

Plant-wide Control of Wet Sulfuric Acid Process in Integrated Gasification Combined Cycle Power Plant

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This paper discusses plant-wide control system design of the wet sulfuric acid (WSA) process which is part of the integrated gasification combined cycle power plant. The regulatory control structure was designed by carefully addressing the requirements and constraints demand by each key unit in the process. We used sensitivity analysis and simple stoichiometric calculation to obtain proper set-point for controlled variable that has direct effect to the energy usage and production rate in WSA process. In this work we also proposed several controller scheme that works better on achieving operational stability of WSA process. This work was supported by the Development of 300MW class Korean IGCC demonstration plant technology of the Korea Institute of Energy Technology Evaluation and Planning(KETEP) and Doosan Heavy Industries and Construction grant funded by the Korea government Ministry of Knowledge Economy. This work was also supported by Priority Research Centers Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education (2014R1A6A1031189).