



安东尼奥·古特雷斯

2022/3/15

联合国秘书长

New York, NY10017

USA

尊敬的秘书长先生：

NIO Inc.（以下称为“蔚来”）于 2017 年 5 月加入联合国全球契约组织，确认支持全球契约关于人权、劳工、环境和反腐败的十项原则。2020 年因组织架构人员变动，导致未能与全球契约组织及时沟通通报，我深表遗憾。希望通过这封邮件，表达蔚来依然坚定实施十项原则的决心和意愿。

我们致力于使全球契约及其原则成为我们公司的战略、文化和日常运营的一部分，并且致力于参与促进联合国发展目标（可持续发展目标）的合作项目。蔚来将向我们的利益相关方和公众作出关于这个承诺的明确声明。

我们认可，参与全球契约的一个关键要求是每年提交描述我们公司努力实施十项原则的进展情况通报(COP)。我们支持公共责任和透明度，因此致力于在加入全球契约后一年内及此后每年根据全球契约 COP 政策报告进展情况。这包括：

- 由首席执行官签署的声明，表明继续支持全球契约及重申我们对倡议及其原则的持续承诺。这独立于我们加入全球契约的最初承诺书。
- 公司为实施全球契约原则在四个问题领域（人权、劳工、环境、反腐败）所采取的实际行动（即披露任何相关政策、程序、活动）（或需要进行的计划）的描述。
- 结果的测量（即对目标/绩效指标的实现程度，或结果的其他定性或定量测量）。

顺颂商祺！

李斌先生

首席执行官

NIO Internal

NIO.com



GREEN DEVELOPMENT
REPORT



2020 GREEN DEVELOPMENT REPORT

绿色发展报告

NIO 蔚来

上海蔚来汽车有限公司

ABOUT THIS REPORT

关于本报告

报告概述 Summary

本报告是上海蔚来汽车有限公司围绕产品全生命周期在采购、研发、制造、销售、回收利用等方面的绿色发展理念和实践情况。蔚来汽车《2020 年绿色发展报告》的发布为利益相关方提供了关于公司绿色发展蓝图和进展的全面信息。

The objective of this report is to disclose the philosophy and practices of NIO for green development throughout the lifecycle of the products from the research and development, supply chain and manufacturing, to sales and recycling, and many other aspects. Our *Green Development Report 2020* will be a comprehensive guide for stakeholders to understand the blueprint and progress of green development at NIO.

时间范围 Time Frame

本报告内容以 2020 年为主，部分内容超过此范围。

While mainly focusing on the year of 2020, some content in this report may be beyond this time frame.

组织范围 Organization Scope

本报告中制造方面信息主要以合肥整车先进制造基地、南京电驱动系统制造基地及整车试制线为主。

The manufacturing information in this report is mainly about the JAC-NIO Advanced Vehicle Manufacturing Center in Hefei, and Advanced Electric Powertrain Manufacturing Center and vehicle pilot production lines in Nanjing.

指代说明 Anaphora

为了便于阅读，报告中“上海蔚来汽车有限公司”也以“蔚来”或“我们”表示。

For convenience of the readers, the NIO Inc. in the report is referred to as “NIO” or “we”.

编写依据 Compiling

本报告参考中汽数据有限公司编写的《汽车企业绿色发展报告编制指南》，并结合蔚来汽车的实际情况编写。

This report is compiled and edited following the Guidelines for Preparing Car Enterprise Green Development Report published by the data center of *China Automotive Technology and Research Center (CATARC)*, and combined with the actual situation of NIO.

数据说明 Data Description

本报告披露的的数据来自公司内部正式文件和统计数据

All data disclosed herein is from NIO’ s internal formal documents and statistics.

联系方式 Contact Information

地址：上海嘉定安拓路 56 号汽车创新港 16 栋

Address: Building 16, 56 Antuo Road, Jiading District, Shanghai, 201804, China

邮编：201804

Postcode: 201804

电话：+86 (21) 6908 2103

Phone: +86 (21) 6908 2103

网址：www.nio.com

Website: www.nio.com

CATALOG

目录

1.0P01

企业概况 COMPANY PROFILE

蔚来里程碑 Milestones	P03
蔚来家族 Product Family	P04

2.0P07

研发 RESEARCH & DEVELOPMENT

战略与管理 Strategy and Management	P08
产品安全 Product Safety	P14
产品环境影响 Product Environment Impact	P25

3.0P31

生产 PRODUCTION

战略与管理 Strategy and Management	P32
管理体系建设 Building of the Management System	P35
能源资源消耗 Energy and Resource Consumption	P36
温室气体排放 Greenhouse Gas Emissions	P42
污染物持续深度治理 Continuous Advanced Treatment of Pollutants	P43

4.0P47

物流 LOGISTICS

战略与管理 Strategy and Management	P48
绿色包装 Green Packaging	P48
绿色运输 Green Transportation	P50
绿色储存 Green Storage	P52

5.0P53

蔚来生态链 ECOLOGICAL CHAIN

供应链管理 Supply Chain Management	P54
创新销售模式 Innovative Sales Model	P55
车网互动 V2X Interaction	P56
生态共建 Ecological Co-Building	P58

6.0P59

回收利用 RECYCLE

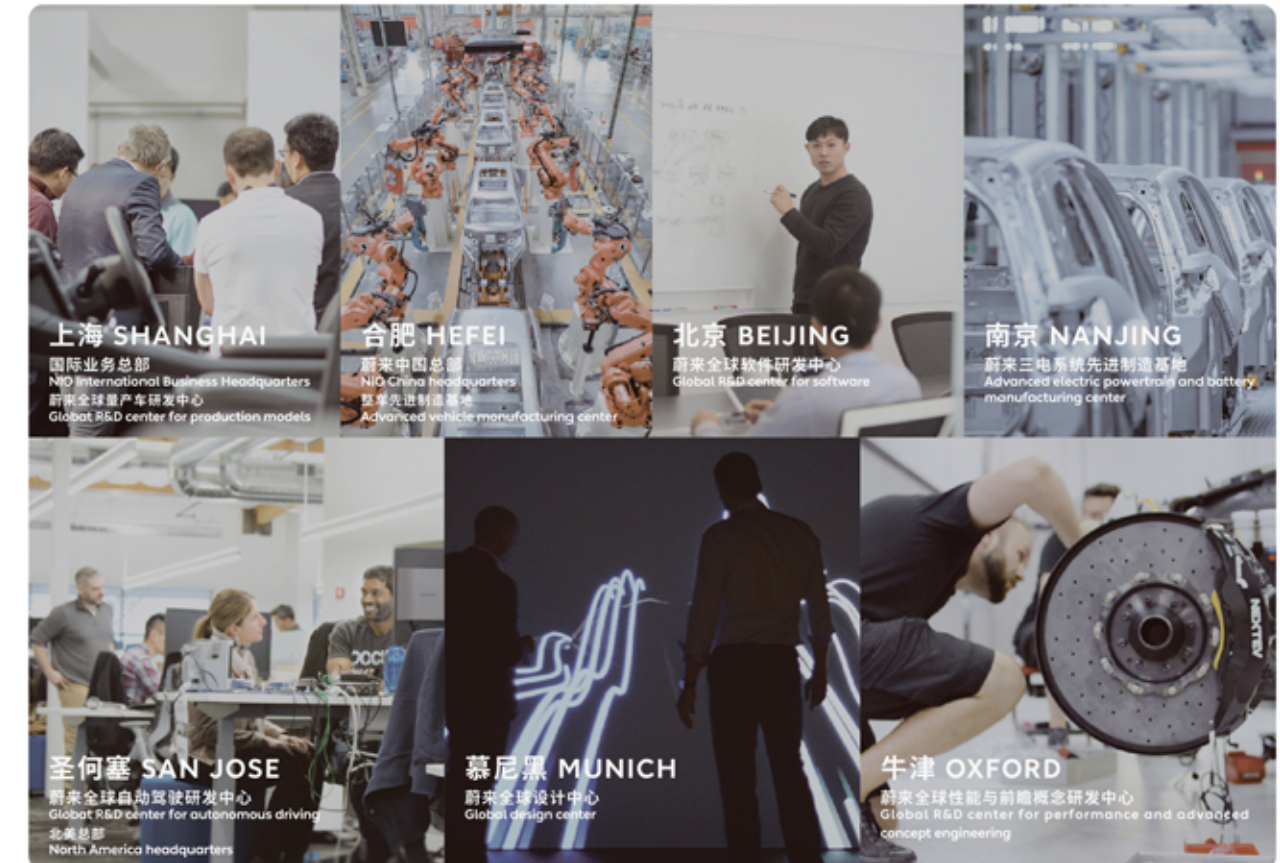
动力电池溯源 Traceability of Batteries	P60
可再利用率和可回收利用率 Recyclability Rate and Recoverability Rate	P62

COMPANY PROFILE

企业概况

蔚来是一家全球化的智能电动汽车公司，于 2014 年 11 月成立。蔚来致力于通过提供高性能的智能电动汽车与极致用户体验，为用户创造愉悦的生活方式。作为一家全球化的智能电动汽车公司。蔚来在上海、合肥、北京、南京、圣何塞、慕尼黑以及牛津等全球多地设立研发与生产机构；在中国市场初步建立了覆盖全国的用户服务体系。2020 年全年，蔚来汽车交付量达 43728 台，同比增长 112.6%。总资产规模从 2019 年底的 145.82 亿元提升至 546.42 亿元，增长了 2.75 倍。

NIO is a global smart electric vehicle company. Founded in November 2014, NIO's mission is to shape a joyful lifestyle by offering high-performance smart electric vehicles and the ultimate user experience. NIO has established R&D centers and manufacturing facilities in Shanghai, Hefei, Beijing, San Jose, Munich, Oxford and other places, and has initially set up the user service network with nationwide coverage in China. In 2020, NIO delivered 43,728 vehicles, representing a year-on-year growth of 112.6%. By the end of 2020, NIO had a market cap of RMB 54.64 billion, up 2.75 times from RMB 14.58 billion in 2019.



COMPANY PROFILE

企业概况

蔚来里程碑

蔚来家族

NIO



(一) 蔚来里程碑 Milestones



2014年
蔚来诞生
NIO (Formerly NextEV) was founded.



2015年
蔚来车队获得国际汽联电动方程式锦标赛历史上首个车手总冠军
NIO Formula E Team won the inaugural FIA Formula E Drivers' Championship.



2016年
蔚来发布全球最快电动汽车之一的 EP9，创造了纽博格林北环等国际知名赛道最快圈速纪录以及无人驾驶时速世界纪录
NIO launched the EP9, one of the world's fastest electric vehicles, which broke lap records and the world's autonomous driving records at global-famous tracks like the Nürburgring Nordschleife.



2017年
蔚来发布了概念车 EVE
NIO unveiled the vision car EVE.



2018年6月28日
蔚来开始正式向用户交付智能电动旗舰 SUV 蔚来 ES8
NIO began delivering the ES8, a 7-seater high-performance smart electric flagship SUV, in China.



2018年9月12日
蔚来在纽约证券交易所上市
NIO went public on the New York Stock Exchange (NYSE).



2018年12月15日
智能电动全能 SUV 蔚来 ES6 正式上市
NIO officially launched the ES6, a 5-seater smart electric all-round SUV.



2019年6月18日
蔚来 ES6 正式开启用户交付
NIO began ES6 deliveries in China.



2019年12月28日
蔚来正式发布了智能电动轿跑 SUV 蔚来 EC6，全面升级后的智能电动旗舰 SUV 蔚来 ES8 焕新登场
NIO officially launched the EC6, a smart electric coupe SUV, and the all-new ES8, a fully elevated smart electric flagship SUV.



2020年4月19日
全新蔚来 ES8 正式开启用户交付
NIO began delivering the all-new ES8.



2020年4月29日
蔚来中国总部落户合肥经济技术开发区
NIO China established its headquarters in Hefei Economic and Technological Development Area.



2020年9月25日
蔚来 EC6 正式开启用户交付
NIO began delivering the EC6.



2021年1月9日
具备自动驾驶能力的智能电动旗舰轿车 ET7 正式发布
NIO launched the ET7, a smart electric flagship sedan with autonomous driving capability.



2021年4月15日
蔚来全球首座第二代换电站正式启用
NIO's first Power Swap station 2.0, the second-generation battery swapping station, was in operation.



2021年5月6日
蔚来发布挪威战略
NIO announced its market entry in Norway.

(二) 蔚来家族 Product Family

01

电动方程式 FORMULA E



02

蔚来EP9
为超越极限而生



05

蔚来ES6



03

蔚来EVE



06

蔚来EC6



04

蔚来ES8



07

蔚来ET7



RESEARCH & DEVELOPMENT

研发

(一) 战略与管理 Strategy and Management

1. 我们的职责 Our Responsibility

坚持设计驱动，坚持用户视角，以能为用户创造价值为准则，同时兼顾生态平衡，以体系化的效率持续创新，以向用户交付低碳，环保，安全舒适的产品为使命，以期给用户带来超越期待的全程用户体验。

As a user enterprise driven by design, NIO aims to create value for its users, contribute to ecological balance, make continuous innovation with systematic efficiency, and deliver low-carbon, environmentally-friendly, safe and comfortable products to users, so as to realize the holistic experience beyond expectations.

2. 我们的战略 Our Strategy

蔚来，寓意“Blue Sky Coming”，研发制造绿色低碳环保产品也是我们的使命之一；因此研发团队从设计开发之初就秉承生态设计理念，涵盖车辆的各种环保属性，既关注驾乘者健康相关的车内空气质量，车内噪声等，又重视全生命周期的环境影响，例如全生命周期碳排放，车辆报废后的环境负担，禁限用重金属等有害物质在材料中的使用，使得产品全生命周期都践行我们守护蓝天的初心。

NIO translates into “Blue Sky Coming” which is one of our guiding philosophies. Developing and manufacturing green, low-carbon and eco-friendly products is one of our approaches to live up to this mission. Therefore, NIO’s R&D team has been adhering to the ecological design concept since the very beginning by looking into various eco-friendly attributes of vehicles. The R&D team not only pays attention to the cabin air quality and noise related to the health of occupants, but also focuses on the environmental impact during the vehicle’s full lifecycle, such as the total carbon emissions, the environmental impact of vehicle scrappage, and the utilization of prohibited and restricted materials such as heavy metals. With that, NIO can always stay true to its original aspiration of bringing back the blue sky during the full lifecycle of its products.

未来

我们将持续打造“蔚蓝座舱”Blue Sky Cabin，给用户带来全方位愉悦舒适安全的“第二生活空间”。

Future

We will continue to build the “Blue Sky Cabin” and bring our users a holistic, joyful, comfortable and safe “second living space”.

RESEARCH & DEVELOPMENT

研发

战略与管理

产品安全

产品环境影响

NIO

我们将持续使用无害低碳材料，持续加强轻量化和低碳效率平衡，不断提高车辆的整体能源效率，减少温室气体排放，降低产品的环境影响因素。

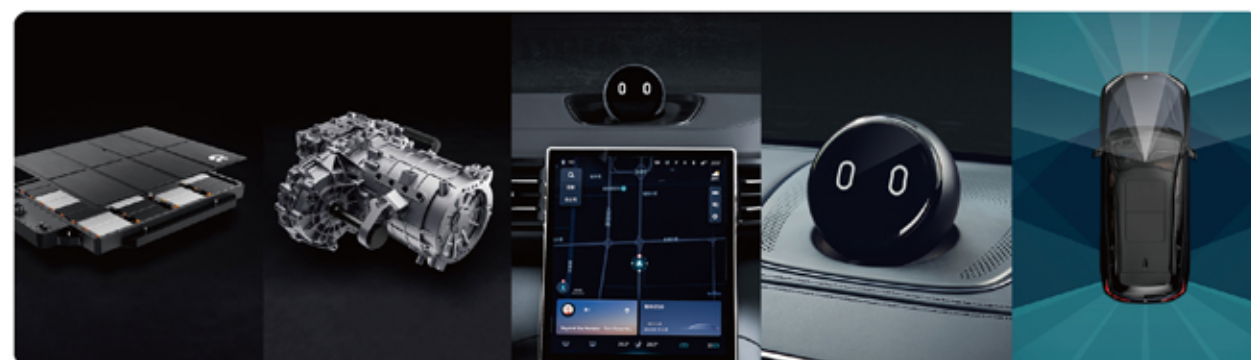
We will continue to use harmless low-carbon materials, further realize the equilibrium between lightweight materials and low-carbon efficiency, enhance the overall energy efficiency of vehicles, and reduce greenhouse gas emissions and the environmental impact of our products.

我们持续提高产品技术和工业化技术协同的体系化效率，平台化，模块化，使用合理成本，交付优质产品。

We will continue to improve the system efficiency, leverage the synergies between product and industrialization technologies, improve platform commonality and modularity, and strive to deliver high-quality products with reasonable costs.

3.我们的技术 Our Technology

独立研发三电和智能化六项核心技术 Six Core Technologies Developed by NIO



电池包
Battery

电机+电控
Electric Motor + Controls

智能网关
Smart Gateway

智能座舱
Smart Gateway

自动辅助驾驶系统
ADAS

量产技术

160kW 高效率永磁电驱动系统

具备行业领先系统功率密度，电机最大效率可达97%，可以最大化续航里程。采用电机、齿轮箱和电机控制器“三合一”集成化设计及电机扁导线技术。

Technologies Available on Mass-Produced Models

160 kW High-Efficiency Permanent Magnet Motor System

With industry-leading power density and maximum efficiency of 97%, the 160 kW PM motor can maximize the vehicle's range performance. We have adopted a "three-in-one" design integrating motor, gear box and control module, as well as I-pin flat wire technology on this motor.

