

**NUMERICAL ANALYSIS EFFECT OF BOTTOM BOUNDARY
ROUGHNESS AND POSITION OF OSCILLATING PART TO THE
POWER OF VORTEX SEA FLOW**

Name : Hafiz Nurqalbuzaky
Reg : 4307 100 013
Department : Ocean Engineering
Supervisor : Prof. Ir. Mukhtasor., M.Eng., Ph.D
: Suntoyo, S.T., M.Eng., Ph.D

ABSTRACT

The main source of the world's energy comes from non-renewable fossil fuels, which encourages many people to seek alternatives for energy that is renewable. One of them is to abuse the phenomena of Vortex Induced Vibration (VIV). This final project is to focus the discussion on a single oscillating part at the vortex power plant. Change the distance between oscillating part and the bottom will result in the difference of the amplitudes. Pavement roughness also affects the amplitude of the result. By modeling the roughness of the bottom boundary and also varying the distance of the oscillation part on the bottom with ANSYS 12.0 (CFD) followed by a numerical calculation of the structural dynamics equations, will get amplitude for the oscillating part. The following will be calculated. The results showed that the greater the roughness of the base, then the resulting amplitude will be smaller. The study also shows that the optimum distance for electrical energy which is produced by oscillating part does not depend on the bottom which has K_s value of $3,42 D$ from 0 to $0,02 m$ from the bottom boundary.

Key words: ANSYS, electrical power, bottom boundary roughness, oscillating part, distance variation, Vortex Induced Vibration.