

SULFITE IN SECONDARY OIL PRODUCTION

BACKGROUND

Sea Water can be injected into an oil field to aid in the production of crude oil. The steel pipes which carry this water into the production field can be affected by corrosion. To inhibit this chemical process sulfite is added to the sea water to remove oxygen thus stopping the corrosion process.

ANALYZER SETUP

A Middle Eastern Sea Water Processing Facility installed an OMNICHem analyzer for wet-chemical measurements of sulfite. The analyzer was able to test two different sample points in the sulfite injection process twice per hour. The sulfite was measured with an iodometric titration. Each titration was done using an ORP (Platinum) electrode. The titrant for both titrations was a mixture of $\text{KIO}_3 - \text{KI}$ (potassium iodate – potassium iodine). The pH of the sample was adjusted with H_2SO_4 (sulfuric acid). Sample collection was done with a fast-flow non-dilution sample system.



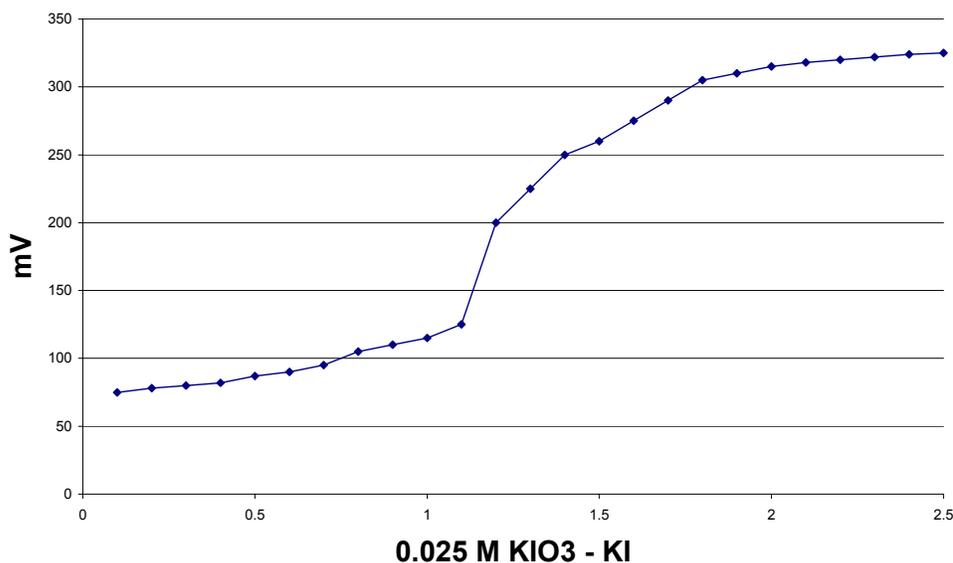
This system allows dirty samples to be collected without the need for filtration. Samples with up to 3 mm particles can be analyzed with no plugging issues. The measurement cell is designed for a large sample volume to aid in the testing of low concentration samples. Either a 90 mL or a 140 mL sample can be collected. Because of the naturally corrosive nature of sea water the analyzer used Kynar (PVDF) sample valves with Teflon seals. The measurement cell was constructed from acrylic and was automatically washed with clean water between analyses. The analyzer enclosure was also made from fiberglass and

has a NEMA 4 X rating (IP65). This installation was indoors but outdoors installation is also possible. The analyzer communicated with the end-user's PC via a serial connection. The analyzer was setup for automatic data downloads. The OMNICHem also has analog current outputs (4-20 mA). In addition, the OMNICHem can have an Ethernet connection for remote observation and control of the analyzer from a PC outside the fab.

ADVANTAGES

- 1) Lab Accuracy On-line
- 2) Reliable Measurements
- 3) Rapid Measurements
- 4) Remote Measurements
- 5) Corrosion Control

Sulfite Titration



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