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Reliability Verification of the Performance Evaluation of Multiphase Pump

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Abstract : The crude oil in an oil well exists in various phases such as gas, seawater, and sand, as well as oil. Therefore, a phase separator is needed at the front of a single-phase pump for pressurization and transfer. On the other hand, the application of a multiphase pump can provide such advantages as simplification of the equipment structure and cost savings, because there is no need for a phase separation process. Therefore, the crude oil transfer method using a multiphase pump is being applied to recently developed oil wells. Due to this increase in demand, technical demands for the development of multiphase pumps are sharply increasing, but the progress of research into related technologies is insufficient, due to the nature of multiphase pumps that require high levels of skills. This study was conducted to verify the reliability of pump performance evaluation using numerical analysis, which is the basis of the development of a multiphase pump. For this study, a model was designed by selecting the specifications of the pump under study. The performance of the designed model was evaluated through numerical analysis and experiment, and the results of the performance evaluation were compared to verify the reliability of the result using numerical analysis.

Keywords : multiphase pump, numerical analysis, experiment, performance evaluation, reliability verification
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