

College of Engineering and Physics Mechanical Engineering Department

Overcoming Adverse Effects of Gas in Artificial Lift Production Operations: R&D of an Ultra-High-Speed High Gas-Volume-Fraction Pump

Speaker:

DR. CHIDIRIM ENOCH EJIM

Petroleum Engineering Specialist
Drilling & Production Technology Department
Saudi Aramco



Date: Wednesday: Oct 14, 2026

Time: 1:30 – 3:00 PM

Location: Building 63 – Room 362

Abstract:

Electric Submersible Pumps (ESPs) lift downhole fluids from reservoirs to surface production facilities. These pumps operate very well when the fluid phase is liquid or liquid with a very negligible amount of free gas or gas volume fraction (GVF). ESP performance deteriorates when the pump intake GVF exceeds a threshold; conventional multiphase pumps are limited to about 75%. The current seminar presents ongoing research and development, as well as physical test results of a novel type of pump with unique internal architecture operating at ultra-high rotational speeds and providing significant pressure boost beyond the intake GVF limit of conventional pumping systems. The pump opens a new chapter in artificial lift production operations for wells with multiphase (gas-liquid) flows with high pump intake GVFs. The seminar also seeks discussion in areas of mutual interest and opportunities for potential engagement and collaboration related to improving artificial lift production operations in the oil and gas industry.

Bio:

Dr. Chidirim Enoch Ejim is a Petroleum Engineering Specialist at Saudi Aramco's Upstream Advanced Research Center, with nearly 12 years at the company and over seven years of prior experience at Schlumberger. His expertise includes downhole pump design and testing, separators, and surface pumping systems. He holds mechanical engineering degrees from the University of Malta, the University of Waterloo, and the University of Alberta. Dr. Ejim has granted patents and technical publications and is a contributing SPE member and registered Professional Engineer in Alberta, Canada.