Supplementary Materials to "Learn-To-Design: Reinforcement Learning-Assisted Chemical Process Optimization"

Eslam G. Al-Sakkari[a,b], Ahmed Ragab[a,b]*, Mohamed Ali[c], Hanane Dagdougui[a], Daria C. Boffito[d], and Mouloud Amazouz[b]

[a] Polytechnique Montréal, Department of Mathematics and Industrial Engineering, Montréal, Québec, H3T 1J4, Canada
[b] CanmetENERGY Varennes, Varennes, Québec, J3X 1P7, Canada
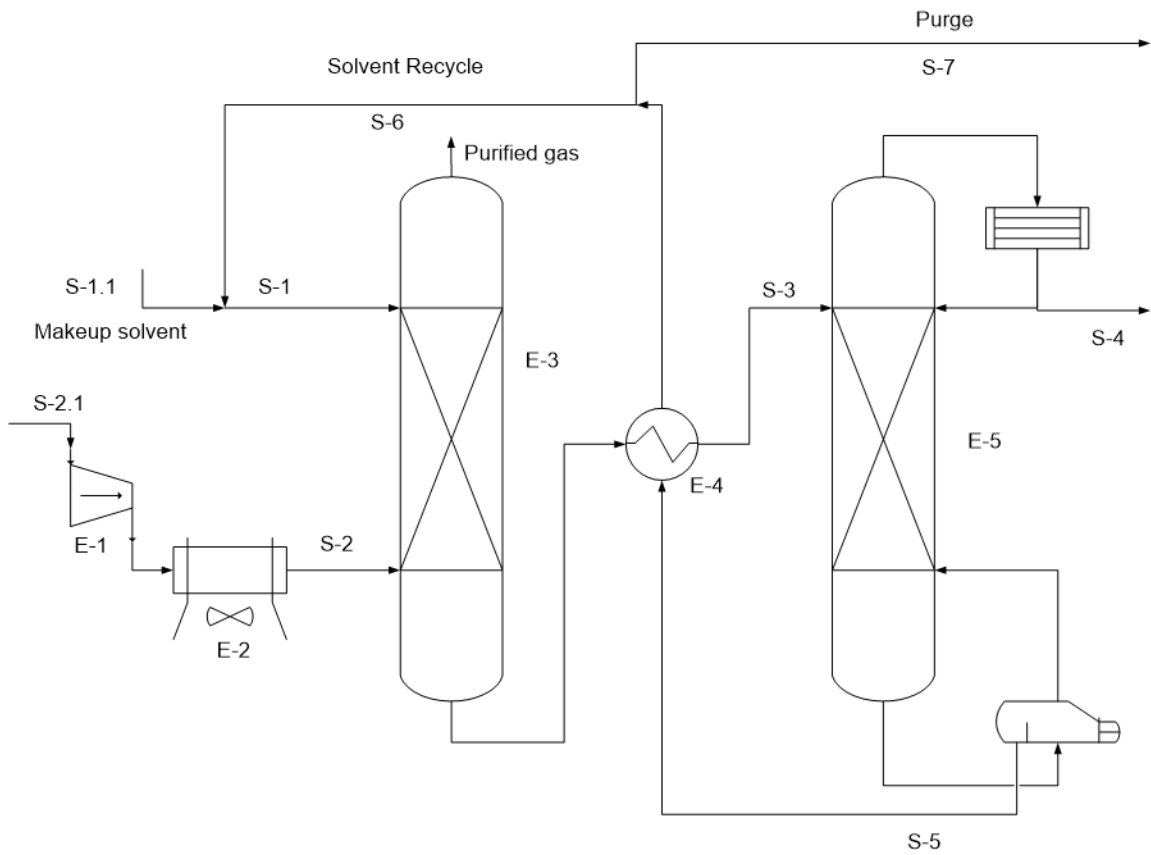[c] CanmetENERGY Devon, Devon, Alberta, T9G 1A8, Canada
[d] Polytechnique Montréal, Department of Chemical Engineering, Montréal, Québec, H3T 1J4, Canada
* Corresponding Author: ahmed.ragab@nrcan-rncan.gc.ca
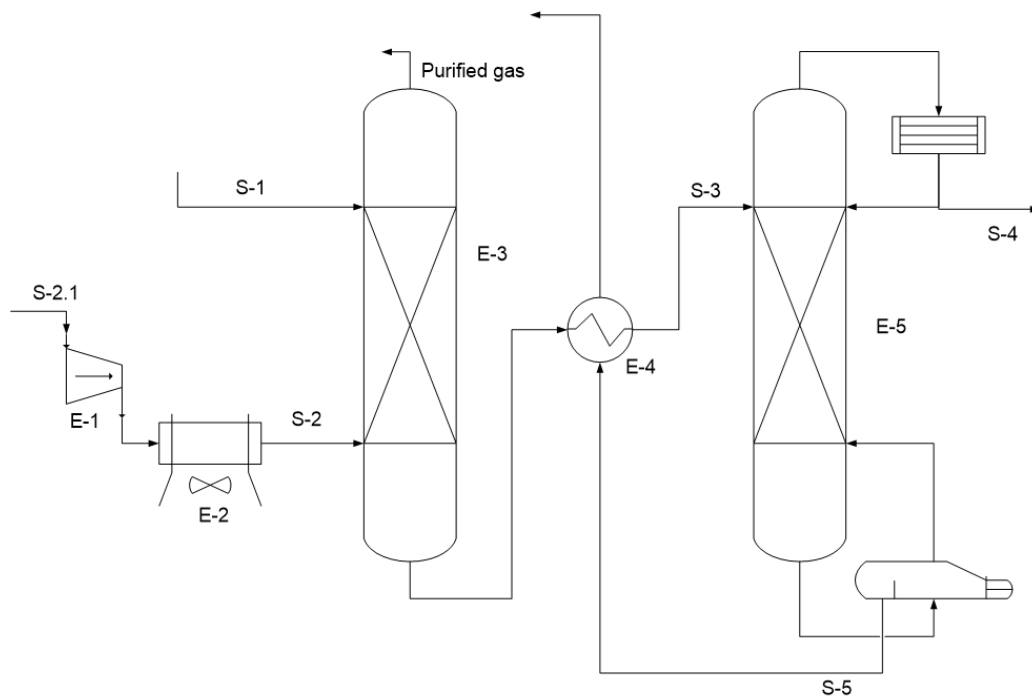
Code	Equipment
E-1	Compressor
E-2	Air Cooler
E-3	Absorption Column
E-4	Heat Exchanger
E-5	Stripping Column