240kW 高性能感应电驱动系统

全国首台量产铜转子及激光熔焊技术电机。采用电机、齿轮箱和电机控制器“三合一”集成化设计及双三相拓扑结构逆变器技术。

240 kW High-Performance Induction Motor System

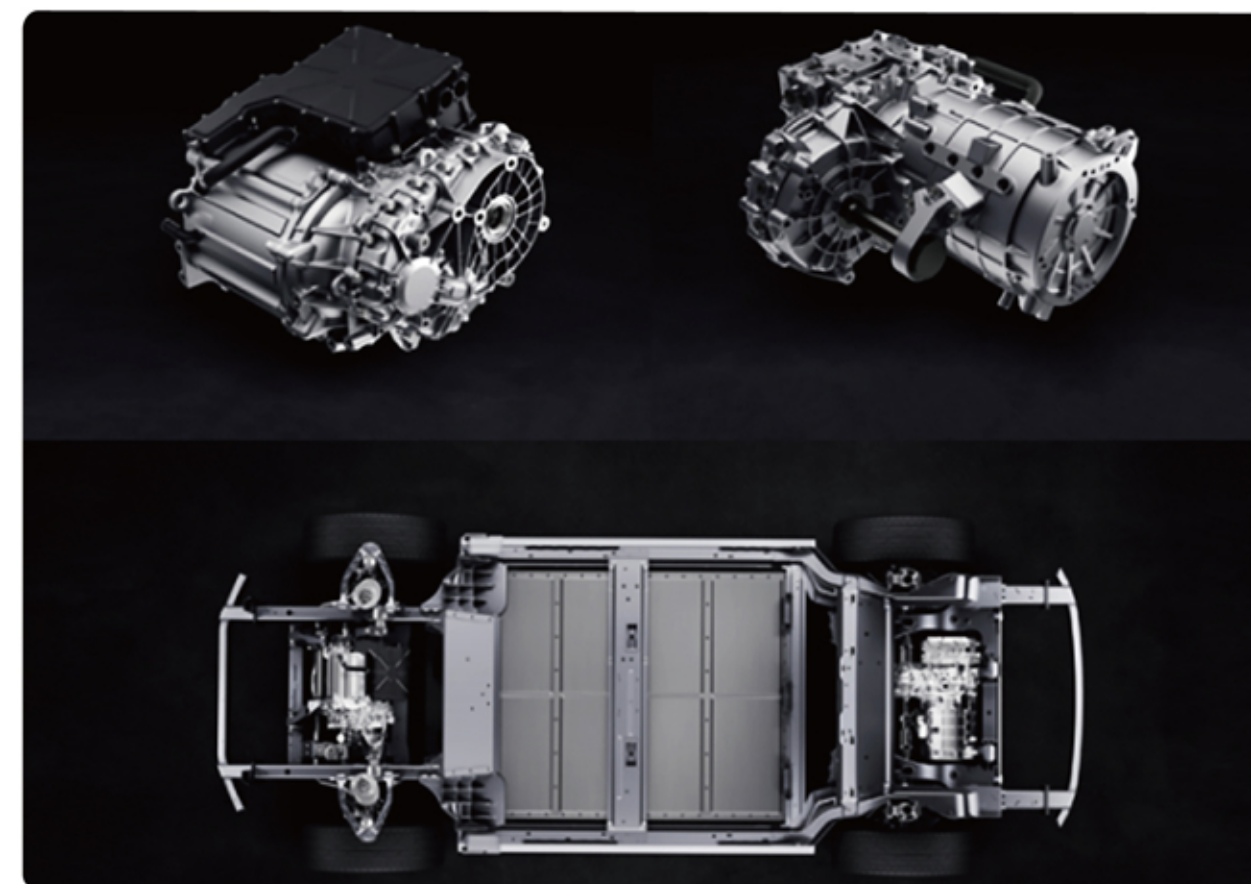
As the first mass-produced motor with copper rotor and laser welding technology in China, the 240 kW induction motor also uses the "three-in-one" design integrating motor, gearbox and control module, as well as inverter with dual three-phase topology.

高性能智能电动力平台

蔚来第二代高效电驱平台，前180千瓦永磁电机和后300千瓦感应电机，最大功率480千瓦，峰值扭矩850牛米，应用了碳化硅功率模块的第二代高效电驱平台，能效水平整体提升。

High-Performance Smart Electric Powertrain Platform

NIO's second-generation high-efficiency electric powertrain platform features a 180 kW PM motor in the front and a 300 kW induction motor in the rear, with a maximum power output of 480 kW and a peak torque of 850 N·m. The silicon carbide power module on the new platform further boosts the efficiency.



4.我们的服务 Our Service

蔚来能源

NIO Power 是依托蔚来能源云技术，通过蔚来移动充电车、充电桩、换电站和道路服务团队，为用户提供全场景加电服务的能源服务体系。

截至 2021 年 12 月 10 日，蔚来能源服务体系 NIO Power 已为用户提供超 530 万次换电服务。为改善长途出行的充电体验，蔚来汽车创新地将 Power Swap 充电站部署在高速公路服务区，大大缩短了高速公路的充电时间。

第二代换电站

全球首创的换电黑科技：拥有超过 1400 项专利，是专为蔚来用户打造的极致加电体验，满电出发仅需要一首歌的时间。每次换电都会进行三电自检，确保整车和电池始终处于最佳状态。

极速加电方案：车辆可实现自动泊入，无需下车，车内一键启动自助换电；单日最多可提供 312 次换电服务。

最安心的服务体验：每次换电都会做电池和整车电气系统检测，确保整车和电池始终处于最佳状态。

紧凑型模块化设计：四个标准停车位；单站存储 13 块电池。

Compact and modular: Each station takes only four standard parking spaces and can accommodate 13 batteries.

NIO Power

NIO Power, a power service system based on NIO's Power Cloud technology, provides a holistic charging and swapping experience via its extensive network encompassing battery swapping stations, charging piles and stations, Power Mobiles and professional service teams.

As of December 10, 2021, NIO Power has already provided more than 5.3 million power swaps for users. To improve the charging experience for long-distance trips, NIO has innovatively deployed its Power Swap stations in expressway service areas, which significantly shortens the time needed for charging on expressways.

Power Swap Station 2.0

The first of its kind: Enabled by over 1,400 patents, NIO Power Swap offers an ultimate and exclusive experience where users can hit the road with a fully-charged battery in only three minutes. A complete self-inspection comes after every swap, to make sure vehicles and batteries are always in a good condition.

Ultra-fast: The vehicle can automatically drive into the swap station, and users can start a battery swap in the car with one tap on the center display. Each station can complete up to 312 swaps per day.

The most reassuring: Automatic inspection on the battery and electrical system is performed after every swap, to ensure that the vehicle and battery are always in their best shape.



移动充电车

蔚来全新研发的一款加电产品，就像一个超级充电宝，能做到加电 10 分钟续航 100 公里。

Power Mobile

Power Mobile is a brand-new power service developed by NIO. It is like a portable charging pile with which a 10-minute charging session can provide 100 km range.



家充电桩2.0



Power Home 2.0

蔚来推出了服务于家庭（或办公地点）充电的专属桩，具备即插即充、预约充电、App 控制等功能。蔚来会为有条件的用户免费安装充电桩。

Power Home is NIO's exclusive charger product that can be installed at home or office. With the NIO app, users can schedule a charging session or control the charger remotely. NIO provides free Power Home installation service to qualified NIO car owners.

超充桩



NIO Power Charger

源于 NIO Power 产品系列设计，聚合互联网基因的蔚来超充桩在公共场景下为所有新能源车提供快速、智能、可靠的充电服务，充电电流最高可达 250A，支持即插即充与扫码充电，操作支付流程更快捷。

Featuring NIO's iconic design and Internet functionality, the NIO Power Charger provides all electric vehicle users with a fast, smart and reliable charging service in public spaces. The Power Charger has a maximum current of up to 250 A, supporting both plug-and-charge as well as scan-and-charge for convenient and easy payment.

20kW家用直流充电桩



蔚来云



一键加电



Power Home Plus (20 kW DC Charger)

配备 380V 电压, 充电功率 20kW, 充满 100kWh 电池只需要 5 个多小时。适合充电细分市场的多场景应用, 目的地充电和城区途中充电的最佳选择。

With 380V voltage and 20kW charging power, it only takes five hours to fully charge the 100 kWh battery with the Power Home Plus. The beautiful design and powerful performance make it the best solution for multiple scenarios, including destination charging and intra-city charging.

NIO Cloud

蔚来专属桩、换电站、移动充电车与超充桩构成蔚来能源(NIO Power)服务体系, 在蔚来能源云的智能调度下, 为用户提供高效加电服务。

Enabled by Power Cloud, NIO Power, featuring Power Home, Power Swap, Power Mobiles and Power Chargers, provides a holistic and efficient battery charging and swapping to users.

One Click for Power

蔚来将利用移动互联网, 成为第一个提供代客加电服务的品牌。蔚来的能源云将把充电桩、换电站、移动充电车、超充桩、电池、车辆、蔚来专员和用户连接成一个智慧的能源互联网, 做到一键加电, 能量无忧。

One Click for Power is the first its kind to provide electric vehicle users with valet battery charging and swapping services. Powered by the mobile internet, NIO's Power Cloud connects NIO's every charger, Power Swap station, Power Mobile, battery, vehicle, and service specialists. As a result, NIO's users can enjoy worry-free power services with a single click on the phone. With that, a NIO car can travel to wherever a gasoline car can go.

蔚来全国布局



Nationwide Power Network

已建成换电站 700 座, 超充站 534 座 (包含 3,020 根超充桩), 目的地充电站 600 座 (包含 3,319 根目的地充电桩), 已接入第三方充电桩超过 430,000 根。

NIO has built 700 Power Swap stations, 534 Power Charger stations (with 3,020 Power Chargers), and 600 destination charging stations (with 3,319 destination chargers), and has connected with over 430,000 third-party chargers in China.

* 信息更新至 2021 年 12 月 10 日

*By December 10th, 2021

(二) 产品安全 Product Safety

1. 车内空气质量管控 Cabin Air Quality Control

蔚来汽车的内饰材料种类多种多样, 包含塑料、橡胶、发泡、胶粘剂等等, 其工艺也各不相同。一台刚下线的新车中存在的挥发性物质可能有上百种, 加之车内空间狭小、密闭性好, 就更容易聚积而产生污染。

NIO has used various materials for interior, such as plastic, rubber, foam, adhesive, which require different processing techniques. For a new car just rolling off the production line, there may be hundreds of volatile substances in the cabin. Given that the interior space is small with good tightness, it is even easier for those substances to accumulate and pollute the cabin environment. According to the results of a large number of experiments related to interior air and the analysis results of interior



基于大量车内空气的实验研究结果和对内饰零部件的分析结果，国内国际重点管控的有苯、甲苯、二甲苯、苯乙烯、乙苯、甲醛、乙醛和丙烯醛 8 种物质，其中中国的标准 GB/T27630 及其可能的更新版本，依据各种物质的健康危害对限值进行了规定。

但是满足标准仅仅只是一个门槛，蔚来要做的是尽可能地减少车内这些挥发性物质，从源头体系化管控车内空气质量，保证用户健康。我们为此建立了全流程的端到端管理，依托于“化学安全战队”，实施源头管控，过程监控，持续改进的管理策略。

标本兼治，源头管控

对于可再生藤木 Karuun®，液态阻尼 LASD，水性胶水，除醛剂等环保材料和工艺的应用，以及各道工序和相关部件，无论座椅发泡，修面皮，真皮，还是 Haptex 巴斯夫皮，我们都设定严格的企业标准并落地执行，并不断寻找低 VOC 散发材料的解决方案，如生物基超纤、植物鞣制皮革、环保麂皮绒等，以此从源头上保障车内空气质量。正是因为体系化的管理，所以任何车型的质量水平都是可控的。

风险评估，过程管控

在车内空气质量管控过程中，蔚来先进行目标设定，再进行风险评估。我们把车内空气相关的要求，从整车、零件、材料，以及工艺辅料逐层分解落地，分别验证确认满足要求。对于高风险的关键零部件及材料，蔚来引导合作伙伴从原料配方、工艺流程、辅料添加、流转时间等多个维度推动风险项持续性优化。

parts, there are eight volatile organic compounds (VOC) under stringent control both in China and worldwide, namely benzene, toluene, xylene, styrene, ethylbenzene, formaldehyde, acetaldehyde and acrolein. China's GB/T 27630 and its possible updates have stipulated the threshold limit values of these VOCs based on their respective health hazards and impact.

However, meeting the standards is only a baseline. What NIO aims at is to reduce these VOCs in the vehicle as much as possible and systematically control the air quality in the cabin from the source to protect the health of users. To this end, NIO's Chemical Safety Taskforce has established a complete end-to-end process to implement source control and process monitoring, and continuously strive to improve management strategies.

Address both symptoms and root causes with source control

NIO has set and implemented strict corporate standards to control the air quality in the car from the source. Be it with regard to the application of environmentally-friendly materials and processes such as karuun® (renewable rattan), LASD (liquid-applied sound damping), water-based glue, aldehyde removal agent, or with regard to the application of mainstream interior materials and processes, including seat foam, corrected grain leather, genuine leather, and Haptex, we've been following its strict corporate standards. At the same time, we've been constantly looking for low-VOC materials, such as bio-based microfiber, plant-tanned leather, eco-suede, etc. Due to the systematic management, the overall quality can still be controlled.

Risk assessment and process control

When managing air quality in the vehicle, we first set the targets and then conduct risk assessment. We've broken down the relevant requirements from vehicle to parts and materials, and even taken the process aids into consideration, to verify and ensure that the requirements are met at all levels. For high-risk key parts and materials, NIO has cooperated with partners to make continuous optimization of risk items from multiple dimensions such as raw material formulas, techniques and processes, additives and process aids, and flow time.

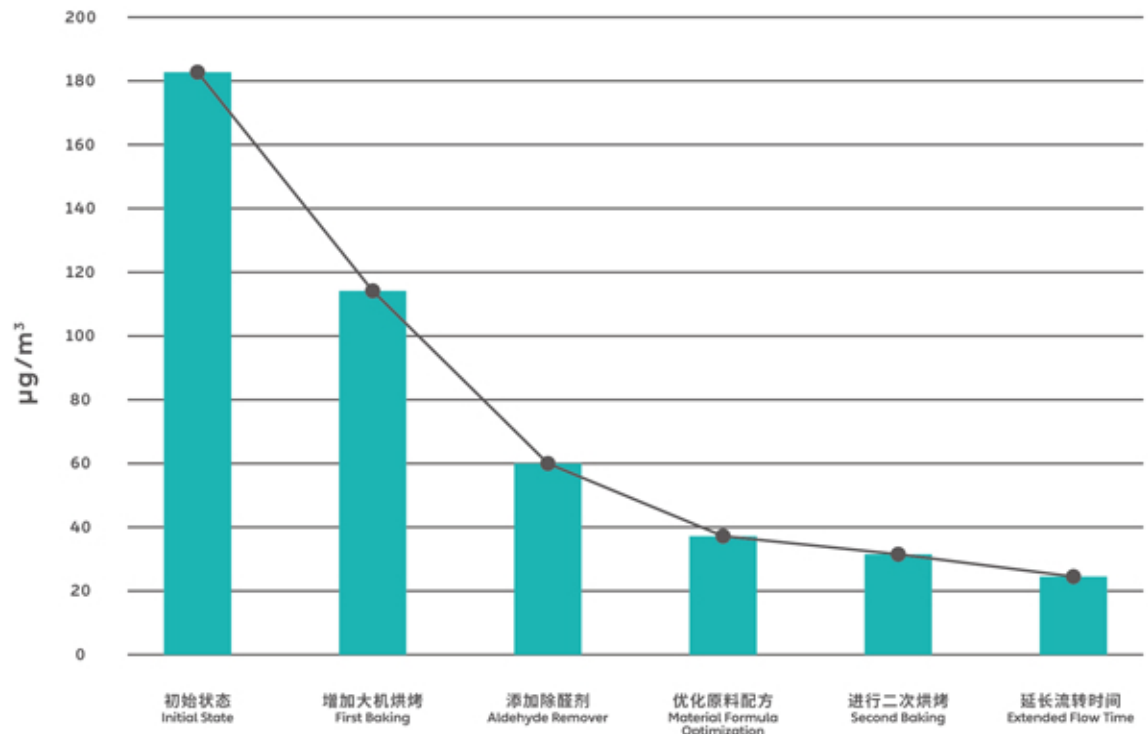


以 Haptex 材料为例,内饰零件包覆使用的 Haptex 材料,在项目初始的阶段乙醛性能表现较差。通过行业材料水平的对标和先进生产工艺的调研,如增加烘烤和添加除醛剂等方式使乙醛的散发大幅下降,并进一步优化原材料配方、增加二次烘烤和延长流转时间等持续性降低材料挥发的乙醛浓度。

Take the Haptex material as an example. The Haptex used as interior wrapping material had poor performance in acetaldehyde test in the initial stage of the project. Through benchmarking with the industry levels and studying advanced production technology, we have significantly reduced the concentration of acetaldehyde by adding baking process and aldehyde remover, and continuously improved the performance of Haptex in acetaldehyde test by further optimizing the raw material formula, adding the second baking, and extending the flow time.

