KOKKUVÕTE

Lõputöö peamine eesmark on luua konseptuaalne lahendus tagastuskapile koos selle projekteerimisega. Tagastuskapp on loodud välitingimustesse ning kapp on iseseisev ehk sisaldab endas tarka elektroonikat nagu arvuti, skänner, kleepsuprinter jne.

Tagastuskapile on tehtud hinnaanalüüs, milles tuleb välja, et 20 tk seeriatootmises läheb koost maksma vahemikus 6000-6500€. Lisaks sellele on tehtud tagastuskasti (kast, kuhu pakid sisse kukuvad) uksele täpsem hinnapäring, kus antud koostu tükihind seeriatootmises (20tk) läheb maksma 138.25€.

Kuna tagastuskapp on mõeldud välitingimustesse, peab see ka olema vandalismikindel. Selletõttu on tagastuskasti uksele tehtud nii painde- kui ka löögisimulatsioonid. Simulatsioonide tulemustest tuleb välja, et nii kangutades kui ka lüües jõuga 500N, ei teki antud uksel plastset ega suurt elastset painet. Kangutamise tõttu suurim nihkumine oli 13,5mm. Tsinkplekil (DX51D) voolepiiriga 270MPa jäävad pinged alla 200MPa. Suurimad pingete konsetratsioonid oli lukukeelel, kus suurimad pinged on 400MPa. Seetõttu on lukukeel valmistatud roostevabast terasest S430. Löömisel olid tulemused väiksemad. Tulemustest võib järeldada, et tagastuskapp vastab WK2 kui ka EN1627 standartidele.

Viimaseks tulemuseks on terve koostu gabariitmõõtmed, mis on saadud tänu terve koostu projekteerimisele. Tagastuskapi gabariitmõõtmed suletud ustega on 1234.5mmx 1685.0mm 1973.0mm ning avatud ustega on 2323.1mm x 1685.0mm x 1973.0mm.

Käesolev bakalaureusetöö on andnud hea põhja tagastuskapi edasiseks projekteerimiseks ja selle täiustamiseks.

SUMMARY

The main goal of the thesis is to create a conceptual solution for the parcel return locker together with its design. The return locker is designed for outdoor conditions, and the locker is self-contained, i.e. it contains smart electronics such as a computer, scanner, sticker printer, etc.

A price analysis has been carried out for the return cabinet, in which it turns out that the set will cost in the range of 6000-6500€ in series production of 20 pieces. In addition, a more precise price inquiry has been made for the door of the return box (the box into which the packages fall), where the given unit price in series production (20 pieces) will cost 138.25€.

Since the parcel return locker is intended for outdoor use, it must also be vandal-proof. Therefore, both bending and impact simulations have been performed on the door of the return box. From the results of the simulations, it turns out that both when prying and hitting with a force of 500N, no plastic or large elastic bending deformation occurs on this door. The largest displacement due to prying was 13.5mm. On galvanized sheet (DX51D) with a yield strength of 270MPa, the stresses remain below 200MPa. The highest stress concentrations were on the latch, where the highest stress is 400MPa. Therefore, the latch is made of stainless steel S430. When hitting, the results were lower. From the results, it can be concluded that the return cabinet meets WK2 and EN1627 standards.

The final result is the overall dimensions of the entire assembly, which are obtained thanks to the design of the entire assembly. The overall dimensions of the return cabinet with the doors closed are 1234.5mm x 1685.0mm 1973.0mm and with the doors open are 2323.1mm x 1685.0mm x 1973.0mm.

This thesis has provided a good basis for the further design and improvement of the parcel return locker.