

# World-Class Solutions Partner.

Oil and gas services for enhancing hydrocarbon productivity.



Welcome to Messer Oil and Gas Services. From our latest technology for enhancing well productivity through the power of combining gases and nanoparticles, to our best-in-class CO<sub>2</sub> and N<sub>2</sub> service operations, Messer is your world-class solutions partner.

## Your productivity partner

Messer, a world leader in industrial gases and engineering, recognizes the significant investment made in upstream oil and gas production, as well as the need for maximum productivity. That's why we serve the energy industry with comprehensive solutions for productivity gains. Our Oil and Gas Services safely and reliably deliver and stage industrial gases – carbon dioxide (CO<sub>2</sub>) and nitrogen (N<sub>2</sub>) – to energize individual well treatments (aka huff n'puffs) to hydraulic fracturing treatments for more efficient, effective, long-term well stimulation and completion. With half a century of expertise serving the energy industry, Messer can help you recover oil and gas more effectively, even from unconventional plays.

## Leading provider of CO<sub>2</sub> and N<sub>2</sub>

Messer, among the first to provide innovation in oilfield services using gases, now comprises of a leading network in the US for CO<sub>2</sub> and N<sub>2</sub> delivery, staging and supporting well stimulation services for enhanced hydrocarbon recovery and oilfield services. Today, we offer the benefits of energized solutions for fracturing unconventional reservoirs. Our expertise in the safe and reliable handling, transportation, and storage of cryogenic liquids and equipment, combined with dedicated on-site personnel, enable you to remain focused on exploration and production. Using Messer CO<sub>2</sub> and N<sub>2</sub> for energized well stimulation can lead to increased Expected Ultimate Recovery of your wells.

## Meet increased demand

The U.S. federal government projects that natural gas sourced from shale will account for more than 20% of the United States' natural gas supplies by 2020. Energy producers and service providers can count on Messer to help them extract the full potential of their wells using CO<sub>2</sub> and N<sub>2</sub> for hydraulic fracturing.

## Advantages of CO<sub>2</sub> and N<sub>2</sub>

Studies show significantly higher gas production from unconventional sources in wells fractured or stimulated with energized fluids. Fracturing treatments energized with CO<sub>2</sub> and N<sub>2</sub> maximize long-term production, minimize damage, and lower overall costs. An alternative to non-energized treatments such as slickwater and gelled oil, CO<sub>2</sub> and N<sub>2</sub> can offer considerable advantages:

- Reduced production decline rates
- Improved flowback
- Good proppant placement for maximizing conductivity of hydrocarbons
- Less formation damage
- Ease of cleanup

CO<sub>2</sub> and N<sub>2</sub> are ideal for formations with low- to no-permeability, when there is low pressure in the hole, or strong capillary forces within the formation. This includes shale, tight formations, and coalbed methane. In addition, due to its high water solubility and viscous hydrocarbon miscibility, CO<sub>2</sub> can provide further well-stimulation enhancement in liquids-rich plays.



## Less water

While non-energized fluids are commonly used for horizontally drilled wells in unconventional reservoirs, challenges with water supply, availability, recovery, and disposal led to technological advances using CO<sub>2</sub> and N<sub>2</sub>, which have been successfully applied in traditional well stimulation. Slickwater applications use an average of 5 million gallons of water per well, and less than 30% is successfully recovered, leading to potential formation damage to the reservoir. Excessive water flowback leads to more costly management for recycling, reuse, or disposal. Because CO<sub>2</sub> and N<sub>2</sub> flow out of the well as a gas, even if mixed with water, there is less water to recover.

## Messer's service commitment

A service-oriented company, Messer works alongside and in support of oil and gas companies for expert handling, logistics, and safety in the smooth delivery and management of CO<sub>2</sub> and N<sub>2</sub> for your well stimulation (fracturing, HNP) projects. We bring decades of experience to ensure for our upstream clients reliable, cost-effective, and sustainable well programs. Our commitment to your productivity gains and performance enhancement is unmatched.

<sup>1</sup>Improved Hydraulic Fracture Performance with Energized Fluids: A Motney Example," Lyle H. Burke and Grant W. Nevison, Recovery-2011 CSPG CSEG CWLS Convention

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Studies show significantly higher gas production from unconventional sources in wells fractured with energized fluids using CO<sub>2</sub> or N<sub>2</sub>.

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## Talk to Messer

To ensure you're maximizing your take of energy from both conventional and unconventional sources, talk to Messer about the advantages of using CO<sub>2</sub> and N<sub>2</sub> for well stimulation. For single-source responsibility, integrated project execution and on-time, on-budget processing, Messer is your partner for guaranteed performance. We offer an unparalleled depth and breadth of solutions to maximize productivity in upstream applications.

To learn more about Messer, and our premier industrial gases and comprehensive services, email [sales@messer-us.com](mailto:sales@messer-us.com) or call 800-755-9277.



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