MULTI-CHEM, A HALLIBURTON SERVICE: YOUR GLOBAL SOURCE FOR LOCAL SOLUTIONS

With more than fifty years of experience in the North and Southern North Sea, Halliburton Europe serves the European upstream oil and gas industry through its full service chemical company, Multi-Chem, a Halliburton Service. With a well-established organizational structure and infrastructure on the ground, our local expertise and technology teams can focus on developing the technologies and services required for continued development of upstream oil and gas resources, backed by an operational organization that understands regional logistical and supply chain requirements.

As a result, Multi-Chem is well-positioned to provide the Europe region with engineered chemical solutions designed to create sustainable value:

- Our people are knowledgeable and experienced in the challenges unique to the region;
- Our facilities are strategically located throughout to supply these markets;
- Our portable blend plants and laboratories ensure custom solutions and rapid response;
- The leading technologies and skills we’re developing in Europe provide support for operations in North Africa, Middle East, and Asia; and
- Multi-Chem shares Halliburton’s global footprint, offering full service chemical solutions wherever you need them, anywhere in the world.

As a Halliburton Service, we work with other Halliburton product service lines who are industry leaders and enable us to offer integrated solutions that add value and improve bottom line performance.

Our Commitment
Multi-Chem is committed to providing unparalleled technical expertise and superior local service to our customers in the Europe region—through cost-effective applications of customized mechanical and chemical engineered solutions for the life of your well.
We Provide Solutions to Production Challenges.
For more than a decade, Multi-Chem has been a leading supplier of specialty chemicals for well completions, production operations, and pipeline maintenance on oil and natural gas systems around the world.

Our innovative products include the most comprehensive chemical deliquification method in the industry, as well as the most cost-effective and efficient sulfide mitigation program available. We provide a line of environmentally conscious fracturing additives, a lower toxicity biocide system for “next level” microbial control, and advanced low dosage hydrate inhibitors that are safer than thermodynamic inhibitors.

But we do more than provide chemicals.

Today, Multi-Chem leads the industry in developing solutions engineered for the increasingly complex challenges of producing hydrocarbons from deepwater, unconventional plays, and mature assets. Combining our extensive product line with professional technical services, we create customized solutions tailored to your needs.

We Deliver Service.
With Multi-Chem, service delivery means more than a chemical formulation. Using advanced system modeling and engineering, we work with you to determine the optimum strategy for improving performance in your deepwater operation, then help ensure that performance with ongoing field testing and regular performance reporting.

With our MVP 2.0™ chemical program-management tool, you get 24/7 access to your program details along with production information, so you can evaluate chemical treatments and monitor cost performance in near real time.

More than that, you get best-in-class service quality and technical services support from highly trained and experienced field engineers. With fully equipped mobile test trailers, our technical experts can provide complete in-field laboratory services, and are backed by a network of local and regional labs. And documented processes for efficient delivery of our customized solutions mean you have the assurance of full transparency every step of the way.

While other companies focus on selling chemicals, Multi-Chem’s team of chemical consultants focuses on helping get you the right solution at the right time, so you get the most out of your equipment and return on your investments.
Customized Completion Solutions for Your Unconventional Operations—and Your Environment

At Multi-Chem, we formulate and apply all of our products in a manner that help minimize environmental impact while addressing your unique completion challenges, improving overall ROI, and helping protect the integrity of your assets for the long-term.

This approach is particularly important for unconventional operations, which typically require injection of fracturing fluids into the reservoir. For applications like these, Multi-Chem performs a full analysis of the well, the source water for the frac, and the surrounding environment—as well as conducting both pre- and post-frac testing to help ensure our completion services and solutions are safe and cost-effective.

Frac Fluid Additives
Our environmentally conscious, high-performing frac additives exceed industry standards for safety, toxicity, biodegradation, and bioaccumulation.

NaturaLine® Products and Services
NaturaLine® products and services are specially formulated to enhance value and public perception in unconventional applications, satisfying stringent environmental requirements while maximizing water management with solutions that can be used throughout the entire fracturing process, and in production operations. This line of friction reducers, scale inhibitors, biocides and surfactants offers improved exposure profiles to help minimize the potential for accidents, and protect both well and reservoir through the entire life cycle.

