



Technical Paper

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Investigation of the flow behaviour and cavitation phenomena in screw pumps using high-speed camera technique

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Summary

Screw pumps cover a wide area of application in the field of process technology and oil production. The reasons for this fact are their high efficiency, their ability to pump liquids within a wide range of viscosity, but also multiphase mixtures, such as liquids with high gas ratio. The high pump efficiency can be led back to the low leakage rate due to the long and small clearance between the stator and the rotating screws.

These advantages can be declined by wear induced by abrasive or cavitation impact. In respect of wear of the spindles and the casing there is still a disagreement about the causation. By using the high-speed camera technique in combination with a transparent pump casing at different viscosity levels of the fluid, an insight in the flow behaviour and new information about essential aspects of a three spindle screw pump could be obtained. In this presentation we point out unique results about the multiphase flow behaviour in a three spindle screw pump, which mechanism takes place and which kind of wear is possible to explain questions and phenomena.