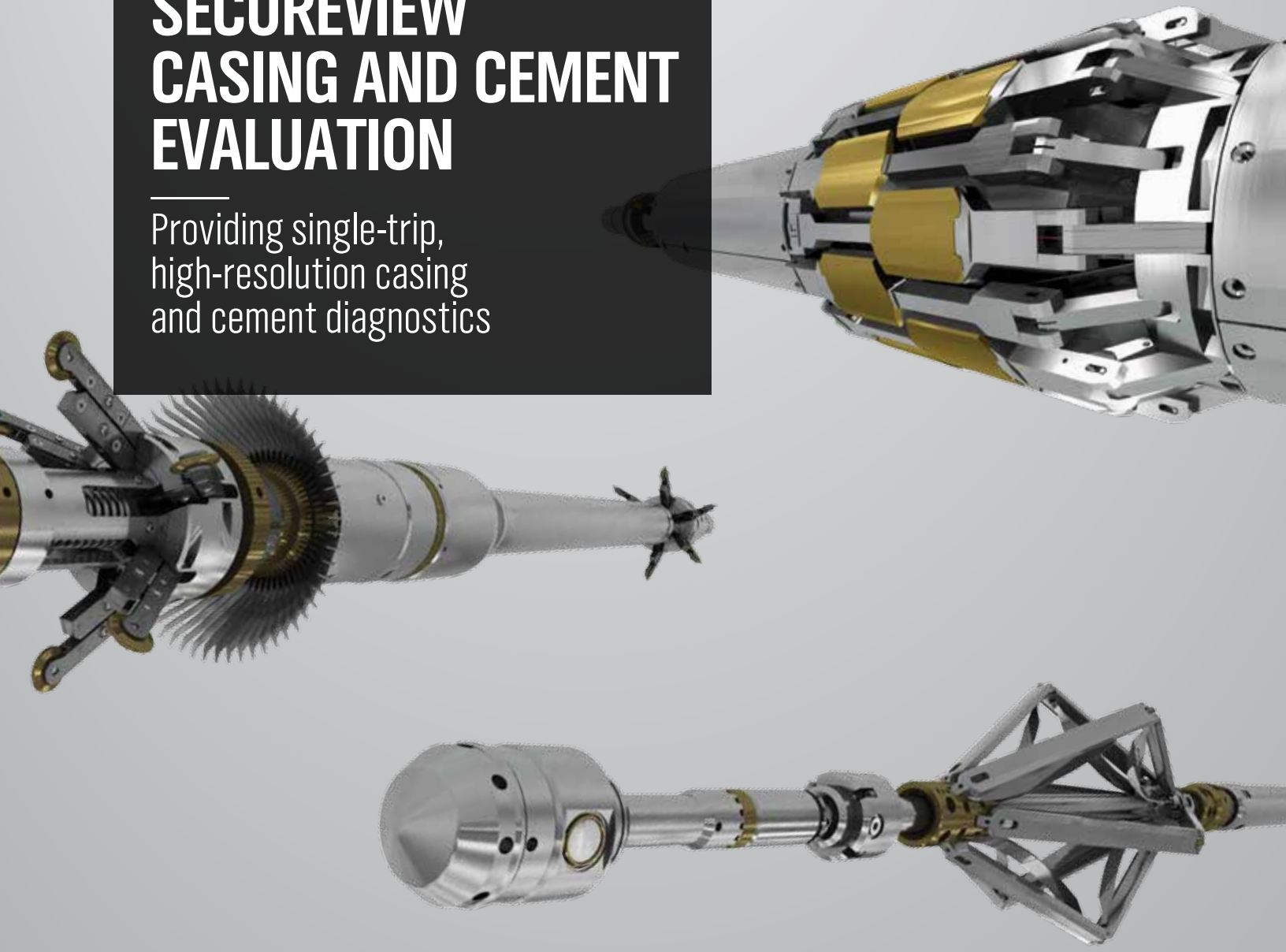
WIRELINE SERVICES

SECUREVIEW® CASING AND CEMENT EVALUATION

Providing single-trip, high-resolution casing and cement diagnostics



DRILLING & FORMATION EVALUATION
WELL CONSTRUCTION
COMPLETION & STIMULATION
PRODUCTION

Weatherford®

LET'S SHINE A LIGHT ON CASED-HOLE WELL INTEGRITY.

