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Faculty of Engineering

Study of Using Propane Gas in Gas Cooling Rings Produced from Oil Fields and The Design of Some Production Units

A graduation project submitted to the Chemical Engineering Department in partial fulfillment of the requirements for the degree Bachelor of Science in Chemical Engineering

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ABSTRACT

This research is about the refrigeration gas at fields. This thesis began with an introduction of oil in the plant separator between gas and oil and reduces the pressure on air pressure through several stages of insulation. Starting from the extraction of the mixture, this contains oil, water and gas from the well and then inserted into the separation unit. Oil from the bottom, gas from the top and water in the middle, these phases are separated depending on the density. The aim of the study was to replace the refrigeration gas by propane in the cooling loop. Also to design some of industrial units (storage tank ,separator and distillation) .

In this research we replace propane gas in the cooling system of natural gas instead of Freon due to environmental risks of Freon gas to the ozone layer also, economic motives. The **Hysys** program was used to simulate these modules. The cost of propane gas lower than the cost of Freon. The characteristics of propane gas was studied and compared with Freon gas and it was found that Propane gas has the higher efficiency compared to Freon. In addition, Freon, which is internationally banned. Finally, some basic units were designed such as (distillation and separator). The energy difference of using propane and Freon in refrigerants is about **10,500 Kj/h** were the propane consumes less energy.

However propane can cause a dangerous explosion, the results showed that it is possible to use propane instead of Freon in cooling loops with safety considerations. It would be benefit to use C_3 in order to protect the environment of dangers pollutants.

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