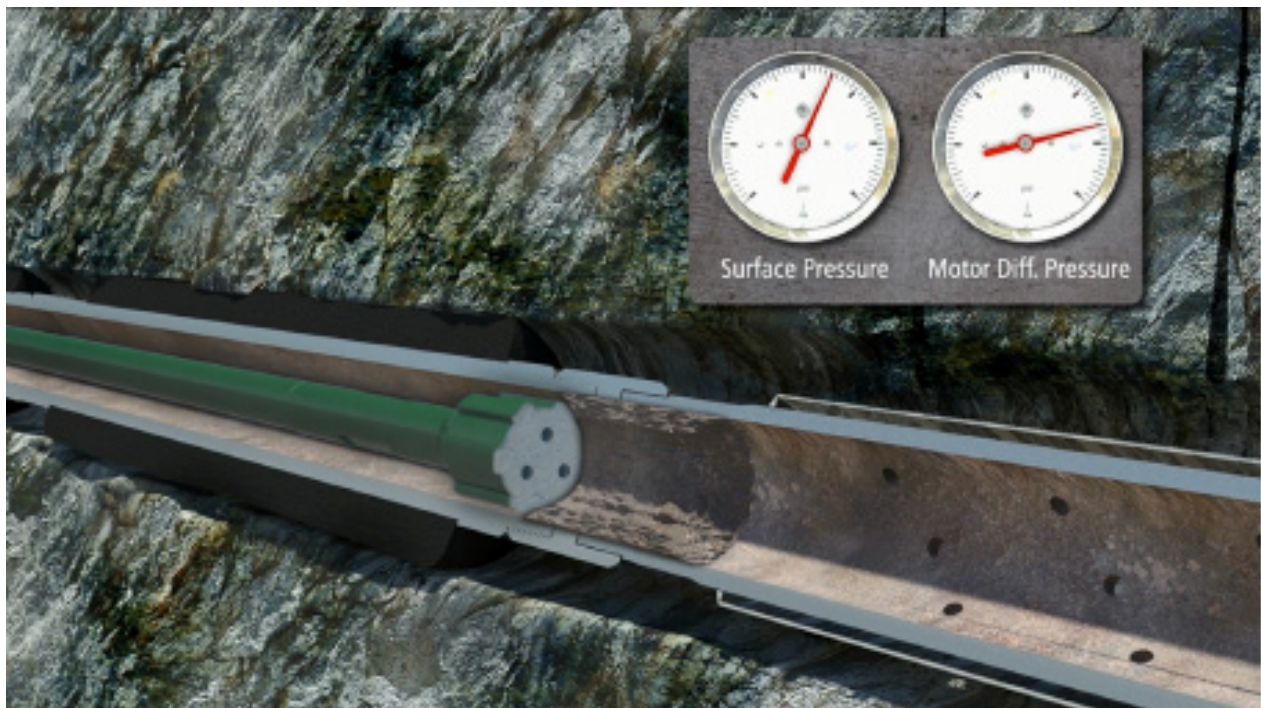
which is built on decades of real-world data and experience—and is used to model and design the job. Job models are so accurate in most cases that pre-job simulations are indistinguishable from post-job reports.

Armed with the pre-job CIRCA model and cleanout plan, the coiled tubing team uses the TeleCoil milling and cleanout service to easily and accurately locate top of sand in highly deviated wells, and optimizes fill penetration rates, wiper trip speeds, and bite sizes to provide effective solids removal. Real-time pressure readings enable the team to dynamically track fill removal and control well balance to prevent lost returns and formation damage.

For hard-scale removal, the Baker Hughes **Roto-Jet™ jetting tool** can be used with TeleCoil milling and cleanout

services to control the rotating speed of the jetting nozzle, applying destructive stress cycling that dislodges even the hardest deposits from the wellbore. And for unmatched flexibility in removing a wide range of solids, the patented **Tornado™ cleanout system** can be run with a variety of BHAs to deliver optimal cleanouts, even with compacted fill such as formation fines, proppant, and pebbles.

To learn more about how the TeleCoil intelligent coiled tubing milling and cleanout service can help you efficiently clean out wellbores and accelerate recovery, call your Baker Hughes representative today or go to BakerHughes.com.



The TeleCoil intelligent milling and cleanout service uses real-time operational data to clean the wellbore efficiently and quickly, helping restore production and accelerate recovery.