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Joint Press Release of JGC, INPEX and BASF

Removal of carbon dioxide from natural gas: New technology enables massive cost reduction

- **Cooperation of JGC, INPEX and BASF successful**

INPEX CORPORATION, jointly with JGC Corporation and BASF SE, has successfully completed tests of a new technology for the removal of carbon dioxide (CO_2) from natural gas. The performance of this new gas treatment technology enables a reduction of 25 to 35 percent of CO_2 recovery and compression costs.

The so called HiPACT technology (HiPACT for High Pressure Acid Gas Capture Technology) was developed by JGC and BASF. The tests of the technology commenced in August 2010 at INPEX's Koshijihara natural gas plant (Nagaoka city, Niigata prefecture), one of the largest plants of this type in Japan.

"We do appreciate the involvement of INPEX, allowing us to test the new technology in a commercial natural gas plant. We successfully demonstrated the excellent energy saving performance as we targeted demand in the market," said Mr. Takashi Yasuda, Executive Officer and Senior General Manager of the Research & Development Division at JGC.

"INPEX strives to reduce energy consumption as much as possible. This new technology offers a great opportunity to improve energy conservation and it also reduces our carbon footprint and to help curb greenhouse gas emissions", added Mr. Kazuo Yamamoto, Executive Officer and Vice President of the Technical Division at INPEX.

"This test was a critical milestone in the commercialisation of a new technology the market has been looking for for some time", said Dr. Andreas Northemann, who heads the Gas Treatment Solutions business unit within BASF's intermediates division.

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Removal of carbon dioxide to save energy

Natural gas, an increasingly important source of energy, more often than not contains CO_2 when it is extracted from the well. Most of this CO_2 is usually removed directly at the natural-gas source. The removal is achieved by means of a solvent which temporarily absorbs the CO_2 from the high-pressure natural gas stream. The solvent is then regenerated at low pressure and fed back to the process, but this regeneration requires energy. The CO_2 released in the regeneration process has traditionally been emitted to the environment.

The CO_2 emission effect is eliminated if the CO_2, once removed from the natural gas, is injected back underground for storage. To do that, however, the CO_2 must first be compressed above its supercritical pressure. This has to date required an additional high energy input, which the new process can reduce significantly. The new process uses a solvent that is not affected by high pressure levels and elevated temperatures during regeneration, so it remains stable and intact during the capture process. Thus, the new technology can be operated at a higher pressure. This reduces the cost of compressing the CO_2 for underground re-injection. Moreover, the solvent, which has an excellent CO_2 absorption capability compared to the existing solvents, enables reduction of the solvent regeneration energy.

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