Modeling and energy analysis of synthesis natural gas(SNG) process using ASPEN PLUS

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Interests in alternative energy have been continuously growing due to rapidly changing nature of the oil market. One of them, coal gasification technology, is investigated in many countries as a sustainable solution to energy problems in the future. In Korea, Synthetic Natural Gas (SNG) process using gasification technology is receiving attention because it is not only considered a clean technology with high conversion efficiency, but also has potentials for further improvements using other processes such as cogeneration or polygeneration.

SNG process consists of unit processes including Gasifier, Air Separation Unit (ASU), Water Gas Shift (WGS), Acid Gas Removal Unit (AGRU), and Methanation. In this study, integrated model with all of the unit processes was developed using a commercial simulator, and the results were validated against available data. Energy analysis was also carried out in order to understand the performance of the integrated SNG process model.