

Colombia, South America

Operator increases ESP run life over 442% with innovative sand management tool

SandRight® solids fallback preventer keeps reservoir sand from re-entering the ESP system during shutdowns

CHALLENGE

- Extend ESP system run life
- Reduce the number of hard startups when ESP system is restarted
- Maximize recoverable reserves and reservoir drawdowns

SOLUTION

Implemented the SandRight Solids Fallback Preventer with its:

- Unique internal design, which prevents sand from falling back into the ESP
- Slim profile, which reduces the risk of cable damage during ESP installation

RESULT

- Improved ESP run life by more than 442%
- Enabled successful restarts without compromising ESP reliability
- Significantly reduced operator's total cost of ownership

Overview

An operator in Colombia wanted to improve its return on investment (ROI) by reducing an asset's deferred production and OPEX through increased electric submersible pump (ESP) run life and reservoir drawdown. The field is well known for its tendency to produce a large amount of sand from the unconsolidated reservoir. After trying different artificial lift methods and existing tools to mitigate the sand falling back into the ESP during shutdowns, the operator was still not able to improve ROI due to numerous ESP failures.

Challenge

Sand produced through the ESP will naturally fall back during shutdowns, accumulating in the first stages of the upper pump and causing hard startups when the ESP system is restarted. This can overstress the shaft, leading to premature mechanical failures in the pump. A large amount of sand with a small particle size has the potential to jam traditional sand management tools, leading to random levels of performance, which was experienced by this operator. A more reliable sand management solution was clearly needed.



SandRight Solids
Fallback Preventer

Solution

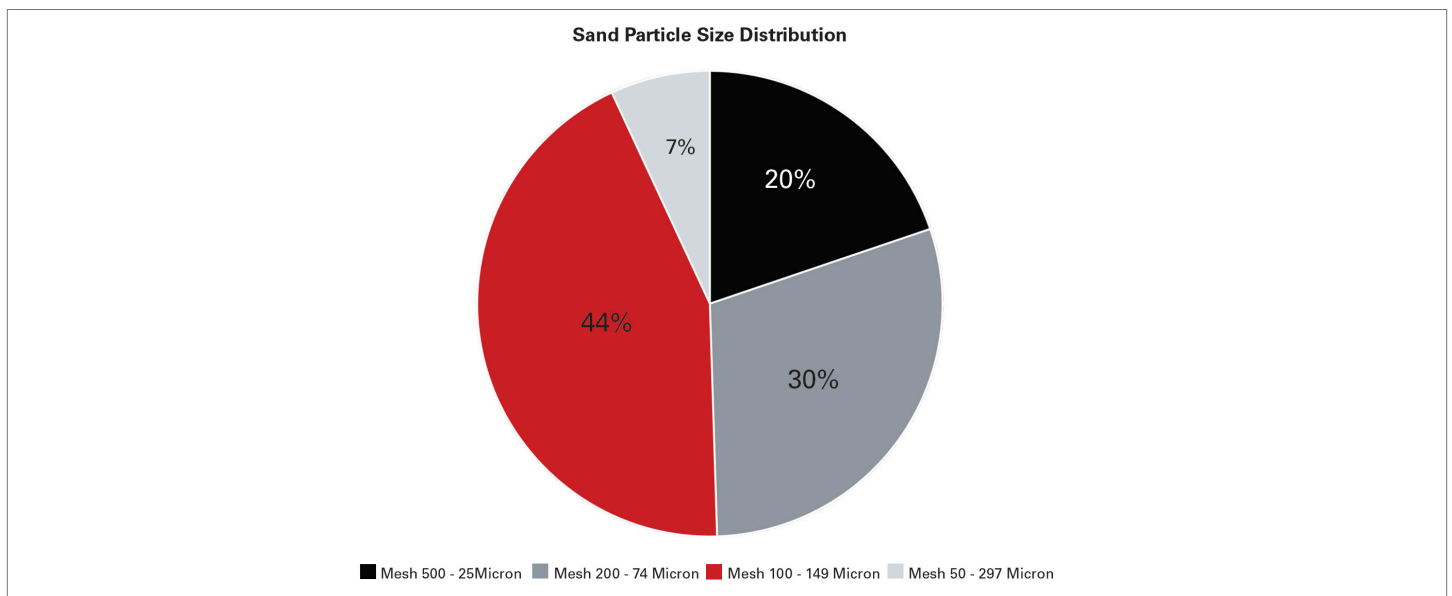
The SandRight® solids fallback preventer was implemented for its ability to eliminate hard startups and to improve ESP run life. Its innovative internal design forms a sand bridge in the annulus of the tool, thereby stopping the sand from reentering the pump. During startup, the pump fluid will flush the sand from the tool and carry it back to the surface. The insulated poppet valve design has the unique capability to open under differential pressure, thus, avoiding tool jamming. Additionally, the SandRight tool's slim profile reduces the risk of cable damage during ESP installation.

Results

The SandRight solids fallback preventer allowed the wells to restart without any sign of a hard start or of damage to the ESP. This more efficient, reliable, and longer-lasting sand management tool delivered on the operator's goal to maximize asset value. An additional 10 ESPs have now been deployed in the same field with the SandRight solids fallback preventer installed - demonstrating the consistent, outstanding performance of this technology.

Accomplishments

- ESP system run life improved from 45 days to 244 days (and the ESP is still running)
- Successful restarts without overstressing pump shafts after every shutdown
- Seventeen samples of sand obtained, analyzed (for concentration and particle size), and recorded since the initial SandRight installation
 - Sand concentration recorded up to 314 lbs/1,000 lbs
 - Average particle size distribution as follows:
 - > 20% of 25 microns (mesh 500)
 - > 30% of 74 microns (mesh 200)
 - > 44% of 149 microns (mesh 100)
 - > 7% 297 microns (mesh 50)



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