



TALLINN UNIVERSITY OF TECHNOLOGY
SCHOOL OF ENGINEERING

Department of Electrical Power Engineering and Mechatronics

Module for a Drone to Install Power Line Bird Flappers

MASTER THESIS

MECHATRONICS PROGRAM

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CHAPTER9: SUMMARY

9.1 Summary

Mechanical device was designed in SolidWorks and FEA analysis was done to test the structural feasibility of the assembly parts. The result of simulation helped to realize the problem strength to weight ratio in the designed part. However the simulation in SolidWorks illustrates the aspects such as stress strain and displacement and deformation in the parts. Hence the system's robustness with structure was determined.

Our structure passed all analysis with positive results and even factor of safety was sustained by the unit with the biggest assumed weight during simulation. The drawback with using metal is that they are higher in density this means per unit volume they have more mass this results in making the system heavier.

Proceeding further Polyethylene was suggested due to its similar mechanical properties and the weight reduced by a factor of more than 50 %. Hence this research also shows how analysis like FEA for a structural part can help in development and realization of the feasibility of different mechanical aspect. To conclude on this aspect I would suggest to use different material for different parts of the assembly to be finalized after a detailed FEA of all parts being assembled.

Different concepts of design procedure were learnt and illustrated elaborately in Chapter 3 this makes the design process clear for us, and helps us structure the entire design process. During the course of thesis concept to make the system autonomous was discussed as well, and with implementation of the proposed control unit motor selected and sensors when integrated and programmed; the prospects of having an autonomous robot for the same device is very much possible.