

## **Efficiency Testing of Oil Field Downhole Desanders**

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### **Abstract**

Tense economic situations push the demand for low-cost oil production, which is especially challenging for production in mature oil fields. Increase in the meantime between failure and limitation of equipment damage is essential. A significant number of long producing fields is suffering under sand production. The objective of the proposed paper is to show the development process and the testing procedure of an effective downhole desander for sucker rod pumps.

In weak reservoir zones in most situations, the strategy to prevent equipment from suffering under sand production is sand exclusion using a gravel pack. Nevertheless, a certain amount of small grains still enters the wellbore and may damage the sucker rod pumping system over time. During the last year, several different downhole desander configurations were tested at the Pump Testing Facility at the Montanuniversität Leoben. Various types and sizes of desanders were tested under different strokes per minute under near field conditions to find the optimum and most efficient design for the field application.

The test results have shown that the design and the pumping speed are the most significant influencing parameters on the efficiency. On the one hand, a bad design in combination with a wrong selected pumping speed can reduce the sand separation efficiency to lower than 50 per cent. On the other hand, if all parameters are chosen carefully, the sand separation efficiency can be 95 per cent or higher. The grain size distribution, in addition, is determined as important parameters for properly selecting adjacent equipment. This paper will present the testing configurations, the development of the high efficiency downhole desander and sensitivity analysis on the design.

The sensitivity analysis, performed for several downhole desander types, has shown the high dependency of the sand separation efficiency on the major design parameters. Proper selection of the components and operating parameters will contribute to an increase in meantime between failures.