

Design of Lightweight 12R22.5 Tubeless All-steel Radial Tire

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Abstract: The design of a lightweight 12R22.5 tubeless all-steel radial tire was described. In the structural design, the following parameters were taken: overall diameter 1 073 mm, cross-sectional width 292 mm, width of running surface 215 mm, arc height of running surface 5.5 mm, bead diameter at rim seat 569.5 mm, bead width at rim seat 240 mm, maximum width position of cross-section (H_1/H_2) 0.98, adopting 4 S-shaped patterns for tread, pattern depth 15.5 mm, block/total ratio 74.6%, and number of pattern pitches 57. In the construction design, the following processes were taken: using double composite extruded tread, using 3 layer belt + 0° belt structure, 0.37 + 6 × 0.32ST steel cord for 1[#] and 2[#] belt, 5 × 0.30HI steel cord for 3[#] belt, 3 × 7 × 0.20HE steel cord for 0° belt, 3 × 0.24/9 × 0.225ST steel cord for carcass, using one-stage capsule molding machine to build tire and a steamer type vulcanizing press to cure tire. The finished tire performance test results showed that, the inflated peripheral dimension, strength and durability met the requirements of corresponding national standards and designs.

Key words: tubeless all-steel radial tire; lightweight; structural design; construction design; finished tire performance

一种适用于EV纯电动乘用车的 轮胎子口结构

由青岛双星轮胎工业有限公司申请的专利(公布号 CN 114872496A, 公布日期 2022-08-09)“一种适用于EV纯电动乘用车的轮胎子口结构”,公开了一种适用于纯电动乘用车的轮胎胎圈结构,包括钢丝圈、设于钢丝圈上端的三角胶和胎体,其中胎体包括一层胎体、胎圈耐磨胶和胎侧胶;一层胎体末端内端点和三角胶交汇处形成一层胎体反包端点;以胎圈耐磨胶和胎侧胶两者相接处下端的胎圈耐磨胶下端点为原点,向三角胶做距离最近的垂线得胎圈耐磨胶下端点法向点;三角胶上设有一段宽度相等的过渡段,过渡段的起点位于一层胎体反包端点处,终点位于胎圈耐磨胶下端点法向点的下方。与现有技术相比,本发明基于纯电动汽车的自身特点,通过胎圈结构设计使轮胎具备更强的抓地性能、更快的动力响应以及更优秀的操控性能。

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基于改进YOLO-v5模型的子午线轮胎X光 图像病疵自动检测方法

由山东科技大学申请的专利(公布号 CN 115690029A, 公布日期 2023-02-03)“基于改进YOLO-v5模型的子午线轮胎X光图像病疵自动检测方法”,公开了一种基于改进YOLO-v5模型的子午线轮胎X光图像病疵自动检测方法,包括如下步骤:(1)采集子午线轮胎X光图像进行分割处理,统一分辨率,制作模型训练样本数据;(2)针对X光机不稳定造成的图像条状、块状缺失,从而影响检测效果的问题,进行图像复原处理;(3)设计改进YOLO-v5模型,包括增加第4个检测层、增加注意力模块,以及改进损失函数;(4)采用子午线轮胎病疵数据进行模型训练;(5)利用训练完成的模型进行实际应用场景的轮胎病疵检测。本发明是一种自动检测方法,基于改进模型能够自动识别多种病疵,针对不同病疵进行检测分类,检测效率和准确率较高。

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