

# Technological Advances for Improving Desulphurization of H<sub>2</sub>S from Sour Crude Oil and Produced Waters

Sheldon McKee<sup>1</sup>

## Abstract

*Development of improved H<sub>2</sub>S removal technologies from both crude oil and process water streams has the potential to be incorporated into many projects across the global oil & gas industry.*

*Our paper highlights the development of AMGAS CLEAR™ for use in the desulphurization of H<sub>2</sub>S from sour crude oils and process waters. Laboratory field data will be presented showing the validation of the technology industrially over the course of our preliminary projects. The equipment package associated with the technology for removing the H<sub>2</sub>S from the sour fluid will be described, highlighting the operation of various components of the system. Process flow diagrams and schematics will show how the desulfurization technology can be combined with multiple sulfur recovery technologies for processing the H<sub>2</sub>S off the system, depending on the quantity of H<sub>2</sub>S being managed. Such technologies include the use of consumable chemicals for low H<sub>2</sub>S tonnage projects but will also describe how regenerable wet redox chemicals and sulfuric acid production could be used as tonnages increase. Importantly, this comparison will lead to showcasing industrial H<sub>2</sub>S processing conditions where the competitive advantage of using this technology (scientifically and economically) exceeds that of traditional treating strategies. Case studies will be presented describing how the technology was successfully implemented for treating sour water in the Permian Basin in West Texas and for treating sour crude oil in North Dakota.*

<sup>1</sup>AMGAS Services Inc.

**Sheldon McKee** is a director of business & product development at AMGAS Services Inc. He splits his time between Europe, Asia, the Middle East, US and Canada, bringing Alberta's expertise in flaring, emission control and treatment technologies, specifically related to hydrogen sulfide (H<sub>2</sub>S) and sulphur dioxide (SO<sub>2</sub>), to the world-stage. Prior to joining AMGAS in 2006 Sheldon's field engineering expertise was focused on heavy oil production measurement using multi-phase technology, molten sulphur heating systems, combustion control systems and tank venting/ vapour recovery technologies. Sheldon is a graduate of instrumentation engineering from SAIT Polytechnic. In addition to his 18 years of sour oil and gas experience, Sheldon has developed 1 patent for AMGAS in H<sub>2</sub>S removal technologies for sour fluid treatment.