Haptex乙醛持续性改善

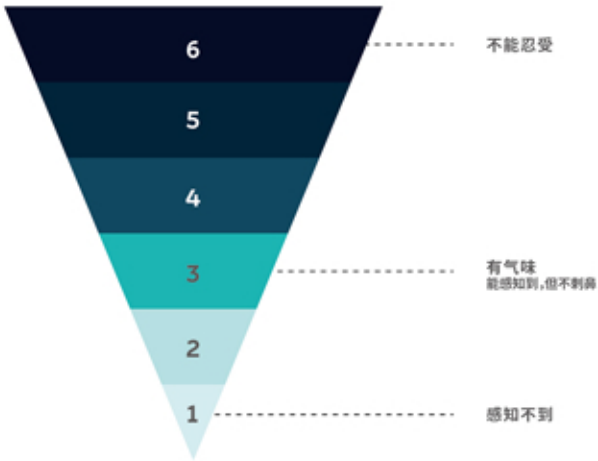
Continuous Improvement of Acetaldehyde Emissions



不仅是挥发性有机物,对于气味,我们也有专属的“金鼻子”来严格按照 VDA 的标准进行气味评价;一共 6 级,通过开发早期的验证,确保整车、系统总成和零件材料,不同层级都不超 3 级,即“有气味,能感知到,但不刺鼻”。

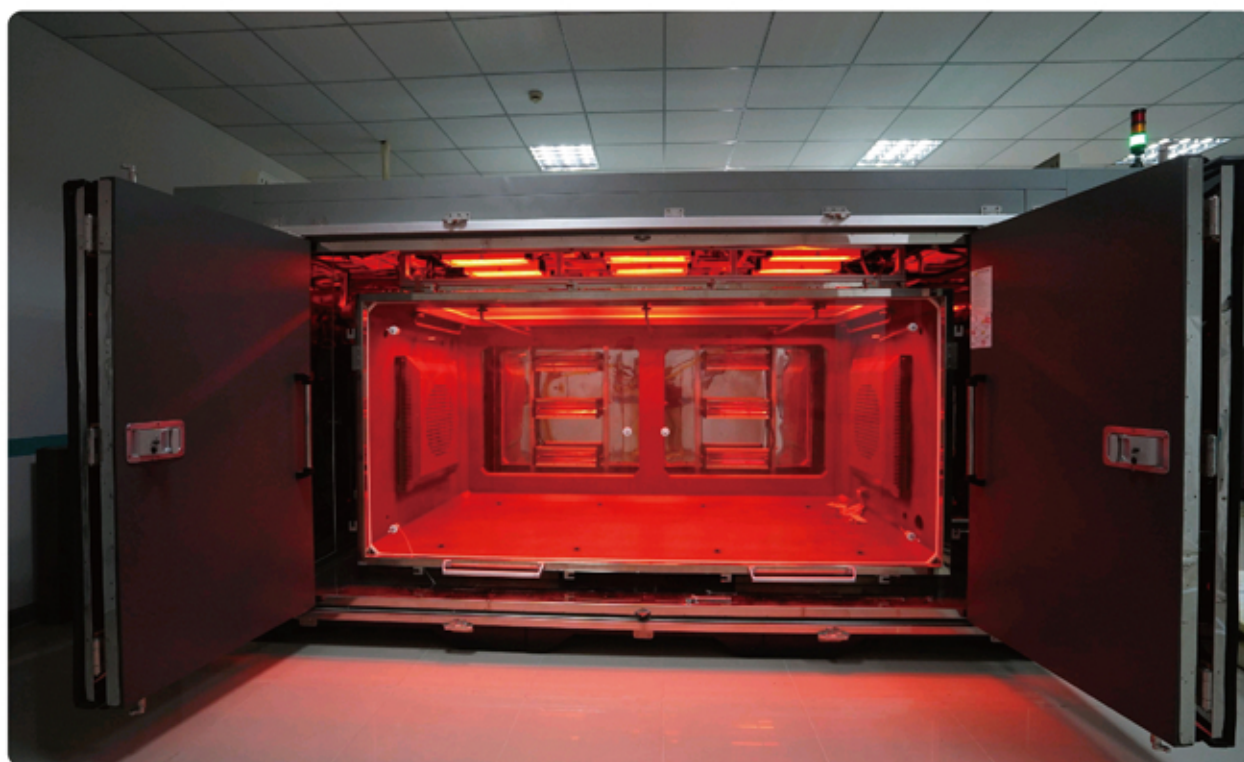


In addition to VOCs, for odors, we also have exclusive “picky noses” for odor evaluation strictly following the VDA standards. Odors are divided into six levels. Through early verification during vehicle development, we’ve ensured that the odors at different levels, including vehicle, system assemblies, and parts, do not exceed Level 3, that is, odorous, perceptible, but not pungent.



在产品开发过程中，我们把不同乘客舱零件，分批不同组合的放入舱内，模拟实车状态，以了解不同材料在车内对于气味贡献度，同时采样分析其具体的物质成分，继而调整其特性，以便量产产品给用户带来更愉悦的车内空气体验。除了常温状态，还可以模拟阳光暴晒以后零部件材料的散发情况。实车下线以后，我们也会组织全部门、跨角色的气味感知体验，如有异常，及时改进调整。

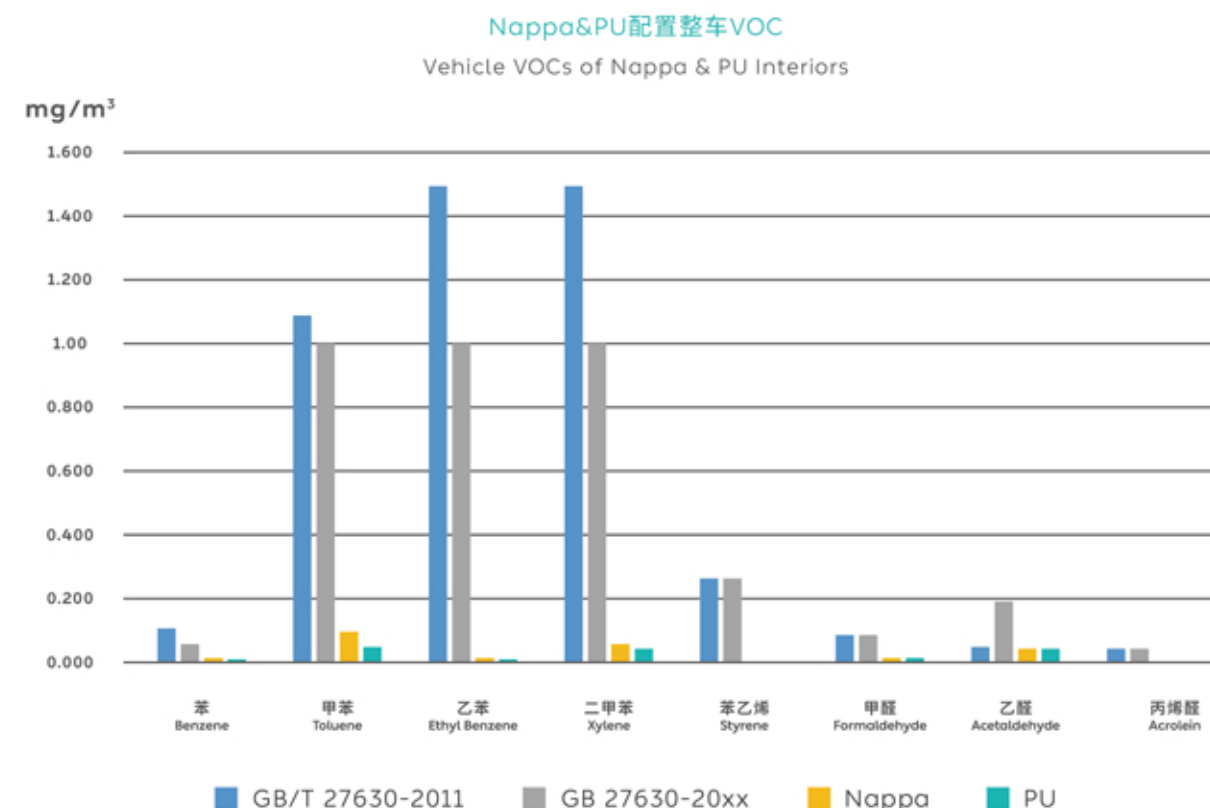
During vehicle development, we put different interior parts in different combinations into the vehicle simulation chamber to simulate the actual vehicle interior where we can learn about the contribution of different materials to the odor in the vehicle. In the meantime, we also sample and analyze the specific material composition to continuously adjust and optimize materials' attributes, so that mass-produced products can bring users a more pleasant experience in the car. In addition to testing the parts in normal temperatures, we also test the emissions of parts and materials after being exposed to simulated sun rays. After vehicles come off the production line, we will also organize the entire department to evaluate odor levels individually. If any abnormal odor is found, we will make adjustment and optimization in time.



开发过程的最后一道关，便是整车。我们在项目开发的不同阶段，都会抽取整车进行实车严格按照标准 HJ/T400 和 ISO12219 测试，在专业的整车 VOC 采样舱里采样，然后在先进的分析设备上进行分析（除了第三方实验室，NIO 也有自己的业内先进的分析实验室）；一旦发现可疑情况，我们会立即改进，确保车辆最后交付给用户的时候，车内是健康且安全的。

The last step in the development process is to evaluate the vehicle VOCs and odors. At different stages of the vehicle development, we sample the vehicles for strict testing following the standards stipulated in HJ/T 400 and ISO 12219. We normally take samples from the professional vehicle VOC sampling chamber, and then analyzed them using advanced analysis equipment (in addition to testing in third-party laboratories, NIO also has its own industry-leading analytical laboratory) to ensure that the air is healthy and safe in the vehicle when it is finally delivered to its user.

图：最新车型研发阶段整车VOC表现
Fig. VOC Performance of The Latest Model in Development



开发重要，一致性管控和持续提升同样重要

蔚来特有的特别行动队，一支由 VE、PIM、COQ、CMQ、MFQ、SO、Plant 等跨部门组成特别行动小分队——化学安全战队，就是为了保障车内空气质量，持续提升用户体验而成立的。从研发、制造、运输，再到售后的全方位体系，实现行业内真正的端到端管理流程。

Development is important, so are consist control and continuous improvement

The Chemical Safety Taskforce is NIO's special action team consisting of stakeholders from VE, PIM, COQ, CMQ, MFQ, SO, and Plant. The taskforces ensures the air quality in the car can meet users' expectation and improve user experience. NIO's comprehensive system covering R&D, manufacturing, logistics and after-sales, realizes a real end-to-end management process in the industry.

主动式的空气净化系统

全系车辆标配了空气净化系统、PM2.5 传感器抗菌过滤、活性炭吸附、负离子发生器,并在研更先进的车内空气质量智能传感器,抗菌材料等新技术和应用,可为用户带来更愉悦舒适的车内空气体验。

Active air purification system

All department vehicles come standard with air purification system, PM2.5 and antibacterial filter, activated-carbon adsorption, and ionizer. In the meantime, NIO has been researching and developing new technologies and applications such as in-car air quality smart sensors and antibacterial materials which can provide users with a more joyful and comfortable experience in the car.



我们一直在关注记录每一位用户的反馈和建议,持续改进,希望能够给用户朋友们带来更愉悦更健康的车内体验。

We have been paying attention to and recording each user's feedback and suggestions, and have made continuous improvement, hoping to bring users a more joyful and healthier in-car experience.

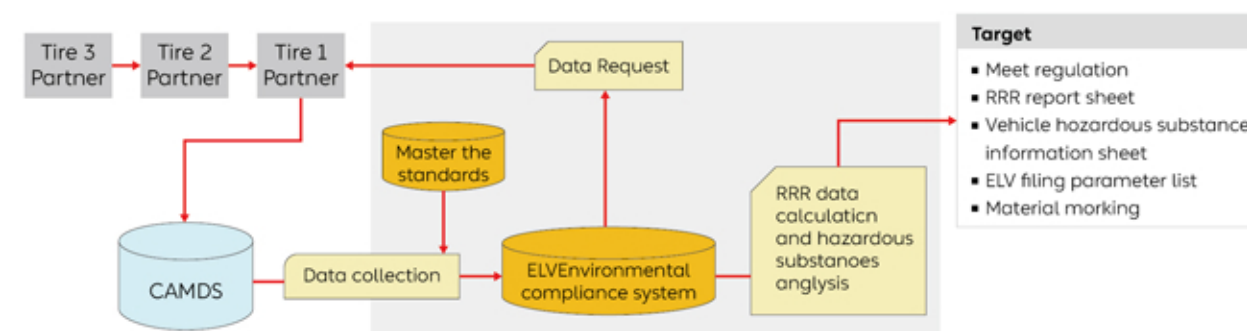
2.材料有害物质管控 Control of Hazardous Substances in Materials

为确保整车禁用及限用物质的有效管控,蔚来的整车环保及材料团队协同设计、零件开发、合作伙伴质量管理、工程质量等相关部门,共同打造绿色健康第二生活空间。

In order to ensure the effective management and control of prohibited and restricted substances in vehicles, NIO's vehicle environmental protection and materials team has cooperated with design, parts development, partner quality management, engineering quality and other related departments to jointly create a green and healthy second living space for NIO users.

我们在研发过程中制定了明确的环保性能开发流程及相应标准,遵循严格的零部件工程认可程序,以确保整车符合环保法规要求,来降低整个生命周期的环境负荷。在关键材料选取上推动国际权威的健康安全认可,从材料角度保证驾乘人员安全。

通过 CAMDS 系统收集材料数据清单,确保数据在供应链上的传递,并采用 ELV 环保合规系统审核产品的环保合规性。根据行业发布的高风险清单及数据库筛查,识别关键零部件,制定一致性管控措施。蔚来 2020 年上市车型,26 个高风险零部件完全不含有害物质的材料比例为 89.52%,10 个豁免零部件中有害物质提前达标比例为 70%。



通过建设内部整车材料环境分析实验室,并取得了禁用物质相关 CNAS 认可,支撑材料的绿色正向开发,并具备整车拆解有害物质分析能力。

自 2016 起,我们每年举行“蔚来整车环保性能开发研讨会”,探讨有害物质管控形式,同时分享 REACH 等海外法规合规要点,推动绿色开发理念在供应链上的传递。与合作伙伴共同努力,实现蔚来首款车型顺利出口海外。

During the research and development process, we have formulated a clear development process and corresponding standards for environmental performance, and followed strict parts engineering approval procedures to ensure that the entire vehicle meets the requirements of environmental protection regulations and reduce the environmental impact during the product life. We've facilitated international authoritative health and safety accreditation in the selection of key materials to ensure the safety of occupants from material perspectives.

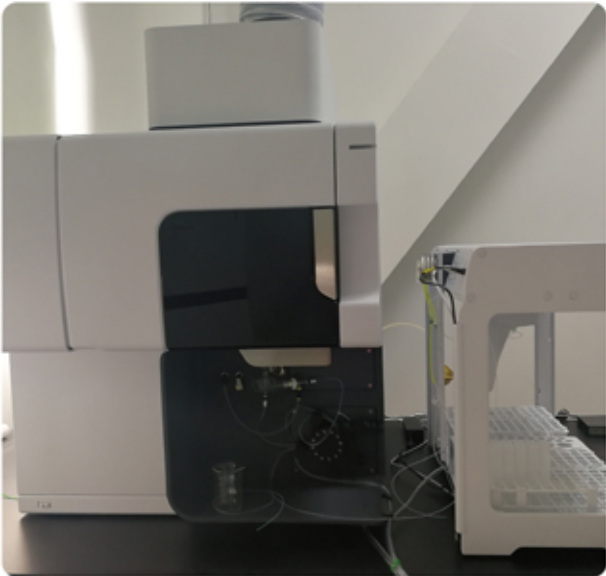
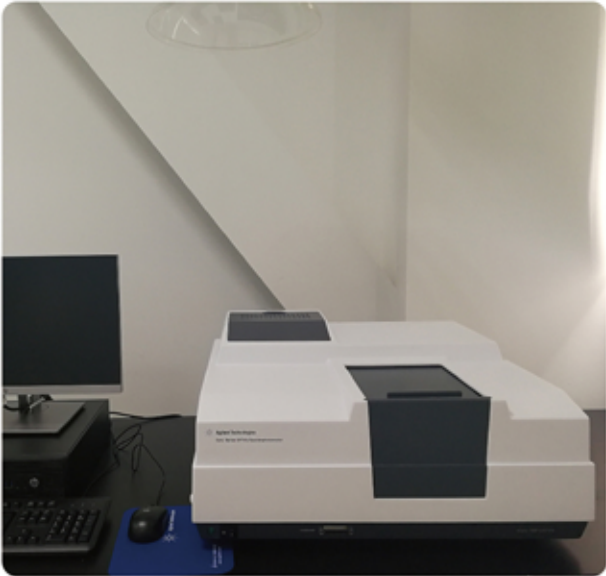
We've also collected material data lists through the China Automotive Material Data System (CAMDS) to ensure the transmission of data in the supply chain, and used the ELV environmental compliance system to review the environmental compliance of products. According to the high-risk list issued by the industry and through screening database, we've identified key components and developed conformity control measures. For the product in 2020, the proportion of materials completely free of hazardous substances in 26 high-risk parts is 89.52%, and the proportion of hazardous substances meeting the standard in advance in 10 exempted parts is 70%.

We've built an internal vehicle material environmental analysis laboratory which has been accredited by China National Accreditation Service (CNAS) for prohibited substances. The laboratory has further supported NIO's forward development of environmentally friendly materials, and the ability to analyze hazardous substances by dismantling vehicles.

Since 2016, we have held the "NIO Vehicle Environmental Performance Development Seminar" every year to discuss approaches to control hazardous substances, share key actions in being compliant with REACH and other overseas laws and regulations, as well as raise the awareness of green development in the supply chain. With the joint efforts from our partners, we've successfully exported and delivered NIO's first model overseas.

在产品全面满足国家标准要求前提下，积极寻求技术方案，改善部分仍在豁免清单范围内材料有害物质含有情况，实现提前达标，例如无铅启动蓄电池替代铅酸电池等，并在后续车型中，做出不断的提升。

Under the premise that the products have already met national standards, we've actively looked for technical solutions to further reduce the hazardous substances that are still in the exemption list, and ensured our products can even be compliant with future requirements. For example, we've replaced lead-acid battery with lead-free battery, and are making continuous improvements on the following vehicle models.



3.车内噪声 Interior Noise

蔚来振动噪声设计一直以客户为中心，围绕如何为客户提供安静愉悦的车内噪声环境持续努力。

With users as the center of NVH (noise, vibration, and harshness) study, NIO strives to make continuous efforts in offering a quiet and joyful interior to its users.

蔚来 ES8 车型，在 2018 年投放市场后，NVH 组针对车内噪声情况持续进行改善，主要工作围绕声学包匹配、制造工艺提高以及电动力总成等开展工作，并应用在全新一代 ES8 车型上。定量测试结果：

After the ES8 was launched in 2018, the NVH group continued to lower the interior noise, mainly focusing on acoustic package matching, manufacturing process improvement, electric power-train which have been applied to the all-new ES8 launched in 2020. Quantitative test results are as follows:

在通用广德试车场车内噪声测试路面（沥青路），以 60 公里 / 小时均匀速度行驶进行测试，记录车内人耳处位置麦克风的噪声值。下表展示了 ES8 两代车型及 EC6 的测试结果：

The test was carried out on the asphalt road in Guangde proving ground. When the test vehicle was driven at 60 km/h, the interior noise level was captured and recorded by microphones placed at the position close to that of occupants' ears. The following table shows the test results of the ES8 and the EC6:

表：整车噪声测试结果（60公里/小时）
Table: Test Results of Vehicle Noise (60 km/h)

车型 Model	车内前排主驾侧噪声 Noise Level On The Driver'S Seat	
	总声压级 Total Sound Pressure Level (dBA)	语音清晰度 Speech Intelligibility (%)
ES8	55.0	95.0
All-New ES8	51.5	97.5
EC6	52.4	97.0

综合测试数据，在车内噪声上，总的声压级和语音清晰度均有明显的提升，大幅降低了车内噪声。全新一代车型投放市场后，收到了用户的广泛好评。

According to the comprehensive test results of the noise level in three models, the total sound pressure level and speech intelligibility have been significantly enhanced, and thus the noise level in the car is greatly reduced. The new models have been well-received by NIO users.

