ABSTRACT

HSD (High Speed Diesel) is a fuel used for power generation process gas and steam at PT PJB Gresik. To ensure the process of electricity production in power plant gas and steam continually, PT PJB Gresik HSD save fuel at the fuel tank as much as five tanks with capacity of 20,000 KL per tank. HSD is a flammable material, for it was on a fuel tank fire extinguishing system need to be equipped accordingly. Fires can occur because of three elements; they are fuel that is enough, oxygen that is enough and hot is enough. So in order not to prevent a fire, an action that needs to be done is to separate the three elements. And on the fuel tank of HSD for oxygen content has not been controlling the action. HSD in the tank so that this necessary control measures oxygen content with inerting system. Inerting is a filling inert gas to tank for reduce oxygen concentration. Inert gas to be used in this study is to use pure nitrogen gas. To find out how the amount of nitrogen gas requirements necessary for reducing the gas content of oxygen in the tank needs to be made a calculation program needs nitrogen gas.

This program aims to determine the need for nitrogen gas as the gas inert the fuel tank. The display and system of this program are using Microsoft Visual Basic 6.0. This program is based on limiting the formulation of Oxygen Concentration and Inerting.

From the test of this program, for high speed diesel fuel obtained the highest mistaken calculation value is 0.004% The results of this program is the reaction of HSD fuel burning is $\text{C}_{12}\text{H}_{26} + 18.5 \text{O}_2 \rightarrow 12 \text{CO}_2 + 13\text{H}_2\text{O}$ and for limiting the Oxygen Concentration Required for 7.1% $\text{O}_2$, and then to the technique requires a vacuum purging and purging cycle 45,322.62 lb nitrogen, pressure purging and purging requires 29 cycles and 47,670.94 lb of nitrogen, for purging requires a vacuum pressure is 1 cycle and 46,966.45 lb nitrogen purging, purging requires a vacuum pressure is 1 cycle and 46,966.45 lb nitrogen purging and to sweep through purging techniques 695.144,34 ft$^3$. Based on the calculation of the resulting programs, for high speed diesel fuel vacuum purging technique is the most efficient technique for purging exists at the amount of nitrogen gas requirements with at least one purging cycle.

**Keywords**: Program, inerting, nitrogen gas requirements.