

ZBORNIK RADOVA SA 2. MEĐUNARODNE
NAUČNE KONFERENCIJE
"Primijenjene tehnologije u mašinskom inženjerstvu"
COMETa2014, Istočno Sarajevo - Jahorina 2014.

PROCEEDINGS OF THE 2nd INTERNATIONAL
SCIENTIFIC CONFERENCE
"Conference on Mechanical Engineering
Technologies and Applications"
COMETa2014, East Sarajevo - Jahorina 2014.

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| <i>Organizator:</i> | Univerzitet u Istočnom Sarajevu Mašinski fakultet Istočno Sarajevo |
| <i>Organization:</i> | University of East Sarajevo Faculty of Mechanical Engineering East Sarajevo |
| <i>Izdavač:</i> | Univerzitet u Istočnom Sarajevu Mašinski fakultet Istočno Sarajevo |
| <i>Publisher:</i> | University of East Sarajevo Faculty of Mechanical Engineering East Sarajevo |
| <i>Za izdavača:</i> <i>For publisher:</i> | Prof. dr Ranko Antunović |
| <i>Urednici:</i> <i>Editors:</i> | Prof. Dr Biljana Marković, Prof. Dr Ranko Antunović, Dr Milija Kraišnik, assistant professor |
| <i>Tehnička obrada i dizajn:</i> <i>Technical treatment and desing:</i> | Dr Miroslav Milutinović, assistant professor Mr Saša Prodanović, senior asisstant |
| <i>Izdanje:</i> <i>Printing:</i> | Prvo; optički disk (CD-ROM) 1 st ; optical disc (CD-ROM) |
| <i>Register:</i> <i>Register:</i> | ISBN 978-99976-623-2-3 COBISS.RS-ID4642840 |
| <i>Tiraž:</i> <i>Circulation:</i> | 100 primjeraka 100 copies |
| <i>Rukopis predat u štampu:</i> <i>Manuscript submitted for publication:</i> | 20. Novembar 2014. November 20 th 2014 |
| <i>Štampa:</i> <i>Printed by:</i> | KOPIKOMERC, Istočno Sarajevo KOPIKOMERC, East Sarajevo |



PARAMETRIC MODELING OF GEAR TRANSMISSIONS IN CAD SOFTWARE WITH DEFINABLE SHAFT AXIS POSITIONS

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Abstract: This paper presents a practical example of using current CAD software solutions for improved modeling of geared power transmissions. The parameterization process used is for creating individual models, elements and assembly models of transmissions. The assembly model parametrically defines the correlation between elements of the assembly and defines the position of the shaft axis. This approach presents an automation of the modeling process, a quick and effective approach to forming and changing technical documentation. The suggested approach forms a basis for automation of the complete design process for geared power transmissions. This paper also presents models of practically applicable geared transmissions which verifies the quality and efficiency of the development process, compared to a conventional approach. Practical examples also show ways of creating models and use of development processes. Models are developed for two-stage and three-stage geared power transmissions.

Key words: Parametric modeling, CAD, geared transmission, shaft axis

1. INTRODUCTION

The use of CAD software is quite wide spread today and is practically unavoidable in engineering practice. A very attractive and frequent use of CAD software is for the automation of the design process. Automation in CAD software implies automated modeling of families of similar components of a certain product and even whole products. Automated modeling is based on modeling parts, subassemblies and assemblies of complete structures automatically by defining parameters, which are previously determined. Defining parameters and their relations is done mathematically

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