

8 KOKKUVÕTE

Lõputöö eesmärgiks oli projekteerida pedaalikast, mis oleks töökindel, hea hooldatavusega, kooskõlas tudengivormeli võistlussarja reeglitega, juhile mugav ning lihtsasti toodetav. Lõputöö jagunes neljaks osaks, milleks oli olemasolevate lahenduste uurimine, erinevate kontseptsioonide loomine, projekteerimine ning tootmine. Lõputöö raames ei käsitletud pidurisadulate, -ketaste ja -voolikute projekteerimist.

Esimeses osas uuriti FS Team Tallinna varasemaid lahendusi kui ka teiste meeskondade projekteeritud pedaalikaste. Loodi kolm erinevat kontseptsiooni, mida võrreldi omavahel hindamismaatriksi abil ning valiti nendest sobivaim lahendus, millega lõputöös edasi mindi.

Teises osas tehti projekteerimiseks vajalikud arvutused ja käsitleti Siemens NX CAD tarkvaras pedaalikasti detailide 3D mudeli projekteerimist. Piduripedaalile teostati FEM analüüs, et uurida selle jäikust võrreldes eesmärgiga ning optimeerida mudelit massile.

Lõputöö viimases osas kirjeldati projekteeritud detailide tootmist ning testiti peasilindri vastupidavust hüdrorõhule kui ka selle toimimist pneumorõhuga.

Lõputöö valmimise ajaks oli pedaalikasti detailid valmis toodetud, komplekteeritud ja masina peal ka sadakond sõidukilomeetrit läbinud. Kokkuvõtteks võib seega öelda, et lõputöö eesmärk sai täidetud.

9 SUMMARY

The aim of the thesis was to design a pedal box that would be reliable, easy to maintain, in accordance with the rules of the student formula competition series, comfortable for the driver and easy to manufacture. The thesis was divided into four parts, which were research into existing solutions, creation of different concepts, design and production. The design of brake calipers, discs and hoses was not discussed in the framework of the thesis.

In the first part, FS Team Tallinn's previous solutions as well as pedal boxes designed by other teams were studied. Three different concepts were created, which were compared with each other using an evaluation matrix, and the most suitable solution was chosen from them, which was used in the thesis.

In the second part, the necessary calculations for the design were made and the design of the 3D model of the pedal box details was discussed in the Siemens NX CAD software. A FEM analysis was performed on the brake pedal to investigate its stiffness relative to the target and to optimize the model for mass.

The last part of the thesis described the production of the designed parts and tested the master cylinder's resistance to hydraulic pressure as well as its operation with pneumatic pressure.

By the time the thesis was completed, the parts of the pedal box had been manufactured, assembled and a hundred kilometers had been driven on the machine. In conclusion, it can be said that the aim of the thesis was fulfilled.