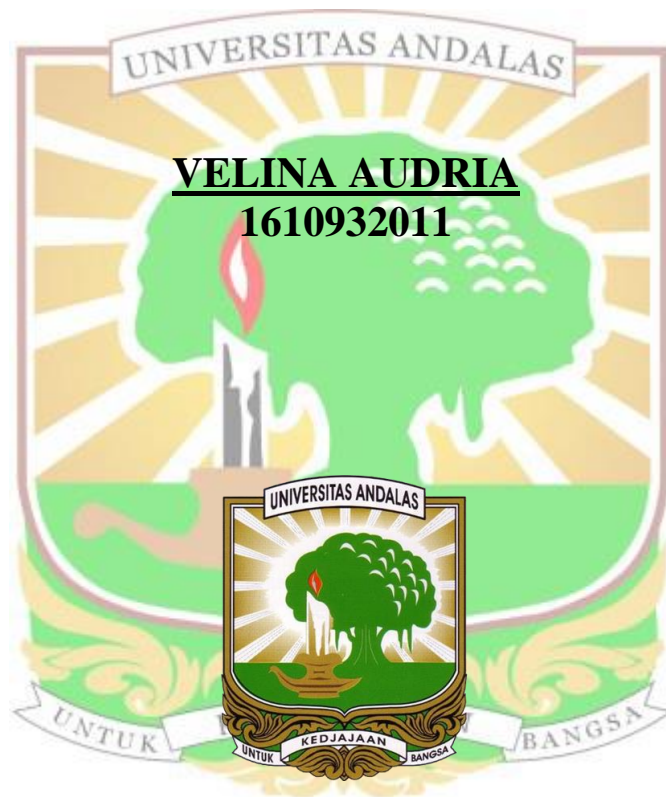


**DESIGNING OF BAKING OVEN
FOR FINNA BAKERY USING KANO MODEL
AND QUALITY FUNCTION DEPLOYMENT**

FINAL PROJECT REPORT



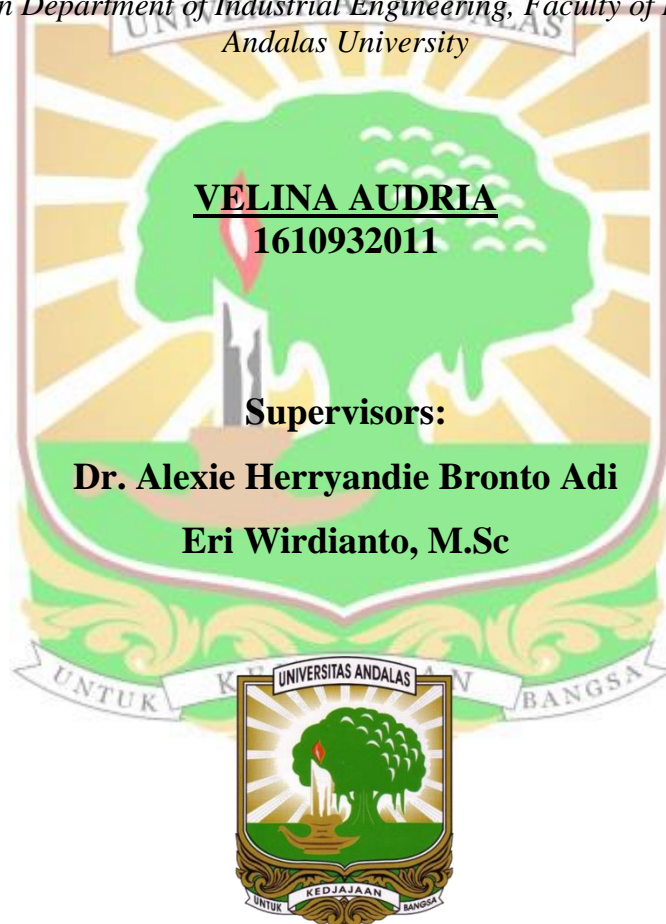
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**DEPARTMENT OF INDUSTRIAL ENGINEERING
FACULTY OF ENGINEERING
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PADANG
2021**