RockOn® Surfactants
RockOn® surfactants are specifically formulated to help boost initial production while meeting specific environmental requirements. Compatible with gelled, slick-water and hybrid fluid systems, RockOn surfactants significantly impact hydrocarbon recovery from micro-pores in shale plays and other tight formations, slowing the decline curve over the life of the well.

In addition to leading specialty chemical products, Multi-Chem’s completion solutions include expert technical services to help your operations succeed.

Injection Optimization
For precise chemical application based on specific objectives and requirements, Multi-Chem’s suite of injection optimization services include chemical supply, pre-frac and emulsion services, full water analysis, and scale modeling. To accurately deliver each customized solution, our fleet of frac-dosing trucks feature Micro Motion® dosing pumps that deliver rates down to parts per million, and have state-of-the-art communication capabilities to keep Multi-Chem technicians aligned with the needs of the Frac Coordinator.

Water Conditioning
The quality of water in a frac operation helps to significantly impact long-term productivity, as well as Lease Operating Expenses (LOEs). To prevent bacteria contamination from souring shale formations, Multi-Chem’s water conditioning services include an extensive on-site evaluation of water sources to determine the chemical solution best-suited for the project, from which we can customize a specific biocide treatment program designed for your unique production environment.

Micro Motion is a registered trademark of Emerson Process Management.
First Things First: Safety and Risk Mitigation
At Multi-Chem, safety comes first. We are committed to the communities where we operate, and remain driven to create safe working environments through continuous improvement and simplification of safety programs and training. Through ongoing safety initiatives, Multi-Chem has achieved consistently low TRIR ratings.

From start to finish, we help you manage risk by identifying and monitoring areas most exposed to risk; performing risk-mitigation analyses and introducing best practices for continuous improvement; and ensuring full compliance with Halliburton HSE standards, as well as with all local regulations.

The Strongest Link: Superior Supply Chain
Multi-Chem uses a supply chain approach unique to the production and completion chemical industry, maintaining local blend plants capable of custom blending products to meet job-specific needs, and offering skid-mounted Portable Blend Plants that can be shipped when and where they are needed.

As a result, you get an overall wider product selection and quicker product development for specific needs. Multiple production facilities help guarantee product availability, with less dependence on single sources of raw materials. Our approach means a closer market to your production fields, wherever they are located.

Partners in Success: Customer Training
In ongoing efforts to enhance partnerships with our customers, Multi-Chem sponsors state-of-the-art customer training events that offer practical information and insights from our own subject matter experts, as well as networking opportunities for participants, and a user-friendly lab segment that provides hands-on experience in researching solutions to specific challenges.

Effective Water Management: A Total Solution
From chemical and mechanical conformance tools, to custom water treatment strategies, Multi-Chem helps solve your water management challenges with processes and technologies that reduce unwanted water production and effectively treat produced water for recycle, EOR or disposal, all while satisfying a broad range of reservoir management and environmental objectives.

CleanStream® Service
Our CleanStream® service uses ultraviolet (UV) light to control bacteria in fracturing fluids, reducing the amount of biocides required and providing a significant environmental advantage.

CleanWave® Service
Deployed via our mobile unit, CleanWave® service uses an electrocoagulation process to remove suspended solids and hydrocarbons from produced water. The result is a clear brine suitable for use in formulating fracturing fluid.

H20ForwardSM Service
Providing our comprehensive water management solution, H20ForwardSM service enables operators to use produced water for fracturing operations, yielding significant cost savings with minimal environmental impact.
Production and Pipeline Solutions for Maximum Performance and Efficiency

Multi-Chem’s extensive range of production and pipeline solutions combine specialty chemical products and services to prevent and treat corrosion, scale, paraffin, asphaltene, liquids loading, bacteria and intermixing of fluids for maximum performance and efficiency from your operations. We conduct a full analysis to identify potential problems, recommend preventive measures before problems occur, and implement cost-effective solutions if existing problems are found.

