

INCREASE SAFETY AND REDUCE UNPLANNED SHUT DOWNS OF SAND SEPARATORS WITH FDM

RESULTS

- Increase throughput and availability of separators
- Decrease maintenance interventions
- Reduced safety risks using the Micro Motion Fork Density Meter instead of nucleonic devices



APPLICATION

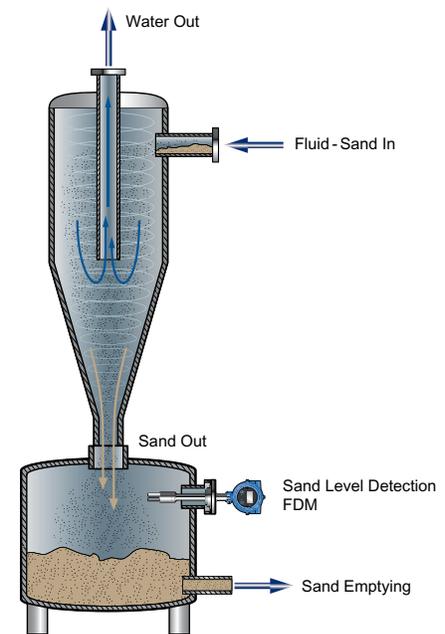
During normal operations, sand and fines from the well may accumulate, reducing overall separator volume and separation efficiency. If the problem is severe enough, wells may be shut-in and production deferred to allow for clean out. In cases where a large amount of sand or fines are expected, a measurement device is installed in a sand catcher upstream of the separator to protect the horizontal sand separator. Sand-liquid separators operate on a centrifuge principle:

- As sand and liquid are separated, the sand collects in the lower chamber
- Excessive sand will clog the separator, if not disposed of, potentially causing expensive and time-consuming shutdowns

CHALLENGE

Unfortunately, many fields produce fines or sand that can quickly erode topside equipment, costing significant money in repair or replacement and in deferred production as operations are shut down for repair. Normally sand accumulation occurs slowly over time; however, after a failure in sand control down hole, sand could quickly build up and clog a separator's sand drain point. Other devices (pumps, valves, flowmeters) downstream of the separator could also suffer damage through blocking, abrasion or erosion.

As a result, in-line de-sanding is key to ensure continuous oil production by providing visibility to sand accumulation in your topside equipment and allowing you to proactively schedule separator cleaning and maintenance. Nucleonic technology has been used to improve the operations, however the danger,



Sand Separator



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complexity, yearly validation, local laws and high cost of ownership for nuclear technology are driving companies to find alternate solutions.

Major oil and gas customers and providers of oil service equipment have been asking for years for a reliable and safe solution to replace nucleonic technology.

SOLUTION

A Micro Motion Fork Density Meter (FDM) can provide prior warning of sand accumulation in a separator, proactively detecting when the sand has reached a given level. As sand in the separator rises, the FDM detects when the tines of the fork are fully covered in sand and triggers the user that sand removal action is required. This alert can be sent via the digital Modbus (RS485) or Discrete Output communication protocols available on the meter, while density changes can be monitored using the 4-20mA signal. With this solution:

- No governing regulations or requirements for specialized training, leak tests, or safety procedures are required
- No need for licenses to adhere to nuclear regulations
- No risk to personnel from a radioactive source

The available analog and digital communications interface comes standard on FDM, to simplify integration into data systems, and the user-friendly Micro Motion ProLink® III software, the display or HART wireless solutions can be used to configure the meter.

Using this approach, the Micro Motion Fork Density Meter can confidently be used in place of a nucleonic device as a lower-cost, maintenance-free way to automate identifying the need for sand removal in separators.



Sand touches the FDM tines, while the fork continues to operate as normal



Sand covers the FDM tines, alarming the customer by generating an 'enhanced event' on a digital output