PREVENT COMPLEX PROBLEMS TOMORROW BY UNCOVERING THE SMALLEST OF THREATS TODAY.

Your crew, your assets, and the environment depend on well integrity. Left unchecked, even tiny leaks can cascade from lost production to environmental damage, which can lead to downtime, extensive repairs, and regulatory penalties.

Our SecureView® service takes the bite out of your cased-hole problems by giving them a name, location, and a path to remediation. By making the single-trip SecureView service a regular part of your well maintenance schedule, you get a definitive and high-resolution view of cement and casing integrity.

The SecureView system provides high-definition logs of your inner casing, outer casing, cement strength, and cement bond. And should we find a problem, our comprehensive remediation technologies can fix the issue with a smaller bite out of your budget than you might expect.

OUR LOGGING EFFICIENCY AND QUALITY IS UNMATCHED.

Only our SecureView service provides a high-definition evaluation of your entire cased-hole system in one trip. The service uses a suite of technologies—UltraView®, CalView®, FluxView®, and BondView® tools—to deliver a full casing and cement diagnostic with minimal logging downtime.

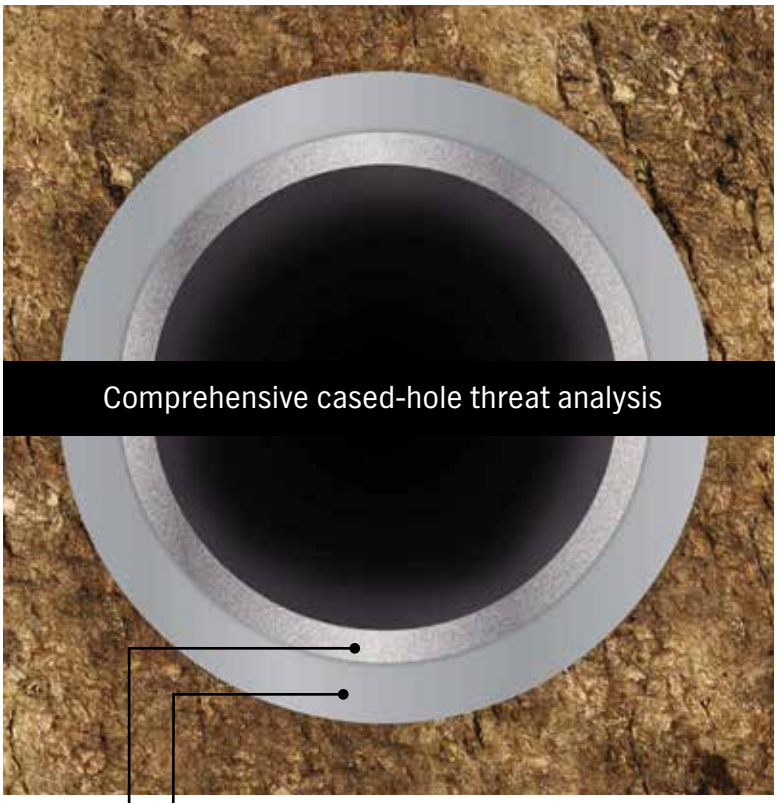
The four SecureView tools can run in combination to gather comprehensive data without information gaps. By overlapping some measurement capabilities, these tools ensure valid, reliable well-integrity data that gives you a map to the most efficient remediation.

WE OFFER SINGLE-SOURCE, LIFE-OF-WELL INTEGRITY SERVICES.

Our well integrity services extend far beyond data acquisition. We use our proprietary analysis software to interpret logging data, diagnose casing and cement issues, confirm the extent of any damage, and recommend and implement the most effective remediation strategy.

If the SecureView service reveals a problem, we prepare the wellbore for remediation with our comprehensive fishing, milling, and pulling equipment. Then, we permanently fix the problem—often in just one day—using our range of cost-effective remediation solutions, including cased-hole liner systems, solid-expandable systems, and casing patches. As a premier provider of casing repair and isolation services, we can restore integrity and productivity in any damaged well at any stage of the well life cycle.

Built from thousands of feet of casing and tons of cement, comprehensive cased-hole well integrity raises questions that no single tool or measurement can answer. That's why our SecureView service—comprised of a suite of well-diagnostic technologies—combines and overlaps measurements to detect any wellbore problem in one logging run.



