connection on the applied bending moment M_b in the range of 5000N·m..20000N·m is described by the trend lines:

$$\sigma_{max} = 0.3366M_b + 13.55 \text{ (MPa) for an axial force of 200 kN,}$$

$$\sigma_{max} = 0.3366M_b + 16.9 \text{ (MPa) - for an axial force of 250 kN.}$$

$$\sigma_{max} = 0.3367M_b + 19.85 \text{ (MPa) - for an axial force of 300 kN,}$$

The results obtained in the zones of stress concentrators in the rifled connection are correlated with the results of the studies described in [2, 3].

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FEM NUMERICAL ANALYZES OF THE RUBBER BOOT OF THE JOINT DRIVE IN THE AUTOMOTIVE INDUSTRY

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Covers joint drive are responsible for the drive components. Their task basics include:

- protecting the inside of the joint against the addition of water, sand, dust and other impurities located on the road,
- providing grease protection against seizing,
- protection of working surfaces against moisture,
- protection of exact surfaces against sand, pebbles, small elementary plants on the road.

The consequence of joint damage is usually the need for a very expensive vehicle suspension repair. This condition can also cause great danger of moving a vehicle. Occasionally the drive system may become blocked or the connection may be broken. Such cases are extremely dangerous.

The rubber boot of the joint drive makes the following movements: when driving onto a hill, the drive shaft is lengthened, and when the wheel is in the recess, the drive shaft must shorten. In addition, when performing a turning maneuver, the guard must adapt to this movement case. No less important element is also driving at high speeds. Then, the grease placed inside is rejected by centrifugal forces on the inside of the cover. This increases the volume of the joint. Large friction occurs on the lateral surfaces of the covers, which manifests itself by increasing the temperature on the lateral surfaces of the slats. The value of the resulting temperature depends on the time, speed, steering angle and type of cover material. Under extreme conditions, it may rub, as it has a small thickness of the side walls [1].

A number of operating conditions are required for the shape and material of the cover. The material adopted should have sufficient flexibility. This feature is required not only during normal operation of the shield in the vehicle suspension. It is also required during the phase of release of the products of the mold cores. A huge number of broken products can form at this stage. The same material requirement is needed during installation or operation of any kind of repair work.

In production practice, TPE or CR elastomer is the most common material for covers. TPE elastomers are characterized by less elasticity, but they have temporary greater abrasion resistance. The cover made of such material becomes more flexible as the temperature rises. This material is more recommended for use due to the possibility of its recycling. The matter is a bit different with CR based rubber materials. They are more flexible in a wide temperature range. The base polymer and fillers cannot be reused on responsible products due to significant deterioration of their properties. They are usually disposed of or are intended as regranulate for low-responsibility and thick-walled products.

The work proposes constructing joint covers. Then a digital geometric model was created in the CAD environment. This model was the basis for performing non-linear FEM numerical simulation in the MSC.MARC / MENTAT environment. In the analysis, the following were used: local compaction of the generated mesh structure, the hyperelastic Mooney-Rivlin material model, large displacement procedure, Newton-Raphson procedure, optimization of nodes and elements [2-4].

Numerical simulation was performed using the cone method. It involves performing an axial displacement analysis, the purpose of which is to check whether the adopted material and geometric shape will meet the given conditions. The results of this analysis has been shown in Fig. 1. They allow us to state that the material has too low elasticity. Then the material and its properties were changed and re-analyzed. This time the results proved to be more useful for practical application.

It is worth noting that thanks to numerical analysis conducted, can reduce costly test runs. The selection of appropriate properties is much faster and, consequently, is a cheaper process. And this ultimately allows you to improve production efficiency. The time of technical preparation of production and its surroundings is significantly accelerated. The consequence of this is the creation of technological advantage and the production of competitive products.

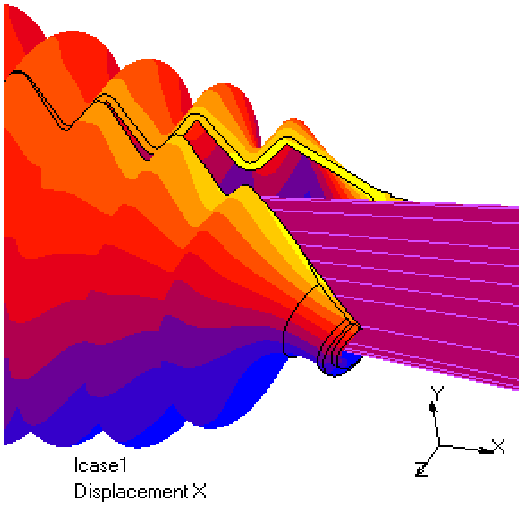

Fig. 1. Result of crack analysis of the rubber boot of the joint drive.

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WIND ENERGY OF SOUTH AND EAST SERBIA

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1. INTRODUCTION

The main goal of this paper was to obtain the best possible locations for siting of wind turbines, with the final goal of making the wind atlas of South and East Serbia. In this phase, twelve mezzo and fourteen micro models are considered, which covers the moutaineous area of Eastern and Southern Serbia, where most of serbian mountains are located. The simulations are mostly performed using the WAsP simulation software. The results are compared by means of the turbine type, quality and quantity of the wind data and the capacity factor. Finally, the economical analysis