

Ecuador

**CHALLENGE**

- Mitigate sand blockages interfering with frac fluids treatment
- Reduce the number of hard starts when stopping production
- Minimize equipment wear and tear due to corrosion/erosion

**SOLUTION**

Implemented the SandRight® solids fallback preventer:

- With unique internal design that prevents sand and formation debris from falling back into the pump
- Constructed of DuraHard® 15 hardened metallurgy for corrosion and erosion resistance

**RESULT**

- Deterred damaging solids from entering the ESP system during power shutdown events
- Allowed the wells to restart without any signs of hard starts
- Provided higher abrasion and corrosion resistance for longer tool wear
- Improved ability to clean equipment through tubing and the SandRight tool

# Unique sand management tool eliminates ESP system blockage in four fracked well

SandRight® Solids Fallback Preventer prevents dislodged formation and sands from entering the ESP

**Overview**

An Ecuadorian operator wanted to maintain incremental production levels and keep reservoir pressure steady by fracking four wells in the Ui formation. The oilfield had a history of more than 25 stops throughout the year, largely due to pumps becoming blocked by the massive presence of sand. Previously, standing valves were employed to avoid sand falling back into the electrical submersible pump (ESP) system. However, the standing valve components were repeatedly blocked or mechanically damaged by solids from the fracturing process and the formation itself. The customer now sought longer run times unaffected by sand-related issues, leading to more effective, continuous administration of chemical treatments downhole.

**Challenge**

The Ui formation reservoir depth was between 10,200 and 10,300 ft. (TVD), and the fracking fluid had an average API of 16°. The effects of emulsion and heavy-to-severe solids threatened to damage existing ESPs, in particular causing overstressed motors and accelerated pump wear. The sand blockages during restart made it impossible to recover or change moving elements of the standing valve.



SandRight™ Solids Fallback Preventer.

### Solution

The SandRight® solids fallback preventer was implemented on all four wells to help avoid sand flowing in the reverse direction. Its unique internal design forms a sand bridge in the annulus of the tool, allowing the pump to re-fluidize the sand and run gas and chemical treatments through the tubing passageway above the tool—without causing any damage to the pump. A big advantage of the SandRight tool is the absence of mobile elements that can get blocked (in this case, by excessive sand) during operation. The success of this engineered solution was further assured by the use of DuraHard® 15 hardened metallurgical materials to better protect against corrosion and erosion.

### Result

The SandRight tool allowed the wells to restart without any signs of hard starts or damage to the tool, or to the ESP. This is impressive considering that these wells historically had over three stops every month during the course of a year. The flow of chemical treatments via the tubing configuration above the tool kept the fracturing process going according to plan. ESP cleaning jobs were also made possible directly through the tubing and SandRight tool. Overall, this job demonstrates the longer run life of ESPs installed in unconventional applications lowered well costs and maximized asset value.

### Accomplishments

- During a 6-month period, more than 15 restarts were registered as successful, without requiring any hard starts
- After every stop, the ESP restart was considered a “normal” start, without any blocking evidence in the monitoring trends (usually expressed as a high peak of amperage)
- Stops with over 7 days registered with a successful restart, not a hard start
- To date, four SandRight tools have been recovered, demonstrating the effectiveness of the tool after non-ESP-related failures or pulling reasons
  - Solids had been captured in the annular section
  - Pumps had free turn, clean from solids

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