

UNIVERSITY OF BELGRADE  
TECHNICAL FACULTY IN BOR



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CONFERENCE ON TECHNICAL  
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## MODELLING AND STRESS ANALYSIS OF MACHINE ELEMENTS IN SOLIDWORKS SOFTWARE

**Students: Marija Divac, Lana Mitrović, Jovana Milošević, Marko Rakita**

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### Abstract

Springs are machine elements that are used to create elastic joints. They are capable of being elastically deformed under the influence of external load and of converting the absorbed energy into mechanical work again. Paper presents analysis of the stress state of the torsion spring. Considered were two cases. The first, when the spring is fixed on the side and loaded with a force of 100 N and the second, when it is fixed at the root and loaded with the same force intensity. Spring modelling was performed in Solidworks software and further analysis of the stress state. The finite element method was used as the basis for the analysis of the stress state. The results are shown through displacement trend, spring deformation and Von Mises Stress. From the aspect of displacement, it can be concluded that the more dangerous case is when the spring is fixed at the root. The displacement values are much more pronounced with this load. The same situation is repeated with deformations. Deformations are more pronounced in the case when the spring is fixed at the root and loaded with a force of 100 N. According to the results of the previous analyzes for displacement and deformations, it is concluded that the Von Mises stress value is higher when the spring is fixed on the side compared to the situation when the spring is fixed at the root.

**Keywords:** *Machine elements, Springs, Stress analysis, Solidworks*

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