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收稿日期:1999-11-15

Application of FEA to tire structure optimization

I. Optimization of turn-up height

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Abstract :Taking the optimization for the turn-up height of radial truck tire as example ,the application of FEA to the optimization of tire structure was discussed. Through a comprehensive analysis of the stress analytical parameters in elements near turn-up ends ,belt ends and shoulders and the tension in carcass near beads ,it was considered that the turn-up height corresponding to 313 low net was more suitable than those corresponding to 313 middle net and 313 high net respectively.

Keywords :tire ;finite element ;carcass ;structure optimization

1999~2005 年世界汽车轮胎销售量

中图分类号:TQ336. 1 文献标识码:D

亿条								
项 目	西欧	中欧和俄罗斯	北美	南美	亚洲	其它地区	总计	增长率/ %
1999 年								
轿车轮胎	2. 035	0. 463	2. 702	0. 359	1. 268	0. 262	7. 089	1. 2
载重轮胎	0. 310	0. 270	0. 560	0. 220	1. 000	0. 190	2. 550	1. 1
2000 年(预计)								
轿车轮胎	2. 044	0. 478	2. 728	0. 386	1. 311	0. 266	7. 213	1. 7
载重轮胎	0. 307	0. 212	0. 591	0. 222	1. 027	0. 194	2. 553	1. 5
2001 年(预计)								
轿车轮胎	2. 042	0. 490	2. 745	0. 403	1. 350	0. 270	7. 300	1. 2
载重轮胎	0. 311	0. 218	0. 803	0. 235	1. 043	0. 201	2. 611	2. 3
2002 年(预计)								
轿车轮胎	2. 049	0. 502	2. 773	0. 421	1. 385	0. 282	7. 412	1. 5
载重轮胎	0. 315	0. 221	0. 609	0. 247	1. 063	0. 206	2. 661	1. 9
2003 年(预计)								
轿车轮胎	2. 056	0. 514	2. 802	0. 446	1. 424	0. 312	7. 554	1. 9
载重轮胎	0. 315	0. 226	0. 612	0. 257	1. 087	0. 211	2. 708	1. 8
2004 年(预计)								
轿车轮胎	2. 072	0. 532	2. 815	0. 449	1. 464	0. 355	7. 667	1. 7
载重轮胎	0. 320	0. 231	0. 614	0. 265	1. 109	0. 218	2. 757	1. 8
2005 年(预计)								
轿车轮胎	2. 080	0. 548	2. 813	0. 490	1. 490	0. 377	7. 798	1. 4
载重轮胎	0. 328	0. 238	0. 612	0. 272	1. 140	0. 224	2. 814	2. 1

{相 泰摘自德国“ KGK ”,52[7/8] ,473(1999) }