최적 바이오가스공급망의 중간저장 허브설계 최적화 연구 (온실가스와 경제성평가)

남기전, Usman Safder[1], JuinYau Lim, 허성구, 이가희,
황보순호[2], 유창규†
경희대학교; [1]kyunghee university; [2]Technical University of Denmark
(ckyoo@khu.ac.kr†)

Biogas supply network has been optimized in the model of integrated utility and biogas supply network (IUBSN) whereby wastewater treatment plants (WWTP) sources remain unutilized. This study aims to propose centralized storage processing hub (SPH) from IUBSN. SPH produces biogas from sludges and stores biogas. Model reduction is implemented to decide location for SPH via area fragmentation which allows efficient sludge transportation. Multi-period optimization via P-graph by considering cost and environmental impact generates optimal solutions which decide location and SPH size. Optimal solution is obtained via pareto frontier analysis along with TOPSIS which capable on multi-criteria decision-making. Acknowledgments: This work was supported by the National Research Foundation (NRF) grant funded by the Korean government (MSIT) (No. NRF-2017R1E1A1A03070713), and Korea Ministry of Environment (MOE) as Graduate School specialized in Climate Change. Keywords: Biogas network expansion; Optimization; Storage Processing Hub; P-graph; Carbon dioxide; Hydrogen gas