

Control Issues for an Entrained-flow Coal Gasifier in an IGCC Process.

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Integrated Gasification Combined Cycle (IGCC) is considered a promising technology to generate the electricity from coal in environmentally friendly and efficient way. Even though it has the advantages, a high capital cost and low availability are remained obstacles to spread of IGCC technology. The low availability of IGCC power plant usually comes from the difficulty of integration of two-gasifier and combined cycle systems, short life cycle and the corrosion due to high operating temperature and the difficulty of handling coal, ash and slag. Among several units, the gasifier is a core unit because it supplies the feed to the gas turbine so its dynamic response impacts the dynamics of the downstream equipment and the performance of the entire plant ultimately. Therefore, it has significant importance to understand the dynamics of gasifier and well control of the gasifier. In spite of the importance, most research has focused on modeling and simulation only. In this study, (i) look into that possible control problems of the gasifier in an IGCC process and (ii) analyze benefits and difficulties of advanced control strategy compared to conventional strategy.