

ABSTRACT

The number of population and the needs of transportation which grow increasingly cause the fuel demand rises. In along with that, it is necessary to design a fuel distribution system using pipes to facilitate the delivery of the fuel with ease.

In this design, the path is taken from Pekanbaru to Batam throughout 302.43 km. The type of fluid flowed is premium oil with isothermal temperature of 15°C with a liquid density of 740 kg/m³, units of weight 7259.4 N/m³, an API gravity of 60, an evaporation pressure of 9 psi (62Kpa), a relative density of 0.74, a kinematic Viscosity of 0.64.10⁻⁶ m²/s, a flow rate of 679.35 m³/cd and a load factor of 0.92.

The calculation results obtain the pipe design used is the pipe type of schedule 40 with a nominal diameter of 300 mm. The class of pipe used to track oil pipeline with fluid oil based on standard of ASME B31.4 is the API 5L with specification-grade seamless pipe type A25. The number of pump stations required is 2 stations, located at km 0 and km 170. Power needed to the first pump is 481.27 KW and power needed to the second pump is 370.25 KW. So that total power pumping is 851.52 KW » 860 KW. The inside pipe protection against corrosion uses lining and epoxy and the outside one uses three-layer coating. To cope with other protection against an anchor for example, the pipe is lined with the mixed concrete to make it safer.

Keywords: API 5L, API gravity, ASME B31.4, Epoxy, Pipeline, Premium oil, three-layer coating