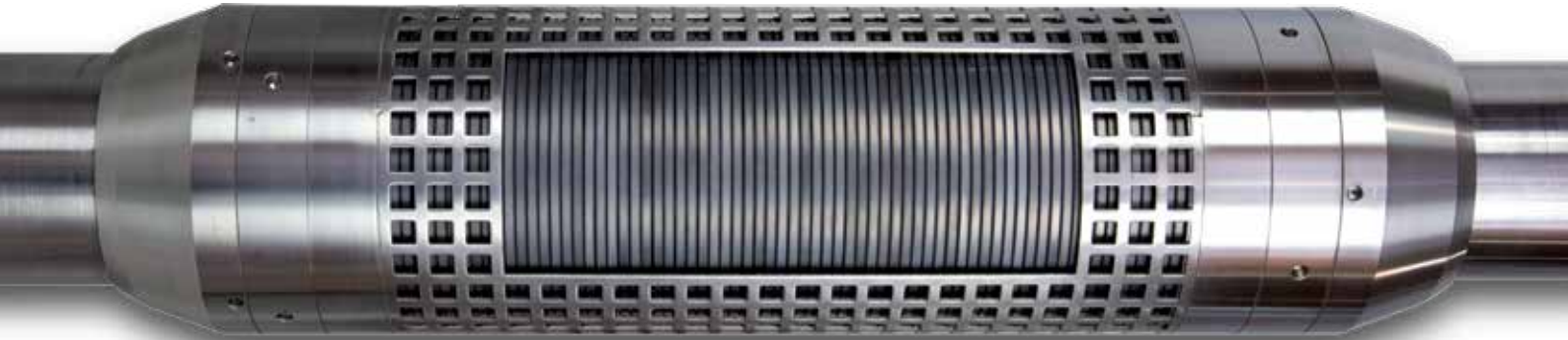


3M™ Ceramic Sand Screens

Working beyond the limits of state-of-the-art metallic sand screens. Designed for unconsolidated reservoirs with the risk of significant sand production.



3M™ Ceramic Stand-alone Sand Screen

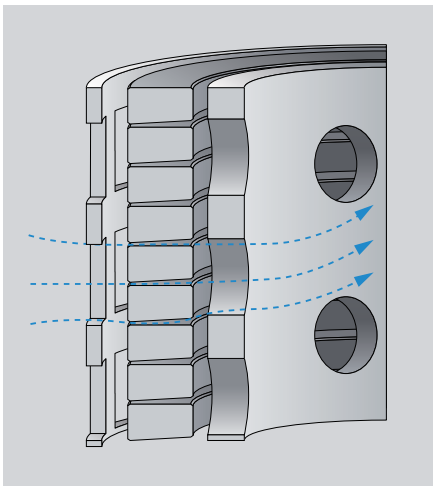
The new 3M™ Ceramic Sand Screen offers a breakthrough sand control technology especially under demanding conditions where erosion is a major challenge. State-of-the-art sand screen systems generally consist of metals that are not erosion resistant. Since the degree of abrasion is determined by material properties, 3M™ Ceramic Sand Screens use ceramic materials, which are ten times harder than metallic materials and show no indications of abrasion under reservoir conditions.

The screens can be deployed for regular sand-control in new wells or retrofitted to existing wells that suffer from sand problems as a result of reduced reservoir pressure. They can be set in most standard well completions and offer the opportunity to produce reserves that would otherwise have been lost.

Solution

The technology of 3M™ Ceramic Sand Control Screen Systems improves the known wire wrap screen principle by taking advantage of the unique properties of technical ceramics.

- Flexible stack of ceramic rings
- Specially designed with v-shape or keystone gaps
- Gap width, length and diameter tailored to the specific application /well bore
- Alternatively as self-supported systems or provided with an internal perforated tube
- Protection of valves and sliding sleeves is also an option



Cross section of ceramic sand screen

One of the few issues with ceramics is its limited toughness. However, with more than 85 years of experience in ceramic materials, this drawback has been overcome. The company's design and engineering competence facilitates the tailoring of ceramic systems for challenging applications.

The 3M™ Sand Screen design is well suited to ceramics and gives flexibility to the stack of ceramic rings while providing stability against torsion and flexure. As a consequence, the 3M™ Ceramic Stand-alone Sand Screen safely passes dog legs.

Minimizing pressure losses is a major issue during oil and gas production. To meet this important goal, extensive modeling on ring and gap design as well as a set of flow tests has been performed. The comparison of theory and practice is fully congruent:

The pressure loss over the 3M™ Ceramic Stand-alone Sand Screen stays very low for a broad range of flow rates.

Benefit

- No erosion (ten times higher hardness than metal)
- Higher collapse resistance (twice the stiffness than metal)
- For horizontal, slanted and vertical wells
- Retrofitting with the system on existing commercial landing nipples

Product is manufactured and sold by 3M Technical Ceramics, Zweigniederlassung der 3M Deutschland GmbH.

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3M Technical Ceramics
 Zweigniederlassung der
 3M Deutschland GmbH
 Max-Schaidhauf-Straße 25
 87437 Kempten, Germany
 T +49 (0)831 5618-0
 F +49 (0)831 5618-345
 info.technical-ceramics@3M.com
 www.3M.de/Technical-Ceramics
 www.3M.com/ceramicsandscreens

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