

Techno-economic Analysis of Olefin Production from Linz-Donawitz Converter Gas

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Off-gases from iron and steel making plants are mostly used to generate power and heat, even though some of them have components that may be potentially useful. LDG is one of the off-gases generated in the steelmaking process containing CO about 60–65%. In this study techno-economic analysis was conducted for producing ethylene and propylene from LDG with supplement hydrogen to verify the feasibility of the proposed process. Parameters required to simulate methanol synthesis reaction, reactor, and methanol-to-olefin(MTO) reaction were calculated and validated from KRICT experiments. Heat exchange network and power generation system were also designed for efficient operation. NPV, IRR, and MSP were suggested as economic indicators and sensitivity analysis was conducted to investigate the effect of cost driving factor on economic efficiency. This research was supported by the National Strategic Project-Carbon Upcycling of the National Research Foundation of Korea(NRF) funded by the Ministry of Science and ICT(MSIT), the Ministry of Environment(ME) and the Ministry of Trade, Industry and Energy(MOTIE). (No. 2017M3D8A2084257)