



极车创研社  
Auto Dream Hub

ISSN 1671-7988  
CN61-1394/TH

# 汽车实用技术

AUTOMOBILE APPLIED TECHNOLOGY

某款新能源纯电动车辆

的NVH问题分析与解决 P1

基于单目视觉的

智能车车道线识别算法 P28

某SUV车型前制动异响分析 P34

某重型卡车踏步支架

总成轻量化设计 P90

粉末冶金结构零件铆接工艺研究与应用

P152

浅谈卡车涂装同步工程设计的程序和分析重点

P173

HEV汽车CAN总线短路故障分析

P187

浅谈汽车线束CAPP资源标准化管理系统

P203

综合运输客运结构研究

P224



邮发代号: 52-275

WWW.AUTOMANNET.COM

ISSN 1671-7988



2019年第19期  
总第298期

## 新能源汽车

某款新能源纯电动汽车的NVH问题分析与解决	邵可峰 陈佳伟 等 (1)
新能源汽车远程锁车功能开发	胡清 刘辉 等 (4)
电动车用动力电池寿命预测及验证分析	叶昌森 (7)
纯电动客车除霜分析	高海 (9)
基于白果壳活性炭制备的超级电容及电化学性能分析	陈冠霖 解雅雯 (11)
电子诊断技术在新能源汽车维修中的应用	韩仕军 (14)
新能源汽车制动系统的发展趋势	蒋鸣雷 (16)
新能源轻型商用车转向系统发展浅析	刘俊荣 牛营凯 等 (18)
纯电动汽车动力性测试方法分析	刘玉振 郑冬冬 等 (20)
某新能源汽车真空泵支架振动强度分析与优化	邹宾兴 (22)
微型逃生电动车用升降装置结构设计及仿真分析	郑志红 陈智勇 等 (24)

## 智能网联汽车

基于单目视觉的智能车车道线识别算法	石金虎 金辉 等 (28)
虚拟视景环境驾驶的碰撞检测技术	张锦思 刘晶郁 等 (32)

## 测试试验

某SUV车型前制动异响分析	孙刚 吴昊 (34)
轴耦合道路模拟试验关键控制因素研究	陈禹 周德泉 等 (38)
具有锯齿式内翅片结构的EGR冷却器换热性能仿真分析	刘丛浩 刘崇 等 (43)
商用车前保险杠支架断裂分析与优化	史季青 王森 等 (45)
基于虚拟样机软件的某商用车操纵稳定性分析	王文磊 宋少宁 等 (47)
计量要求导出在检测实验室中的应用	徐晓 关波 (50)
变速器倒挡拨叉磨损故障分析及改进	宇文创成 武鑫 (52)
商用车驾驶室前面罩试验方法探究	管李艳 惠耀兵 等 (55)
基于PC-Crash的二维碰撞事故车辆速度分析研究	彭娅楠 (57)
车辆横摆角速度影响因素研究	吴利广 李雪鹏 等 (60)
基于滑移率的ABS联合控制仿真	张宏亮 侯宇 等 (64)
基于CATIA的重型汽车三维线束模块化设计	张瑞斌 (69)
基于AIWF-IL评价方法的汽车声学包性能优化	张天宇 邓江华 等 (72)
高弯曲承载能力齿轮过渡曲线及齿形参数研究	朱燃燃 晋民杰 等 (76)
商用车车架纵梁检测方案研究	贡博 (80)
某轻型货车档位清晰度的分析与改进	司志明 (82)
汽车驾驶室内道路交通信号仿真研究	陈鼎 张丽霞 等 (85)
某牵引车动力总成匹配熄火问题分析	周荣耀 秦学 等 (88)

## 设计研究

某重型卡车踏步支架总成轻量化设计	苟丹 温鹏 等 (90)
重卡驾驶室仪表板横梁结构及其轻量化方向	阮玮 强竞 等 (93)
某车型发动机悬置的轻量化设计	刘飞 黄鹏飞 (95)
某重型卡车驾驶室前悬托架、支座轻量化设计	曹天津 李荣义 等 (98)
低噪声客车桥优化设计及试验研究	范春利 史成森 等 (101)
基于北斗云的轮胎自动检测系统	刘涛 田野 等 (104)
大客车防侧翻预警及控制分析	孙艳妮 (107)
轻型商用车车架纵梁及总成性能研究	吴成平 邓正维 等 (110)
整车制动性能主观评价方法研究与应用	谢杰聪 陈龙 (113)
关于CAE技术在汽车车架设计中的应用	杨强 王文磊 等 (116)
智能化车用预警式安全带系统PI控制研究	尤毅 曹丽娜 等 (119)
人机工程学在重卡驾驶室设计中的应用	马玉金 李欣 等 (122)
巴哈赛车悬架设计	权春锋 (126)

