Development of a 'Watercut' Measuring Device for Oil

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Abstract

Oil Exploration and Production Companies worldwide are facing the problem of producing water and gas together with oil. Knowing the percentage of each phase is essential for efficient oil production. In recent years, systematic efforts have been made to improve the field measurements of controlling the entire oil and gas production process. The produced oil is usually monitored using different instruments in order to control the quality of the oil. BS&W instruments are used to determine the "watercut" of an oil/water mixture. This project is proposing development of a simple and inexpensive watercut measuring device; which can give accurate measurement of water cut in oil/water mixture, with a targeted uncertainty of ± 0.5%. In addition to this, the new device should be capable of measuring watercut at any level. The new device is based on the relationship between the watercut in oil and water mixture via the pressure of a sample from the mixture. The results show that the device can attain very high accuracy that may reach up to ± 0.4% and it can be used to measure a full range of water cut levels 0 - 100%.