Figure S1: Process flow diagram (ammonia-water system)

Code	Equipment
E-1	Compressor
E-2	Air Cooler
E-3	Absorption Column
E-4	Heat Exchanger
E-5	Stripping Column

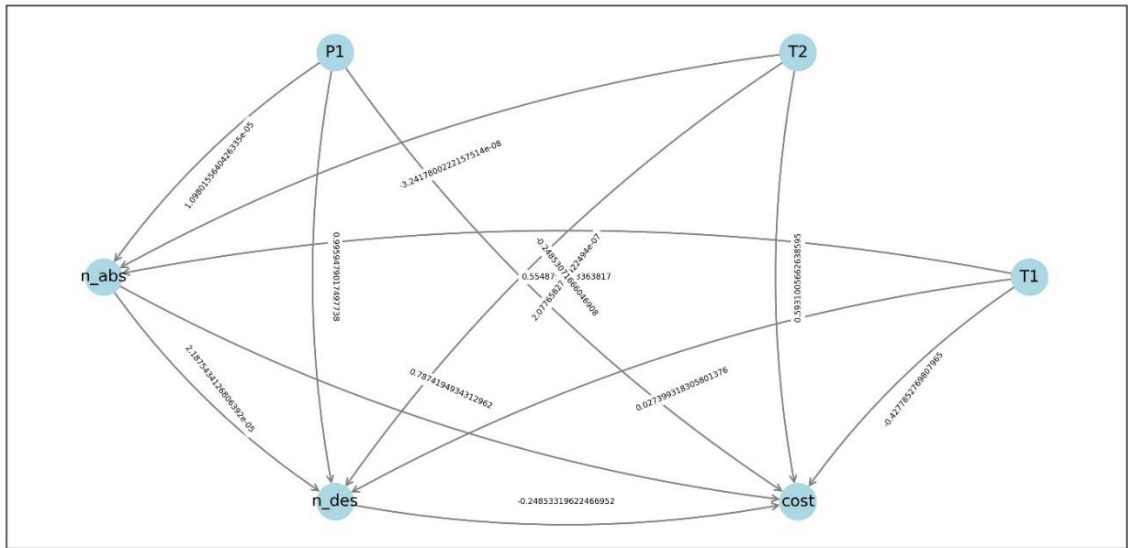**Figure S2:** Process flow diagram (MEA-based CO_2 Capture system)

Figure S3: Causal graph based on Bayesian causal discovery and inference (ammonia-water system)
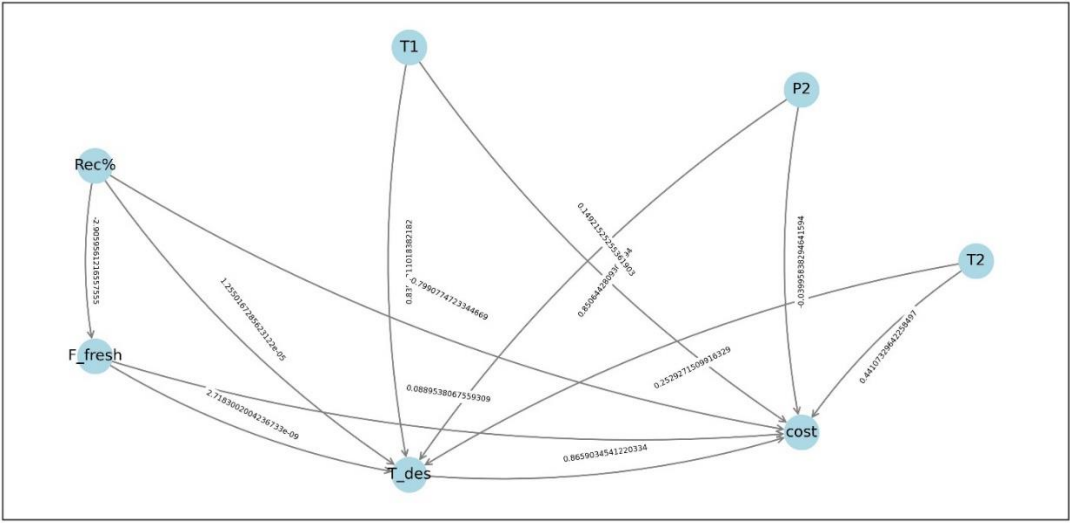

Figure S4: Causal graph based on Bayesian causal discovery and inference (MEA-based CO_2 Capture system)