Reduction of CO2 Emissions by Co-firing Natural Gas and Heavy Oil in the Lime Firing Kiln at the Mishima Mill of Daio Paper

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Osaka Gas Co., Ltd.

Daigas Energy Co., Ltd.

Daigas Energy Co., Ltd. (President: Masayuki Inoue; Headquarters: Chuo-ku, Osaka; hereinafter “Daigas Energy”), a wholly owned subsidiary of Osaka Gas Co., Ltd. (President: Masataka Fujiwara; Headquarters: Chuo-ku, Osaka; hereinafter “Osaka Gas”), has realized the reduction of CO2 emissions from the lime firing kiln*1 (hereinafter “the equipment”) at the Mishima Mill of Daio Paper Corporation (President: Yorifusa Wakabayashi; Shikoku Headquarters: Shikokuchuo City, Ehime Prefecture; hereinafter “Daio Paper”) by co-firing natural gas and heavy oil in the equipment.

Daigas Energy applied Osaka Gas’s gas atomization combustion technology,*2 making it possible to switch about 30% of heavy oil fuel for the equipment to natural gas. The company aims to maximize the improvement of specific energy consumption*3 and the reduction of CO2 emissions. The burner nozzle used for co-firing was developed for the lime firing kiln application by applying the Daigas Group’s know-how on gas burner technology accumulated over many years. In the future, the Daigas Group will work on the development of highly efficient burners for firing only natural gas in lime firing kilns.

Natural gas for the equipment is supplied from the LNG satellite facility constructed by Daigas Energy under an energy service contract.*4 The facility will supply natural gas also to paper machines that have been powered by LPG, in addition to the equipment.

By co-firing natural gas in the equipment and switching LPG fuel for the paper machines to natural gas, CO2 emissions are expected to be reduced by about 22,000 tons per year (lime firing kiln: approximately 19,000 tons per year; paper machines: approximately 3,000 tons per year).

The Daigas Group announced the “Daigas Group Carbon Neutrality Vision” on January 25 this year. While developing technologies and services for the realization of carbon neutrality by 2050, the group, together with its customers, has promoted initiatives that contribute to global environmental conservation, aiming to reduce CO2 emissions by 10 million tons per year, which was set as a milestone for FY2031.3.

Daigas Energy examines customers’ problems and potential needs they have at their manufacturing sites from all angles, co-creates solutions to the problems with the customers, and provides optimal services that contribute to the local community and society.

*1: Equipment for firing lime used in the kraft pulp manufacturing process to reuse it

*2: Technology that uses natural gas as a spray medium for burning heavy oil. While high-pressure air or steam is generally used as the spray medium, use of natural gas instead of them improves combustion efficiency.

*3: Energy consumption required to produce a unit amount of product

*4: Under this type of agreement, Daigas Energy installs its energy equipment on the customer’s premises, saving the customer from buying the equipment and helping them achieve zero initial costs.

[LNG satellite base]