

## RECORDED BENEFITS

- Improved hydraulic fracturing due to increased liquid flow
- Reduced back pressure resulting in lower energy consumption of well pumps
- Increased well output

## Novel Friction Reducer Provides Excellent Results in Challenging Oilfield Application

### Solenis™ FR147-NA Friction Reducer

#### Customer Challenge

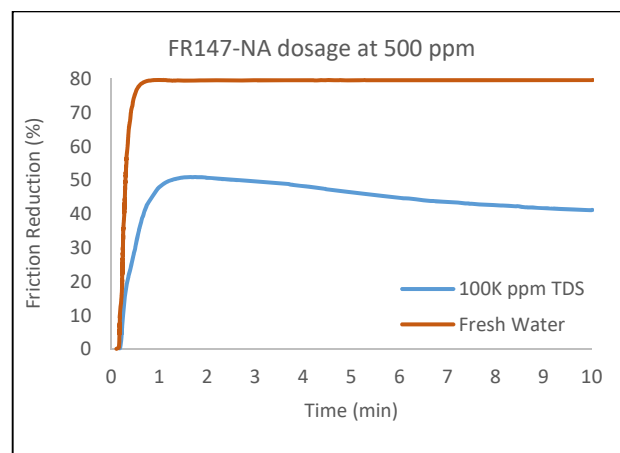
An oilfield customer in North America was challenged to obtain good friction reduction performance using a friction reduction polymer for hydraulic fracturing due to its high brine feed water. The high brine feed water reduced the effectiveness of the friction reduction polymer, resulting in increased back pressure, which increased the energy consumption of the well pumps.

#### Recommended Solution

Solenis recommended the use of a new friction reducer called Solenis FR147-NA that was specifically developed for hydraulic fracturing applications using high brine feed water. The product reduces drag (i.e., friction), allowing greater volumes of liquid to be moved with less pumping energy. Notably, the product activates quickly with a high peak friction reduction, maintains performance with minimal degradation, and is freeze stable to minus 20°C.

#### Results Achieved

Solenis FR147-NA friction reducer was able to significantly reduce the back pressure and consequently the pumping energy in a challenging high brine water. The below graph shows the friction reduction capability of the friction reducer at 100,000 ppm total dissolved solids (TDS).



Friction Reduction Performance With Novel Friction Reducer

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