

**VISOKA ŠOLA ZA PROIZVODNO INŽENIRSTVO**

**DIPLOMSKO DELO**

**NAČRTOVANJE POSTOPKA IZDELAVE OHIŠJA  
EKSPLOZIVA 07911 S TEHNOLOGIJO HLADNEGA  
KOVANJA V PODJETJU UNIOR D.D.**

**PLANNING OF MANUFACTURING PROCESS FOR HOUSING  
EXPLOSIVE 07911 WITH TECHNOLOGY OF COLD  
FORGING IN UNIOR D.D.**

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**Študijski program: Sodobno proizvodno inženirstvo**

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# **NAČRTOVANJE POSTOPKA IZDELAVE OHIŠJA EKSPLOZIVA 07911 S TEHNOLOGIJO HLADNEGA KOVANJA V PODJETJU UNIOR D.D.**

## **POVZETEK**

V diplomskem delu smo zasnovali celoten postopek izdelave ohišja eksploziva 07911 s tehnologijo hladnega kovanja.

V začetnem delu diplomskega dela smo z uporabo metode brainstorming, metode 635 ter metodo dialoga poiskali idejo za snovanje operacij preoblikovanja. Izbrano idejo smo s pomočjo programskega paketa Deform analizirali, tako da smo raziskali in analizirali kakšno silo potrebujemo za posamezno operacijo, kako se material obnaša med preoblikovanjem ter potrdili, da smo operacije pravilno snovali.

Osrednji del diplomskega dela prikazuje izbiro optimalnega stroja ter snovanje in konstruiranje orodja za posamezne operacije. Konstruirano orodje smo pred izdelavo prav tako analizirali s programskim paketom Deform, da smo raziskali, če se v orodju pojavijo napetosti, ki so nižje od dopustnih.

Zadnji del diplomskega dela vsebuje dokumentirano izvedbo poskusne serije artikla ohišja eksploziva. Na osnovi meritev odkovka smo ugotovili, da je narejen v predpisanih tolerancah.

**Ključne besede:** hladno kovanje, numerične simulacije, orodje.

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## **ABSTRACT**

In the diploma the procedure of planning the production of housing of the explosive 07911 with cold forging technology is described.

In the first part of the diploma ideas were searched for the formation of the forming operations. By this were used three methods: brainstorming, 635 method and dialogue method. The chosen idea was analysed with help of the engineering software Deform, where we could see the needed force by each operation and the reaction of the material by the forming. With help of the Deform a confirmation was given that the selected operations were chosen right.

In the main part of the diploma the selection of an optimal machine and planning and construction of the tool for each operation is described. The constructed tool was also analysed with help of the Deform, where it could be seen if there are any additional tensions from the prescribed ones.

The last part of the diploma contains documentary material of the execution of the test series for the housing of the explosive 07911. Based on the measurements of the forging part, we came to the conclusion, that the housing of the explosive 07911 is made in the prescribed tolerances.

**Keywords:** cold forging, numerical simulations, dies.