CONTROLLING OF REFRIGERATION AND FRACTIONATION SYSTEM IN LPG PLANT BY USING PLANTWIDE CONTROL

Name of Students : Ferdian Agung Widianto
2309 106 013
Andi Romdoni Isnan
2310 105 023

Major : Chemical Engineering, Faculty of Industrial Technology

Advised by : Prof. Ir. Renanto MS., Ph.D

ABSTRACT

Liquefied Petroleum Gas (LPG) is the most important product which is used as a source of alternative burning fuel. In Indonesia, its play as an important role as a burning fuel respectively. In case of producing this, there are two important processes that we need to consider and maintain in order to get the continuous supply of this. The processes are refrigeration and fractionation. LPG product actually in fact is produced from the two columns of fractionations, deethanizer and debutanizer. Because of that, in maintaining these two processes, we need to have a good control system. A good control system is consisting from a good control structure which will give an effective control in doing process and its resulted in a good final product. One of the most famous method which have been used by researchers in their works is Plantwide control method. Plantwide control is method developed for designing control structure for complete chemical plant which involves many kinds interactions of the variables, such as recycle stream, energy integration etc. However, this method aimed to gain a good, rapid and smooth responses from the control process in entire plant. Here, we use Aspen HYSYS as simulator and work on two control structure,
they are, conventional and plantwide structure control. Controlling the LPG plant in existing configuration by using ±10% feed flowrate as disturbance, we gained the value of IAE as an average 0.0092. From this research we could look that the structure made by the way of plantwide structure method has showed that it has a good performance and the product which produced better in composition in C3 and C4 by 98,27 % wt with overall product flowrate by 16310 lb/hr.

Keywords: liquefied petroleum gas, plantwide control, AspenHYSYS