(三) 产品环境影响 Product Environmental Impact

1. 产品生命周期碳排放评价 Life-Cycle Carbon Emission Evaluation

蔚来积极开展产品生命周期碳排放评价工作，依据行业标准进行模型建设和分析，依据 CAMDS 系统收集和监控所有的车用材料信息，并且建立蔚来内部材料数据库 (Material WorX)，从原材料获取，到生产，使用，到产品回收的全生命周期碳排放研究核算。在材料认可的时候，要求原材料供应商提供材料的碳排放因子。逐步建立了汽车生命周期碳足迹评价标准规范，并依托先进的碳排放数据管理系统进行系统化的核算评价。

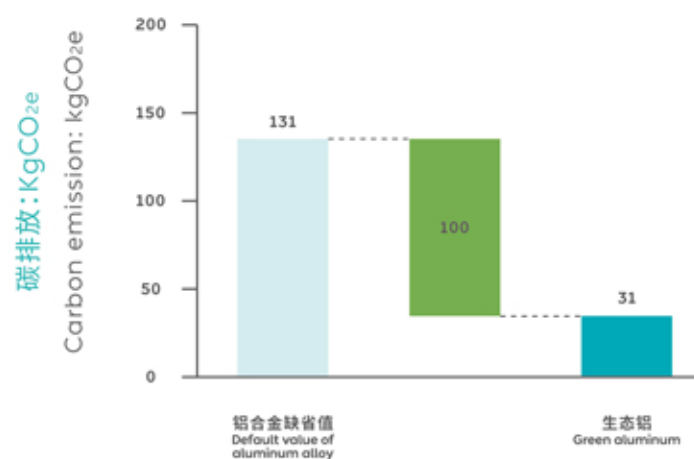
我们同时积极推动低碳材料的应用，例如转向节的合作伙伴使用清洁能源铝锭（碳排放因子 3.9kgCO₂e/kg，已获 CQC 认证），相比于铝合金碳排放因子缺省值 16.38kgCO₂e/kg（来源：中国汽车低碳行动计划研究报告 2021）。单个零件产品材料碳足迹对比分析如下图：

对于现有车型，参照《乘用车生命周期碳排放核算技术规范》进行核算，并且发布于《中国汽车低碳行动计划研究报告 2021》。

For existing models, the calculation was carried out with reference to the *Technical Specifications for Life-Cycle Carbon Emission Calculation of Passenger Cars*, and the result has been published in the *Research Report of China Automobile Low-Carbon Action Plan 2021*.

NIO has actively carried out the product life-cycle carbon emission evaluation, developed analysis models based on industry standards, collected and monitored all vehicle material information based on CAMDS, and established NIO's internal material database (Material WorX) which studies and calculates the carbon emissions of the entire vehicle life cycle from raw material acquisition to production, from utilization and recycling. When approving a material, NIO has asked the raw material supplier to provide the carbon emission factor of the material. With that, NIO has gradually established standards for evaluating vehicle's lifecycle footprint, and carried out systematic calculation and evaluation based on the advanced carbon emission data management system.

We've also actively promoted the application of low-carbon materials, such as the utilization of green aluminum ingots by partners in steering knuckles (with the carbon emission factor of 3.9kgCO₂e/kg certified by CQC). In comparison, the default value of is 16.38kgCO₂e/kg for aluminum alloys (Source: *China Automobile Low-Carbon Action Plan Research Report 2021*). The comparative analysis of the carbon footprint of materials in a single part is as following figure:



同时，产品碳足迹已经作为整车环保性能要求之一，并且在蔚来产品开发流程的不同节点都会进行数据收集和核算，确保车辆碳足迹满足设定的目标。

Meanwhile, the product carbon footprint has become one of the vehicle environmental performance requirements, and data collection and calculation are performed at different stages in the NIO product development process to ensure that the vehicle carbon footprint meets the set goals.

2. 可降解材料的使用 Use of Degradable Materials

蔚来一直致力于寻找环保同时又满足汽车使用性能要求的材料，敢于尝试敢于创新。在内饰设计中融入了可降解材料的元素，在性能和环保中寻找平衡，不断深入探索可降解材料新的应用空间。

同时值得一提的是，蔚来已经在量产车型中使用到了可减轻环境负担的PCR (Post-consumer Recycling) 材料。我们对于这类材料的使用是经过谨慎的零部件及整车的性能评估的，经得起市场和用户的考验。

蔚来最新发布的旗舰轿车 ET7 全球首次量产使用 karuun® 可再生藤木，这种材质来自热带雨林，每一片都有独特的纹理和天然的触感；整车使用多达 14 处，置身其中，时刻感受自然与环境之美。

NIO has always been committed to finding materials that are environmentally friendly and meet the performance requirements of automotive products. Daring to innovate, NIO has incorporated biodegradable materials in its interior design, seeking the balance between performance and environmental protection, and continuously exploring new applications of biodegradable materials.

It is worth mentioning that NIO has already used PCR (Post-Consumer Recycling) materials in mass-produced models, which can reduce the impact on the environment. The utilization of these materials has been carefully evaluated on parts and vehicles to ensure the performance can withstand the test of the market and users.

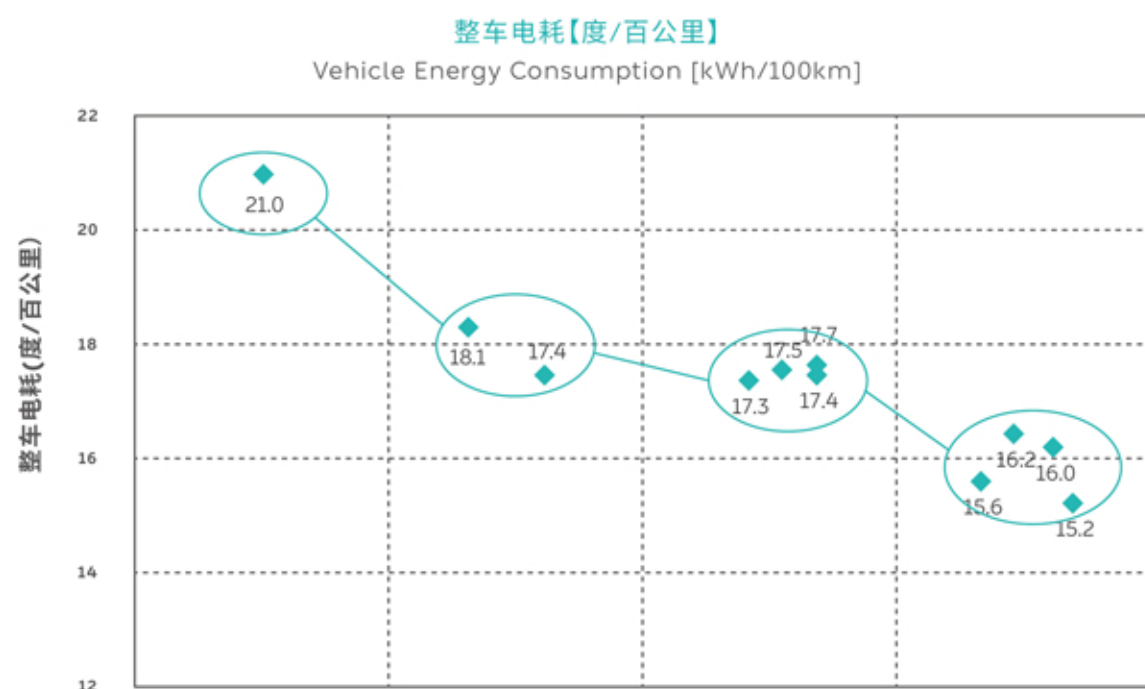
On the ET7, NIO's latest flagship sedan, karuun® renewable rattan has been used for the first time on a mass-produced model. Karuun® comes from tropical rain forests, and each piece of Karuun® has a unique texture and natural touch. The material is used at 14 positions in the ET7, where you can feel the beauty of nature and environment all the time.



3.产品使用能源消耗 Product Energy Consumption

蔚来在降低整车能耗方面不遗余力，企业车型能耗逐年下降。2018 年第一款 ES8 车型单车能耗为 21.0kWh/100km（工况法），2020 年 ES6、EC6 两个车型单车能耗 17.5kWh/100km 左右。到 2021 年，基于全新平台开发的 ET7，最低能耗已下降到 15.2kWh/100km，相较上年，平均下降幅度达到 10%。

NIO has spared no effort in reducing the energy consumption of vehicles, and the energy consumption of its models has been lowered year over year. In 2018, the energy consumption of its ES8 was 21.0kWh/100km (under test conditions). In 2020, the energy consumption of the ES6 and EC6 was reduced to 17.5kWh/100km. In 2021, the minimum energy consumption of the ET7 developed on the brand-new technology platform has been reduced to 15.2kWh/100km, representing an average decrease of 10% compared year-over-year.



蔚来通过一系列的技术创新，降低用户在不同场景下的车辆使用能耗：

SiC 功率模块：蔚来是行业内最先一批将 SiC 功率模块应用到电机控制器的企业。利用 SiC MOSFET 损耗低、效率高的特点，使得单车能耗下降了 3%~5%。

Through a series of technological innovations, NIO is able to reduce vehicle energy consumption in different scenarios for its users.

SiC power module: NIO has been one of the first companies in the industry to apply SiC power module to the motor controller. Leveraging the advantages of the low power loss and high efficiency of SiC MOSFET, the energy consumption has been reduced by 3% to 5% per car.

超级节能模式：除了采用先进的硬件及系统架构，蔚来也在不断通过软件优化，达成延长里程、降低能耗的目的。在超级节能模式下，系统能最大限度地降低电子元器件功耗，同时维持最低驾驶需求的动力输出。使得用户在行车过程中获取更长的行驶里程。与现有的节能模式相比，能耗可再下降 5%~10%。

除了技术创新，蔚来还通过模式创新减少能源消耗。蔚来独特的“车电分离”模式，已累计为用户提供换电服务超过 350 万次，换电量超过 1.5 亿千瓦时。蔚来二代换电站已于今年开始投入使用，单站电池数量增至 13 块，每天最高完成 312 次换电。服务能力和效率的提升，进一步减少了能源消耗。另外，蔚来的 Power North 计划也加大了北方 8 省的换电站建设力度，用以解决低温充电难题，提升能源利用率。

Eco Plus mode: In addition to adopting advanced hardware and system architecture, NIO has been constantly optimizing software to further extend driving range and reduce energy consumption. In the Eco Plus mode, the system can minimize the power consumption of electronic components while maintaining the power output for the lowest driving requirements, which allows users to obtain longer mileage during driving. Compared with the existing Eco mode, the energy consumption can be further reduced by 5% to 10%.

In addition to technological innovation, NIO has reduced energy consumption through innovating business model. With its unique vehicle-battery separation mode, NIO has provided users with more than 3.5 million battery swaps, representing a total of 150 million kilowatt-hour electricity. NIO's second-generation Power Swap stations have been put into operation this year. Each station can accommodate 13 batteries and offer up to 312 swaps per day. The improvement of service capacity and efficiency has further reduced energy consumption. In addition, NIO's Power North Plan has also boosted the installation of Power Swap stations in eight northern provinces in China to solve the problems of low-temperature charging and improve energy utilization.

4.汽车轻量化 Automotive Lightweight Technology

汽车轻量化是指在不降低原有性能要求的前提下，通过采用先进材料，先进设计方案和制造方法等，实现整车重量的下降。整车重量的下降带来的直接成果就是百公里平均能耗的下降，这在目前节能减排和碳达峰碳中和战略的大背景下，意义尤为突出。除此之外，轻量化能有效的降低底盘悬架的载荷要求和车辆碰撞的安全要求，从而为整车设计创造更有利的设计条件。同时，实现轻量化技术的新材料和新设计方案，往往会成为企业技术发展和创新的有效驱动力，从而为品牌和形象建设助力。

Automotive lightweight technology refers to reducing vehicle mass by using advanced materials, design concepts and manufacturing methods without compromising the vehicle's original performance. Reducing vehicle mass can directly result in the reduction of average energy consumption per 100 kilometers, which is particularly prominent against the current backdrop of energy conservation and emissions reduction, as well as the national strategy to peak carbon emissions and achieve carbon neutrality. In addition, a lightweight structure can effectively reduce the load requirements of the chassis and suspension, and the safety requirements in a vehicle collision, thereby creating more favorable conditions for vehicle design and engineering. Meanwhile, new materials and new design concepts that can reduce vehicle mass will often effectively drive enterprises to make technological innovation and development, which further contributes to brand building.

蔚来高度重视轻量化技术并将其定义为公司核心技术之一。蔚来的轻量化技术从整车层面出发进行重量目标定义，进而定义各个子系统的质量目标以及技术方案，从而确保子系统目标以及总体目标的可实现性。在技术层面，蔚来定义了从材料轻量化，方案轻量化，布局方案轻量化，设计要求轻量化到制造技术轻量化的系统轻量化方案。

以新款 ES8 为例，通过采用如铝、镁、陶瓷、塑料、玻璃纤维或碳纤维复合材料等的轻质材料和优化结构设计的方式，新款 ES8 相较于上一代降低 35kg。

镁铝仪表板横梁

镁铝合金的低密度（1.78g/cm³）使其性能显著提高，具有很好的强度、刚性和尺寸稳定性，加上零件集成化程度高，相对传统钢结构仪表板横梁减重 40%。

尾门内板

蔚来从第一款旗舰车型 ES8 就已使用全塑尾门，但第二款车型 ES6 将追求轻量化的目标继续发展到极致，内板从原来的热固性 SMC 材料替换成了长玻纤增强的热塑性材料，进一步减重 10%。同时，热塑性材料的散发和气味也明显优于 SMC 材料，这是绿色环保的一大进步。

NIO has attached great importance to lightweight technology and defined it as one of the company's core technologies. NIO's lightweight strategy starts with setting mass target for the vehicle, and then break that down to the quality targets and technical solutions of each subsystem to ensure that targets at all levels can be realized. Technology wise, NIO has defined a systematic lightweight scheme ranging from lightweight materials, solutions and layout to lightweight design and manufacturing technology.

Take the all-new ES8 as an example. It is 35kg lighter than the previous generation, thanks to the utilization of lightweight materials such as aluminum, magnesium, ceramics, plastics, glass fiber and carbon fiber composite, as well as the optimization of structure and design.

Magnesium-aluminum cross car beam

Magnesium-aluminum alloy (1.78g/cm³) boasts low density, good strength, rigidity and dimensional stability. Leveraging the magnesium-aluminum alloy and high integration rate, the cross car beam can reduce its weight by 40% compared with traditional steel structure.

Liftgate inner panel

NIO has used the all-plastic liftgate since the first flagship model ES8. On the ES6, NIO's second mass-produced model, we have furthered the pursuit of lightweight design by replacing the original thermosetting SMC material with thermoplastic material reinforced with long glass fiber, which not only reduces the weight by 10%, but also significantly improves VOCs and odor emissions, representing a solid step towards green materials.

橡胶管路&密封条

热固性橡胶材料替换为热塑性弹性体是轻量化设计的另一个突破点。热塑性弹性体材料以其优异的加工性能、可回收利用性、突出的耐久密封性能正在逐步在材料技术上突破限制替代越来越多的橡胶零件的应用。冷却水管上热塑性弹性体 TPV 替代 EPDM，从降低壁厚和密度双方面综合减重达 40%。车窗密封条上热塑性弹性体 TPV 替代 EPDM，减重达 35%。

车身地板横梁，前雪橇板，B柱内板等

ES6 在车身地板横梁，前雪橇板，B 柱内板等零件上引入了 7 系热成型铝合金钣金。7 系热成型在实现相同性能的情况下可以使用更小的料厚，相比 6 系冷冲压铝合金钣金，上述零件共减重 1.94kg, 19.8%。

优化设计，减少零件数量

ES6 在 D 柱上端使用了一体铸造内板总成，代替了 ES8 上的冲压件组合方案，零件数量由 4 个变为 1 个，重量下降 1kg, 23.3%。

Rubber pipelines & sealing strips

It has been another breakthrough in lightweight design to replace the thermosetting rubber material with thermoplastic elastomer. Thermoplastic elastomer with its excellent processing properties, recyclability, and outstanding durable sealing performance are gradually breaking through the limitations in material technology so as to replace an increasing number of rubber parts. For example, the thermoplastic elastomer TPV has replaced EPDM on the coolant pipe, which reduces both wall thickness and density of the pipe, resulting in a total mass reduction of 40%. The thermoplastic elastomer TPV used on the window sealing strip helps reduce the weight by 35%.

Floor crossmembers, front sled panels, B pillar inner panels, etc.

7000 series hot-formed aluminum alloy has been applied on the floor crossmembers, front sled panels, B pillar inner panels and other parts on the ES6. With the same performance, 7000 series hot-formed aluminum is thinner than 6000 series cold-stamped aluminum alloy. The total mass of the above-mentioned parts have has been reduced by 1.94 kg, or 19.8%.

Optimize design and reduce the number of parts

The ES6 has adopted single-piece inner panel casting on the D pillar upper, which has replaced the stamping assembly on the ES8. As the number of parts is downsized from four to one, the mass of the part is reduced by 1 kg, or 23.3%.

PRODUCTION

生产

(一) 战略与管理 Strategy and Management

蔚来现有的生产模式是“核心零部件自主生产 + 整车合作制造”模式。

蔚来拥有全球化的前瞻技术和研发团队，与先进制造企业达成创新合作，打造一流的整车和动力总成生产布局及供应链。

同时，蔚来也致力于为全行业提供高性能的电驱动和汽车智能科技解决方案。

目前，蔚来 70% 的供应链伙伴来自国际供应商，超过 90% 的零部件在中国本土生产，并不断优化整条供应链。我们的核心供应链覆盖区域在半径 600 公里以内，已实现体系化效率运作。沿着长江流域，从上海到常熟、南京，再到武汉，蔚来的生产布局已经完成。

NIO's current production model is "independent production of core parts + cooperative manufacturing of vehicles."

NIO has forward-looking technologies and global R&D teams. NIO reaches innovative cooperation with advanced manufacturers to create the first-class vehicle and powertrain production and supply chain.

Meanwhile, NIO is also committed to providing solutions of high-performance electric drive systems and intelligent automotive technologies for the entire industry.

