

Calculation of the Tyre Curing Mould Cavity Shape Using FEM

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This paper describes a modelling methodology that predicts a contour of a pneumatic tyre in the curing mould. Tyre contour is designed to be in the equilibrium shape. Such shape is described by a system of complex mathematical equations that has to be solved numerically. In this new approach a standard FEM software is employed to gain the shape without the need of dealing with these equations manually. The quality of the proposal of FEM approach was assessed by comparing the meridian to a verified solution for several tyre constructions and sizes. Selected results are presented to show the accuracy of the FE modelling procedure. Nowadays, most of the produced tyres are of a radial construction. Therefore, this paper deals only with radial tyres.

Keywords: Equilibrium shape, Tyre contour, Tyre mould, FEM, MSC Marc/Mentat

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