浅析汽车内饰内氛围灯的设计和应用	王莎 (129)
商用车新型传动轴连接机构设计研究与应用	徐世福 陈晓雯等 (131)
汽车经济性巡航控制策略研究	苑风云 谢建新等 (133)
组合仪表的结构设计及发展趋势	张辉 (136)
汽车内饰NVH性能分析及研究	张明 冯策等 (138)
浅谈汽车线束的防水密封性	朱明 齐海英等 (144)
一种分布式车身控制器的设计方案	雒拓 程威等 (146)
汽车前转向节铝合金轻量化拓扑优化设计	周思 吴小冬等 (149)

## 工艺装备

粉末冶金结构零件铆接工艺研究与应用	庞亨江 谢锋 (152)
双、三绞线绞合前后尺寸差异浅析	陈俊杰 张黎明等 (156)
抛丸对A7N01铝合金表面残余应力的影响	刘博 王媛媛 (158)
浅谈整车四门漏水在制造过程中的控制	刘俊 方春苗等 (161)
浅谈车架同轴度检具设计及应用	陈希 高朋等 (164)
浅谈汽车前风挡安装设计及装配工艺	刘小兵 刘艳坤等 (166)
关于线束组装用柔性工装的介绍	齐海英 朱明等 (168)
线束加工	张黎明 陈俊杰等 (170)

## 汽车材料与涂装

浅谈卡车涂装同步工程设计的程序和分析重点	党江波 颜光 (173)
汽车门盖折边处密封胶气泡问题的具体解决方法	朱北芳 (176)
基于ECB的车身轻量化材料应用趋势	吕奉阳 罗培峰等 (179)
浅谈一种电泳抗缩孔助剂的应用	李欣闻 王亮等 (184)

## 使用维修

HEV汽车CAN总线短路故障分析	谭红川 雍林等 (187)
电子诊断在现代汽车维修新技术中的运用研究	王琤 (189)
信息技术在汽车维修中的应用探究	齐伟 (191)
基于汽车电控技术发展的现代汽车维修策略分析	陶建雪 (193)
数据流分析法在汽车电控系统故障排除中的应用	赵明敬 (195)

## 汽车教育

构建新型高职汽车检测与维修技术专业教学教材的若干思考	刘晓鹂 (197)
“一带一路”背景下陕西省民办高校汽车专业人才跨文化交际能力培养研究	邓丽蓉 (201)

## 标准·法规·管理

浅谈汽车线束CAPP资源标准化管理系统	丁军强 郑璐等 (203)
基于层次分析法(AHP)的城市轨道交通枢纽换乘衔接模糊评价	郭沛鑫 (206)
浅谈汽车电线束检测台模块制作流程规范	李成 郑璐等 (208)
浅析汽车零部件生产现场电子化查阅系统	苟建武 史晓宁等 (211)
宜宾智轨换乘问题及对策	李新 李建松等 (213)
青岛公交车智能调度系统的优化研究	刘超 谢建新等 (215)
浅谈整车计划零部件分解系统	苟建武 尚志英等 (218)
浅谈研发中心宣传工作系统化建设	卢星吉 (221)

## 行业综述

综合运输客运结构研究	陈慧琴 吴红丽等 (224)
石油安全与汽车能源多样化刍议	蒋佳伟 (227)

## 广告索引

哈尔滨东安汽车发动机制造有限公司	封二
《汽车实用技术》杂志征稿启事	封三
华晨汽车集团控股有限公司	封底

## New Energy Automobile

Research and Solution of NVH Problem of an Electric Vehicle .....	Gao Kefeng, Chen Jiawei, et al (1)
Empolder of Remote-lock Function for New Energy Vehicles .....	Hu Qing, Liu Hui, et al (4)
Life Prediction and Verification Analysis of Power Battery for Electric Vehicle .....	Ye Changsen (7)
Defrosting Analysis of Pure Electric Bus .....	Gao Hai (9)
Super Capacitor and Electrochemical Performance Analysis Based on Activated Carbon From White Fruit Shell .....	Chen Guanlin, Xie Yawen (11)
Application of Electronic Diagnostic Technology in Maintenance of New Energy Vehicles .....	Han Shijun (14)
Development trend of new energy vehicle brake system .....	Jiang Minglei (16)
Brief Analysis on the Development of Steering System for New Energy Light Commercial Vehicles .....	Liu Junrong, Niu Yingkai, et al (18)
Analysis of Dynamic Test Method for Pure Electric Vehicle .....	Liu Yuzhen, Zheng Dongdong, et al (20)
Vibration Strength Analysis and Optimization of a New Energy Vehicles Vacuum Pump Bracket .....	Zou Binxing (22)
The Design and Simulation Analysis of Lifting Device for Mini Escape Electric Vehicle .....	Zheng Zhihong, Chen Zhiyong, et al (24)

