

## **ABSTRACT**

The aim of writing this final assignment is to design a comprehensive pumping and piping system, especially for seawater extraction, as well as the use of seawater cooling in the Liquefied Petroleum Gas (LPG) production process in the East Java Refrigerated LPG Terminal Development Project Phase 2. The pumping and piping system needed to carry sea water which functions as a coolant or heater to the heat exchanger & condenser. This system will focus on the method of taking seawater for the cooling and heating process from propane temperatures of  $-41.20^{\circ}\text{C}$  to propane  $5^{\circ}\text{C}$  and from butane  $-1.73^{\circ}\text{C}$  to butane  $5^{\circ}\text{C}$ . In addition, this design will incorporate advanced technology to maximize the cooling potential of seawater, thereby increasing the overall efficiency of the LPG production process. This project will consider environmental factors, cost effectiveness and operational reliability in the development of pumping and piping systems, in line with industry standards and the specific requirements of PT Wijaya Karya (Persero) Tbk. This sea water intake system uses a vertical pump type with an impeller submerged in water and is capable of producing liquid hydraulic power of 206.68KW. The pipe used is 20 inches in size and is made from GRE (Glass Reinforced Epoxy) or FRP (Fiber Reinforced Plastic). The design pressure is 8.83 bar.

**Keywords:** LPG, Pump, Pipe, Heat Exchanger

