

CO₂ conversion for CO₂ reduction: Dry reforming of methane for acetic acid production

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Recently, as CO₂ regulation gets much stricter due to global warming, CO₂ conversion has attracting much attention as one of the solutions to reduce CO₂ emissions. Dry reforming of methane (DRM) is one of the promising CO₂ conversion reactions because one of its feed, natural gas, is cheap and the high CO₂ feed ratio (CH₄:CO₂=1:1) can lead to large CO₂ reduction effect. Utilizing the produced syngas with a condition of H₂/CO=1, acetic acid can be synthesized via 2H₂+2CO→CH₃COOH. This study focuses on design and simulation of an acetic acid plant employing DRM technology. The overall process is developed by using a process simulator Aspen plus[®]. CO₂ life cycle assessment (LCA) and economic evaluation are carried out to examine the feasibility of the developed process.