Advanced System Modeling and Engineering Services

Multi-Chem continues to invest in the latest industry testing equipment and procedures for our production and pipeline solutions, and focuses on bringing in industry leaders in flow assurance technology to utilize advanced third-party programs such as OLGA®, PVTsim™ and Multiflash™ applications.

On-Going Field Testing

To optimize a complete chemical-management strategy, on-going field testing provides continual review and analysis. Information sharing keeps field and operator personnel up to date on current conditions as well as expected changes to the chemical program, while sharing lessons learned throughout the company affords continuous improvement.

Performance Reporting

At Multi-Chem, our job is to help protect your investments. To help us achieve this, we establish a service plan with our customers to continuously monitor and help improve all aspects of the chemical-application program. Performance is then consistently trended over time, with key performance indicators (KPIs) summarized to detail the current performance while bringing opportunities for improvement to light. Regularly scheduled business reviews are conducted where action plans are developed to address any potential areas of improvement.

Industry-Leading Chemical Solutions for Optimum Production

Following expert evaluation of each application, Multi-Chem works with you to develop site-specific products and formulations for customized solutions that help ensure production systems operate at full potential.

AcroClear® Acrolein-Based H₂S Scavenger and Iron Sulfide Dissolver

AcroClear® H₂S scavenger and iron sulfide dissolver consistently out-performs conventional chemical solutions, providing highly effective removal of iron sulfide in production and injection wells, and repairing near-wellbore damage caused by iron sulfide deposits and previous acid jobs. It is also effective in removing iron sulfide-based deposits on pipelines or tubular surfaces, exposing the surface area for an effective corrosion-inhibitor application.

AcroClear H₂S scavenger and iron sulfide dissolver can penetrate oily coatings on iron sulfide particles due to water and oil solubility, and clarifies black water and rids discharge of surface-sheening iron sulfide solids. The highly reactive dissolver works quickly, completely and irreversibly. Extremely rapid reaction between AcroClear and H₂S can be an advantage when retention time is an issue.
Administered only by trained, Certified AcroClear Technical Specialists (CATS), AcroClear H₂S scavenger and iron sulfide dissolver treats at much lower rates than other specialty chemicals, providing a cost-effective dissolver with less environmental impact due to its very short half-life. Although it requires special handling, AcroClear scavenger and dissolver degrades rapidly in water to become nontoxic 3-Hydroxypropenal, making it relatively easy to meet environmental requirements for offshore overboard water disposal and air permits.

**Foam Assisted Lift Solutions**

Foam Assisted Lift (FAL) solutions from Multi-Chem help maintain the critical velocity needed to carry liquids to the surface both in producing wells where production pressures are not high enough to lift fluids, and in new wells that produce more liquids than the well’s natural flow can unload. By reducing the density of liquids in the well, FAL solutions allow gas pressure from the reservoir to flow to critical velocity for lift, stabilizing production by preventing fluids from accumulating and causing liquid loading.

Using Multi-Chem’s proprietary FAL modeling software, subject matter experts perform a complete system survey and can recommend a custom-designed solution that can be formulated with compatible chemistries for corrosion protection, scale control, hydrate control, or paraffin and asphaltene control, providing maximum benefit from a single injection point.

**Solutions to Mitigate Risk and Protect Pipeline Integrity**

When you work with Multi-Chem to protect your pipelines, you reap the benefits of our vast experience in providing customized pipeline integrity solutions across the international market and in every type of production environment.

**Pipeline Systems Integrity Group (PSIG)**

The Multi-Chem PSIG works in conjunction with operations to service pipeline assets, and proactively control and prevent pipeline failures using chemical inhibition programs that minimize internal corrosion.

For complete transparency whenever possible, the group provides maps and reports detailing the overall internal Multi-Chem treating program, as well as comprehensive data related to corrosion rates, mitigation and control recommendations, and the respective costs in achieving program objectives.

In addition to technical support for problem-solving issues, the group is tasked with providing a means for equipment maintenance, coupon pulling, and electronic logging to assist in establishing trends for assuring pipeline integrity—and implements summary reporting as a chronological history of all related actions for pipeline protection.

