Dissolvable Packers: Improving Well Control in High-Pressure Annular Gas Lift Installations

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Annular gas lift is favored in high-pressure wells for maximizing early production through the annulus's large flow area, easing installation with existing well geometry, and managing high gas and solids volumes. Installing gas lift systems in these conditions relies on conventional well control methods, such as snubbing, wireline-set traditional packers, or heavy brines. Snubbing is costly, time-intensive, and increases operational risk under high pressure due to specialized equipment and crews, while traditional packers can be even more expensive due to retrieval interventions and impose undesirable flow restrictions despite effective pressure isolation. Heavy brines, used to counterbalance pressure, are costly at high densities, risk formation damage, and are challenging to maintain in wells with a high GOR. As a result, operators often delay gas lift deployment, flowing wells naturally for months until pressures drop, which defers production and introduces logistical inefficiencies.

This case study evaluates a dissolvable packer, made from a magnesium alloy with a controlled dissolution rate, for reliable well control in open-ended, high-pressure annular gas lift systems. Deployed via wireline, it isolates downhole pressures during tubing and gas lift valve installation, then dissolves completely, eliminating restrictions. We detail its design—material composition, dissolution behavior, and pressure capacity—alongside deployment procedures and performance data from a multi-well trial in Devon Energy's Delaware Basin operations. Metrics include installation duration, pressure containment, safety incidents, and production start dates compared to traditional methods.

Field data show the dissolvable packer, as compared to traditional well control methods, is less expensive, shortens installation windows, and enhances safety by minimizing high-pressure exposure risks during installation. Earlier gas lift activation is also achieved. The session presents operational details, quantitative results, and lessons learned, including pressure limits and dissolution reliability. This method supports gas lift optimization by improving recovery efficiency. Collaboration between Devon Energy and Shale Oil Tools refined its field application, establishing a repeatable process for similar wells. Attendees will gain technical understanding of its implementation and adaptation considerations.