PRESS RELEASE

May 8, 2015

Pilot Plant Testing of SCWC Technology Launched in Canada

Yokohama, Japan - JGC Corporation, in partnership with Japan Oil, Gas and Minerals National Corporation (JOGMEC), commenced pilot plant testing of their Supercritical Water Cracking (SCWC) process from early March 2015. This is part of a joint research program aimed at upgrading extra heavy crude oil into more easily transported SCO (Synthetic Crude Oil) using supercritical water. Demonstrations have begun at a pilot plant with a capacity of 5 barrels (800 liters) per day located at a government research facility in Alberta, Canada. Engineering data will continue to be collected through 2015 and implementation of long-term demonstration operations of this innovative technology is expected.

Extra heavy oil, including oil from the Alberta Oil sands, is difficult to transport via pipeline due to its high viscosity and high specific gravity. SCWC (Supercritical Water Cracking) technology partially upgrades the oil at the production site to produce synthetic crude oil, which has a lower viscosity and specific gravity and enables pipeline transportation.

At pressures of over 220 atmospheres and temperatures of over 374 degrees Celsius, water turns supercritical. This supercritical water is then used as a medium for thermal cracking of extra heavy oil, and, due to its high lipophilic nature, it can help with the extraction and recovery of lighter portions of the cracked oil.

Significant reserves of extra heavy oil exist in Canada, Venezuela, Colombia, and elsewhere and the total volume, including heavy oils, is comparable to the world's reserves of conventional light and medium oil. The Canadian oil sands in particular contain reserves amounting to 168 billion barrels.

At present, in order to transport the extra heavy crude oil by pipeline, it must be diluted with condensates, naphtha or other lighter oils (the Dilbit process), or through a hydrocracking or delayed coking process (a thermal cracking of residual oil into lighter fractions) a technology known as a Full Upgrader. The Dilbit process requires diluents and a larger capacity pipeline to transport the product, while the Full Upgrader method requires the use of catalysts and hydrogen, causing possible environmental problems involving the disposal of low value solid byproducts like coke and sulfur and also requires higher investment costs as well as complex plant operations.

On the other hand, SCWC technology requires neither diluents nor catalysts and hydrogen. SCWC facilities are simple and suitable for small-scale capacities, requiring only water to produce SCO suitable for transport via pipeline with lower operating costs and thus will serve to encourage the further utilization of extra heavy oil deposits.

In addition, the pitch produced as a byproduct of SCWC can be used as blending stock for road asphalt. In this way, SCWC technology can improve the market value of products with minimal waste.

The current pilot plant has already achieved performance target results in terms of viscosity and specific gravity. Engineering data will be gathered to optimize operating conditions and adapt the technology for engineering commercial plants. Long-term demonstration operation is planned during this year. The technology is being developed for a demonstration plant with a capacity of 500-2000 barrels/day in the next phase, leading to the scaling up to create commercial plants with a capacity of up to 30,000 barrels/day as the final target.

Contact:
Takuya Saito: saito.takuya@jgc.com
PR & IR Department
JGC CORPORATION
Tel: 81-45-682-1111
Fax: 81-45-682-1112

-END-