TETRA Innovation Group

TETRA Laboratory Services

Specialized Fluid Testing

Completion Fluid Testing

Frac Water Testing & Treatment

New Product Development

Analytical Testing Services

Technical Services

Test Instrumentation

Project Management

Technology Center
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The TETRA Innovation Group is a team of scientists dedicated to developing innovative solutions to the complex challenges of today's global oil and gas market.

Our team constantly looks beyond customer expectations and regulatory requirements to deliver market-leading fluid testing and analytical services. Our focus on providing specialized solutions that improve quality, safety, and productivity helps our customers navigate in an increasingly regulated world.

Our global network of laboratories are staffed with experienced PhD chemists and subject matter experts, and are equipped with state-of-the-art instrumentation. The result is an ongoing history of novel developments, industry firsts, and numerous patents awarded for products, including high-density fluids, enhanced brine additives, mud displacement systems, and manufacturing processes for heavy brines.

Transforming Challenges Into Innovative Solutions

We built our reputation on creating effective, economical fluids that yield exceptional results, setting new standards for the industry, and expanding the realm of possibilities. Among our game-changing innovations are:

TETRA CS NEPTUNE® FLUIDS

Winner of the Hart Energy 2020 Special Meritorious Award for Engineering for Drilling Fluids/Stimulation, our patent-pending TETRA CS Neptune family of fluids is a unique offering that is zinc-free and formate-free and available in both divalent and monovalent blends.

TETRA ADVANCED DISPLACEMENT SYSTEMS (TADS™)

TADS is a three-phase drilling-fluid displacement system designed for optimal wellbore cleaning. Engineered to remove solids and render all metal surfaces water-wet, the system is designed for direct and indirect displacement of water-based, diesel-oil-based, and synthetic-oil-based drilling fluids.

TETRACLEAN™ SPACER SYSTEMS

Our single-stage TETRAClean family of spacers are single-pill, environmentally-friendly displacement systems containing surfactants and suspension polymers that disperse, remove, and suspend solids in a single sweep.

TETRA BREAKER TECHNOLOGY

TETRA was one of the first within the industry to recognize that removal of drilling fluid filtercake from the reservoir is desirable for production wells and essential for injectors.

Each filtercake removal project presents unique challenges and hence no single breaker chemistry is suitable for all applications. TETRA is able to offer a broad range of filtercake removal options including: acid precursors, chelating agents, enzymes, wettability modifiers and oxidizers. Our historic and pioneering patents on the use of oxidizers illustrate our wealth of knowledge and experience in this subject area.

Laboratory Services

SPECIALIZED FLUID TESTING

Our focus on providing specialized solutions that improve quality, safety, and productivity helps our customers keep pace with regulatory requirements. Some of our specialized fluid testing includes:

- Rheology, including high pressure and high temperature
- Mud displacement design & testing
- High-pressure differential scanning calorimetry
- Gas-hydrate inhibition testing & modeling
- Heat capacity/thermal conductivity measurement
- Formation damage testing
- Lost-circulation prevention testing
- Thermal stability studies
- Corrosion mitigation testing & modeling
- Insulated packer fluid formulation
- Drill-in fluid formulation & testing

COMPLETION FLUID TESTING

The TETRA Innovation Group tests all types of completion fluids, providing a comprehensive range of testing, modeling, and analysis that includes:

- Brine reclamation
- Crystallization point determination
- Compatibility testing
- Brine composition analysis
- Brine system optimization
- Oil and grease testing
- API RP 13J testing

FRAC WATER TESTING & TREATMENT

Our team performs laboratory testing and develops treatment for frac water, delivering cost-effective, environmentally sound solutions tailored to the specific needs of each customer. These services include:

- Water analysis and clarification
- Bacteria analysis
- Scaling index analysis & modeling

NEW PRODUCT DEVELOPMENT

The TETRA Innovation Group has a proven record in pioneering research and development, leading to breakthrough technologies that have set new standards for excellence. We maintain that legacy with a tireless commitment to creating new solutions that address the increasing complexity and environmental needs of oil and gas development in the twenty-first century. Among the products we continue to research and develop are:

- High-density fluids
- Low-density hydrate-inhibited fluids
- Reservoir drill-in fluids
- Insulating packer fluids
- Wellbore cleaning chemicals
- Filter-cake breakers
- Corrosion control fluids & additives
- Brine additives
- Flocculants
- CO_2, H_2S, O_2 scavengers
- Process development & risk assessment
- New and customized products to fulfill unmet needs

ANALYTICAL TESTING SERVICES

Our analytical testing services offer a broad spectrum of chemical and material characterization capabilities and expertise. Analyses ranging from bulk properties to ultra-trace elemental quantification is performed via various types of instrumental and wet chemical techniques.

We also provide direct support to all technical functions within TETRA and provide the data required to help customize fluid formulations or to identify non-compliant materials. Our analytical testing includes:

- Gas chromatography–mass spectrometry
- Inductively coupled plasma spectrometry
- Color spectrophotometry
- High-pressure liquid chromatography
- Ion chromatography
- Reaction calorimetry
- Pressurized brine crystallization testing
- Total organic carbon analysis
- Particle size analysis
- Thermogravimetric analysis & differential scanning calorimetry
- High-pressure differential scanning calorimetry
- X-Ray diffraction
- Completion fluid testing

TECHNICAL SERVICES

Our team conducts standard and non-standard testing and product development on drill-in, completion, and packer fluids, including:

- Hydrate modeling & testing
- Corrosion mitigation modeling, testing & development
- Mud displacement modeling, testing & development
- Formation damage modeling & testing
- Loss-circulation prevention modeling, testing & development
- Rheological properties evaluation & development
- Engineered solutions for support of fluid design & management
- Field support in engineering design & fluid testing
- Fluid reclamation evaluation & recommendation
- Fluid troubleshooting

TEST INSTRUMENTATION

Our laboratories are equipped with high-end instrumentation and apparatus to ensure precise measurement. All test equipment is routinely calibrated in accordance with industry standards and manufacturer specifications. Our instrumentation includes:

- Color spectrophotometer
- High-performance liquid chromatograph
- Ion chromatograph
- Fourier transform infrared spectrometer
- Gas chromatography-mass spectrometer
- Inductively coupled plasma spectrometer
- High-pressure differential scanning calorimeter
- Pressurized brine crystallization temperature tester
- Thermal gravimetric calorimeter
- Reaction calorimeter
- High-pressure/high-temperature rheometer
- Laser diffraction particle size analyzer
- Total organic carbon analyzer
- X-ray diffractometer
- Return permeability tester
- Flash point tester

PROJECT MANAGEMENT

The TETRA Innovation Group employs agile project methodology with iterative sprints to develop, test, obtain customer feedback, and revise products and solutions. The use of sprints allows product design to be adapted as needed and, ultimately, reduces overall development time. We use Jira issue and project tracking software to manage all laboratory project data, ensuring data security, accurate versioning, and transparent ownership of each and every stage of analysis, testing, and development.