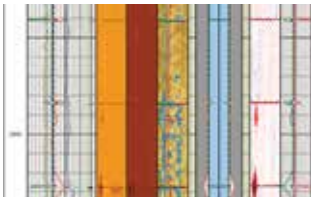
Comprehensive cased-hole threat analysis

Cement
- Location
- Bond to pipe
- Bond to formation
- Compressive strength

Casing
- Wear
- Deformation
- Thickness
- Defects (internal and external)
- Pressure

CEMENT	
Bond	**Tools**
Bond to Pipe	BondView, UltraView
Bond to Formation	BondView
Compressive Strength	BondView, UltraView
Bond Index	BondView, UltraView
Position	
Top of Cement	BondView, UltraView
Channeling	UltraView
Microannulus	BondView, UltraView
Zonal Isolation	BondView, UltraView
Fluid	
Fluid Properties	UltraView
Type	
Lite/Foam	UltraView
Green/Contaminated	UltraView

CASING	
Position	**Combination**
Well Deviation	FluxView, CalView, UltraView
Relative Bearing	FluxView, CalView, UltraView
Trajectory	CalView, UltraView
Eccentricity	CalView, UltraView
Contorsion	
Ovality	CalView, UltraView
Strain	CalView, UltraView
Penetration	
% Penetration (Internal/External)	FluxView
% Remaining Wall (ID/OD)	CalView, UltraView
Internal Mapping	FluxView, CalView, UltraView
External Mapping	FluxView, UltraView
Defect Geometry	FluxView, CalView, UltraView
Burst Pressure	FluxView, CalView, UltraView
Collapse Pressure	CalView, UltraView
Environmental	
Wellbore Temperature	CalView

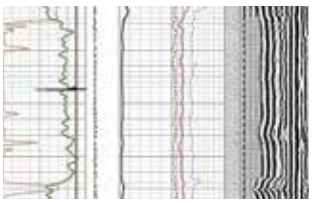


UltraView® Tool

SIMULTANEOUS 360° CASING AND CEMENT COVERAGE AND REAL-TIME FLUID MEASUREMENTS FOR SUPERIOR DIAGNOSTICS

Gain unparalleled insight into your wellbore integrity. The UltraView tool delivers ultrasonic cement inspection, internal and external casing inspection, and fluid properties data simultaneously. An advanced, high-speed DC motor drives the scanning head—ranging from 3.38-in. (86-mm) to 10.5-in. (266.7-mm) outer diameter—which enables precision transducer firing that minimizes the risk of missing critical details and improves accuracy.

With an ultrasonic transducer on both the scanning head and body, the UltraView tool provides 360° casing and cement coverage, identifies channels in the cement map as small as 5°, and captures high-resolution, real-time measurements that determine acoustic impedance, cement thickness, fluid slowness, and density. Our patented mud chamber provides a unique and continuous mud-property measurement that enables an accurate evaluation of the cement acoustic impedance.



