Method and System to Proactively Prevent Failures in Electrical Submersible Pumps

Summary
An innovative system for detecting, diagnosing, and preventing interruptions in the usage of Electrical Submersible Pumps (ESPs). ESPs are commonly used for lifting large volumes of fluid from wellbores. ESP failure can result in significant production loss and costly equipment replacement. Current operation software does not predict anomalies in ESP function. Our researchers have developed a method for preventing ESP malfunctions by using real-time data and multivariate statistical modeling to monitor ESP behavior. This ESP monitoring system is able to predict an ESP complication, diagnose the future malfunction, and automatically prescribe a remedy that will prevent ESP failure.

Competitive Advantages
- Capable of diagnosing impending complications in ESPs
- Automatically generates solutions to correct and prevent the complication
- Can extend the life expectancy of ESPs
- Increases the production time of ESPs
- Reduces production loss and replacement costs

Problem Addressed
- ESP failure can cause substantial production loss and pumps are costly to replace
- ESP failure can be predicted with real-time data already collected in oil production industry using this system
- By predicting and resolving future malfunctions, production interruptions caused by ESP failure can be avoided

Applications
- Detecting, diagnosing, and preventing abnormal events in ESPs
- Prevent breakdowns in other electrical, mechanical, or pumping systems

Meet the Inventor
Dr. Michael Nikolaou
Professor,
DEPARTMENT of ELECTRICAL ENGINEERING AND BIOMOLECULAR ENGINEERING

Research Interests:
- Oil and Gas production systems
- Semiconductor manufacturing tools and processes
- Effective development and use of antibiotics

Patents
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Contact
Tanu Chatterji, PhD.
Technology Transfer Associate
oipm@Central.uh.edu | 713-743-0201
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