## Smart Network Automobile

Lane line recognition algorithm under monocular vision .....	Shi Jinhu, Jin Hui, et al (28)
Collision detection technology for driving in virtual visual environment .....	Zhang Jinsi, Liu Jingyu, et al (32)

## Testing and Experiment

Braking-noise's Analysis About A Certain SUV FRT Brake Ass' y .....	Sun Gang, Wu Hao (34)
Study on Key Control Factors of Spindle-coupled Road Simulation Test .....	Chen Yu, Zhou Dequan, et al (38)
Simulation Analysis of Heat transfer performance of EGR cooler with Sawtooth Internal Fin structure .....	Liu Conghao, Liu Chong, et al (43)
Analysis and Optimization on Front Bumper Support Fracture for Commercial Vehicle .....	Shi Jiqing, Wang Miao, et al (45)
Stability analysis of a commercial vehicle based on virtual prototype software .....	Wang Wenlei, Song Shaoning, et al (47)
The application of exportingmeasurement requirementsin testing laboratories .....	Xu Xiao, Guan Bo (50)
Analysis and improvement of transmission's reverse yoke wear failure .....	Yuwen Chuangcheng, Wu Xin (52)
Research on Test Method of Commercial Vehicle Cab Front Cover .....	Guan Liyan, Hui Yaobing, et al (55)
Pure electric vehicle body skeleton design and optimization .....	Peng Yanan (57)
Research on Factors Affecting Vehicle Yaw Rate .....	Wu Liguang, Li Xuepeng, et al (60)
Research on ABS Co-simulation Based on Slip .....	Zhang Hongliang, Hou Yu, et al (64)
Modular Design of 3D Harness for Heavy-Duty Vehicle Based on CATIA .....	Zhang Ruibing (69)
Performance Optimization of Acoustic Package for Automobile Based on AIWF-IL Index .....	Zhang Tianyu, Deng Jianghua, et al (72)
Study OnTransition Curve and Tooth Shape Parameters of Gear with High Bending Bearing Capacity .....	Zhu Ranran, Jin Minjie, et al (76)
The Research of Truck Frame Side Beam Measurement .....	Gong Bo (80)
Analysis and improvement of the definition of gear position of a light truck .....	Si Zhiming (82)
Research on Simulation of Road Traffic Signal in Automobile Cab .....	Chen Ding, Zhang Lixia, et al (85)
Analysis on matching flameout of power assembly of a tractor .....	Zhou Rongyao, Qin Xue, et al (88)

## Design Research

Lightweight Design Of Step Stents Of Heavy-duty Truck .....	Gou Dan, Wen Peng, et al (90)
Structure of Instrument Panel Cross Beam of Heavy Truck Cab and Its Lightweight Direction .....	Ruan Wei, Qiang Jing, et al (93)
Lightweight Design of an Engine Mount .....	Liu Fei, Huang Pengfei (95)
Light Weight Design Of Suspension Bracket In Front Of Heavy Truck Cab .....	Cao Tianjin, Li Rongyi, et al (98)
Optimization Design and Experimental Study of Low Noise Passenger Car Bridge .....	Fan Chunli, Shi Chengmiao, et al (101)
Automatic Tire Detection System Based on BeiDou Cloud .....	Liu Tao, Tian Ye, et al (104)
Early Warning and Control Analysis of Passenger Bus Anti-rollover .....	Sun Yanni (107)
Longitudinal Beam and Frame Assembly Performance Research of Light Commercial Vehicle .....	Wu Chengping, Deng Zhengwei, et al (110)
Research and application of subjective evaluation method of vehicle braking performance .....	Xie Jiecong, Chen Long (113)
Application of CAE technology in frame design of vehicle .....	Yang Qiang, Wang Wenlei, et al (116)
Research on PI Control of Intelligent Pre-warning Safety Belt System for Vehicle .....	You Yi, Cao Lina, et al (119)
Application of ergonomics in the design of heavy truck cab .....	Ma Yujin, Li Xin, et al (122)
Baha Racing suspension Design .....	Quan Chunfeng (126)
Research on the interior ambient lamp design and application .....	Wang Sha (129)
Design and Application of New Drive Shaft Connection Mechanism for Commercial Vehicles .....	Xu Shifu, Chen Xiaowen, et al (131)

