

Improvement of the control system of a gas mixing station to reduce the fluctuation in the heating value of the mixed gas

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This study has been carried out to improve the control system of the gas mixing station. On-line composition data of the by-product gases were gathered and analyzed to derive representative heating values. It was found that the heating values of COG and LDG were over-estimated. The heating value of BFG was higher than the standard value. Various items related with mixing station operation were reviewed to enhance the control efficiency and to reduce the calorie fluctuation of the mixed gas. It was found that the mixing control based on Wobbe index is optimal in consideration with the air-fuel ratio of the mixed gas. New criteria for setting the mixing ratio of each gas were derived. Numerical simulation on the mixing phenomena around the mixing station was executed to predict the composition saturation point necessary for determining the gas sampling location for feed back control. The transfer function of the mixing station and proper gain and integral time for PID controller were determined, also. It is expected that the fluctuation of heating value of the mixed gas can be reduced remarkably by applying recommended control methods.