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

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FACULTY OF ENGINEERING

MECHANICAL STUDY PROGRAM

CIKARANG

SEPTEMBER, 2023

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

By

Farrel Daffayu Nandra

003201900014

Approved by

Drs. Nanang Ali Sutisna M.Eng	**Dr.Eng. Lydia Anggraini, S.T., M.Eng**
Thesis Advisor	Head of Study Program Mechanical Engineering

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ACKNOWLEDGEMENT

Praise and gratitude for the presence of Allah SWT, for all blessings, grace, and gifts that have provided knowledge, experience, strength, patience, and opportunities to researchers so that they can complete this thesis. However, the researcher realizes that without the help and support of various parties, the preparation of this thesis cannot go well. Until the completion of writing this thesis has received a lot of help time, energy and thoughts from many parties. In this regard, on this occasion please allow the researcher to express his deepest gratitude to:

1. Both parents, my beloved father Erinandra and my beloved mother Yessy Ariani John, have been extraordinary parents in educating me all this time and also provided spirit, prayers, support, and money to pay for school from elementary school to college today.
2. Dr. Eng. Lydia Anggraini, S.T., M.Eng as the head of the mechanical engineering study program at President University and the organization that always provides smoothness during my education at President University.
3. Mr. Drs. Nanang Ali Sutisna, M. Eng as the supervisor who provided knowledge, time and energy to guide me during the process of writing the thesis
4. Lecturers of the mechanical engineering department who have provided useful knowledge for my future.
5. Mechanical engineering friends of President University class of 2019 who gave me many good memories during my study in mechanical engineering.M Solidarity Forever.
6. Last but not least, I wanna thank me,I wanna thank me for believing in me,I wanna thank me for doing all this hard work,I wanna thank me for having no days off,I wanna thank me for, for never quitting,I wanna thank me for always being a giver and tryna give more than I receive,I wanna thank me for tryna do more right than wrong,I wanna thank me for just being me at all times.

May Allah SWT, reward with all the goodness of the world and ahirat for the sincerity and kindness of all parties who have been given to researchers. The researcher hopes that this thesis can be useful for all those who read it, especially the development of Mechanical Engineering. The researcher realizes that there are still many shortcomings and imperfections in this thesis research. For this reason, researchers expect criticism and suggestions to improve in the future. The

researcher would also like to thank all parties for their attention and encouragement during the thesis completion process.

Cikarang,

Farrel Daffayu Nandra

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 Pushbcak 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 Suppot, Pushback Car, Pushback Tug, Analysis

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