

KOKKUVÕTE

Antud lõputöö tulemusena valmis projekt, mille järgi saab ehitada alajaamade uste töötlemiseks mõeldud rakise. Valminud projekti põhjal saab ehitada rakise, kuhu kinnitatakse alajaama uks. Ust saab rakises pöörata vastavalt, millist külge soovitakse parasjagu töödelda. Töö valmis koostöös ettevõttega AS Harju Elekter, kust tuli projekti jaoks sisend ja andmed.

Töö käigus tehti saadud sisendile, tehnilistele nõuetele ja soovidele kontseptsioonide analüüs, kus võrreldi erinevaid lahendusi. Rakise disainimise faasis analüüsiti erinevaid projekteerimise valikuid ja vajalikke ostutooteid. Valitud lahenduste põhjal projekteeriti Solid Edge tarkvaras valmis rakise mudel. Mudeli põhjal valmisid ka tugevusarvutused rakise strateegilisemate elementide kohta. Tugevusanalüüs näitas, et arvutatud kohtades on konstruktsiooni tugevus tagatud. Tööks vajaminevatest materjalidest, ostukomponentidest ja tehnoloogiast valmis kokkuvõtlik hinnatabel, mis annab ette pildi, kuidas rakise hind kujuneb. Valminud mudeli põhjal valmisid projekteeritud toodetele tööjoonised.

Valminud konstruktsiooni osas võib probleemseks osutada ukse ohutu kinnitamine. Seda just selles valguses, kui see pööratakse kinnitatult teist pidi. Nagu sisus kirjeldatud, siis seda ohutust näitab rakise praktiline ehitus. Kinnitusliistu juurde jäeti ka varu ruumi, kuhu vajadusel saab juurde lisada teisi kinnitustarvikuid või kasutada hoopis muud lahendust. Kui aga töös valitud kontseptsioon toimib, siis pole kinnitusliistu juurdeehitus oluline.

Lõpliku eesmärgi saab antud töö puhul saab teada siis, kui see valmis ehitatakse. Siis saab hinnata kas see ka tootmisele kaasa aitab. Tulevikus saab antud raamile teha veel arendustöid. Esiteks võivad olla need koostamisest tulenevate puudujääkide likvideerimine. Teiseks ka üleüldiste arendustegevuste teostamine, et rakist parendada. Antud lõputöö andis autorile palju oskusi ja teadmisi taoliste koostude projekteerimiseks, sest varem polnud autor niivõrd mahukat projekti ette võtnud.

SUMMARY

As a result of this thesis, a jig was constructed, according to which an assembly jig for a substational door can be built. Based on the completed project, a jig can be built to which the substation door is attached. The door can be rotated in the jig according to which side is the need for the processing. The work was completed in cooperation with the company AS Harju Elekter, where the input and data for the project came from.

To achieve this, a concept analyzation was made based on the received input technical requirements. Different concepts were compared. During the design phase, various design options and necessary purchase products were analyzed. Based on the selected solutions, a jig was designed in Solid Edge software. Strength calculations for the more strategic elements of the jig were also prepared based on the model. The strength analysis showed that the strength of the structure is guaranteed at the calculated locations. A summary price table was prepared from the materials, purchase components and technology needed for the work, which gives a picture of how the price of the jig is formed. Based on the finished model, drawings were prepared for the designed products.

As for the completed construction, there can be a problem to securely attach the door to the jig. This is precisely at the moment, when the door is turned upside down. As described in the content, this safety is demonstrated by the practical construction of the jig. A spare space was also left next to the bench clamp, where other fastening accessories can be added if necessary or a completely different solution can be used. However, if the concept chosen in the construction works, then the extension of the fastening strip is not important.

The final goal for this work will be known when it is built. Then it can be assessed whether it also contributes to production. In the future, more development work can be done on this jig. First of all, it can be elimination of defects arising from production. Secondly, the implementation of general development activities to improve the jig. This thesis gave the author a lot of skills and knowledge to design such assemblies, because the author had never undertaken such a large-scale project before.