Multi‑objective optimization and economic analysis of blue ammonia synthesis process linking with MATLAB

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Recently, ammonia has been used as a hydrogen carrier. Ammonia is produced through the Harbor‑Bosch process developed in the early 1900s. This process was economically analyzed by calculating CAPEX and OPEX. Ammonia production cost was calculated. Ammonia production is 3000 tons/day, and production cost is optimized compared to production. The important factors in plant design are economical and environmental factors. In this paper, LCOA(levelized cost of ammonia) and GWP(global warming potential) were optimized through MATLAB linking. This makes the plant more economical and helps improve profitability. For the optimization method, the Genetic algorithm was used in conjunction with Aspen Plus and MATLAB.