At present, 70% of NIO's supply chain partners are international partners, and more than 90% of its parts are produced locally in China. The entire supply chain is being continuously optimized. Our core supply chain covers an area within a radius of 600 kilometers and has achieved operation of system efficiency. Along the Yangtze river basin, from Shanghai to Changshu, Nanjing, and then to Wuhan, NIO's manufacturing planning is now complete.



合肥 - 整车先进制造基地
Hefei: Advanced Vehicle
Manufacturing Center



南京 - 电驱动系统制造基地
Nanjing: Electric Powertrain
Manufacturing Center



常熟 - 电池系统制造基地
Changshu: Battery
Manufacturing Center

PRODUCTION

生产

战略与管理

管理体系建设

能源资源消耗

温室气体排放

污染物持续深度治理

NIO

合肥整车先进制造基地

这是一个全新打造、全球自动化程度最高的全铝工厂，占地约1,000亩，总建筑面积约23万平方米，设有冲压车身、涂装、总装四大工艺，及质量、试车和能源三大中心，计划一期双班年产能12万辆并具有可扩展性。世界级的研发设计、世界级的零部件体系、世界级的工厂，充分保证了车辆的超高品质。

蔚来ES8、ES6、EC6与ET7均在此生产，四款车型均采用个性化定制、按订单生产的模式。

Hefei Advanced Vehicle Manufacturing Center

This is a brand new factory with the highest automation level for vehicles with aluminum body. It covers an area of about 66.67 hectares and has a total floor area of about 230,000 m², housing four major workshops: stamping, body, painting, and general assembly, as well as three centers: quality, test, and energy. The annual production capacity is planned at 120,000 vehicles or more with two shifts in the first phase. The world-class R&D design, parts system, and factory are solid foundations for the ultimate quality of NIO's vehicles.

NIO's ES8, ES6, EC6 and ET7 are all manufactured here. They are all produced under a make-to-order mode and following users' customization.



南京 - XPT蔚来驱动科技

XPT 蔚来驱动科技成立于2015年，是一家提供智能电动力解决方案的科技公司，具有卓越的技术创新实力和先进制造能力，坚持以用户为中心打造智能化电动力平台，为用户提供更环保、更高效和更安全的电动力解决方案。

核心产品

100-200kW永磁同步电驱动系统

平台化设计，功率灵活拓展，实现行业领先的系统功率密度，扁线电机最大效率97% 最大化增加续航里程。“三合一”集成化设计，兼容IGBT和SiC功率模块。

240-300kW异步感应电驱动系统平台

搭载业内最大功率乘用车用异步感应电机，首台量产铜转子及激光熔焊技术电机，采用“三合一”集成化设计及双三相拓扑结构。



Nanjing - XPT NIO Drive Technology

Established in 2015, XPT is a technology company that provides intelligent electric powertrain solutions. With excellent capabilities on technological innovation and advanced manufacturing, XPT insists on building a user-oriented smart powertrain platform, to provide users with safer, more environmentally friendly and efficient, electric powertrain solutions.

Core products

100-200 kW permanent magnet synchronous motor system

With a platform-based and expandable power design, the system achieves an industry-leading overall power density. The maximum efficiency of a flat wire motor reaches 97%, which maximizes the driving range. The system has a "three-in-one" integration design, compatible with IGBT and SiC power module.

240-300kW asynchronous induction electric motor platform

The asynchronous induction motor on the platform has the highest power output among passenger car motors. It also comes with the first mass-produced copper rotor, and laser welding technology. It adopts a "three-in-one" integration design and dual three-phase topology.



(二) 管理体系建设 Building of the Management System

1. 职业健康安全管理与环境管理体系

Occupational Health and Safety Management System and Environmental Management System

NIO 蔚来已先后取得了 ISO14001 环境管理体系以及 ISO45001 职业健康安全管理体系的双认证。

我们根据 ISO14001 中 PDCA (Plan, Do, Check, Action) 的模式建立环境管理的自我约束机制, 从最高管理层到每位员工都积极关注业务发展与环境保护的关系, 不断改善环境绩效, 确保各过程、产品及活动中的各类污染控制进行有效的管理, 积极探索与“双碳”目标的可行性方案, 与可持续发展相结合, 最终实现 NIO 的良性发展。

而在 ISO45001 方面, NIO 也不仅仅关注于直接的职业健康和安全问题, 而是会考虑更大的社会期许。比如 NIO 的相关方管理, 如合作伙伴、周边邻居及政府部门等, 识别需要应对的风险和机遇, 完善危险源识别控制以及 EHS 法律法规合规性评价, 收集所处的环境和相关方的需求等, 实现 NIO 在职业健康安全方面的持续改进。

NIO has been certified both by the ISO14001 Environmental Management System and the ISO45001 Occupational Health and Safety Management System successively.

According to the PDCA (Plan, Do, Check and Action) mode in ISO14001, NIO has established a self-regulation mechanism for environmental management. From the top management to every employee, everyone pays close attention to the relationship between business development and environmental protection, and has been constantly improving the environmental performance, ensuring an effective control on pollution in various processes, products and activities. NIO also actively explores feasible plans to contribute to the goal of carbon peaking and carbon neutrality. Combined with sustainable development, this will ultimately establish a healthy development of NIO.

In term of the ISO45001, NIO not only focuses on occupational health and safety issues, but also set its ambition on top of more corporate social responsibilities. Take the management of relevant parties of NIO, such as supply chain partner, neighbors and government departments as an example, NIO has been able to identify and react to risks and opportunities, to improve hazard identification and control and EHS compliance evaluation, to collect needs and requirements of the current environment and relevant parties, and to achieve continuous improvement of NIO in terms of occupational health and safety.



2. 能源管理体系 Energy Management System

2020 年 3 月, 蔚来制造合作伙伴, 安徽江淮再次通过了能源管理体系认证, 这是我们在生产合规性方面不懈努力的成果。

我们建立了能源管理制度, 细化各级管理职责、明确管理要求, 通过两个措施不断提高能源使用效率。一是采用 OKR 指标绩效管理方法, 设定具有挑战性的能耗目标, 对各车间能源管控进行赏罚考核, 指标不断提升。二是设立能源质量奖 (指标达标奖、节能攻关奖) 进行奖励。江淮蔚来工厂已经建立了能源管理在线系统, 配备专业人员进行维护, 且在不断的完善中。工厂中的一、二、三级计量器具均已 100% 配备在线采集, 并已经建立了规范的能源计量器具使用清单, 以便进行能源审核和管控。

In March 2020, JAC Motors, the manufacturing partner passed the Energy Management System certification again, which is contributed by our joint unremitting efforts in production compliance.

JAC Motors has established an energy management system to refine management responsibilities, to clarify management standards at all levels, and to constantly enhance energy efficiency. Firstly, the OKR performance management method has been adopted to set challenging energy consumption targets, and mete out rewards and punishments for energy management and control in each workshop, with constantly rising thresholds. Secondly, several quality awards on energy have been set up (e.g. awards for reaching targets, awards for new energy saving technologies, etc.). The JAC-NIO Plant has established an online energy management system, which is maintained by professionals, and is under constant improvement. The level-1, level-2 and level-3 measuring instruments of the plant have all been upgraded to support online data collection. NIO has formulated a standardized list of energy measuring instruments for energy auditing, management and control.

(三) 能源资源消耗 Energy and Resource Consumption

江淮蔚来工厂涉及能耗消耗种类包括: 水、电、天然气、压缩供气、冷冻水、锅炉热水等。我们以建成绿色工厂, 获得 LEED 认证为目标。预计在绿色工厂完全建成后, 清洁能源占比在总能源用量中大于 20%, 运营能耗费用低于 600 元/台, 基于 10 万台产量上单车用电控制在 600 度内。

在工厂的转型和发展中, 我们将围绕以下几个方面开展节能工作:

The types of energy consumed in the JAC-NIO advanced manufacturing center include water, electricity, natural gas, compressed gases, chilled water, boiler water, etc. In the meantime, NIO aims to build its new manufacturing facility in NeoPark into a green factory with LEED certification. It is estimated that after the factory is completed, clean energy will account for more than 20% of the total energy consumption, and the energy cost for operations will be less than RMB 600 per unit. Based on the annual capacity planning of 100,000 units, the electricity consumption will be controlled within 600 kWh per vehicle.

In the transformation and development of the factory, we will focus on the following aspects to further save energy.

01

清洁能源 Clean energy

光伏及蒸汽的使用
utilizing photovoltaics
and steam power

02

厂房、备设施 Equipment and facilities

余热回收、地源热泵、
高效电机、LED 照明及天窗使用
utilizing waste heat, ground source heat pumps,
high-efficiency motors, LED lighting, and skylights

03

生产工艺 Production processes

硅烷工艺、水性漆工艺
以及冷连接工艺使用
utilizing silane, water-based
paint and cold joining process

04

资源回收再利用 Resource recycling

包括循环水、浓水、废料、废水
circulating water, concentrated water,
waste and wastewater

1.能源消耗 Energy Consumption

据统计，蔚来在 2019 年消耗 3411.27 万度电，248.36 万立方天然气，综合能耗 6924.46 吨标煤，单台 0.3396 吨标煤；

2020 年消耗 3875.83 万度电，327.41 万立方天然气，综合能耗 8364.84 吨标煤，单台 0.1882 吨标煤；

2021 年 1-8 月份消耗 4285.90 万度电，360.126 万立方天然气，综合能耗 9228.76 吨标煤，单台 0.1600 吨标煤；

2020 年相较于 2019 年，单台能耗下降 44.48%；

2021 年 1-8 月份相较于 2020 年，单台能耗下降 14.98%。

According to statistics, in 2019, NIO consumed 34,112,700 kWh electricity and 2,483,600 cubic meters of natural gas, representing a total consumption of 6,924.46 tons of coal equivalent (tce), or 0.3396 tce per vehicle.

In 2020, NIO consumed 38,758,300 kWh of electricity and 3,274,100 cubic meters of natural gas, representing a total consumption of 8,364.84 tce, or 0.1882 tce per vehicle.

From January to August 2021, NIO has consumed 42,859,000 kWh of electricity and 3,601,260 cubic meters of natural gas, representing a total consumption of 9,228.76 tce, or 0.1600 tce per vehicle.

Compared with 2019, the energy consumption per unit was reduced by 44.48% in 2020.

Compared with 2020, the energy consumption per unit has been reduced by 14.98% in the first eight months in 2021.

	2019年	2020年	2021年(1-8月)
单台能耗(tce) Tce per unit	0.3396	0.1882	0.1600
与上一周期相比 YoY comparison	—	-44.48%	-14.98%

蔚来不断推进识别管理节能和技术节能项目，现已采取了一系列措施促进绿色工厂的实现：

推广清洁能源

一期光伏投入运营 5.028MW，平均年发电量 480 万，自用 430 万，上网 50 万，每年节约 590 吨标煤，减少 4454.4 吨碳排放，发电量预计占 2021 年工厂总用电量的 9% 左右。

Promote clean energy

In the first phase, a total PV (photovoltaic) capacity of 5.028 megawatts (MW) was installed which can produce 4.8 million kWh per year, among which 4.3 million kWh has been consumed and 0.5 million kWh has been fed back to the grid. The power generated by PV in one year is equivalent to saving 590 tce and reducing carbon emissions by 4,454.4 tons. The power generation is expected to account for about 9% of the total power consumption of the factory in 2021.

厂房、设备节能设施

烘房余热回收装置

目前在涂装分厂电泳、中途、面漆三个烘房，安装了 3 套烘房废气余热回收装置、参与锅炉热水的升温，每年可节约至少 30-40 万立方天然气。每年节约 440 吨标煤，减少 864.88 吨碳排放。

地源热泵系统

工厂目前投入使用 7 台地源热泵机组，总装 4 台、管理大楼 3 台，较制冷机组每年预计可节约 40-50% 用电，按照 20 年用电约 80 万计算，每年可节约 80 万度电，减少 100 吨标煤，可减少 562.80 吨碳排放；同时在地源热泵系统中，设立蓄能罐，利用低谷电降低水温蓄能，峰、平使用，减少能源使用费用。

高效电机使用

严格按照国家相关能效标准和淘汰目录要求，杜绝高耗能电机使用。

LED照明灯具全面使用

同时厂房相对传统厂房增设天窗采光，充分利用自然光，减少能源使用，总计可减少照明用电约 50%。



Energy-saving facilities and equipment

Waste heat recovery device in paint drying room

At present, we've installed the waste heat recovery device in three paint drying rooms for e-coating, mid-coating, and top coating respectively. By using waste heat to heat boiler water, the device can save at least 300,000 to 400,000 cubic meters of natural gas every year, equivalent to 440 tce and contributing to carbon emissions reduction by 864.88 tons.

Ground-source heat pump system

The factory currently has seven ground-source heat pump units in use, including four in the general assembly shop and three in the office building. Compared with the refrigeration units, it is estimated to reduce electricity consumption by 40 to 50% every year. Based on the electricity consumption of about 800,000 kWh in 2020, the system can save 800,000 kWh of electricity every year, equivalent to the saving of 100 tce, and contributing to carbon emissions reduction by 562.80 tons. In addition, energy storage tanks have been installed in the ground source heat pump system to store off-peak electricity that can be used during peak and standard hours to reduce energy cost.

High-efficiency motor

NIO has been strictly following the relevant energy consumption and efficiency standards, as well as the phase-out category in China to decisively eliminate the use of high-consumption motors.

LED lightings

Compared with the traditional factory buildings, NIO's factory has utilized skylights to make full use of natural light and reduce energy use, which can reduce the lighting power consumption by about 50% in total.



改进生产工艺

涂装采用环保节能的硅烷工艺

硅烷处理是以有机硅烷为主要原材料，对金属或非金属材料，进行表面处理的过程，硅烷工艺相较传统的磷化工艺，常温下即可正常运行，不需要额外的加温，节省加热能源。

涂装采用行业领先的3C2B水性漆工艺

水性漆为无公害产品，在生产过程中无废渣、废气、废水排放，不存在环境污染，减少处理过程的能源消耗。

焊装采用最先进的铝车身冷连接工艺

分别为热融自攻铆接(FDS)、铝点焊、冷金属过度弧焊、自冲铆接(SCR)、激光焊、高强度抽芯拉铆，均达到100%的自动化率，较传统工艺减少焊接烟尘的产生，同时减少能源消耗。



Improve production processes

The coating adopts the environmentally friendly and energy-saving silane process

Silane treatment is a process of treating metal or non-metal surfaces with organosilanes as the major raw material. Compared with the traditional phosphating process, the silane process can operate at room temperature without additional heating, thus saving heating energy.

The coating adopts the industry-leading 3C2B water-based paint process

The water-based paint is a pollution-free product, and the process doesn't discharge of waste residue, waste gas, or waste water, with no environmental pollution and lower energy consumption in the treatment process.

The welding adopts the most advanced cold joining processes for aluminum body

including flow drill screw (FDS), aluminum spot welding, cold metal transfer (CMT), self-piercing riveting (SPR), laser welding, and high-strength self-plugging riveting, which are all fully automated to reduce welding fume and energy consumption compared with traditional processes.

回收再利用

涂装车间在制备纯水过程中会产生部分浓水，用于车间循环水池、滑梯清洗间等区域用水，每日减少自来水用量100吨及污水处理消耗的电能和药剂。

冲压车间生产线，配备废料线，统一回收废边角料再利用，节约原材料采购成本。

对工业废水进行再处理，使其达到回用标准，用于厂区卫生间、保洁和绿化用水，每日减少废水排放量200吨。

充分使用循环水，全年可保证工业用水重复利用率达到93%以上，减少自来水使用量。

我们同样计划了一系列相关举措在接下来的时间中进一步减少能源消耗 We have drawn up a series measures to further reduce energy consumption

快速推进二期光伏项目实施

二期按目前方案新增12.99MW，届时一期和二期总计18.018MW。预计全年发电量1800万度，全年减少2212.2吨标煤，可减少12663吨碳排放。

继续运用余热回收装置

二期涂装会继续增加三个烘房的废气余热回收装置，一期和二期全年共计可节约80万立方天然气，节约880吨标煤，可减少1729.7吨碳排放。

Recycling

Some concentrated water generated in the process of preparing pure water in the paint workshop, can be used for the workshop's circulating pool, skid cleaning and other purposes, reducing the tap water consumption by 100 tons per day as well as electricity and chemicals consumed by sewage treatment.

The production line in the stamping shop is equipped with a waste processing line to uniformly recycle and reuse waste and scraps to save raw material costs.

Industrial wastewater is retreated according to the reuse standard, and used for toilets, clean-keeping, and greening in the factory area, reducing the discharge of wastewater by 200 tons per day.

Circulating water is fully used to ensure that the reutilization rate of industrial water reaches more than 93% throughout the year to reduce the use of tap water.

Rapidly implementation of the Phase Two of the photovoltaic project

A capacity of 12.99MW will be added in the second phase according to the current plan, and by then, the total capacity of the first and second phases will be 18.018MW, and the annual power generation is expected to be 18 million kWh, which can save 2,212.2 tce and reduce carbon emissions by 12,663 tons every year.

Continue to use waste heat recovery devices

Waste heat recovery devices for three drying rooms will be further added to the coating process in the second phase, and the waste heat recovery devices in the first and second phases will save 800,000 cubic meters of natural gas and 880 tce, and reduce carbon emissions by 1,729.7 tons in total every year.

一期能源中心高耗能设备的节能优化整改

通过增加智能控制、定频改变频等手段实施，每年减少能源中心 8% 左右的能耗使用，约 130 万度，每年可节约 159.77 吨标煤，减少碳排放 914.55 吨。

针对一期能源中心和涂装高耗能设备和工序

联合工厂二期项目组推进落实节能优化整改，增加能源中心空压机、制冷机组等高能设备自动化智能控制和在线自动化维保功能，通过智能化控制减少能源使用浪费的同时，确保高能耗设备的高效运转，预计全年可节约电能消耗约 200 万度，每年可节约 245.8 吨标煤，减少碳排放 1407 吨。针对涂装面漆工序工艺要求高，能源消耗的大问题，优化增加专门的工艺保障手段，减少能源消耗，如：闪干含水量问题，增加专用的除湿设备，降低制冷机组温度需求。

洽谈储能电站项目

充分利用低谷电价，建设储能电站，谷电储能，峰、平生产使用，配合电网清洁能源消纳，同时降低工厂用电费用，每年预计可节约 60-80 万元。

Optimize and rectify the high energy-consuming equipment in the first phase of the energy center

By adding intelligent controls, and changing fixed frequency to variable frequency, the annual energy consumption of the energy center will be reduced by about 8% every year, which is about 1.3 million kWh, saving 159.77 tce, and reducing carbon emissions by 914.55 tons every year.