BondView® Tool

SHORT AND LIGHTWEIGHT CEMENT BOND TOOL FOR HORIZONTAL APPLICATIONS

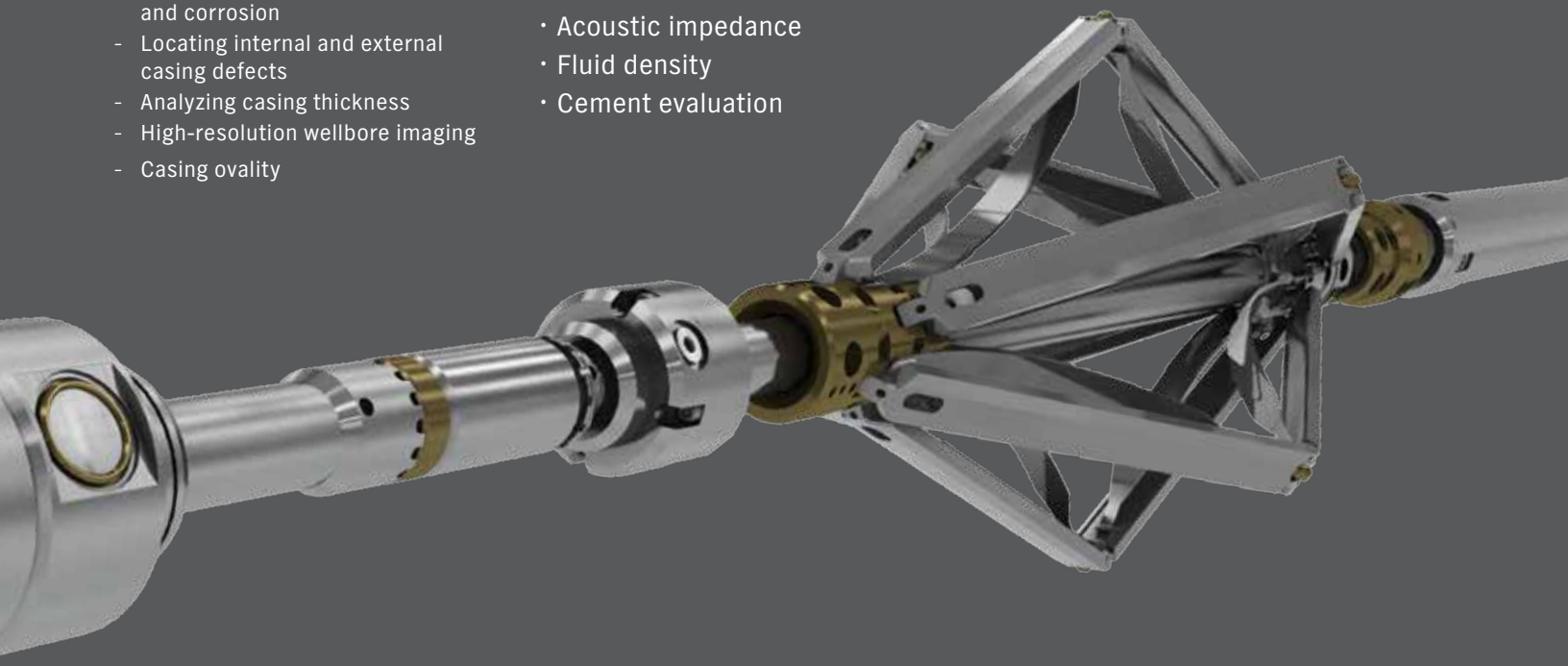
Determine the quality and vertical length of the cement bond between your casing and the formation. Using a monopole transmitter and 3-ft and 5-ft receivers, the BondView tool acquires amplitude, travel time, signature, and variable-density-log (VDL) measurements. This tool is well suited for highly deviated wellbores in which centralization—critical for accurate acoustic measurements—is more difficult to maintain.

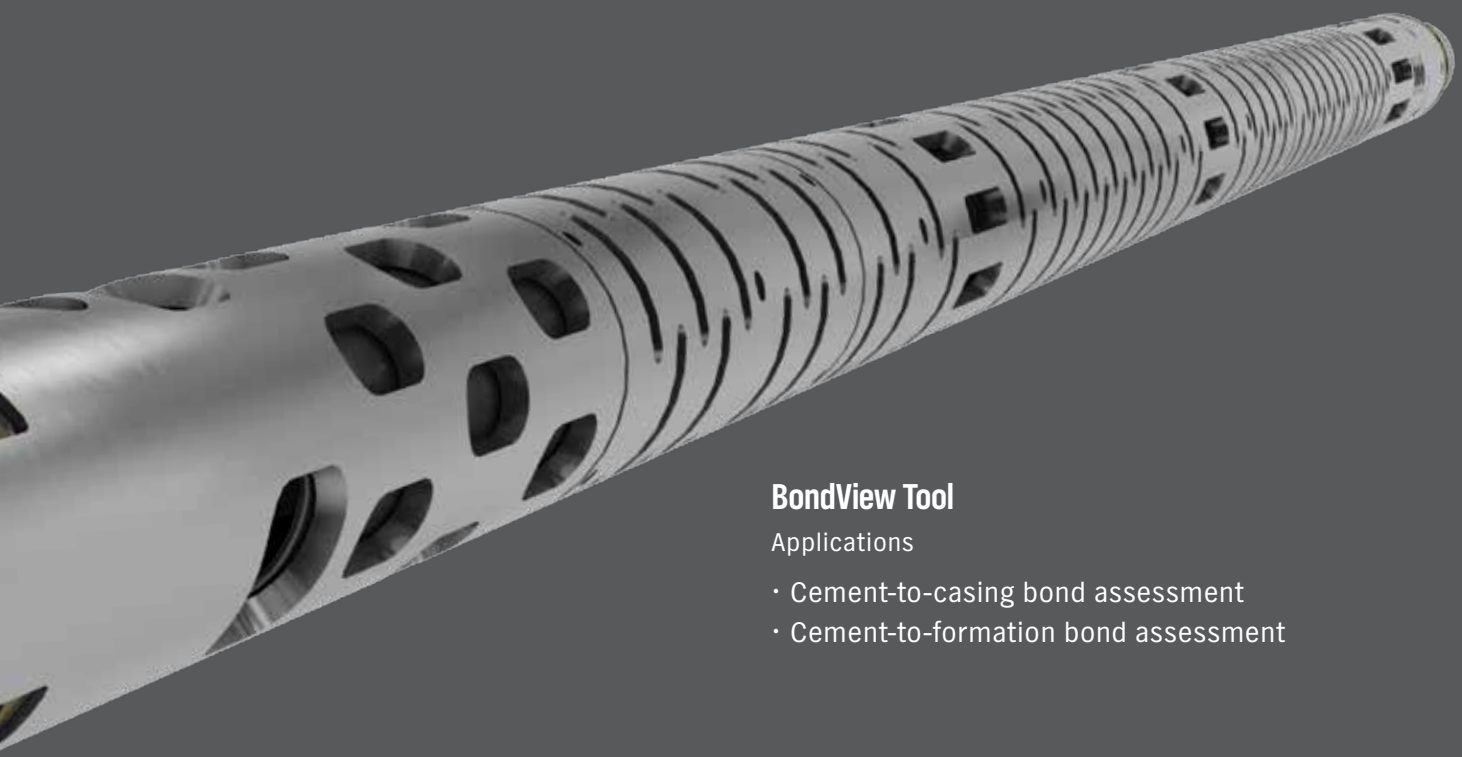
The short length and light weight of this tool help to eliminate problems associated with inadequate centralization. In addition to high-angle wellbores, the BondView tool performs in high-temperature and high-pressure wells, and in either water- or oil-based mud.

