

SPE 80919 Fourteen Years of Progressing Cavity Pumps in a Southern Oklahoma Waterflood

Kenneth D. Oglesby, SPE, Oak Resources Inc.; Jose Luis Arellano, SPE, Petroleum Experts Limited and Gary Scheer, SPE, Advanced Rotary Pump Systems Inc.

Waterflood was carried out in southern Oklahoma for which the appropriate PCP configuration was to be defined and a design of 4+ year pump life was to be achieved. Further desirable characteristics are: adjustable surface rates. Low capital costs, low repair costs and high electrical efficiency. Further issues were: improving the identification of elastomer compatibility with reservoir fluids and conditions, improving the prediction of stator-rotor fit over time and the reduction of the top rod or drivehead breaks.

The basic elements of a PCP are: rotor, stator, rods, tubing, drivehead/backspin brake, sheaves/belts, electrical motor and electrical control box.

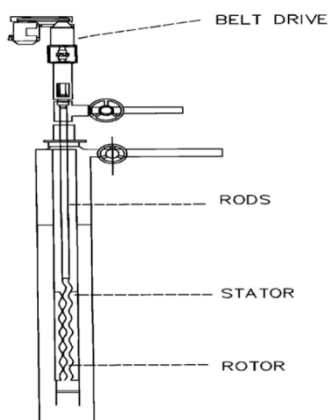


Figure 2- Typical well configuration

PCP monitoring was carried out to ensure that any sudden changes were immediately highlighted and could be addressed which was essential when considering the changing operating conditions and the stator elastomer swelling which occurred. The paper discusses in great detail the problems encountered as well as the approaches taken to overcome or minimise them. The resulting conclusions were:

1. PCPs are an efficient and low cost alternative to artificial lift in southern Oklahoma water flood wells.
2. Elastomer swelling is a critical concern and must be fully studied in the lab.
3. Rod or drivehead shaft failures remain unresolved problems.
4. Applicability of PCPs in other fields should be carefully tested since elastomer suitability and stator rotor fit can vary from field to field and well to well.