Measures for the first phase of the energy center and the high energy-consuming coating equipment and processes

To collaborate with the second-phase project team of the joint factory to promote the implementation of energy-saving optimization and rectification by adding automatic and intelligent control and online automatic maintenance functions for high energy-consuming equipment such as air compressors and refrigerating units in the energy center, so as to reduce energy waste through intelligent control while ensuring the efficient operation of high energy-consuming equipment. It is estimated that this can reduce the annual electricity consumption by about 2 million kWh, saving 245.8 tce, and reducing carbon emissions by 1,407 tons every year. Regarding the problem of the high technical requirements and the large energy consumption of the coating process, special technique assurance measures are to be added to reduce energy consumption. For example for the water content problem in flash drying, special dehumidification equipment is added to reduce the energy consumption of the refrigerating unit.

Negotiate on the energy storage power station project

The project will make full use of the off-peak electricity price, and build an energy storage power station which can store off-peak electricity for production use at peak and flat usage time, to support the clean energy consumption and accommodation of the grid while reducing the electricity cost of the factory by an estimated RMB 800,000 per year.

2.水资源消耗 Water Resources Consumption

据统计，蔚来 2019 年总计使用 18.32 万立方米自来水，单台 8.99 立方米；

2020 年总计使用 18.36 万立方米自来水，单台 4.13 立方米；

2021 年 1-8 月份总计使用 20.03 万立方米自来水，单台 3.99 立方米；

2020 年相较于 2019 年，单台水耗下降 54.06%；

2021 年 1-8 月份相较于 2020 年，单台水耗下降 3.29%。

Compared with 2019, the per unit water consumption was reduced by 54.06% in 2020.

From January to August in 2021, the per unit water consumption was reduced by 3.29% year over year.

	2019年	2020年	2021年(1-8月)
单台水耗(m³) Per unit water consumption (m³)	8.99	4.33	3.99
与上一周期相比 Y-o-Y comparison	—	-54.06%	-3.29%

在水资源消耗管控上，蔚来采取的措施包括：

With regards to water consumption management and control, NIO's measures include:

- 01 采用节水型器具；
Use of water-saving devices.
- 02 涂装车间在制备纯水过程中会产生部分浓水用于车间循环水池、滑梯清洗间等区域用水，每日减少自来水用量 100 吨及污水处理消耗的电能和药剂；
Some concentrated water produced in the pure water preparation process in the painting workshop is used for the recycling pool, skid cleaning room and other areas of the shop, reducing daily consumption of tap water by 100 tons per day and saving the electricity and chemicals consumed in the process of sewage treatment.
- 03 对工业废水进行再处理，使其达到回用标准，用于厂区卫生间、保洁和绿化用水，每日减少废水排放量 200 吨；
Industrial wastewater is re-treated to meet the reuse standard for the toilets, clean-keeping and greening in the factory area, reducing the discharge of wastewater by 200 tons per day.
- 04 充分使用循环水，全年可保证工业用水重复利用率达到 93% 以上，减少自来水使用量。
Recycled water is fully used to ensure that over 93% of industrial water is reused throughout the year to reduce the amount of tap water used.

(四) 温室气体排放 Greenhouse Gas Emissions

蔚来致力于以可持续的方式为用户制造绿色环保产品，同时为低碳经济的发展做出贡献。我们已经从三个方面来提升能源利用效率，减少制造环节的碳排放：

1、源头控制：从工厂建设到设备采购，严格按照国家相关节能标准和要求执行，采

NIO is committed to producing green and environmentally friendly products for users in a sustainable manner, and also contributing to the development of a low-carbon economy. We have improved the efficiency of energy consumption and reduced carbon emissions in the manufacturing process from three aspects:

1. Source control: From factory construction to equipment procurement, we've strictly adhered to relevant national energy-saving stan-

用节能设备、装置、杜绝高能耗设备使用，减少能耗消耗，从而减少温室气体排放。

2、过程管控：严格按照能源管理体系，开展各项能源管理工作，明确组织职责，绩效指标拉动，人员意识提升、过程使用管控，减少能源投入，减少温室气体排放。

3、节能降耗：深化技术节能和新能源应用，开展节能降耗工作，不断扩大光伏、余热回收、智能控制等新能源、新技术，减少能源投入，减少温室气体排放。

根据计算核查，2019 年全厂温室气体排放量 26734tCO₂；2020 年温室气体排放量 31775tCO₂。

dards and requirements, adopted energy-saving equipment and devices, and eliminated and prohibited the use of high energy-consuming equipment, with an aim to reduce energy consumption, and thus reduce greenhouse gas emissions.

2、Process control: Strictly in line with the energy management system, we've carried out energy management from various aspects including setting clearly the roles and responsibilities of relevant organizations, motivating through performance indicators, raising people's awareness and managing and controlling the consumption in the process, to reduce energy investment, and greenhouse gas emissions.

3、Energy saving and consumption reduction: We've deepen technology-enabled energy saving and the application of new energy, kept identifying and carried out energy saving and consumption reduction measures by expanding the application of new energy and new technologies such as photovoltaics, waste heat recovery and intelligent control to reduce energy consumption and reduce greenhouse gas emissions.

According to the calculation and verification, the greenhouse gas emissions of the whole factory were 26,734t CO₂e in 2019 and 31,775t CO₂e in 2020.

(五) 污染物持续深度治理 Continuous Advanced Treatment of Pollutants

1. 废气排放 Exhaust Gas Discharge

江淮蔚来工厂中废气产生主要工序或设备：冲焊打磨、焊接（处理方式干式除尘设备）；涂装喷漆、烘干（处理方式：文丘里、吸附、TNV）；能源中心锅炉（处理方式：更换低氮燃烧器）。全厂共 17 个废气排放口，每季度对主要污染物（非甲烷总烃、粉尘、氮氧化物、二氧化硫等）进行检测，并计划安装挥发性有机物在线监测设备。

The main processes or equipment that generate exhaust gas in JAC-NIO Plant include stamping and polishing, welding (treatment method: dry and wet dust removal equipment); painting, drying (treatment method: Venturi, adsorption, TNV); and boilers in the energy center (treatment method: shifting to low-nitrogen burners). There is a total of 17 exhaust gas outlets in the factory. The main pollutants (NMHC, dust, NOx, SO₂, etc.) are tested on a monthly or quarterly basis. We also plan to install VOCs online monitoring devices.

主要废气污染物排放量(2021年1-6月)
Emission Volumes of Major Exhaust Gases (January-June 2021)

主要污染物排放量 (t) Major pollutant emissions (t)	二氧化硫 Sulfur dioxide SO ₂	氮氧化物 Nitrogen oxides NOx	颗粒物 Particulates	挥发性有机物 Volatile organic compounds (VOC)
2021年(1-6月) January to June, 2021	1.1	1.5	10.2	6.5

* 废气排放总量根据月季度污染物检测数据、标杆烟量及流速、设备运行时间，按污染物计算公式进行换算。

*The total exhaust gas emissions are converted according to the pollutant calculation formula, combining the monthly and quarterly pollutant test data, the benchmark smoke volumes and flow rates, and the operating time of the equipment.

2. 废水排放 Wastewater Discharge

全厂废水包括生产废水（冲压车间模具清洗水、涂装车间前处理设备连续排放的脱脂废水、硅烷处理废水、电泳设备连续排放的电泳废水、前处理设备间歇排放的预脱脂废液、脱脂废液、硅烷废液、电泳设备定期清洗排放的电泳废液、面漆喷漆室定期排放的喷漆废水和总装淋雨试验废水）、生活污水和各循环系统的排水。生产废水经管道直接进入综合污水处理站各处理工艺进行处理，食堂废水经隔油池预处理后同生活污水一起进入综合污水处理站处理，以上废水经综合污水处理站处理一起排放至市政污水管网，再经合肥经济技术开发区污水处理厂深度处理，属于间接排放，根据《环境影响评价技术导则地表水环境》(HJ2.3-2018)，地表水环境影响评价等级为三级 B。对于水污染影响型三级 B 评价。主要评价内容包括：水污染控制和水环境影响减缓措施有效性评价；依托污水处理设施的环境可行性评价。

The wastewater of the factory comes from production (die cleaning water in the stamping shop, degreased wastewater continuously discharged from the pretreatment equipment of the painting shop, silane treatment wastewater, electrophoresis wastewater continuously discharged from the electrophoresis equipment, pre-degreased waste liquid intermittently discharged from the pretreatment equipment, degreased waste liquid, silane waste liquid, electrophoresis waste liquid discharged during regular cleaning of the electrophoresis equipment, spray paint wastewater regularly discharged from the top coat spray booth, and rain test wastewater discharged from the general assembly shop), domestic sewage and various circulation systems. The production wastewater is directly sent via pipelines to be treated by various techniques in the integrated sewage treatment station, and the canteen wastewater is pretreated by the grease trap and then, together with domestic sewage, goes to the integrated sewage treatment station for treatment. After the treatment in the integrated sewage treatment station, all these types of wastewater are discharged to the municipal sewage ductwork, and then to the sewage treatment plant of Hefei Economic and Technological Development Zone for advanced treatment, which consists of an indirect discharge. According to the Technical Guidelines for Environmental Impact Assessment - Surface Water Environment (HJ2.3-2018), the surface water environmental impact assessment grade is III B. And the type of water pollution is assessed by III B. The major assessment items include: Assessment of the effectiveness of water pollution control and water environmental impact mitigation measures; and assessment of the environment feasibility of sewage treatment facilities.

2020 年,由于产量增加和工艺优化,我们废水排放总量增加到了 21.38 万吨,污水收集率为 75.51%,复用水 26274 吨,平均单台处理量为 3.26 吨。相较于 2019 年的单台废水排放量为 5.36 吨,同比降低 39.2%。

江淮蔚来工厂污染物浓度对比 (mg/l)
Concentrations of Pollutants in JAC-NIO Plant (mg/l)

项目 Project	COD	NH ₃ -N	TP
2019	23.45	4.87	0.15
2020	55.60	4.77	0.43
达标情况 Status	达标 Up to standard	达标 Up to standard	达标 Up to standard

3.固废排放 Solid Waste Discharge

蔚来按年制订危险废物管理计划,统计不同种类固体废物的数量、来源及合理的管理措施。包括:改进设计、采用先进的工艺技术和设备、使用清洁的能源和原料、改善管理、危险废物综合利用、提高污染防治水平等。

江淮蔚来工厂的废弃物处理遵循以下流程。对于生产固废,我们首先识别工厂生产过程中产生的固体废弃物种类(废胶沾染物、废油漆、废化工桶、废旧电池等),而后寻找有资质厂家签订处置合同进行处理,按流程各车间将生产产生的危废运送到危废处理站并进行分类称重登记,专业厂家对危废进行统一整理,出厂前再次进行分类称重,由工厂环保专员将数据备案至安徽省固体废物管理系统,并由专业处理厂家的专员对数据进行确认。而非危废

In 2020, due to increased production volume and technique optimization, the total wastewater discharge increased to 213,800 tons, the sewage collection rate was 75.51%, the amount of reused water was 26,274 tons, and the average treatment capacity per unit was 3.26 tons. Compared with the single-unit wastewater discharge volume of 5.36 tons in 2019, there was a year-on-year decrease of 39.2%.

江淮蔚来工厂污染物浓度对比 (mg/l)
Concentrations of Pollutants in JAC-NIO Plant (mg/l)

项目 Project	COD	NH ₃ -N	TP
2019	23.45	4.87	0.15
2020	55.60	4.77	0.43
达标情况 Status	达标 Up to standard	达标 Up to standard	达标 Up to standard

NIO has formulated hazardous waste management plans annually which record the quantity and sources of different types of solid waste as well as reasonable management measures, including improving design and management, adopting advanced technology and equipment, utilizing clean energy and raw materials, rational usage of hazardous waste, and progress in the pollution control.

The waste treatment of the JAC-NIO Plant is as follows. For solid waste produced in manufacturing, we first identify the types of solid waste (waste objects contaminated with glue, waste paint, waste chemical barrels, waste batteries, etc.), and then approach to companies with credentials and sign a disposal contract for treatment. For hazardous solid waste, each workshop follows the process and transports it to the hazardous waste treatment station for classification, weighing, and registration, which later will be handed to the professional companies to go through the procedures of classification and weighing again before leaving the plant. Next, the plant's environmental protection specialist will file the data to the Anhui Provincial Solid Waste Management System, and the data also needs to be confirmed by relevant specialist

则由第三方专业厂家进行统一收集处理。生活固废由第三方专业厂家进行统一收集处理。

2020 年江淮蔚来工厂一般固废排放计 3611.1 吨,危险废物排放计 464.7 吨。2021 年计划处理危险废物 1116 吨。

sional treatment company. Non-hazardous waste is collected and treated by a third-party professional company. Domestic solid waste is collected and treated by a third-party professional company in a unified manner.

In 2020, the JAC-NIO Plant discharged 3,611.1 tons of general waste and 464.7 tons of hazardous waste. In 2021, 1,116 tons of hazardous waste is expected to be treated.

工厂的废弃物汇总表
Summary of Factory Waste

	单位 Unit	2019	2020
固废排放总量 Total Solid Waste	Tons	558.5	4075.8
无害废物总量 Total Non-Hazardous Waste	Tons	255.3	3611.1
固废类型数量 Number of Solid Waste	Types	32	40

4.厂界环境噪声 Industrial Enterprises Noise

现有工程噪声源主要为冲压车间压力机产生的噪声、涂装车间风机、总装车间下线及检测处、空压站空压机、循环水系统冷却塔、短试车跑道等高噪声设备。通过全封闭、低噪声装备、减震设计、改良测试路面等方法进行噪声消除。

厂界噪声每季度由有资质第三方机构进行检测,于厂界四周设置检测点位,并对高噪音冲压车间进行重点关注。经过检测,不同监测点厂界噪声值最大为昼间 56.7dB,夜间 48.2dB,均符合国家的环保标准要求。

The existing engineering noise sources are mainly stamping presses in the stamping shop, fans in the paint shop, the end-of-line inspection area in the general assembly shop, air compressors in the air compressor station, the cooling tower of the circulating water system, the short test track, and other high-noise equipment. Noise is eliminated through such methods as the use of fully enclosed and low-noise equipment, shock absorption design, and improved test road surface.

The industrial enterprises noise is detected by a qualified third-party organization every quarter, and detection points are set up at the factory boundary. Special attention is paid to the high-noise stamping workshop. After detection, the maximum noise value at the factory boundary among different monitoring points is 56.7dB during the day and 48.2dB at night, which both meet the requirements of national environmental protection standards.

LOGISTICS

物流

(一) 战略与管理 Strategy and Management

可持续发展战略已经成为蔚来发展的基石之一，作为新能源车企，更需要在节能减排、低碳环保、构建全面、长期可持续发展方面做出自己的表率作用。2021 年，蔚来在绿色物流发展方面逐步进入了深水区，与供应链管理部门互相协同、合作，结合“数字化”这一现代企业的发展方向，将“绿色”这个概念进一步推向合作伙伴，从“挖矿”开始评估端到端整个物流环节内的碳排放产生，并由此建立长期、有效的改善措施，为“碳达峰、碳中和”这一国家目标标准时达成贡献出自己的力量。

Sustainable development strategy has become one of the cornerstones for the development of NIO. As a EV startup, it is more necessary for NIO to set an example in energy saving, emission reduction, low carbon development, and environmental protection so as to promote comprehensive and long-term sustainable development. In 2021, with its higher maturity of green logistics, NIO has started coordination and cooperation via Supply Chain Development departments to further promote the "green" concept to partners with the combination of digitalization, which will be the future for modern enterprises. It conducts an end-to-end evaluation on carbon production and emission in the entire logistics process as early as the mining of raw materials, based on which a whole set of long-term and effective improvement measures are established, contributing to the completion of the national goal of carbon emission peak and carbon neutrality.

(二) 绿色包装 Green Packaging

蔚来从建立之初就推行循环包装应用到国产零件的运输，从 2017 年 ES8 车型到现在的 ES6/EC6 车型的量产，蔚来循环包装使用率已高达 98%；使用的包装材料无毒无害，100% 可降解；现有车型使用的循环包装每车可以减少 0.8 吨的碳排放。

Since its establishment, NIO has been promoting the application of recyclable packaging to the transportation of domestic parts. Up to date, NIO's use of recyclable packaging registers 98%, including the mass production vehicle models of ES8 in 2017 and the current ES6 and EC6. The packaging materials used are non-toxic, harmless, and 100% biodegradable. Currently, recyclable packaging used in existing models reduces carbon emissions by 0.8 tons per vehicle.

LOGISTICS

物流

战略与管理

绿色包装

绿色运输

绿色储存

NIO

在包装上, 蔚来将在后续进一步做到
In terms of packaging, NIO plans to achieve the following goals in the next phase

可循环: 后续进一步提升可循环包装比例至 99%, 减少一次性包装的使用, 进一步单车减少 8.87Kg 的碳排放。

可共享: 考虑双品牌、多平台、多车型兼容性, 85% 采用标准包装方案 (当前 78%); 规整、精简外箱尺寸; 统一定位、支撑块标准; 共享合作伙伴及社会资源, 3 年内减少单车 4.4Kg 的碳排放。

标准化: 对包装尺寸进行标准化, 大大增加运输装载率, 同时增加循环包装的可共用性。

轻量化: 通过优化包装结构, 减少包装材料的使用量, 有利于降低包装总重量, 5 年内减少单车 3.96Kg 的碳排放。

绿色化: 使用无毒无害的包装材料, 且包装材料几乎 100% 可降解。

Recyclable: Further increase the proportion of recyclable packaging to 99%, reduce the use of disposable packaging, and reduce the carbon emissions by 8.87kg per vehicle.

Shareable: Consider dual-brand, multi-platform, and multi-model compatibility, adopt standard packaging solutions for 85% of products (currently at 78%), as well as regular and simple outer carton sizes, unify the positioning and support block standards, share partners' and social resources to further reduce the carbon emissions by 4.4kg per vehicle within 3 years.