UltraView Tool

Applications

- Casing inspection
  - Monitoring internal wear and corrosion
  - Locating internal and external casing defects
  - Analyzing casing thickness
  - High-resolution wellbore imaging
  - Casing ovality
- Foam and light cement analysis
- Fluid slowness
- Acoustic impedance
- Fluid density
- Cement evaluation

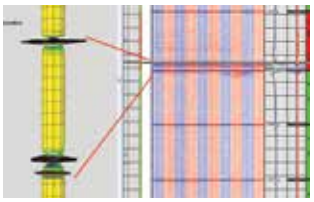




BondView Tool

Applications

- Cement-to-casing bond assessment
- Cement-to-formation bond assessment

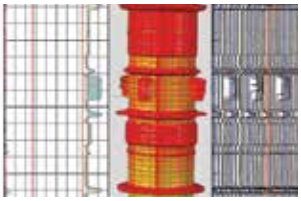


FluxView® Tool

SUPERIOR ANALYSIS OF INTERNAL AND EXTERNAL CASING DAMAGE USING 360° COVERAGE HALL-EFFECT SENSORS AND MAGNETIC FLUX TECHNOLOGY

Identify and quantify casing defects using state-of-the-art sensors and magnetic flux technology. The 360° sensor array and advanced analysis techniques determine percent of defect penetration and evaluate casing geometry inside and outside the casing wall. A powerful samarium-cobalt ($SmCo_5$) magnet produces concentrated levels of magnetic flux in the casing wall. Within this magnetic field, localized disturbances created by the casing defects cause magnetic flux to leak from the casing. The sensors evaluate the magnetic flux to pinpoint the location and extent of casing damage.

We are one of the few service providers with a pipe library that enables us to model the FluxView tool response in different casing sizes, weights, and grades. While our current modeling focuses on defects that are three times the nominal thickness of the pipe, we are developing methods to expand our analysis of larger and smaller casing defects.

