



**BUSITEMA
UNIVERSITY**
Pursuing Excellence

**FACULTY OF ENGINEERING
DEPARTMENT OF CHEMICAL AND PROCESS ENGINEERING
FINAL YEAR PROJECT**

**DESIGN AND CONSTRUCTION OF AN AIR-COOLED JACKETED WINE
FERMENTATION TANK**

BY

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**Final report submitted to the faculty of engineering, department of chemical and
processing engineering in partial fulfillment for the award of a bachelor of sciences in
Agro-processing engineering**

Abstract

Fermentation in winemaking is an exothermic process which turns grape juice or juice from other tropical fruits into an alcoholic beverage where, yeast consumes the sugar in the juice and converts it to ethanol, carbon dioxide, and heat. During wine fermentation the internal temperature of the fermenting must is the most notable factors that winemakers take into consideration.

The method currently being use for reducing the temperature of the fermenting must in the jacketed fermentation tank has number of hindrances which limit its demand by the local winemaker. The purpose of this study was to design and construct an air-cooled jacketed wine fermentation tank. In this paper much emphases were put on the temperature being notable parameter in wine fermentation, size of the tank, the amount of heat generated, the required volume of air, size of the blower fan, and charcoal based evaporative air cooler working on the principle of evaporative cooling

This was achieved through the following method; design of the various components, construction of the prototype, carrying the test, and carrying out an economic evaluation for the project.

At the end of this study, wine fermentation tank was constructed and the blower was in position supply cool air to ensure the temperature of fermenting must maintain to the desired ideal temperature for wine fermentation

Declaration

I, OCICAN CHRISTOPHER, do hereby declare that this final report compiled is my original work and to the best of my knowledge, it has never been published or submitted for the award of any academic qualification in any higher institution of learning.

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Approval

This is to certify that OCICAN CHRISTOPHER is the original author of this report to be submitted for examination for partial fulfillment for the award of a Bachelor of Science in Agro-Processing engineering, Busitema University under the approval of my supervisors.

Supervisor

Mr. Sserumaga Paul

Signature.....

Dedication

I dedicate this report to my dear family, my parents Mr. OGAM E MILIOUS and Mrs. JANET AKUMU and finally to my friends for the unsparing support that made this report writing a success. Love, God blesses u all.

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Acronyms

FAO – Food and Agricultural Organization