

FINAL PROJECT

“Characteristics Test of Picohydro Francis Turbine With 8 And 10 Cm of Runner Diameter
at Limau Manih Irrigation Channel”

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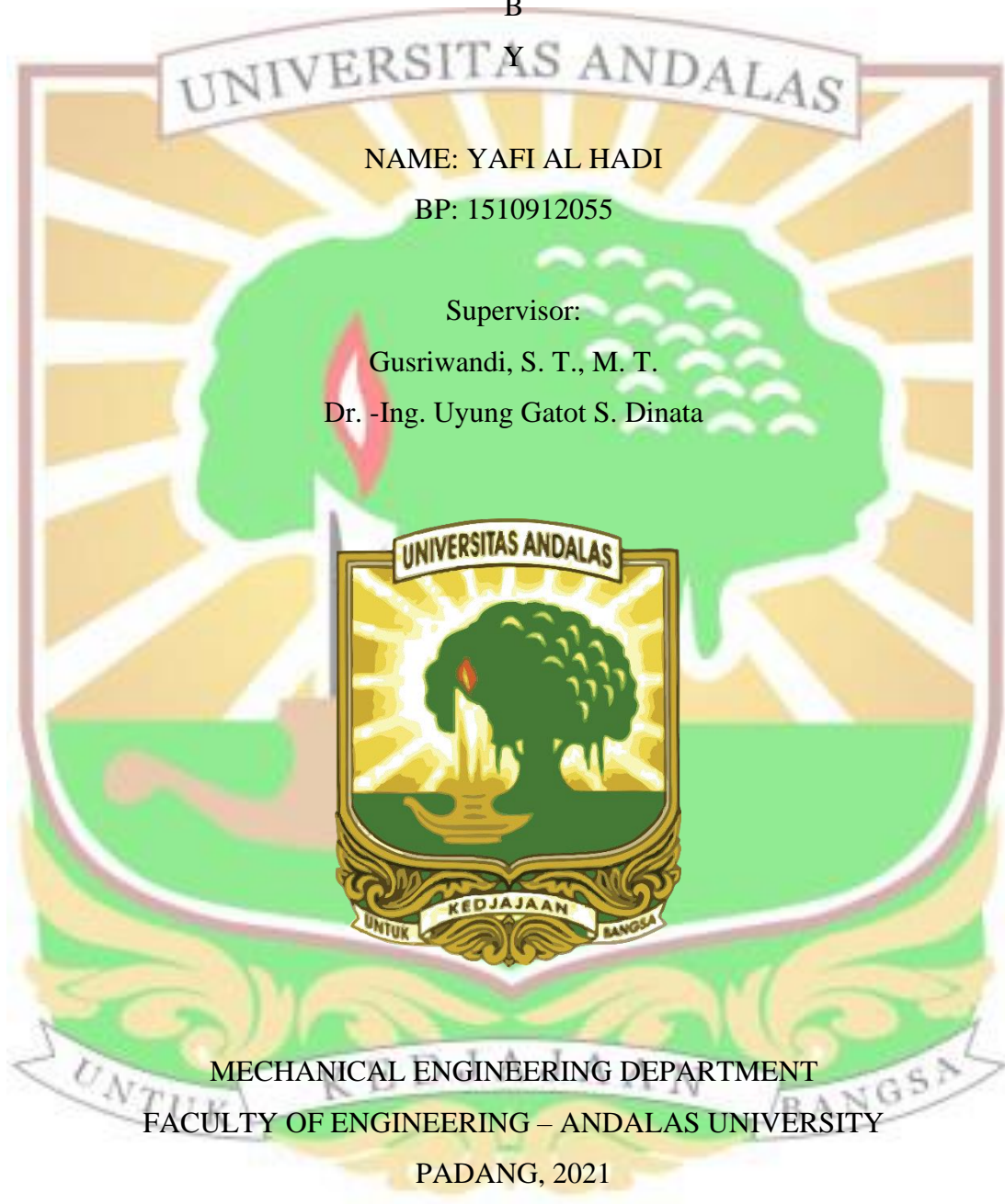
NAME: YAFI AL HADI

BP: 1510912055

Supervisor:

Gusriwandi, S. T., M. T.

Dr. -Ing. Uyung Gatot S. Dinata



MECHANICAL ENGINEERING DEPARTMENT
FACULTY OF ENGINEERING – ANDALAS UNIVERSITY

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Abstract

A picohydro power plant (PLTPH) is one of the solutions in utilizing the existing hydropower potential. But the obstruction is the high cost of pico-hydro turbines in Indonesia also the inadequate public knowledge of turbine technology. In helping the problems that exist in the community, it is necessary to carry out research to obtain characteristics that are in accordance with the potential of hydropower in Indonesia. Testing using two francis turbines with diameter differences which later able to provides to the turbine specification table that is in accordance with head conditions, water discharge and water pressure in Indonesia. Then that able to help people choose a proper turbine. On that condition, it is necessary to test the characteristics of the turbine and to obtain the maximum efficiency.

Power house and testing installation construction is prepared and located at limau manih irrigation channel, Pauh, Padang City. Characteristics test of the turbine taken place with variation of discharge and load. And head of the turbine remained constant for each load given.

The result of this testing namely obtained the highest mechanic power for turbine with 10 cm diameter of runner is 93 W at 593 RPM. Moreover, the highest mechanic power for turbine with 8 cm diameter of runner is 97 W at 617 RPM. Furthermore, the efficiency of each turbine is 32% and 31%. This turbine is exactly classified into pico scale power, but not reccomended for under ~50 W electricity consume.

(Keywords: Hydropower, Francis Turbin, Characteristics, Electricity)