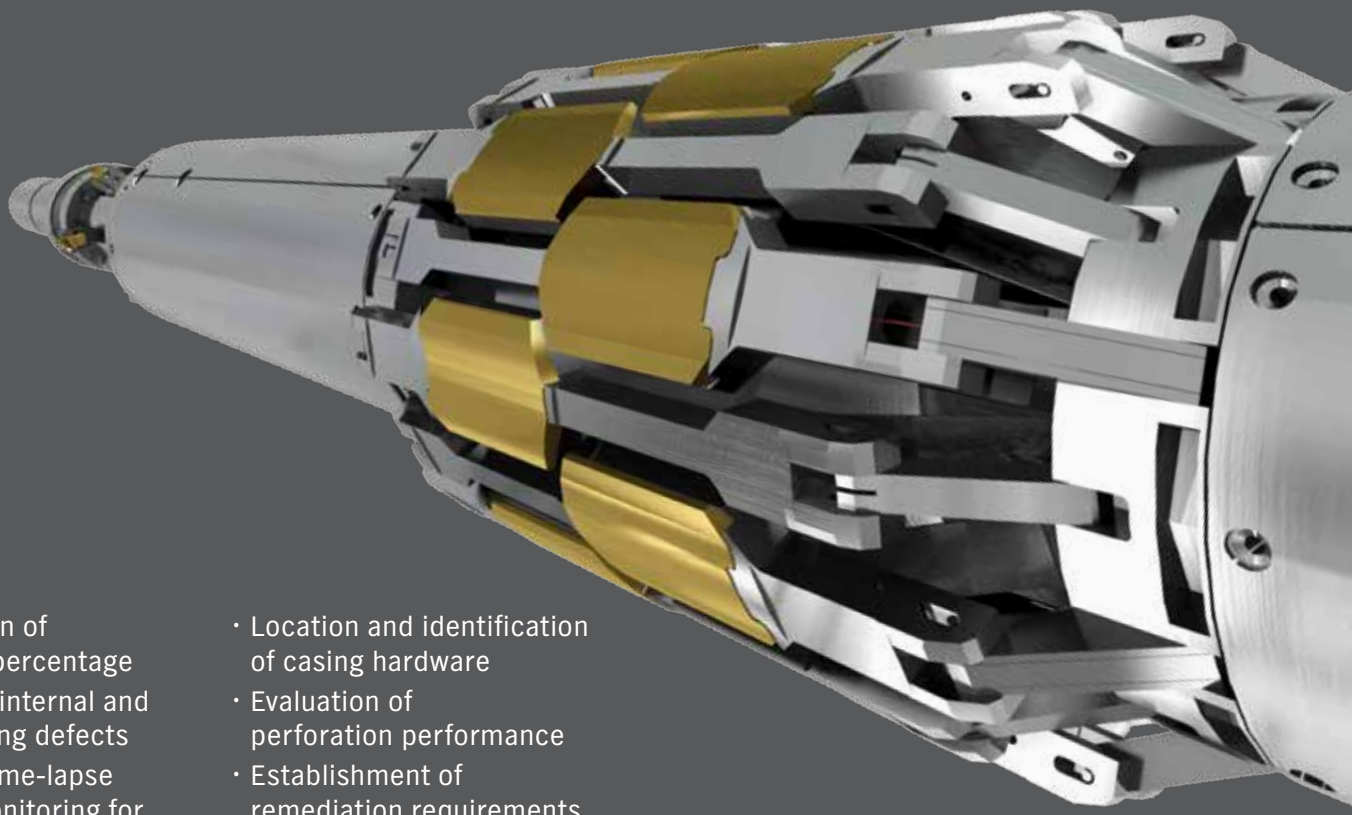


CalView® Tool

THE HIGHEST-RESOLUTION MULTISENSORY CALIPER TOOL ON THE MARKET WITH A SAMPLING RATE TEN TIMES THE INDUSTRY STANDARD

Get a complete and accurate profile of your internal casing to identify corrosion, scale buildup, wear, splitting, and deformations caused by geomechanical stresses. With an array of precision-calibrated feeler arms that capture independent, radial measurements, the 40- and 60-arm CalView tools capture 400 data samples per 3.2 ft (1 m), compared to the industry standard of 40 samples. No other caliper tool on the market can deliver equivalent resolution at the same logging speeds.

