

Author's Accepted Manuscript

Two-phase Flow Characterization in a Split Vane Impeller Electrical Submersible Pump

Sahand Pirouzpanah, Sujan R. Gudigopuram,
Gerald L. Morrison



PII: S0920-4105(16)30505-8
DOI: <http://dx.doi.org/10.1016/j.petrol.2016.09.051>
Reference: PETROL3658

To appear in: *Journal of Petroleum Science and Engineering*

Received date: 23 September 2015
Revised date: 19 September 2016
Accepted date: 27 September 2016

Cite this article as: Sahand Pirouzpanah, Sujan R. Gudigopuram and Gerald L. Morrison, Two-phase Flow Characterization in a Split Vane Impeller Electrical Submersible Pump, *Journal of Petroleum Science and Engineering* <http://dx.doi.org/10.1016/j.petrol.2016.09.051>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Journal of Petroleum Science and Engineering

Two-phase Flow Characterization in a Split Vane Impeller Electrical Submersible Pump

Sahand Pirouzpanah¹, Sujan R. Gudigopuram, Gerald L. Morrison*

Mechanical Engineering Dept., Texas A&M University, College Station, Texas USA

sahand.pirouzpanah@gmail.com

sujanreddy@tamu.edu

gmorrison@tamu.edu

*Corresponding Author.

ABSTRAC

Electrical Submersible Pumps (ESPs) are used in the upstream petroleum industry for pumping liquid-gas mixtures. The presence of gas in the flow reduces the efficiency of ESPs. To investigate the effect of gas in the flow medium, Electrical Resistance Tomography (ERT) and pressure measurements were utilized on the diffuser stages in a 3-stage split-vane ESP. In an ERT system, the relative conductivity of the fluid mixture is measured which is used to obtain the gas concentration. The measured local gas concentration and gas volume fraction (GVF) were used to characterize the flow for different water and air flow rates, inlet pressures and rotating speeds.

Keywords: ESP; Multiphase; Slip Velocity; Void Fraction; Electrical Impedance Tomography; Performance Scaling

NOMENCLATURE

¹ Present Address: Regal Beloit America Inc., 531 N 4th St., Tippcity, OH45373, USA

Download English Version:

<https://daneshyari.com/en/article/5484534>

Download Persian Version:

<https://daneshyari.com/article/5484534>

[Daneshyari.com](https://daneshyari.com)