Research on Automobile Economic Cruise Control Strategy .....	Yuan Fengyun, XieJianxin, et al (133)
The structure design and development trend of instrument Cluster .....	Zhang Hui (136)
Analysis and research on NVH performance of automobile interior .....	Zhang Ming, Feng Ce, et al (138)
Discussion on the waterproof sealing of automobile wiring harness .....	Zhu Ming, Qi Haiying, et al (144)
Design of a distributed BCM scheme .....	Luo Tuo, Cheng Wei, et al (146)
Lightweight topology optimization design of aluminum alloy for front steering knuckle .....	Zhou Si, Wu Xiaodong, et al (149)

## Process Equipment

Riveting of powder-metal part structural parts .....	Pang Hengjiang, Xie Feng (152)
Analysis of Size Difference Before and After Twisting of Double and Triple Stranded Wires .....	Chen Junjie, Zhang Liming, et al (156)
Effect of shot blasting on the surface residual stress of A7N01 aluminum alloy .....	Liu Bo, Wang Yuanyuan (158)
Brief Talk on the Control of Four Doors Leakage in the Manufacturing Process .....	Liu Jun, Fang Chunmiao, et al (161)
The Design and Application of Frame Coaxiality Checking Tool .....	Chen Xi, Gao Peng, et al (164)
Installation design and assembly process of front windshield of automobile .....	Liu Xiaobing, Liu Yankun, et al (166)
Introduction of flexible tooling for wire harness assembly .....	Qi Haiying, Zhu Ming, et al (168)
Wire harness processing .....	Zhang Liming, Chen Junjie, et al (170)

## Vehicle Materials and Coating

Talking About the Procedure and Analysis Focus of Truck Engineering Synchronous Engineering Design .....	Dang Jiangbo, Yan Guang (173)
Solutions to the air bubble problem in sealant at the hemming position of the car doors .....	Zhu Beifang (176)
Application Trend of Body Lightweight Materials Based on ECB .....	Lv Fengyang, Luo Peifeng, et al (179)
A Brief Discussion On The Application of Anti-Crator Assistant .....	Li Xinwen, Wang Liang, et al (184)

## Use and Maintenance

Trouble Analysis of HEV (hybrid) Vehicle CAN bus Short-circuit .....	Tan Hongchuan, Yong Lin, et al (187)
Application of Electronic Diagnosis in New Technology of Modern Automobile Maintenance .....	Wang Zheng (189)
Application of Information Technology in Automobile Maintenance .....	Qi Wei (191)
Analysis of Modern Vehicle Maintenance Strategy Based on the Development of Automotive Electronic Control Technology .....	Tao Jianxue (193)
Diagnosis and analysis of idle speed instability of electronic controlled engine .....	Zhao Mingjing (195)

## Automobile Education

Some Thoughts on the Construction of New Teaching Materials for Automobile Inspection and Maintenance Technology in Higher Vocational Education .....	Liu Xiaoli (197)
A study on the cultivation of Intercultural communicative competence of Automobile Professionals in Private Colleges and Universities in Shaanxi Province under the background of "Belt and Road Initiative" .....	Deng Lirong (201)

## Standards Regulations Management

Talking about the Standard Management System of Automobile Wire Harness CAPP Resources .....	Ding Junqiang, Zheng Yao, et al (203)
Fuzzy Evaluation of Transfer Cohesion in Urban Rail Transit Hub Based on Analytic Hierarchy Process (AHP) .....	Guo Peixin (206)
A brief talk on the making flow Specification of Automobile wiring harness testing Station Module .....	Li Cheng, Zheng Yao, et al (208)
Brief analysis of the electronic inspection system of auto parts production site .....	Gou Jianwu, Shi Xiaoning, et al (211)
Yibin Intelligent Rail Transfer Problems and Countermeasures .....	Li Xin, Li Jiansong, et al (213)
Research on Optimization of Qingdao bus intelligent dispatching system .....	Liu Chao, Xie Jianxin, et al (215)
A brief talk on the decomposition system of parts and components in the whole vehicle Plan .....	Gou Jianwu, Shang Zhiying, et al (218)
A brief talk on the systematic Construction of propaganda work in R&D Center .....	Lu Xingji (221)

## Industry Overview

Research on Integrated Transportation Passenger Transport Structure .....	Chen Huiqin, Wu Hongli, et al (224)
Petroleum Safety and Diversification of Automobile Energy .....	Jiang Jiawei (227)

## Advertising Index

Harbin DongAn Automotive Engine Manufacturing Co., Ltd .....	inside front cover
Automobile Applied technology magazine announced notice .....	inside back cover
Brilliance automobile group holding co. LTD .....	back cover