Media Release

Clariant presents a pioneering solution to optimize oil production at the pre-salt layer at the 2014 Rio Oil & Gas Expo and Conference

• The H₂S Risk Management System, developed by Clariant, optimizes and safely removes hydrogen sulfide in offshore operations
• Clariant's comprehensive management of the H₂S removal process by it's Brazilian facilities will contain over 90% local content
• Clariant provides integrated chemical solutions for FPSOs, offshore wells, and oil and gas treatment facilities, including integrity management, flow assurance, fluid separation and managing the appropriate removal and disposal of residues

São Paulo, September 15, 2014 – Clariant, a world leader in specialty chemicals and solutions for the oil and gas production chain, will present its new H₂S (hydrogen sulfide) management and sequestration (removal) technology for offshore operations at the 2014 Rio Oil & Gas Expo and Conference, to be held between September 15 and 18 at Riocentro in Rio de Janeiro, Brazil.

The H₂S Risk Management System, developed by Clariant, encompasses the provision and management of specialty chemicals for both subsea activities (liquid H₂S scavengers injected into wells) and offshore topside natural gas processing (removal of hydrogen sulfide residues using a solid adsorbent), including the entire onshore and offshore product delivery logistics and managing the removal and disposal of residues generated during this process.

“Clariant offers the oil and gas industry a unique proposition, combining two technologies with highly specialized services, which the market is still lacking,” notes Carlos Tooge, Vice President of Clariant Oil & Mining Services for Latin America. “With this new system, we can manage and monitor the entire process so that we can deliver the precise volume of each solution required by the wells at each platform.”

Comprehensive Solution

The presence of hydrogen sulfide in the pre-salt oil fields, as well as the logistical challenges posed by the distance of these operations from the coast and the restricted space on the platforms to store chemical solutions, are just some of the factors that increase the complexity of offshore operations in ultra-deep waters. H₂S, which is water-soluble and is present in several pre-salt fields, is highly toxic and impedes the integrity of offshore units.
Clariant developed an integrated chemical solutions logistics and application system that meets the demands of H₂S removal in two stages. The first stage injects liquid H₂S scavengers into the wells so that cleaner hydrocarbon fluid arrives topside. The second stage uses a catalyst (a solid adsorbent) on the offshore natural gas processing plant to purify the gas and eliminate H₂S residues, given that the gas cannot be transported to an onshore facility if it contains such impurities.

“Clariant’s adsorbents are used to purify the natural gas that comes up from the well with impurities such as H₂S, sulfur, mercury, arsenic and other compounds dangerous to the environment and the equipment in the production system. The adsorbents remove these contaminants before the gas enters the piping system, thereby meeting legal specifications and ensuring productivity,” explains Bruce Kleppe, Head of Sales Latin America, Clariant Catalysts.

The H₂S Risk Management System was developed by Clariant’s research centers in Brazil: the Deepwater Center of Excellence, located in Rio de Janeiro, which operates in conjunction with Clariant’s other Deepwater Centers of Excellence, in Houston, Texas, USA and Aberdeen, UK; and the Catalyst R&D Laboratory located in Suzano, São Paulo, which boasts a highly specialized team dedicated to developing new generations of catalysts for the oil and gas industry. Both research centers operate in conjunction with Clariant’s new Innovation Center, which was opened in October 2013 in Frankfurt, Germany.

“We have the expertise and resources to manage and execute all activities involving H₂S scavenging in pre-salt oil fields, relieving the operator of the onus and risk of this activity as well as optimizing the supply, storage and logistic activities that are critical for these offshore operations,” states Carlos Tooge.

Knowledge Generation

Clariant will present five technical research studies at the Rio Oil & Gas Expo and Conference, which should draw around 4,000 participants from over 30 countries. Clariant representatives will carry out the following presentations using the digital poster format:

**Evaluation of Polymeric Products on the Rheological Properties of Heavy Oils**  
*Speaker:* Dr. Antônio Pedro de Oliveira, Technical Services & Innovation Manager for Clariant Latin America  
*Monday, September 15,* from 2:30 PM to 2:45 PM at Box D, Pavilion 5  
The main objective of the research study was to develop polymeric surfactants and study them as viscosity reducers in oils with different viscosities and different water content.

