



Pan American Energy sets new standards for very high load applications using AlphaRod® HS sucker rods

The AlphaRod® HS sucker rod allowed the operator to exceed the limits of high strength conventional rods and achieve a peak gross production of 160 m³/day in the Cerro Dragón field, located in Argentina.

Summary

A record achievement

Sand content and its effects are a relevant key factor to seriously consider when selecting an artificial lift system. The mobile parts of the pump are sensitive to solid particles which produce abrasion and blocking, as in the case of the electro submersible pump (ESP) installed in a demanding well of the Cerro Dragón field. The frequent failures due to sand blocking encouraged the engineers to choose a beam pumping system, which is able to operate under sand conditions.

To complete the string design, a more resistant sucker rod was needed because standard sucker rods would be unable to withstand the load parameters. Tenaris suggested the use of the AlphaRod® HS sucker rod in a beam pumping application. This product, characterized by its high strength, offered an outstanding performance for over three months, achieving a peak gross production of 160 m³/day. In this way, Pan American Energy and Tenaris raised the performance of sucker rods to an unprecedented level.

Challenges

Breaking paradigms for heavy loads

When the electric submersible pump (ESP) system failed to ensure the expected performance, Pan American Energy decided to return to a beam pumping application. The oil and gas company required strong and reliable sucker rods, able to resist extreme conditions that included maximum loads between 37000 and 41000 lbs, minimum loads between 4000 and 5000 and a structural load of 95%.

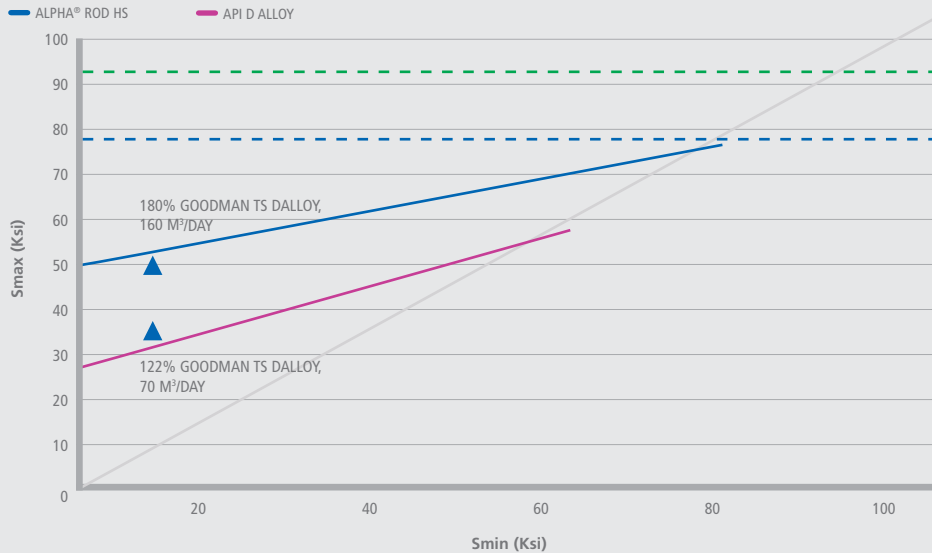
PROJECT PROFILE

Operator Pan American Energy	Products Highlighted AlphaRod® HS sucker rod
Location Cerro Dragón, Chubut, Argentina	Services Provided Field Services (Running Assistance, Technical Assistance).
Type of Well Vertical well	

Main features

SPECIFICATIONS	GRADE D ALLOY SUCKER ROD	ALPHAROD® HS SUCKER ROD
Maximum load (FS:0,9)	120%	180%
Toughness	30 JOULES	150 JOULES
ULTIMATE TENSILE STRESS (UTS)	120 - 140 KPSI	145 - 160 KPSI

AlphaRod® HS vs Standard Sucker Rod



AlphaRod® HS sucker rods operated with +47% max operative stress in comparison with standard D alloy sucker rods, to achieve +128% gross production.

▲ Goodman Diagram.

Solutions

A reliable answer

The AlphaRod® HS sucker rods are designed for very high loads in low corrosive environments, offering improved performance compared to conventional high-strength sucker rods. This solution ensures extended lifespan and superior toughness when compared to standard API sucker rods.

Results

Setting new standards

The AlphaRod® HS sucker rod exceeded the limits of conventional sucker rods, with an average Goodman D alloy SF=0,9: 180% (Maximum 191% - Minimum 176%). Following the design criteria of Pan American Energy,

the string worked at an average of 167%, reaching the highest value at 180%.

The results obtained by Pan American Energy mark an important milestone in the oil and gas industry, since the performance offered by the AlphaRod® HS sucker rods had been previously only achieved with ESP systems. By setting new standards, the AlphaRod® HS sucker rods made it necessary to upgrade the pumping unit to reach higher loads.

Oil and gas companies working in unconventional shale fields in Argentina in the future will require suckers rods able to withstand conditions such as early productions of over 80 m³/day, depths of about 3000 meters, big pumps and longer laterals. In this new scenario, AlphaRod® HS sucker rods have the field proven capacity to resist these tough environments, opening a new perspective to unconventional operations with greater depths.



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