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Please fill in your abstract title.	A Novel Technique To Predict The Fluid Rate And Bottom Hole Flowing Pressure For Gas-lifted Oil Wells Utilizing Artificial Neural Network and Integrated Production Modeling

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Abstract

In the oil and gas industry, millions of dollars are spent on improving measurement instruments such as down-hole gauges and wireless surface sensors. Additionally, there is a large amount of measured data and interpretation reports regarding well intervention jobs available in the wells history files, but unfortunately they are scattered in an unstructured format. This makes it hard for data to be analyzed and studied by engineers to determine a certain relation. In some cases, engineers could not know the production rates of each well during production because a group of wells are connected to one separator.

Thus, the total flow rates of these wells are measured, not the rate of fluids of each well. In the offshore environment, performing the jobs and taking the measurements is complicated and expensive. In the case of gas lift wells, the situation will be worse. For reservoir and production engineers, it is important to know the fluid rate and the bottom hole flowing pressure of each well in order to optimize the production, allocate the gas lift injected volumes, and monitor the reservoir and well performance.

Therefore, this work presents an approach for how to utilize this large amount of structured and unstructured data to find the variables related to the bottom-hole pressure and well fluid rate. Then, these variables are used to build different PROSPER models for different wells from the Egyptian offshore field (group of wells connected to one separator) for generating a huge amount of synthetic data. This synthetic data was used to develop an artificial neural network model model to predict the bottom-hole flowing pressure and the fluid rate of each well in that field.

After that, these predicted bottom-hole flowing pressures and fluid rates were used to build an updated PROSPER model for each well to generate an integrated production model using GAP software for gas lift optimization in the selected field.