Computer-aided analyzing of CCU paths which produces fuel additives with regards to CO_2 LCA and TEA

임형묵, 정원석, Hasan Imran[1], Ali S. Al Hunaidy[1], 이재형[†]

한국과학기술원; [1]Saudi Aramco

The global warming due to the anthropogenic greenhouse gas (GHG) emission such as fossil fuel usage and industrial processing has become an intensely debated issue recently. To manage the GHG (especially, CO_2) emission in the industrial sectors, CO_2 capture, utilization (CCU) technologies are being viewed as viable alternatives. In this study, various combinations of CCU technologies are applied to several CO_2 sources, especially for producing fuel additives. Fuel additives increase the octane rating of fuels, act as corrosion inhibitors or lubricants, so producing them from CCU technologies can give both environmental and economic benefits. Relevant CCU paths are analyzed based on CO_2 life cycle assessment (LCA) by different demands of fuel to get the optimal result with a computer-aided tool called ArKaTAC[3] (Aramco/KAIST-Tool for Analysis of CO_2 capture & Conversion systems).