

ABSTRACT

Technology is very important for mankind, especially in this day and age, so we must keep up with technological developments and also have to innovate to advance technology. Hypersonic Flight is one of the technological developments in the field of aircraft with speeds above Mach 5, the speed at which air separation begins to become significant and there is a high heat load. Therefore, in this final project the author will discuss Hypersonic Flight Control (HFC) using the - NonLinear system as the method and with Inverse Dynamics Based Control which functions to control changes in altitude and aircraft speed quickly and accurately with a certain resistance.

HFC will be simulated using the MATLAB application and will be connected to the Flightgear application. MATLAB itself will be used to program and make mathematical calculations that will be entered into Flightgear to simulate the aircraft using the Nonlinear system method and using Inverse Dynamics Based Control as the controller of the aircraft when it is simulated.

With the results of this simulation, it is hoped that the aircraft can be controlled for changes in altitude and speed quickly and accurately so that it can help the technology on Hypersonic aircraft to develop.

Keywords : *Hypersonic Flight Control, Euler Lagrange Dynamics, Inverse Dynamics Based Control, MATLAB, Flightgear.*