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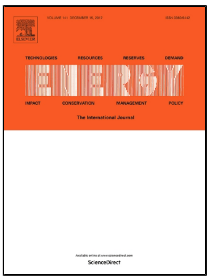

Global cost optimization of a mini-scale liquefied natural gas plant

Amir Hamzeh Aslambakhsh, Mohammad Ali Moosavian, Majid Amidpour, Mohammad Hosseini, Saeedeh AmirAfshar

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Amir Hamzeh Aslambakhsh [a], Mohammad Ali Moosavian [b], Majid Amidpour [c,*],

Mohammad Hosseini [d], Saeedeh AmirAfshar [e]

[a] *Industrial Projects Management of Iran (IPMI), Commercial Department Piping and Instrumentation disciplines, Sa'adat Abad Ave, Tehran, Iran.*

[b] *School of Chemical Engineering, College of Engineering, University of Tehran, Tehran, Iran*

[c] *Department of Mechanical Engineering, K.N.Toosi University of Technology, Pardis Street, Mollasadra Ave., Vanak Square, Tehran 1999143344, Iran*

[d] *Iranian Oil Terminal Company, Oil Lab, South Pars Special Economic Zone, Asaluyeh 75119-158, Iran*

[e] *Institute of Liquefied Natural Gas (I-LNG), School of Chemical Engineering, College of Engineering, University of Tehran, Tehran, Iran*

Abstract

Cryogenic natural gas liquefaction plant has huge capital and operating expenses corresponding to operating equipment and energy utilization. Considering ever-increasing energy price, therefore, minimization of energy consumption rate for a better profit is highly required. However, any un-engineered energy cut off would result in larger surface area of heat-exchanger and hence bigger capital cost. Here, the net profit of establishing a mini 50 ton/day liquefied natural gas facility, operating for 25 years, is optimized via Genetic Algorithm technique. Poly Refrigerant Integrated Cycle Operations (PRICO) process is simulated in HYSYS environment and linked to MATLAB software for subsequent maximization. The simulation resulted in total consumed power, heat exchanger area and total profit by 2745.33 kW, 3285.58 m^2 and 1266.64 million$, respectively. In order to

*Corresponding author.
E-mail address: amidpour@kntu.ac.ir

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