

Specialty Reciprocating Rod Pump Improves Reliability in Sand-Laden Oil Wells, Achieves Continuous Run Time of More Than 5 Years



By designing a specially modified rod pump that prevents heavy, sand-laden oil from contacting the polished surface of the production barrel, Weatherford helped Petroboscan avoid interventions and increase runtimes up to 400%.

Objectives

- Provide a reliable artificial-lift method to produce heavy-oil wells (10° API) in the Boscán Field.
- Reduce workover frequency, associated costs, and downtime in conditions where conventional rod pumps frequently fail because of sand, gas, water, and heavy oil.

Our Approach

- First, Weatherford conducted a thorough review of historical well-performance data to gain a better understanding of the challenges and conditions the operator was facing.
- Tasked with designing a pump that could withstand the unique conditions of the Boscán Field and avoid the common problem of sand buildup causing the plunger to stick, Weatherford engineers recommended a modified assembly to an existing specialty pump design. This customized design was especially effective at pumping heavy oil in sandy conditions.
- To date, Weatherford has installed more than 140 of these specially configured pumps in this field for operator Petroboscan.

CLIENT
Petroboscan

LOCATION
Venezuela

FIELD
Boscán

WELL TYPE
Vertical, heavy oil

CASING SIZE
9-5/8 in.

TUBING SIZES
3-1/2 or 4-1/2 in., depending on well

DEPTH
8,000 to 9,000 ft (2,438 to 2,743 m)

ROD-STRING SIZE AND TYPE
1 1/8-, 1-, and 7/8-in. tapered, high-strength steel

OIL TYPE
10° API oil

PRODUCTS/SERVICES

- Application review
- Customized tool design
- Specialized reciprocating rod pump



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Value to Client

- Because of its ability to protect the plunger/production-barrel interface in sandy conditions, the pump significantly extended the average run life in the field compared to rod pumps previously installed in the field, which required interventions every 15 months.
- By starting each project with the understanding that no two fields are the same, Weatherford provided Petroboscan with a customized solution that provided superior performance, improved reliability, and greater value than an off-the-shelf solution would have provided.
- As of August 2015, two of the units installed, referred to by Petroboscan as the “Bomba Weatherford Sand Pump,” had completed 5 years of continuous operation, which represents a run-life increase of up to 400%.

