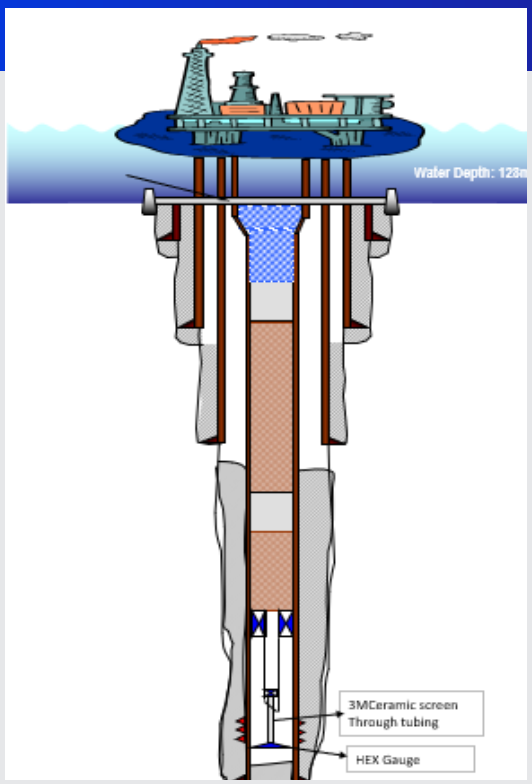
3M Science. Applied to Life.™

Case Study:
Oil & Gas

3M™ Ceramic Sand Screen deployed on coiled tubing assured fast return on investment

Gaining incremental production from existing well paying back within 5 days



Customer challenge

Reservoir depletion reached the point when sand production started to occur, and the operator had to restrict the flow rate to achieve sand-free production. The well had no sand control in place. Operator was looking for a cost-effective sand control solution which could offer the possibility to increase production rate in high flux and impingement velocities environment.
Another challenge was poorly sorted sand with a high content of fines.

The cased hole gravel pack option was rejected due to the high cost and increased complexity.

Challenge

Operator was looking for a cost-effective sand control solution which could offer the possibility to increase production rate in high flux and impingement velocities environment.

Solution

The screen with 2 3/8" base pipe and 3.6" max OD was selected to assure a smooth deployment through minimum well restriction.

Key Features

Deployment on coiled tubing
Screens straddled across the perforations
Erosion & Hot spotting resistance
Maintain slot opening
Corrosion resistant filter media

Application Reservoir PSD

Uc (d40/d90)= 8 to 16
Sc (d10/d95)= 40 to 72
Fines (<44µm) = 16% to 29%

Location

Caspian Sea

Why Ceramics?

Metallic sand screens tend to fail rapidly in highly erosive environments. Changing filter media material to ceramics (non-oxide silicon carbide) provides extreme resistance to erosion leading to increased production rates and period.

Solution offered

3M™ Ceramic Sand Screens previously had a successful track record with this operator in another location and were chosen to address the given challenges. The screen with 2 3/8” base pipe and 3.6” max OD was selected to assure a smooth deployment through minimum well restriction. Total BHA assembly of 376ft with actual screen length of 203 ft was run through 5 ½” tubing and set inside 9 5/8” casing with high expansion gauge at the bottom.

Deployment was performed with coiled tubing unit over 2 runs. The high expansion gauge was set at the required depth following with Ceramic Sand Screens landed on it and set across the perforations.

Customer value

Operator fulfilled the goal of increased production through a cost-effective retrofit solution deployed on coiled tubing

Well producing at 7800 BOPD with ca. 14 MMSCFD Gas. Ca. 2000 BOPD production increase from initial rate

3M Ceramic Sand Screens pay-back in 5 days based on incremental oil production

Sand control maintained at higher drawdown

Technical references

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SPE 146721: An Innovative Milestone in Sand Control – Maersk Oil & Gas
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MOC-Egypt- April 2016: Ceramic Sand Screen Systems - A Unique Down-Hole Solution for Sand Control
Sand Control with Ceramic Screens in Unconsolidated Reservoirs Demonstrated in the Mature Gaiselberg Oilfield. **OIL GAS European Magazine,** 2/2012, p. 74–78
SPE-182278-MS: Sand Control in Corrosive and Erosive Downhole Conditions at High Temperatures- 3M Technical Ceramics

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