Design and optimization of a novel cascade power generation cycle for LNG cryogenic exergy recovery using binary working fluids

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Utilization of clean energy has attracted attention as the global warming problem had been issued. In this situatilon, using cryogenic exergy of LNG can be an alternative energy source in a huge LNG importing country like Korea. In this study, a new concept of power generation cycle utilizing cryogenic exergy of LNG was proposed. This cycle introduced cascade organic Rankine cycle and binary mixtrue working fluid for producing maximum power output.
Optimization of this power cycle was perfomed in this study. A suitable optimization algorithm was need to reducing irreversibilities in condensers. After the optimization, the new power cycle show higher efficiency than conventional power cycles using LNG.