**Processing of Natural Gas for the Removal of H₂S Using Fixed-Bed Technology**  
*Speaker:* Dr. Holli Garrett, Business Development Gas Processing for Clariant Catalysts  
*Monday, September 15,* from 3:00 PM to 3:15 PM at Box E, Pavilion 5  
This research study evaluates H₂S removal technologies and evaluates technical and economic factors when using fixed-bed adsorbents in offshore environments. Factors like gas flow rate, contact time, moisture content and the quantity of carbon dioxide will be discussed and correlated with the performance of each technology.
Evaluation of the Synergy of Polymer Bases on Different Asphaltene Dispersing Solvents
Speaker: Dr. Silas R. Ferreira, Application Development Chemist for Clariant Latin America
Monday, September 15 from 3:15 PM to 3:30 PM, at Box D, Pavilion 5
The research study establishes a correlation between different polymer bases and the solvents chosen as dispersing agents in order to facilitate the selection of the most appropriate solvent when formulating asphaltene inhibitors/dispersants.

Development of Flow Improvers for Oils with High Solids Content
Speaker: Dr. Silas R. Ferreira, Application Development Chemist for Clariant Latin America
Monday, September 15, from 3:15 PM to 4:00 PM at Box E, Pavilion 5
The research study underscores the importance of the development of solid particulate dispersants with the concurrent controlled increase of droplet size in order to promote a significant reduction in viscosity.

H₂S Scavengers for Ultra-deepwater Wells in the Oil and Gas Industry
Speaker: MSc Aline Yae Kina, Application Development Chemist for Clariant Latin America
Wednesday, September 17, from 5:45 PM to 6:00 PM at Box D, Pavilion 5
The research study investigated two types of H₂S scavengers that could be used in ultra-deepwater oil fields. Not only were all products evaluated with regard to their scavenging performance, but they also passed specific compatibility tests for this type of application.

About Rio Oil & Gas Expo and Conference
ROG, which is in its 17th edition, is the world’s second largest offshore technology trade fair and conference. Held every two years by the Brazilian Institute of Oil, Gas and Biofuels (IBP), it brings together renowned specialists and companies from the offshore industry, around 1,300 exhibitors and 4,000 participants from 30 countries, and receives 55,000 visitors during the four day event.

Clariant’s booth at the 2014 ROG (Pavilion 1, A30) will be staffed by a technical and commercial team to promote and explain the attributes and outstanding features of this new solution, as well as the company’s other major products and services for offshore operations.

Clariant will also deliver lectures in its booth during the four day event.

2014 Rio Oil & Gas Expo and Conference
September 15, 16, 17 and 18.
RioCentro, Av. Salvador Allende, 6555 - Barra da Tijuca - Rio de Janeiro (RJ) – Brazil
Clariant Booth - Pavilion 1, A30.
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Clariant is a globally leading specialty chemicals company, based in Muttenz near Basel/Switzerland. On December 31, 2013 the company employed a total workforce of 18,099. In the financial year 2013, Clariant recorded sales of CHF 6.076 billion for its continuing businesses. The company reports in four business areas: Care Chemicals, Catalysis & Energy, Natural Resources, and Plastics & Coatings. Clariant’s corporate strategy is based on five pillars: increase profitability, reposition portfolio, add value with sustainability, foster innovation and R&D, and intensify growth.

BU Catalysts

The Business Unit Catalysts (BU Catalysts) of Clariant is a global leader in catalysts for industrial processes. It has been part of the Clariant Group since the acquisition of Süd-Chemie in 2011, and is included in the Business Area Catalysts & Energy.

BU Catalysts is headquartered in Munich, Germany and has a total of 18 production sites, 14 sales offices and 9 R&D centers across the world. Approximately 1800 employees serve customers across all regional markets.

The BU offers a broad portfolio of catalysts and adsorbents for many chemical and fuel processes, including those that enable the use of alternative raw materials, such as natural gas, coal, and biomass. In addition, the BU portfolio also includes products that reduce hazardous emissions from industrial processes and combustion engines.