Standardized: Standardize the packaging size to greatly increase the transportation payload and improve the compatibility of recyclable packaging.

Lightweight: Optimize the packaging structure to reduce the amount of packaging materials, which helps reduce the total weight of the packaging, so as to reduce the carbon emissions by 3.96kg per vehicle within 5 years.

Green: Use non-toxic and harmless packaging materials which are almost 100% degradable.



(三) 绿色运输 Green Transportation

1. 零部件的绿色运输 Green Transportation of Parts

2021 年开始, 蔚来致力于绿色运输政策的研究及运输优化方案的推行, 全年零部件运输距离 (蔚来承担运费) 约 470 万公里, 其中公路运输 130 万公里, 铁路 130 万公里, 海运 4 万公里, 空运 210 万公里, 通过铁路比例的调整 (2020 年 31% VS 2021 年 37%)、循环取货 (MILK RUN) 的逐步推开 (新设 5 条线路, 整合 12 条运输线路)、短途新能源车辆的增投 (全年预计增加 5 台) 等措施的推进, 切实、有效地降低了碳排放, 较 2020 年单车碳排放降低 36 公斤。

Since 2021, NIO is committed to the study of green transportation policies and the implementation of transportation optimization plans. The annual transportation distance of parts (for which NIO bears the freight) is expected to reach about 4.7 million kilometers, including 1.3 million kilometers by road, 1.3 million kilometers by railway, 40 thousand kilometers by sea, and 2.1 million kilometers by air. Through the implementation of such measures as the adjustment of the railway transportation ratio (31% in 2020 vs. 37% in 2021), milk run (5 new routes have been established, and 12 routes integrated), and the increased investment in short-distance new energy vehicles (expected to add 5 units throughout the year), the carbon emissions per vehicle will be effectively reduced to be 36 kilograms lower than that of 2020.

	2020年CO ₂ 排放 CO ₂ emissions in 2020	2021年预计 CO ₂ 排放 Expected CO ₂ emissions in 2021	2020年单车 CO ₂ 排放 CO ₂ emissions per vehicle in 2020	2021年单车 CO ₂ 排放 CO ₂ emissions per vehicle in 2021	单车CO ₂ 排放降低 Reduced CO ₂ emissions per vehicle
公路 Highway	242804 Kg	1399084 Kg	20 Kg	15 Kg	5 Kg
空/海/铁 Air/Sea/Railway	2808617 Kg	6947486 Kg	158 Kg	127 Kg	31 Kg

在疫情肆虐国际运输受阻的艰难时期, 物流团队另辟蹊径加大一带一路中欧班列火车的投入使用, 在优化线路提升时效并有效的减少德国线的空运频次同时也降低了碳排放。在疫情的特殊时期, 仍受限于全球供应商供应能力的下降。相信进口零件在疫情得到进一步的控制后, 碳排放会有更为显著的优化和下降。

In a difficult period when the pandemic is still raging and the international transportation hampered, the logistics team is creative in leveraging the China-Europe Railway Express of the Belt and Road Initiative, which not only optimizes the routes to improve the timeliness and effectively reduces the frequency of airflights with Germany, but also reduces carbon emissions. However, with the pandemic still ravaging, restraints still exist due to the decline in the supply capacity of global suppliers. We believe that after the pandemic situation improves, the carbon emissions of imported parts can be significantly reduced.

在筹建中的合肥新桥智能电动汽车产业园项目中，蔚来将“低碳、节能、环保”作为产业园内运输的唯一准入标准及长期发展策略，项目一期规划了无人自动驳运车及无人自动拖车两种料件驳运方式，用于产业园内的料件接驳，产业园内料件运输全面实现无碳排。

2. 整车绿色运输 Green Transportation of Vehicles

汽车整车物流已经从运输、仓储等物流基础服务逐步向信息、数据等物流增值服务方向转变，共享、绿色、智能成为整车物流高质量服务的新概念，新的服务模式和服务手段不断创新应用。建立云仓系统，拉通城市端资源，实现整车物流系统的整体效率最优化和对环境的最低损害。合肥工厂 2021 年平均公里数约 887，比 2020 年下降 19 公里，平均每年碳排放量减少约 3 万千克；城市端 2021 年平均公里数约 166，比 2020 年下降 54 公里，平均每年碳排放量约减少 2.5 万千克。

为响应国家号召，并满足公司降本增效的需求，蔚来汽车制定了整车物流多式联运的长期发展规划。预计 2021 年起，通过提升水铁运输比例至 10%（根据目前潜在运作线路运量占比），平均每年碳排放量减少约 6.8 万千克。

In the Hefei NeoPark Project which is under way, NIO puts "low-carbon, energy-saving, and environmentally friendly" transportation as the only admittance criterion and long-term development strategy. In the phase I of the project, self-driving shuttle vehicles and self-driving haulers are planned for the transfer of materials, realizing zero-carbon emission material transportation in the park.

Vehicle logistics has gradually shifted from basic logistics services such as transportation and warehousing to value-added ones like information and data. Sharing, green, and intelligence are becoming synonyms for high-quality vehicle logistics services while new service models and methods are continuously innovated and applied. Hub, NIO's cloud warehouse system, has been established to integrate the resources on the city end to maximize the overall efficiency of the vehicle logistics system and minimize the damage to the environment. The average logistics distance for the Hefei plant in 2021 is expected at about 887 kilometers, a decrease of 19 kilometers from 2020, and the average annual carbon emissions are estimated to reduce by about 30,000 kilograms. The average vehicle logistics distance on the city side is expected to reach about 166 in 2021, a drop of 54 kilometers from 2020, and the average annual carbon emissions expected to fall by about 25,000 kg.

In response to the national call and the company's need to reduce costs and increase efficiency, a long-term development plan for multi-modal transportation of vehicle logistics has been formulated. It is expected that starting from 2021, by increasing the proportion of water and railway transportation to 10% (based on the payload proportion of current and potential routes), the average annual carbon emissions will be reduced by about 68,000 kg.



(四) 绿色储存 Green Storage

2021 年，蔚来坚定执行绿色仓储目标与战略，整合仓储资源，在 2020 年运行的基础上，寻找绿色低碳运作改善点，其中通过价值流分析，优化了厂内物流翻包作业区域及存储区域，节省存储面积 383 平方米，相应减少 1 台叉车的工作量，提高了运作效率，减少了叉车耗电带来的碳排放量（约 40 千克二氧化碳 / 天）；通过仓库面积优化，蔚来在 JPH40 不变的情况下，减少中转库面积 2000 平方（约减少 7%），减少叉车投诉 2 台，减少了叉车耗电带来的碳排放量（约 80 千克二氧化碳 / 天）；在新桥智能工业园区，依照绿色标准规划仓库，锂电池叉车、LED 照明、太阳能电池板等都已经规划在方案内等待实施；新桥智能园区中转库布局紧邻工厂，最大化减少料件驳运距离及驳运车辆投入，为降低碳排放添砖加瓦。

In 2021, NIO has firmly implemented the green warehousing goals and strategies, integrated warehousing resources, and looked for improvements based on the green and low-carbon operations in 2020. Through value flow analysis, NIO has optimized the logistics transfer area and operation area of the factory to save 383 square meters of storage area, which has correspondingly reduced the workload of one forklift, improved operation efficiency, and reduced the carbon emissions caused by forklifts (about 40 kg CO₂/day). Through the optimization of the warehousing area, while still realizing 40 JPH capacity, NIO has reduced the transfer area by 2000 square meters (reduced by about 7%), and reduced two forklifts, which has also helped the carbon emissions caused by forklifts (about 80 kg CO₂/day). In the NeoPark, warehouses are planned in accordance with green standards. Lithium battery forklifts, LED lighting, solar panels have been included in the planning scheme. In the meantime, the transfer warehouse in the NeoPark has been arranged close to the factory, so as to minimize the material transfer distance, reduce the transfer vehicles, and contribute to the reduction of carbon emissions.



ECOLOGICAL CHAIN

蔚来生态链

(一) 供应链管理 Supply Chain Management

蔚来在追求自身产品极致环保性能的同时，致力于推动供应商共同进步。在蔚来 330 家零部件供应商中，与制造相关的主体有 230 家，其中 78.3% 的主体通过 14001 环境质量管理体系认证，超过行业平均水平。在供应商环保合规管理方面，蔚来注重全过程管控，主要开展了以下 3 个方面工作：

一是抓源头，提供合规指南。在新供应商导入之前，要求其签署《蔚来汽车供应商合作指南》，明确要求供应商需要通过 ISO14001 认证，必须遵守环保合规方面法律法规的要求。

二是抓筛选，不合规不纳入。在供应商筛选过程中，蔚来将绿色发展纳入其能力指标考量范围。在潜在供应商审核过程中，蔚来会确认供应商对法律法规的符合情况，特别是针对环保合规的法律法规。针对不符合要求的供应商，蔚来会积极推动其整改，对整改不到位的，拒不将其纳入蔚来供应体系。

三是抓过程，确保持续提升。在合作过程中，积极培养供应商可持续发展的意识和能力，每年针对量产供货的供应商进行年度过程审核，审核检查清单中列明“三废”检查要求，确认其环评报告和“三废”检测报告。一旦发现其有违规情况，会第一时间要求其立刻采取紧急措施，消除对环境

While pursuing the ultimate environmental performance of the products, NIO has been committed to promoting the common progress with our partners. Among 330 parts and component suppliers of NIO, 230 are manufacturing-related entities, of which 78.3% have passed the ISO14001 environmental quality management system certification, exceeding the industry average level. In terms of partner environmental compliance management, NIO attaches great importance of management in the whole process and mainly carries out the work in the following three aspects:

First, identifying the source and provide guidance which is compliant with laws and regulation. Before new partners join the business, they are required to sign the NIO Partner Cooperation Guide which clearly states the necessity for partners to be ISO14001-certified and comply with laws and regulations of environmental compliance.

Second, screening and selection. Non-compliant partners are not included. NIO has already included green development as a criterion for selection. When reviewing the potential partners, NIO would confirm if they are compliant with laws and regulations, especially the ones for environmental protection. For partners who fail to meet the requirements, NIO will actively promote rectification. Partners who refuse to do so will not be accepted into NIO partner system.

Third, continuous improvement. In the cooperation, NIO proactively cultivates partners' awareness and capability of sustainable development. NIO conducts process auditing for mass production partners on an annual basis, with the checklist on which the inspection requirements of the "three wastes" (waste water, exhaust gas and industrial residue) are included, and the EIA (environmental impact assessment) report and the test report of the "three wastes" are confirmed. Once non-compliant cases are found, emergency measures are required to be taken immedi-

ECOLOGICAL CHAIN

蔚来生态链

供应链管理

创新销售模式

车网互动

生态共建

NIO

的影响，并停产整改直至符合环保要求，杜绝影响进一步扩大。在日常合作过程中，还会积极推动供应商进行设备升级改造，主动提升其环保符合能力。

ately to eliminate impact to the environment, and suspend the production for rectification until the environmental requirements are met, which can put an end to the expansion of impact. In the daily cooperation, we have been actively promoting suppliers to upgrade their equipment and improve their environmental compliance.

(二) 创新销售模式 Innovative Sales Model

蔚来采取直营模式，蔚来 EHS 直接对城市区域公司施加影响和管理。目前蔚来采用的是订单式生产，用户统一从 NIO APP 下单，工厂依据订单信息进行生产，避免库存。

As NIO adopts the direct-sales model, our EHS team can directly influence and manages our regional companies. The make-to-order model of NIO enables users to put their orders on the NIO app, and the plant to manufacture according to the order information, avoiding overstocking.

蔚来 EHS 统一制定各区域公司管理层的领导力标准、明确各层级的职责和角色、各公司建立 EHS 组织及委员会、开发高风险管控项目及工具、准备事故及突发事件应急响应机制、安排各层级人员的意识培训及建立较强的 EHS 文化等。

NIO's EHS team is in charge of unifying the leadership standards of the management of all regional companies, defining the responsibilities and roles of positions at different levels, establishing EHS organization and committee at each regional companies, developing projects and tools for high risk management, formulating the response mechanism for accidents and emergencies, arranging awareness training for the personnel and developing a strong EHS culture.

目前蔚来共 34 个区域公司，计划每年认证 35% 的城市公司，并于 2023 年完成全覆盖。

NIO currently has 34 regional companies, and plans to certify 35% of them per year, which will be completed by 2023.



(三) 车网互动 V2X Interaction

1. 有序充电初体验 The Start of Organized Charging

从蔚来公司成立之初，立足在电力容量不足的场景，研发了有序充电产品“power share”，通过监控桩群的充电负荷，充分利用有限的容量多建桩，满足更多用户的充电需求。该应用也纳入国网在上海的有序充电小区试点中。同时，蔚来在上海、乌镇、杭州以及成都等地开展了自建桩群的有序充电试点，可节省配电建设投资近百万元。

Since the foundation of NIO, we have developed an organized charging solution called “Power Share” to tackle the insufficiency of electric capacity. By monitoring the load of chargers, it maximize the number of chargers with limited capacity to cater to users' need of charging facilities. This solution has also been included into the pilot project of State Grid in Shanghai. Meanwhile, NIO carried out the pilot project of self-built chargers in cities including Shanghai, Wuzhen, Hangzhou and Chengdu, which contributed to saving almost a million dollars of infrastructure investment.

2. 参与上海电网以及浙江的需求响应

Response to Power Load Shifting in Shanghai and Zhejiang

从 2019 年开始至今，蔚来组织上海的家充桩资源以及换电站资源参与电网的需求响应，其中家充桩资源主要参与填谷响应。累计参与 10 次削峰响应，5 次填谷响应，累计响应电量 24000 度。

Since 2019, NIO has been organizing Power Home chargers, the home charger of NIO, and Power Swap stations in respond of the demand of power supply for load shifting, with the home chargers mainly to balance the valley demand. In total, NIO has participated in 10 times of the action for peak load, and 5 times for valley load, with over 24,000 kWh of electricity utilized.

3. 参与京津冀的辅助服务

Auxiliary Services in Beijing-Tianjin-Hebei Region

组织京津冀的家充桩用户通过负荷聚合的方式参与辅助服务市场，助力华北电网的清洁能源消纳。2020 年 12 月 8 日至 2021 年 4 月 30 日，累计组织 4500 余名家充桩用户参与，促进清洁能源消纳累计 60 万度。

NIO has been organizing Power Home users of Beijing-Tianjin-Hebei region to assist the service market by collecting the load and promote the clean energy consumptions of Huabei region. From December 8th, 2020 till April 30th, 2021, we already organized more than 4500 household charging piles users to join. In total they promote the clean energy consumptions of 600 thousand kwh.

4. 与国网合作开展园区V2G充放电试点应用

Cooperate with the State Grid and launch the V2G community charging pilot application project

在上海嘉定汽车创新港地下停车场建设

NIO built 15 V2G (Vehicle to Grid) Bidirectional charging piles at the

了 15 台 V2G(Vehicle to Grid) 双向充电桩，是蔚来与国网电动围绕车网互动商业模式探索的一里程碑式应用。员工车主通过在家里低价充，在园区高价放，获取差价收益；园区业主通过使用 V2G 的电量降低整体用电成本。在结算方面，蔚来采用积分结算方式，用户通过放电获取蔚来积分奖励。

5.光储充换一体化应用试点

Pilot of the Integration of Solar Power

上海汽车博览公园建设了一座“光储充换一体化电站”，从 2019 年正式运营起，累计用能近 140 万度，开展换电近 3 万次，消纳新能源超过 5 万度。

该项目在能源融合上实现了光伏就地消纳，建设的所有资源可与电网友好互动，通过错峰充电，助力全网清洁能源消纳；结合反向换电，缓解换电站高峰排队，同时在电网高峰时削峰效果。

在技术方案上采用了容量共享技术，即通过设定有序充电策略，在满足电动汽车用户充换电服务体验的同时，实现光储充换一体化站或桩群整体能量效率利用最大化，设备投资最优化。

underground parking lot of Shanghai JIADING new automobile innovation harbor. This is a momentum application of IOV interaction business mode for NIO and State Grid. The employee car owners are able to charge at home and sell it in a high price in the community so they will make profits; The house owners are able to lower the electricity cost by utilizing V2G. When it comes to accounting, NIO uses credit points settlement method. Users earn the points from NIO by releasing the electricity.

There is a "optical storage and exchange integration electricity station" built in Shanghai Auto Expo Park. It put into operation from 2019. The amount of use energy is around 1.4 million kwh and changed electricity 30 thousand times and consumed more than 50 thousand clean energy.

As for the energy convergence, this project realized that photovoltaics consumed on the spot. All resources that we built are able to interact with power grid. It will promote the clean energy consumption in the whole power grid by staggering the charging peak hours. Combined with reverse power change, it can relieve the peak queue of power change station and the same time "shave the peak" during the peak hours.

As for the technology plan, it adopted capacity sharing technology, which is satisfy the service experience of vehicle users while realize the maximum utilization of the overall energy efficiency and the optimization of the equipment investment of the integrated optical storage and charging piles by setting strategies of charging piles.

5 月 11 日，蔚来与海南省三沙市启动绿色海岛共建计划，在西沙群岛推进海岛清洁能源发展，守护碧海蓝天。

10 月 29 日，蔚来与三江源生态保护基金会启动三江源国家公园绿色生态共建计划，共同助力三江源国家公园建设，守护绿水青山。

12 月 2 日，蔚来宣布助力守护海南热带雨林国家公园，为海南热带雨林国家公园提供智能电动汽车及补能设施，助力园区生态巡护。

12 月 11 日，在珠穆朗玛峰国家级自然保护区，我们助力珠峰地区的巡护工作，纯电出行，守卫纯净世界屋脊守护纯净珠峰。

12 月 18 日，在 NIO Day 2021，蔚来宣布正式发起 Clean Parks 生态共建计划。未来 3 年，蔚来将投入 1 亿元人民币，支持全球自然保护区使用智能电动汽车、建设清洁能源基础设施，构建清洁低碳的能源自循环体系，守护生态系统的原真性和完整性。Clean Parks 也是一个开放平台，欢迎更多有意愿、有需要的组织加入共建 Clean Parks，一起守护晴朗天空，迎接 Blue Sky Coming!

On May 11, NIO and Sansha City, Hainan Province launched the Joint Green Island Building Plan, with an aim to safeguard the blue sky there by facilitating the development of clean energy in the Xisha Islands.