**GIS Monitoring/Mapping**

The dedicated Multi-Chem PSIG helps to mitigate risk in gas transport lines by working with you to establish objectives for minimizing failures and downtime, and maximizing throughput. By mapping lines, and assessing low-resolution risk and consequence of various pipeline segments, PSIG provides a more accurate overview than is possible by merely assessing “average risk.” Additional data can be integrated to better manage and assess multiple factors, such as gas content, flow velocity, pipeline pressure, and high-consequence areas for risk assessment.
In addition to gas and fluid sampling, other GIS services include developing mitigation programs to control both internal and external corrosion, scale, bacteria, acid gases, and hydrates, and monitoring the line to help ensure control and compliance.

**Pipeline Corrosion Control Solutions**
Multi-Chem’s PSIG works proactively to control and prevent pipeline failures using chemical inhibition programs that minimize internal corrosion due to MIC, CO$_2$, under-deposit, H$_2$S, or O$_2$, individually or in combination. Multi-Chem offers a variety of corrosion inhibitors, including water- or oil-soluble, high-shear, high-temperature, and pressure-stable inhibitors, and also certifies corrosion inhibitors for umbilical use. In addition to these products, Multi-Chem provides fluid properties and field condition evaluations to customize corrosion-treatment programs to meet specific requirements.

Hydrate control solutions are critical in gas production systems, where a sudden change in pressure, volume or temperature, can potentially cause water to form a cage around a gas molecule, forming a solid form of gas called a hydrate. Not only do hydrates threaten production by aggregating and adhering to pipeline surfaces, causing line blockages and plugs, but they also pose a great safety risk, as they have potential to become a dangerous projectile. Multi-Chem offers three unique approaches to preventative hydrate control, each of which can be customized for specific production challenges.

**Thermodynamic Inhibitors**: change the makeup of the water to make the environment non-conducive for hydrate formation.

**Kinetic Hydrate Inhibitors (KHI)**: keep hydrates from forming for a period or “hold time”. When residence time of fluids in the pipe is shorter than the hold time, no hydrates will form.

**Anti-Agglomerate (AA) Inhibitors**: allow hydrate formation, but prevent them sticking together to form plugs. Instead, hydrate crystals are kept in a slurry, easily removed by remaining fluids.

**Solutions for the Challenges of Deepwater Operations**
As your true partner in deepwater operations, Multi-Chem offers an innovative suite of customized technological and chemical solutions that can provide consistent and quality flow assurance; increase production through optimum treatment levels; and help reduce your overall costs.

We don’t drop off chemicals and walk away. Multi-Chem is with you for the long haul, providing continuous monitoring and analysis services to clearly diagnose issues, and engineering customized chemical solutions in the right proportions to effectively help resolve your deepwater challenges.

It is our objective to enhance the life of your offshore asset with preventative maintenance, and help you avoid surprises by identifying potential problems before they occur. Toward that end, Multi-Chem has developed a first-of-its-kind system of highly advanced rocking cells, specially designed to withstand corrosive gases for testing and assessing Low Dosage Hydrate Inhibitors (LDHI) for offshore application. The system provides an opportunity to better simulate actual flow conditions safely, reducing risks during later field application.
Solutions to Maximize Deepwater Operations

Multi-Chem offers a range of specialty chemicals to enhance performance, including CapSure® certified products for use in umbilical lines to ensure stabilized chemical application for greater safety in deepwater systems. Our expertise also means we can customize platform-specific, chemical products and formulations for a particular system or producing condition.

Low Dosage Hydrate Inhibitors (LDHI)

LDHI from Multi-Chem effectively control hydrates to maintain well, flowline and pipeline integrity while lowering total costs in offshore applications. Requiring lower dosage rates than traditional methanol or glycol based inhibitors, Multi-Chem’s LDHI offshore solutions prevent hydrate plugs that can create complete blockages, improving HSE by reducing chemical hazards associated with thermodynamic inhibitors such as methanol and glycols.

Our advanced technologies allow continuous LDHI treatments while controlling topsides fluid separation and water quality, with special formulations available to eliminate methanol contamination of export crude and associated penalties.

