

SUMMARIES REZIMEA

¹ VIRTUAL TESTING AND EXPERIMENTAL VERIFICATION OF SEAT COMFORT IN DRIVER'S SEAT FOR PASSENGER AUTOMOBILE

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Abstract

In this paper, the effects of the thickness and density of polyurethane foam on the seating comfort in driver's seat for passenger automobile are presented. The comfort is estimated by analysis of the pressure distribution on the contact surface of the virtual human body and the seat cushion foam. The comfort seating posture for the virtual model of human in driver's seat is defined on the base of comfort angles. The virtual testing is performed with software package ABAQUS, which can simulate dynamic processes using FEA. The testing includes variation of the thickness and density of polyurethane foam and variation of the body sizes with 50th and 80th percentiles. The results from the virtual testing are confirmed experimentally with pressure distribution mapping sensors.

Key words: Seating comfort, comfort posture, virtual testing, virtual model of seat, virtual model of human, Finite element analysis (FEA).

VIRTUALNO ISPITIVANJE I EKSPERIMENTALNA VERIFIKACIJA UDOBNOSTI VOZAČEVOG SEDIŠTA ZA PUTNIČKE AUTOMOBILE

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Rezime: U radu je prikazan uticaj debljine i gustine poliuretanske pene na udobnost vozačevog sedišta za putnički automobile. Udobnost je ocenjena analizom raspodele pritiska na kontaktnoj površini između virtualnog ljudskog tela i ispune jastuka sedišta. Udoban položaj pri sedenju kod virtualnog modela čoveka koji sedi na vozačevom sedištu definisan je na osnovu uglova udobnosti. Virtualno ispitivanje je izvršeno u softverskom paketu ABAQUS koji može da simulira dinamičke procese korišćenjem analize konačnim elementima. Ispitivanje uključuje variranje debljine i gustine poliuretanske pene i variranje

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veliĉine tela sa 50% i 80% modela. Rezultati virtualnih ispitivanja potvrđeni su eksperimentalno pomoću senzora za mapiranje raspodele pritiska.

Ključne reči: udobnost sedišta, udobni položaj, virtualno ispitivanje, virtualni model sedišta, virtualni model čoveka, analiza konaĉnim elementima.