On October 29, NIO collaborated with the Sanjiangyuan Ecological Protection Foundation in kicking off the Sanjiangyuan National Park Green Ecosystem Joint Building Initiative, in order to help with the construction of the Sanjiangyuan National Park and protect the lucid waters and lush mountains.

On December 2, NIO joined hands with the National Park of Hainan Tropical Rainforest, to provide smart electric vehicles, battery charging and swapping facilities to the park, and to contribute to the local eco patrol.

On December 11, we helped with the patrols with purely electric mobility in the Qomolangma National Nature Preserve, to secure the clean and pure Roof of the World.

On December 18, on NIO Day 2021, NIO announced to launch Clean Parks, a joint ecosystem building initiative. In the upcoming three years, we will invest RMB 100 million into Clean Parks to support more nature reserves across the world in the use of smart EVs, construction of clean energy infrastructure and the establishment of a clean and low-carbon energy cycle system, protecting the authenticity and integrity of ecosystems. Clean Parks is an open platform, NIO also welcomes more willing and interested organizations to join Clean Parks, protecting the blue and clear sky together with us and embracing Blue Sky Coming!



(四)生态共建 Ecological Co-Building

践行 Blue Sky Coming 晴朗天空的愿景，蔚来希望通过发挥在智能电动汽车零排放、零污染等方面的产品优势，以及充换电基础设施方面的优势，与各方携手，共同保护生态建设，守护我们共同的家园。

NIO is committed to bring the vision of Blue Sky Coming to reality. NIO hopes to give full play to its advantages including emission-free and pollutant-free smart electric vehicles, and its charging and battery swapping infrastructure to join hands with various parties in an effort to protect the ecosystem and our shared homeland.

RECYCLE

回收利用

动力电池溯源

可再利用率和可回收利用率

NIO

RECYCLE

回收利用

(一) 动力电池溯源 Traceability of Power Batteries

蔚来按《溯源管理规定》在国家溯源管理平台注册并按规定对动力电池生产、销售、使用、报废、回收、利用等全过程进行信息采集，对各环节主体履行回收利用责任情况实施监测。用于蔚来产品的所有动力电池包、模组及单体均按《GB/T 34014-2015 汽车动力电池编码规则》要求进行编码，并在工信部进行备案。蔚来自《溯源管理规定》实施以来，按要求建立动力电池回收服务网点，并在工信部进行备案。

蔚来的车辆销售是以线上下单的模式，由体验店、交付中心、维保中心等服务门店组成。2017 年至今，蔚来已在中国开业 33 家体验店，很多已经成为所在城市新地标。2021 年 10 月 1 日，海外首家蔚来中心——蔚来中心 | 奥斯陆正式开业。截至 2021 年蔚来共有 84 个动力电池回收服务网点，分别位于 39 个城市，回收服务网点建设率达 95%。

NIO registers power batteries on the national traceability management platform in accordance with the *Traceability Management Regulations*, collects information in the entire process of production, sales, use, scrapping, recycling, and reuse of power batteries in accordance with the regulations, and monitors the performance of the recycling responsibilities of the entities in each link. All power battery packs, modules and cells used in NIO's automotive products are coded as per the requirements of *GB/T 34014-2015 Coding Regulation for Automotive Traction Battery* and filed with the Ministry of Industry and Information Technology. Since the implementation of the *Traceability Management Regulations*, NIO has established power battery recycling service outlets according to the requirements and filed them with the Ministry of Industry and Information Technology.

NIO's vehicle sales are based on an online order placement model, consisting of service outlets such as experience stores, delivery centers, and repair and maintenance centers. Since 2017, 33 NIO House have been opened in China, many of which have already become new landmarks in multiple cities. October 1st, 2021, NIO House | Oslo officially opened. As of 2021, NIO has a total of 84 power battery recycling service outlets, located in 39 cities, and the construction rate of recycling service outlets has reached 95%.

26 家
正常营业的体验店

84 个
动力电池回收服务网点

95 %
回收服务网点建设率

2019年11月,工信部正式发布《新能源汽车动力电池回收服务网点建设和运营指南》,要求新能源汽车生产及梯次利用等企业应按照国家有关管理要求通过自建、共建、授权等方式建立回收服务网点,新能源汽车生产、动力电池生产、报废机动车回收拆解、综合利用等企业可合作共用回收服务网点。根据“指南”的要求和规定,我们对现有的回收服务网点进行审查,制定整改计划,同时与格林美、华友等“白名单”动力电池回收企业积极推进合作,共用这些企业已有的动力电池回收服务网点。

自2018年8月1日《溯源管理规定》实施以来,我们在不断完善数据上传机制。为在规定时间内上传车辆及动力电池生产、销售、维修、换电、回收、退役等信息,采取了多种应对措施。对于车辆生产信息的收集及上传,在企业平台设置10天为上传周期,打印合格证10天内若未上传车辆生产信息,则有消息提醒。因车辆换电的特殊性,积极与主管部门沟通,协力开发定制化系统来支持换电数据上传,目前已上传3724736次换电,实现上传比例100%。

In November 2019, the Ministry of Industry and Information Technology officially issued the *Guidelines for the Construction and Operation of New Energy Vehicle Power Battery Recycling Service Outlets*, in which the companies engaged in the production and cascade utilization of new energy vehicles are required to establish recycling service outlets by means of self-construction, co-construction, and authorization in accordance with relevant national management requirements, and companies engaged in the production of new energy vehicles, the production of power batteries, and the recycling, dismantling and comprehensive utilization of end-of-life motor vehicles can cooperate in and share the recycling service outlets. In accordance with the requirements and regulations of the Guidelines, we have reviewed the existing recycling service outlets and formulated a rectification plan, and meanwhile, we have actively promoted cooperation with "whitelisted" power battery recycling companies such as GEM and Huayou to share the existing power battery recycling service outlets of these companies.

Since the implementation of the *Traceability Management Regulations* on August 1, 2018, we have been continuously improving the data upload mechanism. In order to upload information on the production, sales, maintenance, replacement, recycling, and decommissioning of vehicles and power batteries within the specified time, various response measures have been taken. For the collection and upload of vehicle production information, a 10-day upload period is set on the enterprise platform, and if the vehicle production information is not uploaded within 10 days of printing the certificate of qualification, a message will be sent as a reminder. Due to the swappability of our vehicles' batteries, we have actively communicated with the competent authorities and worked together to develop a customized system to support the upload of battery swapping data, and so far, 3,724,736 times of battery swapping have been uploaded, achieving a 100% upload ratio.



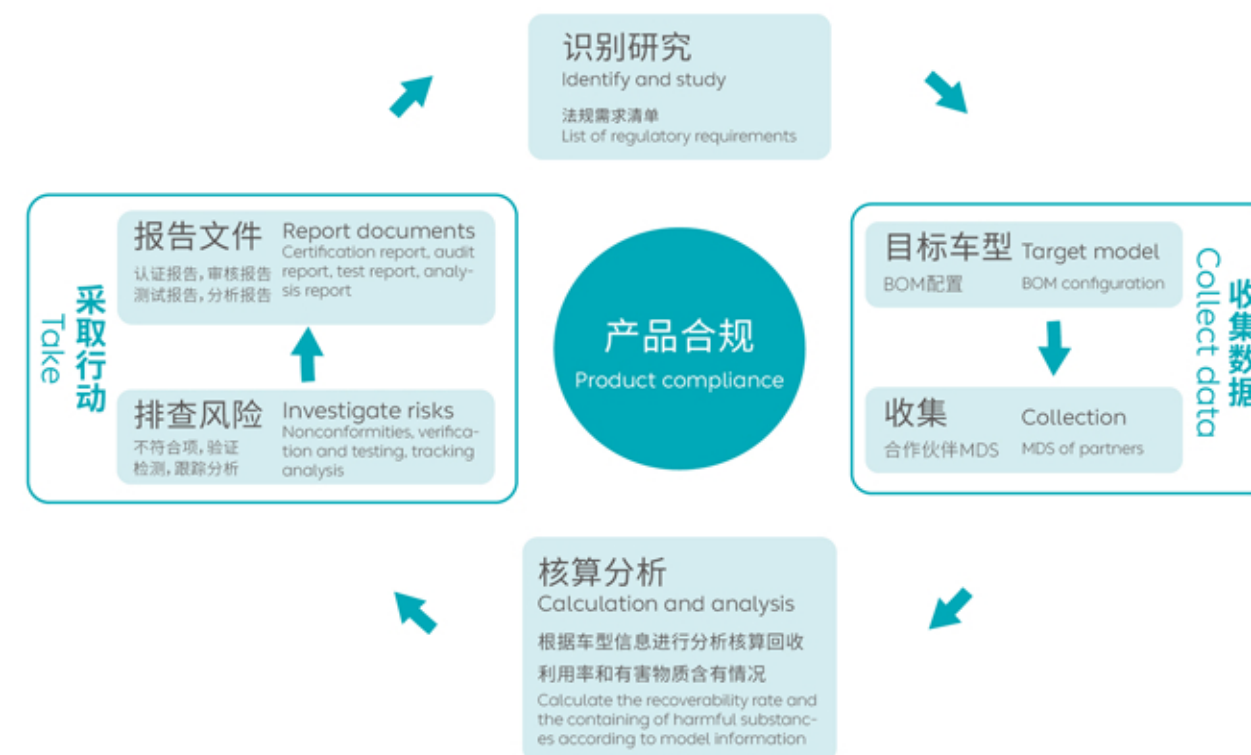
数据截至2021年9月1日打印合格证的车辆生产总数共计134571台,实际上传134566台,上传比例为99.99%,车辆销售共计125528台,实际上传124794台,上传比例为99.42%。车辆销售信息由于特殊情况未收集到用户上传信息外,均在规定时间内按要求上传数据。

Regarding data, as of September 1, 2021, the total number of vehicles produced with the certificate of qualification printed is 134,571, the data of 134,566 vehicles had been uploaded with an upload ratio of 99.99%; the total number of vehicles sold was 125,528, the data of 124,794 vehicles had been uploaded with an upload ratio of 99.42%. Regarding vehicle sales information, unless the registration information of users is not collected due to special circumstances, all data are uploaded as required within the specified time.

(二) 可再利用率 and 可回收利用率 Recyclability Rate and Recoverability Rate

为降低车辆报废后对环境的影响,确保符合欧盟RRR指令(2000/53/EC)及MIIT 2015.38要求,蔚来建立了完整的回收认证管理体系,将回收利用要求贯穿整车开发全过程。

In order to reduce the environmental impact of scrapped vehicles and ensure the compliance with the requirements of EU RRR Directive (2000/53/EC) and MIIT 2015.38, NIO has established a complete recycling certification management system, and implement the recycling requirements throughout the entire vehicle development process.



推动回收导向设计，减少材料种类，使用可回收或生物基材料，并与合作伙伴共同探讨闭环回收体系。借助内部环保合规系统，对整车的材料进行回收利用性能识别分析，依据 GB/T19515 及 ISO22628 核算车辆可回收利用率及可再利用率，在新车型公告时申报两率情况，并对材料标识符合性进行一致性管控。

NIO has promoted recycling-oriented design, reduced material types, applied recyclable or bio-based materials, and explored closed-loop recycling systems with partners. With the help of the internal environmental protection compliance system, NIO has identified and analyzed the recycling performance of the materials of the entire vehicle, calculates the recyclability rate and reusability rate of the vehicle according to GB/T19515 and ISO22628, declares the two rates when a new model is homologated, and conduct consistency control on the compliance of material identification.

表：蔚来近三年可再利用率与可回收利用率

Table: The reusability rate and recyclability rate of NIO in recent three years

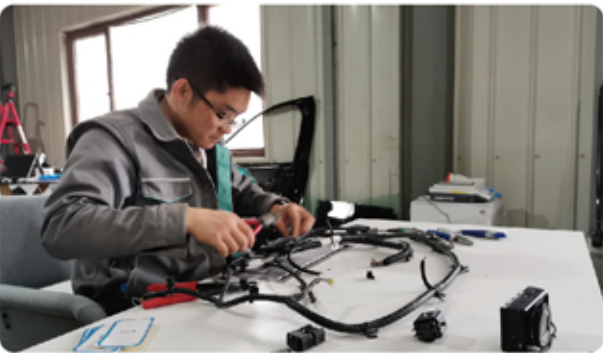
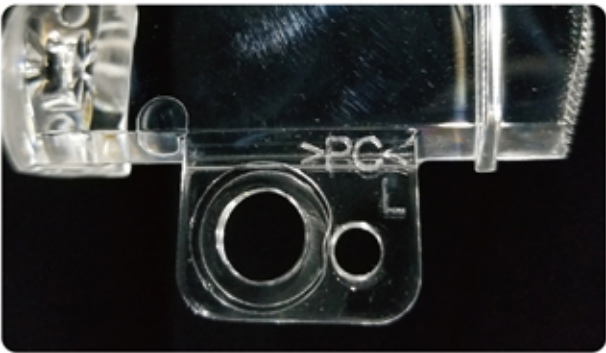
	2018	2019	2020
可再利用率(%) Reusability rate	95.3	94.7	95.0
可回收利用率(%) Recyclability rate	98.8	97.8	98.1

依据公告要求，按照 GB/T33460 标准，借助 CAGDS 及时披露更新《汽车拆解指导手册》，为下游报废回收企业提供充足的信息及技术指导，以达到最大程度回收。

According to the requirements of the announcement and GB/T33460, with the help of CAGDS, NIO has disclosed and updated the *Automobile Dismantling Instruction Manual* in a timely manner, to provide downstream scrap recycling companies with sufficient information and technical guidance to achieve maximum recycling.

举行年度培训，传递蔚来绿色开发理念，与合作伙伴共同探讨回收利用管控形式。推动理念在供应链上的传递。

NIO holds annual training to convey NIO's green development idea, and discuss with partners the form of recycling control, to promote the transfer of the concept along the supply chain.



蔚来一直坚持材料的最大化利用，2021年10月15日，蔚来的全新时尚环保品牌 BLUE SKY LAB 在上海时装周现场正式亮相。我们以汽车制造中剩余的“Seat Belt 安全带”、“Airbag 安全气囊”、“Haptex 巴斯夫皮”三种车规级面料为核心材料，循环再利用打造时尚系列。

NIO has always insisted on maximizing the use of materials. On October 15, 2021, NIO's new fashion and environmentally friendly brand Blue Sky Lab was officially unveiled at Shanghai Fashion Week. We take the surplus of three automotive-grade fabrics in automobile manufacturing, namely the materials for seatbelts, airbags and Haptex, the synthetic leather of BASF, as the primary materials, and recycle them to create a fashion series.

首批合作设计师包括世界顶尖的帕森斯设计学院、全球著名日籍建筑设计师青山周平、蔚来用户设计师及蔚来全球设计师们。合作品牌包括李宁、可持续时尚创新品牌 Allbirds。

The first group of designers and design institutions we have cooperated with include the world's top design institution, Parsons School of Design, the world-renowned Japanese architect Shuhei Aoyama, designers among NIO users, and NIO's own designers around the globe. Cooperative brands include Li-Ning, and the sustainable and innovative fashion brand Allbirds.



标准披露项索引 Standard Disclosure Index

序号 No.	披露方向 Indicators	标准披露项 Standard Disclosure	页码 Page
1	企业基本信息 Overview of Corporations	主要产品信息 Product Information	P02
2		企业运营范围 Business Scope	P02
3		所有权性质及法律形式* Nature of Ownership and Legal Form*	—
4		企业规模 Enterprise Size	P02
5		员工信息* Employee Information*	—
6	发展战略 Development Strategy	企业全产业链管理战略 Enterprise Entire Industry Chain Management Strategy	P08
7		碳中和 Carbon Neutral	P25
8	管理方针 Management Policy	职业健康安全管理体系 Occupational Health and Safety Management System	P35
9		环境管理体系 Energy Management System	P35
10		能源管理体系 Environmental Management System	P36
11		绿色供应链管理 Green Supply Chain Management	P53
12	新概念技术开发应用 New Concept Technology Development and Application	电动化 Electrification	P09
13		网联化* Networking*	—
14		智能化* Intelligent*	—
15	优化生命周期设计 Optimize Life Cycle Design	产品生命周期碳排放 Product Life Cycle Carbon Emissions	P25
16	降低材料环境影响 Reduce Material Environmental Impact	材料VOC管控 Control of Material VOC	P14
17		材料有害物质管控 Control of Hazardous Materials	P21
18		再生材料的使用 Use of Degradable Materials	P26
19		可降解材料的使用 Control of Hazardous Materials	P26
20		R-134a的使用* Use of R-134a*	—
21	减少材料用量 Reduce Material Usage	汽车轻量化 Lightweight	P28
22	优化生产过程 Optimize the Production Process	能源消耗 Energy Consumption	P37

序号 No.	披露方向 Indicators	标准披露项 Standard Disclosure	页码 Page
23	优化生产过程 Optimize the Production Process	单车能耗 Energy Consumption Per Vehicle	P37
24		水资源消耗 Water Consumption	P41
25		单车水耗 Water Consumption Per Vehicle	P41
26		废水排放 Wastewater Disposal	P44
27		企业温室气体排放 Greenhouse Gas Emissions	P42
28		废气排放 Exhaust Emissions	P43
29		固废排放 Solid Waste Discharge	P45
30		厂界环境噪声 Plant Boundary Noise	P46
31		绿色工厂 Green Plant	P32
32		绿色包装 Green Packaging	P48
33	优化分销系统 Optimize the Distribution System	绿色运输 Green Transportation	P50
34		绿色仓储 Green Storage	P52
35		经销商管理 Dealer Management	—
36	优化使用过程 Optimize the Use Process	产品能源消耗 Product Energy Consumption	P27
37		车内VOC Interior VOC	P14
38		车辆噪声 Vehicle Noise	P24
39		尾气排放 Emissions	—
40		绿色设计产品 Green Design Products	P08
41		R-134a泄露* R-134a Leaked*	—
42	优化回收处理 Optimize Recycling	动力电池溯源 Traction Battery Traceability	P60
43		拆解信息公开 Dismantling Information Disclosure	P63
44		可再利用率和可回收利用率 Recyclability Rate and Recoverability Rate	P63
45		回用件使用* Use of Recycled Parts*	—
46		再制造零部件使用 Use of Remanufactured Parts	P26

本索引根据《汽车企业绿色发展报告编制指南》编制

* 可选披露项

This index was prepared in accordance with the *Compilation Guide of Automotive Corporation Green Development Report*

* Optional disclosure