RESERVOIR STIMULATION

ZetaFlow® Sand-Conglomeration Services

Increases maximum sand-free flow rates and boosts total reservoir performance

Weatherford®

Effective and efficient sand control

Enhance flow rates and protect your reservoir with ZetaFlow® sand-conglomeration services

Sand problems will eventually plague most wells. Whether beginning with first production or with water breakthrough, sand and unconsolidated particles can erode the near-wellbore area and slowly choke production.

ZetaFlow sand-conglomeration technology is field-proven to dramatically improve sand management and enhance production. This chemical process increases the attraction between particles without damaging the reservoir by trapping formation sand and fines to maximize sand-free flow rates and increase production.

Effective in most formation types, including sandstone, coal, and shale, the unique ZetaFlow chemical solution controls the movement of formation sand and fines that hinder production flow. It enhances the load recovery of treatment fluids during fracture flowback operations. The ZetaFlow solution modifies the zeta (ζ) potential of the formation or proppant surfaces and of the fines and brings them to near-neutral values. As a result, the proppant conductivity increases and the fines bind together and fix in place to avoid flow restrictions. This system leaves formations in the optimal wetted condition for increased load recovery.

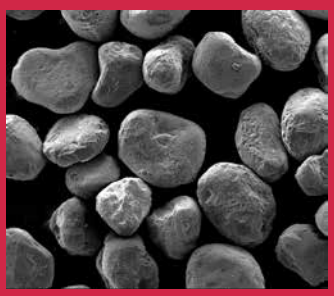
Economically managed sand issues in

400 wells

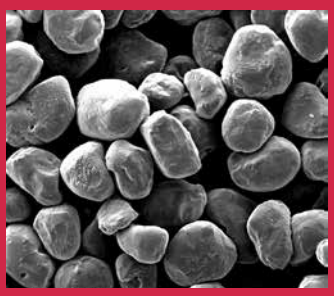
throughout the world

The ZetaFlow service advantage

- Controls formation sand and fines movement
- Maximizes asset value and reduces lifting costs by increasing sand-free rate
- Enhances standalone screen, gravel-pack, and frac-pack applications
- Minimizes erosion of the near-wellbore area
- Adapts to changing reservoir stress conditions by remaining ductile and agglomerative
- Provides an effective, cost-efficient, and nondamaging alternative to resin-consolidation treatments
- Replaces traditional, curable, resin-coated proppants
- Can be deployed via coiled tubing or production tubing



Before ZetaFlow



After ZetaFlow

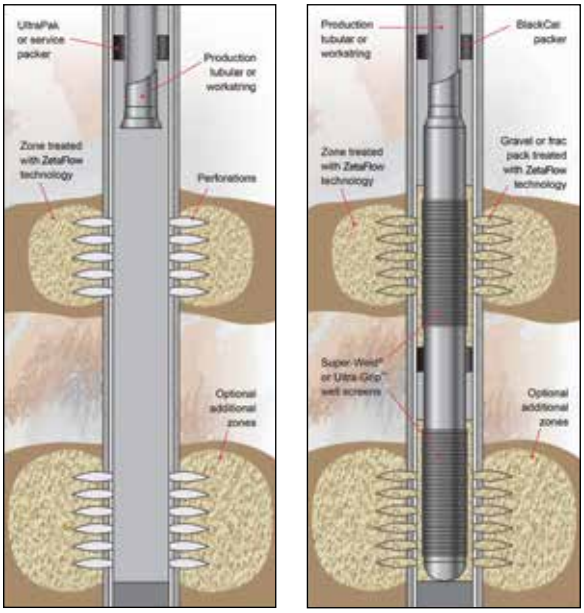
How the ZetaFlow service works

The ZetaFlow service resolves existing and potential sand problems that reduce production. Though some wells begin production with sufficient natural consolidation with clays, reservoir depletion or water breakthrough dissolves the clays or changes the capillary pressure, which triggers sand production.

ZetaFlow solution alters the ζ-potential of the formation. The solution is added continuously in both slickwater and borate cross-linked gel systems that are engineered for the specific application. It minimizes the ζ-potential of sand, proppant, or fines to promote particle agglomeration, which enhances sand- and fines-free production.

Remedial

New Wells and Workovers



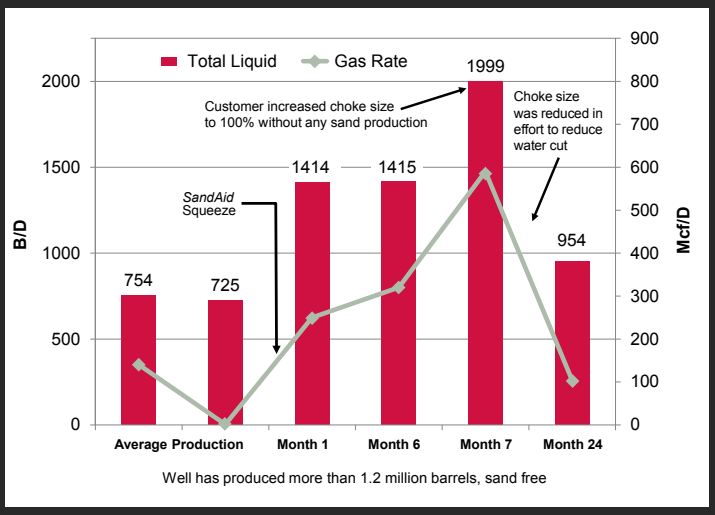
In existing wells, ZetaFlow technology can be pumped through current tubulars or coiled tubing

ZetaFlow sand-conglomeration service

increased revenue by $1 million

in just 6 months

An offshore Gulf of Mexico well produced increasing volumes of sand, which made production uneconomic. Once the ZetaFlow service was performed, the well recorded a 78% increase in its maximum sand-free flow rate despite increasing the choke size. The operator's investment was recouped in less than 30 days, with an incremental increase in revenue of approximately US $1 million in the first 6 months. The production increases have been maintained for nearly a decade, with zero sand to date.



The ZetaFlow sand-conglomeration service increases the maximum sand-free flow rate and boosts total reservoir performance. To learn how our services and technologies can work for you, contact your authorized Weatherford representative or visit **weatherford.com**

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