

Self-optimizing Control Test for an Elevated Pressure Air Separation Unit in an IGCC Power Plant

노고산, 이재형*
KAIST
(jayhlee@kaist.ac.kr*)

IGCC (Integrated Gasification Combined Cycle) power plant is one of the promising alternative power plant systems. It is attracting lots of attention as the power generation system utilizing fossil fuels in an eco-friendly way. Air separation unit (ASU) consumes a large amount of electricity to compress air feed and products to the high pressure. Even though the control studies for ASU system have done a lot, there is no study with an economical consideration in terms of the operating cost. To save the electricity production cost by reducing the operating cost of ASU, "Self-optimizing control" which is a simple and manageable method can be applied to select the appropriate controlled variables in ASU system. In this study, an elevated pressure ASU (EP ASU) is chosen as a target process. EP ASU has the air extraction from the gas turbine and is operated in the higher pressure than the conventional ASU system. Equation-based modeling of EP ASU has been carried out using the software platform of gPROMS. Based on the self-optimizing control approach, the best controlled variables are selected for the most economical operation.