The Rise of E-Frac

By Steve Besore, GD Energy Products

Net-zero carbon emissions goals and energy industry expectations are on the rise throughout the U.S.

As a result, more E&P companies are requesting, and in some cases insisting on, alternative well stimulation frac solutions from their contractors to help reduce their overall carbon footprint at well sites.

That's where electrification, also known as "e-frac" comes into play. Hydraulic frac pump manufacturers have designed market-specific pumps with the latest technologies to meet the needs of future Environmental, Social and Governance (ESG) demands. These new technologies empower pressure pumpers to transition to electric-powered frac units and diversify their fleets with different fuel options.

Alternative Frac Solutions

Traditionally, large semi-trailers were brought in housing diesel-powered frac pumps to power a frac site. Now, there are other options in the mix, including using electrical line power, turbine generators fueled by natural gas, or dual fuel engine technologies.

As oilfield service companies shift to lower emissions fuel sources for their frac units, GD Energy Products and other high-pressure pump manufacturers are constantly innovating and improving their technologies to help minimize the carbon footprint for their customers and for the environment, especially at shale sites across the country.

Natural gas is known to have fewer greenhouse gas (GHG) emissions, and when used for electricity production, it emits 50-60% less carbon dioxide (CO_2) than coal. In Texas alone, from 2011 to 2018, Permian Basin operators reduced methane emissions intensity by nearly 64%. In that same time period, oil and gas production in the Permian has increased by over 210%, and it continues to rise. In its Annual Energy Outlook 2022, the U.S. Energy Information Administration projects that natural gas production will increase by nearly 25% through 2050.

Courtesy of GD Energy Products

Industry Challenges and Innovations

Now that the pandemic is showing some relief and the U.S. oil and gas industry has a mostly positive outlook, companies are beginning to ramp up their capital planning and spending. To meet energy industry expectations and ever-changing regulations, many firms are exploring their own unique and sustainable solutions.

Because well completions at shale sites require intense amounts of pressure and a high volume of water, sand and other chemicals to pump through the well, pump manufacturers are constantly creating new, powerful and efficient technologies to help maintain equipment.

Some hydraulic fracturing pumps like GDEP's Thunder 5000 are built to give their customers an all-encompassing and versatile unit for electric, gas and diesel-driven fleets. A powerful, 5,000 HP pump with an 11-inch stroke as well as stainless steel fluid ends factor in a longer performance life at a slower speed. The stroke length is important as it defines the speed of the unit and reduces fatigue cycles. The Thunder 5000 is an extremely high-powered pump optimized for e-frac, dual fuel, turbine direct and conventional diesel power sources.

An e-frac system with higher horsepower pumps requires less equipment and fewer trailers at the well site, saving operators capital spending costs and fuel efficiency in addition to potential downtime from frac engine repairs and reducing the footprint at the well site.

In addition to generating electricity on the pad site, some E&P companies are currently testing and using battery power, which includes large trailers with multiple batteries that can either boost or operate overnight to reduce the noise and to sustain the system until fracking continues in the morning.

Future Environmental Risk Reporting

The ongoing transition from fossil fuels to clean energy is not a straightforward process and is going to continue down an uncertain path until more regulations are in place. The Securities and Exchange Commission (SEC) recently proposed new rule changes that would require many oil and gas companies to disclose climate-related risks and other governance information in their registration statements and reporting, including both direct and indirect GHG emissions. If approved, the proposed rules could go into effect later this year with phased compliance dates to follow.

Steve Besore, Director of OEM Sales, GD Energy Products, provides pumping solutions to OEMs and end users of oilfield equipment. With 30 years of oil and gas experience, he continues to stay on top of evolving industry trends.