

## VPLIV MAZIV ZA ŠTANČANJE NA TRIBOLOŠKE LASTNOSTI PLOČEVIN S PREMAZI

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### **Povzetek**

Zaradi vse strožjih zakonodajnih omejitev glede uporabe številnih visoko zmogljivih materialov in maziv sta tako industrija kot znanost prisiljeni v stalen razvoj novih trajnostnih in bolj zelenih rešitev. Pri štančanju je to zelo pomembno, saj je izpostavljeno visoki globalni konkurenčnosti in vedno večjim zahtevam po tehnoloških izboljšavah za večjo produktivnost, energetske in stroškovno učinkovitost ter kakovost izdelkov. Da bi izpolnili te zahteve, je treba tribologijo štančanja, vključno s kontaktnimi materiali, nenehno prilagajati in evalvirati. V avtomobilskem sektorju so jeklene pločevine pogosto prevlečene z različnimi izolacijskimi premazi, da bi dosegli izboljšane lastnosti materialov, kot so zmanjšana izguba moči, izboljšane lastnosti štančanja in odpornost proti koroziji. V praksi se tovrstne pločevine navadno štancajo v suhem. Čeprav kombinacija organskega premaza in suhih pogojev predstavlja najbolj trajnostno in zeleno rešitev, je potrebno oceniti, koliko uporaba maziv v primerjavi s suhimi pogoji prispeva k znižanju trenja in obrabe orodja za štančanje in s tem k znižanju porabe energije.

**Ključne besede:** štančanje, maziva, premazi, zelene tehnologije.

### **Abstract**

Due to increasingly stringent regulatory restrictions on the use of many high-performance materials and lubricants, both industry and science are forced to constantly develop new sustainable and greener solutions. This is very important in stamping, as it is exposed to high global competitiveness and increasing demands for technological improvements for higher productivity, energy and cost efficiency, and product quality. To meet these requirements, the stamping tribology, including contact materials, needs to be constantly adjusted and evaluated. In the automotive sector, steel sheets are often coated with various insulating coatings to achieve improved material properties such as reduced power loss, improved stamping properties and corrosion resistance. In practice, such sheets are usually stamped in the dry. Although the combination of organic coating and dry conditions is the most sustainable and green solution, it is necessary to assess how much the use of lubricants compared to dry conditions contributes to reducing friction and wear of stamping tools and thus reduce energy consumption.

**Key words:** stamping, lubricants, coatings, green technologies.