



**DESIGN OF PUSHBACK TUG BODY AND FRAME FOR DOUBLE
NOSEWHEEL AIRCRAFT TYPES WITH MAXIMUM WHEEL DIAMETER OF
700MM**

UNDERGRADUATE THESIS

Submitted as one of the requirements to obtain

Sarjana Teknik

By:

FARREL DAFFAYU NANDRA

003201900014

FACULTY OF ENGINEERING

MECHANICAL STUDY PROGRAM

CIKARANG

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ABSTRACT

Aircraft is one of the most frequently used transportation by humankind today. In line with the technological development of the transportation industry, the type of air transportation for the community is considered more effective and efficient than land and water transportation. The aviation industry currently has various tools with different functions for aircraft maintenance and flight process. Aircraft Support is divided into various forms according to its function, one of which is the Pushback Car. Pushback Cars play a significant supporting role in helping aircraft so that they are not misdirected when exiting the parking area so that there are no collisions between aircraft. While the increase in technology is increasingly sophisticated, Aircraft Support is also positively affected by the rapid development of technology. PT.XYZ is currently producing a Pushback Car that has been innovated to be unmanned and not in the form of a car called Pushback Tug. All aircraft Pushback activities will be controlled via Remote Control. To make this all happen, a design process is needed before production. In the Pushback Tug design process will use the Solidworks computer program. The simulation is also carried out to ensure safety usage and reduce unnecessary costs due to product failure. The finite element analysis simulation will be carried out using the ANSYS program and will provide safety results. The simulation results show that ASTM A36 material is a suitable material for the Pushback Tug with a body von-mises stress of 120.82 Mpa at a load of 17 tons and a frame von-mises stress of 111.79 Mpa at a load of 7 tons. The hydraulic cylinder at a pressure of 1200 N/cm² has a force of 166,168.8 N during extension and 81,388.8 N during retraction.

Keywords: Aircraft Support, Pushback Car, Pushback Tug, Analysis

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