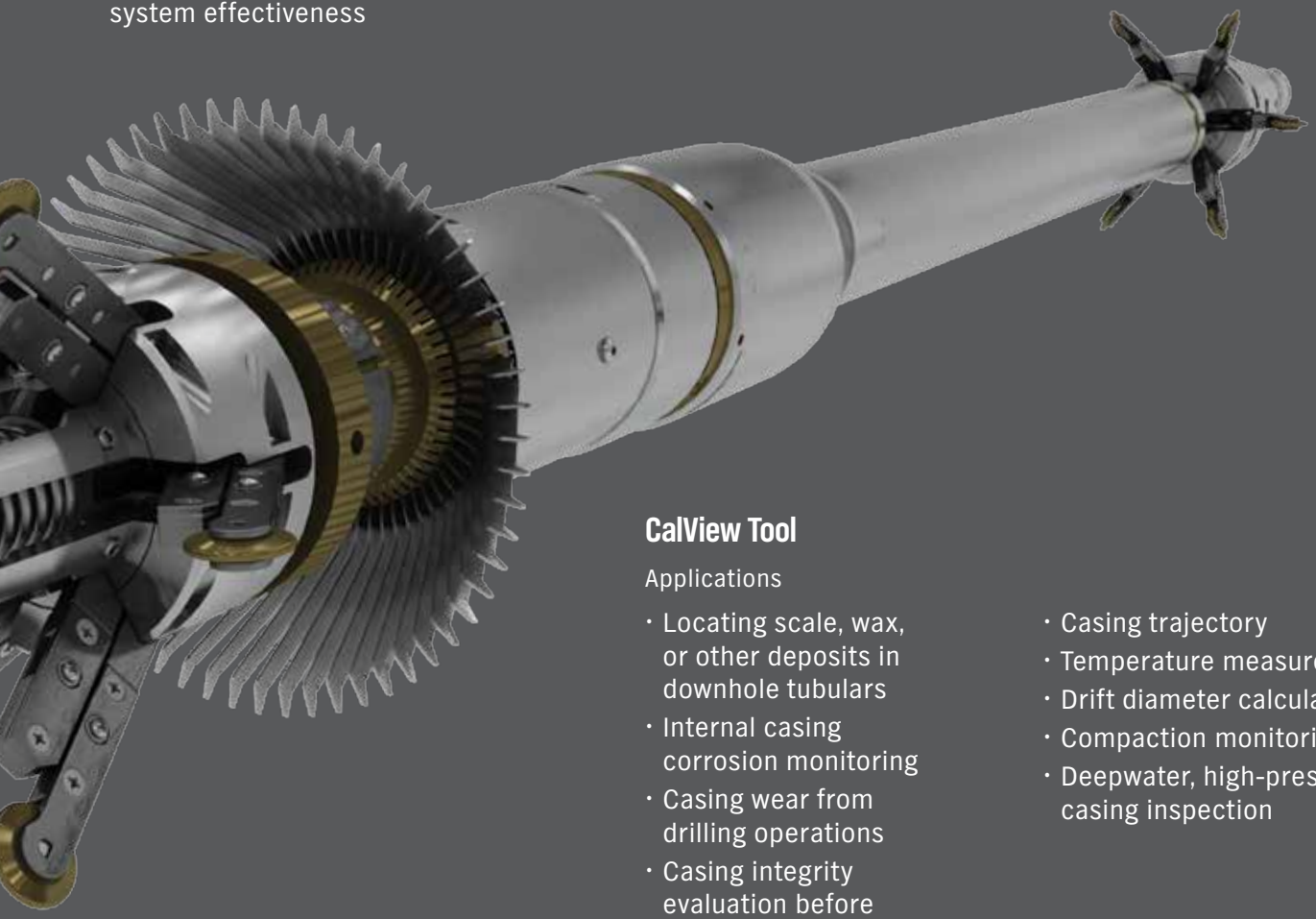
The 60-arm CalView tool can be modified to measure casing internal diameters up to 20 in. (508 mm) and can include a high-pressure housing to raise its pressure rating to 30,000 psi (206.8 MPa). This makes the 60-arm CalView tool the perfect choice for logging deepwater drilling risers.



FluxView Tool

Applications

- Determination of penetration percentage
- Geometry of internal and external casing defects
- Long-term, time-lapse corrosion monitoring for storage and injection wells
- Evaluation of anticorrosion system effectiveness
- Location and identification of casing hardware
- Evaluation of perforation performance
- Establishment of remediation requirements
- Identification of casing weight or grade change



CalView Tool

Applications

- Locating scale, wax, or other deposits in downhole tubulars
- Internal casing corrosion monitoring
- Casing wear from drilling operations
- Casing integrity evaluation before sidetracking
- Casing trajectory
- Temperature measurement
- Drift diameter calculation
- Compaction monitoring
- Deepwater, high-pressure casing inspection

The SecureView® service gives cased-hole problems a name, location, and a path to remediation. By making the single-trip SecureView system a regular part of your well maintenance schedule, you get a definitive and high-resolution view of cement and casing integrity. Visit **weatherford.com/secureview** today to discover more well integrity evaluation and remediation technologies.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