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Optimasi rantai suplai LNG untuk desain operasional floating storage and regasification unit (FSRU) = Optimizing LNG supply chain for operational design of floating storage and regasification unit (FSRU)

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Abstrak

ABSTRAK
Pembangunan Floating Storage and Regasification Unit (FSRU) berfungsi untuk melengkapi keterbatasan fasilitas jaringan pipa dalam mengakomodasi kelancaran arus suplai gas. Model optimasi rantai suplai LNG digunakan untuk mendapatkan keuntungan maksimal dari pengoperasian terminal tersebut. Optimasi dilakukan dengan menerapkan konsep linear programming mencakup penentuan fungsi objektif, decision variable, dan constraint dilanjutkan proses optimasi dengan bantuan program Solver Microsoft Excel. Dari studi kasus 1 dengan kombinasi suplai LNG ke terminal dari kilang Badak sebanyak 5 kali pengiriman kapal, 2 kali pengiriman dari Donggi, 7 kali pengiriman dari Masela dan 1 kali pengiriman Tangguh didapatkan keuntungan sebesar US$ 73,4 juta. Dari studi kasus 2 dengan kombinasi suplai LNG ke terminal dari kilang Badak sebanyak 5 kali pengiriman kapal, 2 kali pengiriman dari Donggi, 6 kali pengiriman dari Masela dan 2 kali pengiriman dari Tangguh didapatkan keuntungan sebesar US$ 85,7 juta. Dari studi kasus 3 didapatkan keuntungan sebesar US$ 8,2 milyar, dan studi kasus 4 sebesar US$ 8,4 milyar dengan kombinasi pasokan LNG dari tiap supplier berbeda-beda sesuai dengan desain operasional pada kasus tersebut.

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Abstract

Floating Storage and Regasification Unit (FSRU) serves to overcome the limitations of pipeline facilities in order to accommodate the flow of gas supply. LNG supply chain optimization model is used to obtain maximum benefit from the operation of the terminal. The optimization is applied by implementing the concept of linear programming that includes determination of the objective function, decision variables, and constraint. Then optimization process is continued by using Microsoft Excel Solver program. The result from study case 1 that combined 5 shipments of LNG supply to the terminal from Badak, 2 shipments from Donggi, 7 shipments from Masela, and 1 shipments from Tangguh yields US$ 73,4 million of profit. US$ 85,7 million of profit was obtained from case study 2 that combined 5 shipments of LNG supply to the terminal from Badak, 2 shipments from Donggi, 6 shipments from Masela and 2 shipments from Tangguh. US$ 8,2 billion of profit was obtained from case study 3 and US$ 8,4 billion from case study 4 with a combination of LNG supplies from each supplier accordance with the operational design of the case.