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FINAL PROJECT REPORT

*A report submitted in fulfillment of the requirement for the award of the degree of
Bachelor in Department of Industrial Engineering, Faculty of Engineering,
Andalas University*



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ABSTRACT

This research proposes a baking oven design based on the user requirements. The research objectives are to obtain the design of a baking oven (functional design and technical design) and to estimate the cost for building the baking oven. The functional design is done to determine the functions of the baking oven based on user requirements. The user requirements are gathered through user interviews and are analyzed using the Kano Model. Kano model is used to classify the product attributes based on the quality attributes and determine the importance of each product attribute. The baking oven type is chosen by considering the user preferences. QFD is used to construct the baking oven function system. Two quality houses will be established using QFD: the requirement-function quality house model and the function-part quality house model. The technical design starts from determining the technical response of the user requirements. The dimension of the baking oven's chamber is determined based on the capacity needed and the dimension of baking equipment. The energy requirement during the baking process is also determined. Then, the materials and parts of baking oven are chosen, and the estimated cost to build the baking oven is determined.

There are 20 user requirements obtained based on capacity, performance, ease of use, ease of maintenance, safety, and aesthetic aspects. The designed baking oven is the rotary rack oven, with a capacity of 32 sheet pans in a trolley. The overall dimension of the baking oven is 1,930 x 1,530 x 1,980 mm. The total energy requirement for baking one batch production of white bread is 37,226.52 kJ. The total energy consumption of LPG for baking one batch production of white bread is 1.27 kg. The cost of energy consumption is Rp155.92 per loaf of white bread. The total cost for building the baking oven is Rp78,033,260. The depreciation cost for the baking oven is Rp40.39 per loaf of white bread.

Keywords: *baking oven, design, Kano model, QFD*



ABSTRAK

Penelitian ini mengusulkan desain *baking oven* berdasarkan kebutuhan pengguna. Tujuan penelitian ini adalah untuk mendapatkan desain *baking oven* (desain fungsional dan desain teknis) dan memperkirakan biaya pembuatan *baking oven*. Perancangan fungsional dilakukan untuk menentukan fungsi dari *baking oven* berdasarkan kebutuhan pengguna. Kebutuhan pengguna dikumpulkan melalui wawancara dan dianalisis menggunakan Kano model. Kano model digunakan untuk mengklasifikasikan atribut produk berdasarkan atribut kualitas dan menentukan tingkat kepentingan setiap atribut produk. Tipe *baking oven* dipilih dengan mempertimbangkan preferensi pengguna. QFD digunakan untuk membangun sistem fungsi *baking oven*. *Quality house* yang akan dibangun menggunakan QFD adalah *requirement-function quality house model* dan *function-part quality house model*. Perancangan teknis dimulai dari menentukan respon teknis dari kebutuhan pengguna. Dimensi *baking oven* ditentukan berdasarkan dimensi *baking chamber* dan peralatan *baking*. Kebutuhan energi selama proses pemanggangan juga ditentukan. Kemudian, material dan *part* dari *baking oven* dipilih, dan perkiraan biaya untuk membuat *baking oven* ditentukan.

Hasil wawancara dengan pemilik *bakery* adalah terdapat 20 kebutuhan pengguna dari *baking oven* berdasarkan aspek kapasitas, performa, kemudahan penggunaan, kemudahan perawatan, keamanan, dan estetika. *Baking oven* yang dirancang adalah *rotary rack oven*, dengan kapasitas 32 loyang dalam satu troli. Dimensi keseluruhan dari *baking oven* adalah 1.930 x 1.530 x 1.980 mm. Total kebutuhan energi untuk produksi satu *batch* roti tawar adalah 37.226,52 kJ. Total konsumsi energi LPG untuk produksi satu *batch* roti tawar adalah 1,27 kg. Biaya konsumsi energi adalah Rp155,92 per potong roti tawar. Total biaya pembuatan *baking oven* adalah Rp78.033.260. Biaya penyusutan untuk *baking oven* adalah Rp40,39 per potong roti tawar.

Kata kunci: *baking oven*, desain, Kano model, QFD