

# Analisis teknis dan ekonomi pembangunan pipa transmisi gas bumi Dumai-Sei Mangkei = Technical and economic analysis for Dumai-Sei Mangkei natural gas transmission pipeline construction

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## Abstrak

Pipa transmisi Dumai-Sei Mangkei dibangun sepanjang 421 km dengan tujuan untuk mengalirkan gas alam mencapai 300 MMSCFD baik ke arah Sumatra Selatan dan juga Pulau Jawa, maupun ke arah Sumatra Utara untuk menambahkan pasokan gas alam yang dialirkan pipa transmisi ruas Arun-Belawan. Dalam kajian ini bertujuan untuk mengetahui kelayakan pipa tersebut berdasarkan evaluasi teknis dan ekonomi. Desain teknis meliputi desain sistem pipa transmisi. Perhitungan dari simulasi memberikan hasil desain pipa baja API 5L X42 dengan diameter 28 inci. Desain peralatan meliputi kompresor yang terletak di Dumai dan Sei-Mangkei, berupa kompresor dua tahap dengan masing-masing tahap berkekuatan 7537 hp dan 7353 hp, desain slug catcher yaitu diameter 2,24 meter dan panjang 4,88 meter, desain knock-out drum yaitu diameter 2,07 meter dan tinggi 4,88 meter, serta desain scrubber yaitu diameter 1,1 meter dan tinggi 3,3 meter. Hasil perhitungan nilai parameter keekonomian yang didapatkan adalah NPV sebesar USD 121.878.245, IRR 10,08%, dan PBP setelah 9,75 tahun dengan toll fee sebesar USD 8,37/MMBTU.....The Dumai-Sei Mangkei transmission pipeline is built for 421 km to transport 300 MMSCFD of natural gas both ways towards South Sumatra and Java Island, and towards North Sumatra as an additional supply to the Arun-Belawan section pipeline. This study is made to determine the feasibility of the pipe based on its technical and economical evaluations. Technical evaluations include the design of the transmission pipeline system. Based on the calculations of a simulation, the pipe is designed with steel API 5L X42 as its material with a diameter of 28 inches. Equipment designs include compressors which are in both Dumai and Sei-Mangkei, each with two stages, and each stage has a power of 7537 hp and 7353 hp respectively, the design of a slug catcher with a diameter of 2,11 meter and length of 6,33 meter, the design of a knock-out drum with a diameter of 2,18 meter and height of 6,55 meter, and a scrubber with a diameter of 1,1 meter and height of 3,3 meter. The results of economic parameter calculations is a NPV of USD 121.878.245, IRR 10,08%, and PBP after 9,75 years with a toll fee of USD 8,37/MMBTU.