

Study on Influence of Profile Parameters on Tire Performance by Finite Element Method

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Abstract: Based on the finite element simulation method, the three-dimensional finite element model of 225/50R17 steel-belted radial tire was established by using Abaqus software to study the influence of profile parameters on tire performance. Under the standard test conditions, the simulation results under different structure parameters were in good agreement with the actual test results, the simulation results were effective and reliable, and the influence of the width of running surface (b), arc height of running surface (h) and cross-sectional width (B) was obtained. With the increase of b , the shape coefficient of tire footprint and the radial stiffness increased, and the lateral stiffness decreased. With the increase of h , the rolling resistance coefficient of the tire increased, the shape coefficient of tire footprint decreased, and the rigidity increased. With the increase of B , the shape coefficient of tire footprint increased, the cornering stiffness and aligning stiffness increased, and the rolling resistance coefficient decreased.

Key words: steel-belted radial tire; finite element analysis; simulation; profile parameter; tire performance; footprint; stiffness

《智能检测装备产业发展行动计划 (2023—2025年)》发布

2月23日,工业和信息化部、国家发展和改革委员会和国家市场监督管理总局等七部门联合印发《智能检测装备产业发展行动计划(2023—2025年)》(以下简称行动计划),明确提出到2025年,智能检测技术基本满足用户领域制造工艺需求,核心零部件、专用软件和整机装备供给能力显著提升,重点领域智能检测装备示范带动和规模应用成效明显,产业生态初步形成,基本满足智能制造发展需求。

行动计划提出了技术研发、行业应用、产业体系等一系列目标。(1)技术水平明显提高。智能检测装备创新体系初步建成,突破50种以上智能检测装备、核心零部件和专用软件,部分高端装备达到国际先进水平,产品质量明显提升,攻克一批智能检测基础共性技术。(2)行业应用显著深化。推动100个以上智能检测装备示范应用,培育一批优秀场景和示范工厂,深化智能检测装备在机械、汽车、航空航天、电子、钢铁、石化、纺织、医药等8

个领域的规模化应用。(3)产业体系初步构建。建成从材料、元器件、零部件、专用软件到装备较为完整的产业链,以及涵盖标准、检测、人才等在内的产业体系。培育30家以上智能检测装备专精特新“小巨人”企业,打造10个以上产业领军创新团队,用户敢用愿用的市场环境明显改善。

为实现上述目标,行动计划明确实施产业基础创新工程、供给能力提升工程、技术装备推广工程、产业生态优化工程四项重点工程,提出建立健全创新体系,支持建设一批国家级智能检测装备重点实验室、工程研究中心、创新中心等研发创新载体,开展产业链协同攻关等举措。

智能检测装备作为智能制造的核心装备,已成为稳定生产运行、保障产品质量、提升制造效率、确保服役安全的核心手段。着力突破核心技术、增强高端供给、加快推广应用、壮大市场主体,打造适应智能制造发展的智能检测装备产业体系,对加快制造业高端化、智能化、绿色化发展,提升产业链供应链韧性和安全水平,支撑制造强国、质量强国和数字中国建设具有重要意义。

(本刊编辑部)