



Acid-gas removal easier than ever

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MANY INDUSTRIAL GAS streams, such as natural gas, biogas, synthesis gas, and flue gas, have to be scrubbed prior to downstream processing to remove acid gases, such as carbon dioxide and hydrogen sulfide. In most cases, amines are used as absorbents. With CAPLUS®, Evonik has developed a market-ready amine that is superior to conventional products on a number of fronts. For the project's success to date, the team from New Business Opportunities from the Advanced Intermediates Business Unit and Process Technology has been nominated for the Evonik Innovation Award 2014.

Conventional amines cause a variety of technical problems during gas scrubbing. Because of low chemical and thermal stability, they have to be regularly topped up, and, in some cases, changed completely. They generate numerous secondary reactions, and the decomposition products can lead to foaming and corrosion. In addition, amine regeneration consumes high amounts of energy. Dramatic fluctuations in the acid gas content of the gas stream entering the plant can necessitate reducing plant capacity.

Two commercial biogas plants were filled with CAPLUS® for the first time

about two years ago. Since then, the new high-performance absorbent has proven its superiority. Despite extreme conditions, no refilling of the absorbent was necessary. Compared to the absorbents usually found on the market, energy savings of ten percent and capacity increases of 20 percent were possible with CAPLUS®. This made it possible for Evonik to successfully enter the biogas market with the newly developed product.

CAPLUS® is currently being launched by renowned natural-gas producers in Southeast Asia, the Middle East/South Africa and South America. "Our greatest challenge was convincing the first big natural-gas company to convert to CAPLUS®," says Dr. Jörn Rolker, project head and Project Manager. "The oil and gas industry is generally quite conservative, and is afraid of plant shutdowns, which always involve financial losses and damage to a company's image." To clear this hurdle, Evonik positioned itself as a complete technology supplier with an intense focus on the customer's plant and a comprehensive package of services. Its first task was to address companies with plant problems.

In July 2014, a large, commercial natural-gas processing plant in Indonesia was filled with CAPLUS. "During the nearly three-month observation period, CAPLUS® confirmed all predicted and contractually agreed value added," says Rick Steglich, Director of Innovation. Due to the excellent performance of the product, the customer wants to convert another plant to CAPLUS® in the future. In doing so, Evonik will have also entered the market for natural gas purification.

The first plant for scrubbing flue gas with CAPLUS®, therefore the entry into the soon-to-be third market segment, will commence operation in November.