CapSure® Certified Solutions

Multi-Chem’s CapSure® line of umbilical-qualified products exceeds industry standards for quality, purity and application compatibility. The CapSure certification process includes thorough testing of materials compatibility, particulate content, low-temperature and high-pressure viscosities, and long-term product stability.

The CapSure line goes beyond accepted industry standards of excellence and requires 60-day hot and cold static stabilities (no change in properties) and high pressure (20,000 psig / 138 MPa) viscosity at seabed temperatures.

This strict CapSure certification process helps ensure that all chemistries approved for umbilical/capillary use meet the stability and integrity requirements needed for flow performance under the harsh conditions encountered in these injection systems.
Multi-Chem’s Process for Innovation on a Global Scale

Consistent Delivery of Distinctive Service Quality Around the World
At Multi-Chem, we are dedicated to process adherence. It’s what enables us to provide custom solutions that consistently meet or exceed customer expectations in applications worldwide. Mapped on a global perspective, then customized locally to address local legislation and needs, our comprehensive, auditable processes exceed ISO standards, providing a roadmap for repeatable performance excellence. That’s how we consistently deliver distinctive service quality around the world.

Continual Performance Optimization
With world class research and development facilities in Houston, Texas, and Pune, India, as well as collaboration with universities around the world, Multi-Chem is committed to continually develop and apply new technologies that benefit our customers. Our research and development experts collaborate closely with our field engineers to define solutions for challenges at the well site.

That’s why our technical and operational processes are interconnected. When field application is directly connected with research and development, process adherence enables us to rapidly innovate and customize systems specifically for maximum performance and efficiency in individual wells. These processes also provide documentation of everything we do—knowledge capture that is essential to our efforts toward continual performance optimization. After all, “lessons learned” are what drive innovation.

Laboratory Support with No Boundaries
An extensive global lab database allows Multi-Chem experts to conduct comprehensive testing analysis on a global scale. So whatever your challenge, wherever it arises, we can meet it with expertise and knowledge from around the world.

Starting at the well site, our engineers are the first line of technical service. Highly trained and locally experienced, they provide monitoring and testing services, recommending and implementing appropriate treatments to help ensure that fluids meet operational specifications.

In support of the field engineers, a network of local and regional labs perform more extensive and complex tests, calling on global laboratories to provide very specialized equipment or knowledge when required for a customized engineered solution.

Technical Services Mobile Laboratories
Fully equipped mobile test trailers provide in-field laboratories that enable Multi-Chem field technical service experts to conduct complete surveys, chemical analyses, and operational systems evaluations at field locations anywhere in the world. Each self-sufficient lab trailer houses its own energy source and contains all the equipment necessary for accurate on-site analyses, eliminating inaccuracies that can occur when samples age during shipping to distant laboratories. As a result, the Multi-Chem team can rapidly develop new formulations in support of programs that optimize production and help reduce lease operational expenditures.
Mission, Vision and Values

Mission
To provide unparalleled technical expertise and superior local service to our customers, through cost-effective applications of customized specialty oil and gas chemicals.

Vision
“To be the best in all we do.”

• To develop long-term relationships with our customers, by earning their confidence and consistently exceeding their expectations and requirements.

• To attract, develop and retain a highly productive, committed and loyal work force while creating opportunities and pursuing mutual success.

• To be the standard by which others are measured, in order to remain the supplier and employer of choice.

• To generate stakeholder value and be good neighbors in the communities we serve.

• To create a work environment that promotes the safest work habits, sound environmental practices and full compliance with industry regulations.

Values

Ethics - “Doing the right thing”
• Being honest
• Being trustworthy
• Demonstrating integrity

Commitment - “Being here to stay”
• Ensuring customer confidence
• Meeting compliance standards
• Sharing mutual respect for all stakeholders in our business

Excellence - “Exceeding performance expectations”
• Developing and rewarding values-based performance
• Providing value-added customer service
• Delivering a premier product line

Innovation - “Continually improving our business”
• Developing customized application methods
• Leveraging technology to create customer solutions
• Promoting strategic supplier relationships

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Sales of products and services will be in accord solely with the terms and conditions contained in the contract between company and the customer that is applicable to the sale.