

GeoFORM conformable sand management system

Ensure total wellbore conformance and superior filtration—on every job

The patented **GeoFORM™ conformable sand management system** offers a superior alternative to conventional sand control methods, providing performance similar to or even better than that of an optimal gravel pack, without the logistics or risks associated with pumping slurry. Using advanced materials science, customers can achieve total conformance and superior filtration—on every job to improve long-term production while reducing operational requirements and health, safety, and environmental (HSE) risks.

Conventional considerations

Despite advances in technology, no conventional sand control solution provides the right combination of operational simplicity, total conformance, wellbore stability, and superior filtration required for effective, long-term sand control. Shortfalls can lead to sand migration plugging, compaction, hot-spotting, and screen erosion—and ultimately higher costs and diminished returns.

Total wellbore conformance

To overcome the challenges associated with conventional solutions, materials science experts from Baker Hughes developed **Morphic™ shape memory polymer (SMP) material**—an expandable filtration media that enables the GeoFORM system to conform to the wellbore.

During manufacturing, the outside diameter (OD) of the SMP media is sized slightly larger than the openhole wellbore. The material is then heated and compacted to a smaller OD and assembled onto a perforated basepipe. After installation, an activation agent is pumped downhole and triggers the SMP media to return to its original, larger OD.

As the media expands, it forms a tight seal against the wellbore, providing total conformance, regardless of hole irregularities. And after activation, the SMP material maintains positive stress against the formation to stabilize the near-wellbore region. This complete coverage helps keep sand at bay, enabling optimal sustained production with significantly reduced risk of plugging or hot spotting.

Applications

- Frac-pack alternative for reservoirs with fine sands
- Gravel-pack alternative for ICD completions
- Short-radius and sinusoidal wells
- Extended-reach wellbores in reservoirs with low fracture gradients
- Locations with sand control pumping constraints

Benefits

- Creates long-term, total wellbore conformance
- Captures a broad range of particle sizes
- Minimizes formation damage
- Resists plugging and erosion
- Simplifies logistics and reduces the operational footprint
- Combines easily with zonal isolation devices and inflow control technology

Enhanced filtration efficiency

The complex pore structure of the SMP material covers a wide range of sand grain sizes to provide superior, in-depth filtration. Because the media is uniformly structured and compressed before installation, customers no longer have to rely on the proper sizing and effective placement of proppant to protect against sand. The SMP media expands uniformly to provide an effective filter while maintaining high permeability (averaging around 40 Darcy) for maximum inflow performance.

Simplified operations and reduced HSE exposure

In addition to providing advanced sand control capabilities, the GeoFORM system significantly

increases operational efficiency and reduces risk compared to conventional gravel- and frac-pack jobs.

A typical gravel-pack or frac-pack operation can require a crew of 10 engineers and field specialists, as well as specialized blending and pumping equipment. Operational costs are further compounded when multizone frac-pack operations are performed.

With the GeoFORM system, sand control installation can be conducted by a two-person crew. No special pumping equipment, fluid, or proppant is needed; only the activation fluid. And once the fluid has been pumped, operations can proceed to the upper completion while the SMP media activates. This simplified method saves rig time, shrinks the onsite footprint,

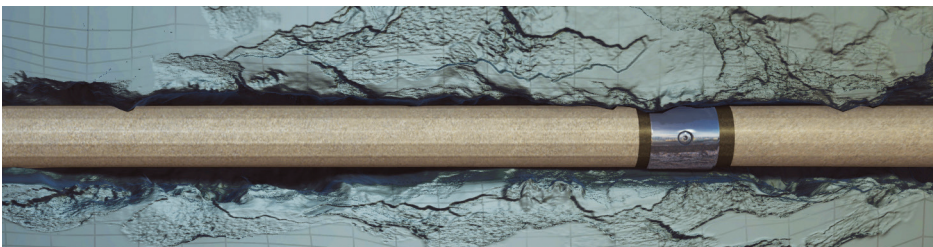
minimizes operational logistics and cost, and reduces HSE exposure.

To combat sand in harsh environments such as methane hydrate, an enhanced version of the GeoFORM system—the **GeoFORM XTreme™ (XT) system**—is also available. With **BeadScreen™ flowback control technology** incorporated into the basepipe, the GeoFORM XT system provides an added layer of defense against abrasive formation sands and high production rates while enabling maximum flow.

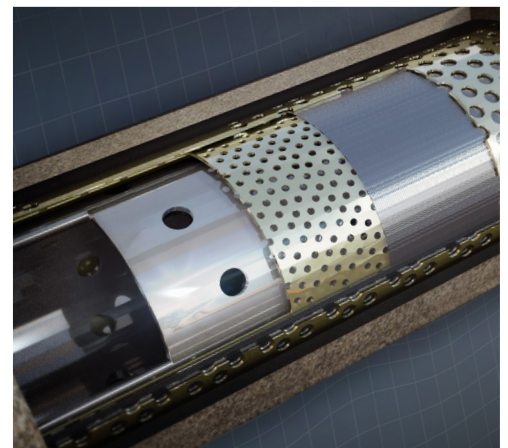
Contact your local Baker Hughes representative today to learn more about how GeoFORM system can improve performance and reduce logistics and risks in your next sand control application.

GeoFORM system specifications

Size	Basepipe OD	Compacted SMP OD	End ring OD	Nominal opehole size	Maximum expanded SMP OD	Temperature range	
						LoTg	HiTg
3½ x 6 in.	3½ in.	5.20 in.	5.625 in.	6.000 in.	7.500 in.	32 to 140°F (0 to 60°C)	140 to 200°F (60 to 93°C)
5½ x 8 ½ in.	5½ in.	7.250 in.	8.000 in.	8.500 in.	9.500 in.		



The SMP media is run in hole in a compressed state with an OD smaller than the wellbore (top). When activated, the SMP material expands and fills the entire annulus, applying residual stress to the sandface while acting as a filtration medium (bottom).



The GeoFORM system cartridges include a premium mesh screen that is held in place by inner and outer shrouds located between the SMP media and the basepipe to enhance filtration and increase burst and collapse strength.

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