FAST
HAS DEVELOPED THE SOLUTION

THROUGH SIGNIFICANT RESEARCH FAST HAS IDENTIFIED THAT STABILISER WEAR IS THE FUNDAMENTAL CAUSE OF DOWNHOLE VIBRATION.

THEORY SUPPORTED BY SOCIETY OF PETROLEUM ENGINEERS RESEARCH IN 1996 AND 2013. FAST HAS DESIGNED, LABORATORY TESTED AND CURRENTLY OPTIMISING A TOOL WHICH WOULD ELIMINATE MANY OF THE PROBLEMS OF DOWNHOLE VIBRATION CAUSED BY STABILISERS AND PROVIDE A MAJOR IMPROVEMENT IN BOREHOLE QUALITY.
DRILLING STABILISER CHALLENGES

STANDARD DRILLING STABILISER TECHNOLOGY

• No technological advancement in over 50 years
• Purpose is to deliver drilling system stability, avoid vibration and reduce hole spiralling
• Usually 2 to 6 stabilisers fitted into BHA
• Typically protected with carbide hard facing with no design or HF consistency
• Perceived as a commodity
• No reaming capability
• Sufficient for most non-abrasive drilling but not for the demands of complex 21st century wells
THE GAME-CHANGING FAST TOOL

THE FAST TOOL IS THE WORLD’S ONLY PATENTED DOWNHOLE STABILISER REAMER

- 21st Century Technology for 21st Century Well Challenges
- Unique patented diamond impregnated technology
- Stabiliser with extreme wear resistance
- Fixed bi-directional reaming capability
- Unparalleled friction control
- Applicable in all well types: vertical to horizontal, soft to ultra-abrasive

FAST IS HAVING AN IMMEDIATE IMPACT

IMPRESSIVE TRACK RECORD

- FULLY TESTED IN ALL SIZES
- OPERATING IN WELLS FOR OVER 2 YEARS
- SUCCESSFULLY DEPLOYED ON OVER 100 RUNS WITH EXCELLENT OPERATING RESULTS
- OVER 350,000 FEET DRILLED AND REAMED
- NO GAUGE LOSS ON ANY FAST TOOL
**FAST 3 IN 1 TOOL**

**WEAR RESISTANCE**
- Unique diamond impregnated inserts
- Unparalleled wear resistance
- 2,500 x more abrasion resistant than industry standard carbide

**FIXED REAMER**
- Patented technology optimises the diamond reaming cutting structure layout
- Reaming angle enhanced to optimise reaming efficiency
- Low torque performance benefits of a roller reamer but with full stabilisation

**FRICTION CONTROL**
- Diamond reduces friction compared with industry standard carbide
- Unique insert geometry and cross sectional height
- Allows fluid bypass & lubrication that reduces friction heat build
- Achieves up to 55% friction reduction based on results of scientific testing
- Improves energy delivery to the drilling system

**RESULTS OF INDEPENDENT TESTING**

<table>
<thead>
<tr>
<th></th>
<th>CARBIDE</th>
<th>TSP INSERTS</th>
<th>FAST TYPE 1</th>
<th>FAST TYPE 2</th>
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<tr>
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</table>

European university delivered independent scientific wear test analysis. Wear test protocols applied to ensure consistent mounting procedure, counter pressure application, running time and measuring of inserts after fixed time periods. All materials tested for the same total time period. Test results, set counter pressures, highlighted that the Carbide material wore more than 900 times faster than the FAST type 1. Mathematical extrapolation of this data shows that with increased counter pressures (as seen in live wells) the FAST tool’s diamond impregnated inserts are, as a minimum, 2,500 x more wear resistant than industry standard tungsten-carbide.
• FAST technology allows for the delivery of an extremely efficient and risk free bi-directional reaming action to eliminate wellbore spiralling.
• Wellbore spiralling is a major problem faced by the oil and gas industry. The materials used to protect downhole equipment along with the tools used in the BHA are the root cause of this condition. This problem leads to vastly reduced drilling performance, poor directional control and once again results in significantly more time spent tripping in and out of the hole.

KEY FEATURES
• The patent allows the use of the most efficient reaming angles
• Peak placement of the uniquely manufactured diamond impregnated inserts
• Non-magnetic solution available

BENEFITS OF FIXED REAMER
• Use of patented features lead to a considerable improvement in the reaming efficiency of the tool
• FAST technology delivers the low torque performance benefits of a roller reamer, but with no moving parts
• Low torque performance benefits delivered without the re-dress charges associated with other reamers
• More predictable directional control equals improved directional results
• Greatly reduced hang up risk for high cost logging tool suites

European university delivered independent scientific friction test analysis
• Based on first ever scientific friction testing of diamond impregnated technology in industry against standard rock types (2 x Limestones, 3 x Sandstones and 1 x Quartzite)
• FAST type 1 material delivered a minimum 55% reduction in friction when compared to the tungsten carbide material results in the Sandstone tested
• FAST technology friction control allows for consistent pressure distribution throughout operation.
CASE STUDY 1

17½” SLEEVE

Based on successful performance of the 17-1/2” tools on a project in the North Sea the operator commissioned the build of 2 x 17-1/2” inline sleeves.

17-1/2” Fast Stabiliser sleeves were used on two successive sections drilling tertiary (shale to silica cemented sandstone) into cretaceous (consisting of hard and abrasive cryptocrystalline limestones)

The sleeves drilled and reamed 33,987 feet in 700 rotating hours, without losing gauge.
CASE STUDY 2
6” STRING

27,285FT DRILLED & REAMED IN PERMIAN AND CARBONIFEROUS SANDSTONE WITH THE SAME TOOL.

VERY GOOD WELLBORE QUALITY DELIVERED, NO PROBLEMS ENCOUNTERED WHEN RUNNING TIGHT TOLERANCE LINER.

STILL IN GAUGE AFTER 631 HOURS AND 4 RUNS WHILST DELIVERING A LOW VIBRATION SIGNATURE THROUGHOUT OPERATION.

DELIVERED 2 RECORDS FOR DD CO. WITH THEIR 4¾” RSS TOOLS IN BUILD/HORIZONTAL APPLICATIONS.

REDUCTION IN REAMING DUE TO CONFIDENCE IN WELLBORE QUALITY, EQUATING TO SAVINGS OF 32.3 RIG HOURS OR £336K DELIVERED OVER THE 4 x WELLS.

10,023FT
18,699FT
24,735FT
27,285FT