车辆电气化与奥升德 (Ascend) 创新型产品解决方案

Vehicle Electrification and Ascend Material Solutions

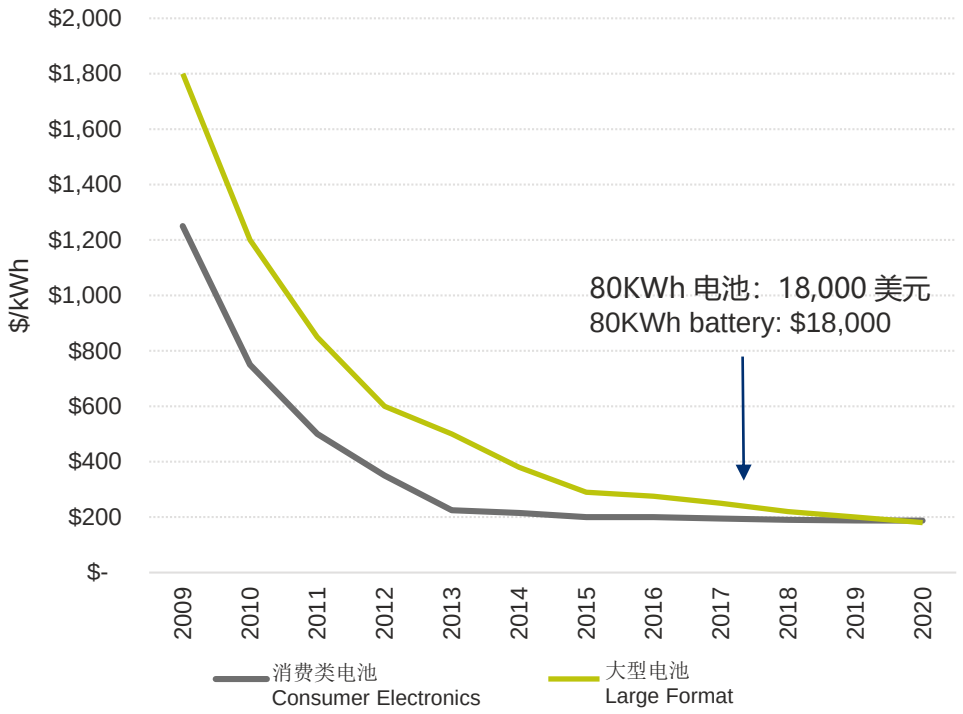
2019 年 5 月 21 日

到 2030 年，纯电动汽车 (BEV) 将会比燃油汽车 (ICE) 更加经济实惠
By 2030, BEVs will be more affordable than ICEs

电池的价格正在下降，这将加快电动汽车 (EV) 的发展速度

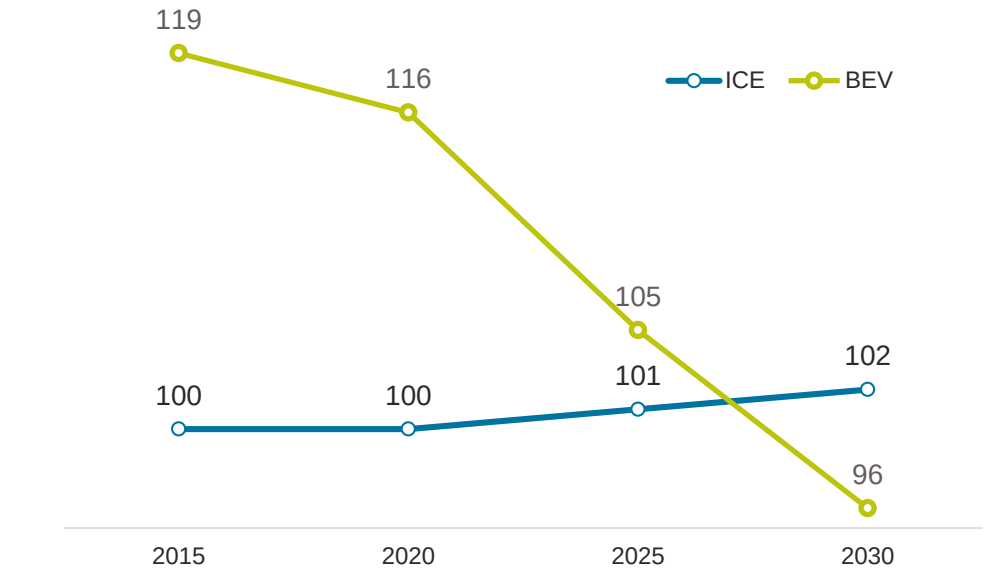
Battery prices are dropping; will accelerate EV growth

锂离子电池价格(根据电池类型划分)
Li-ion battery pricing by cell type



来源 Source: Navigant Research 市场报告

每公里成本：燃油汽车(ICE)与电动汽车(EV)对比（以 2015 年 ICE 为基准）
Cost per kilometer: ICE vs. EV(normalized to 2015 ICE)

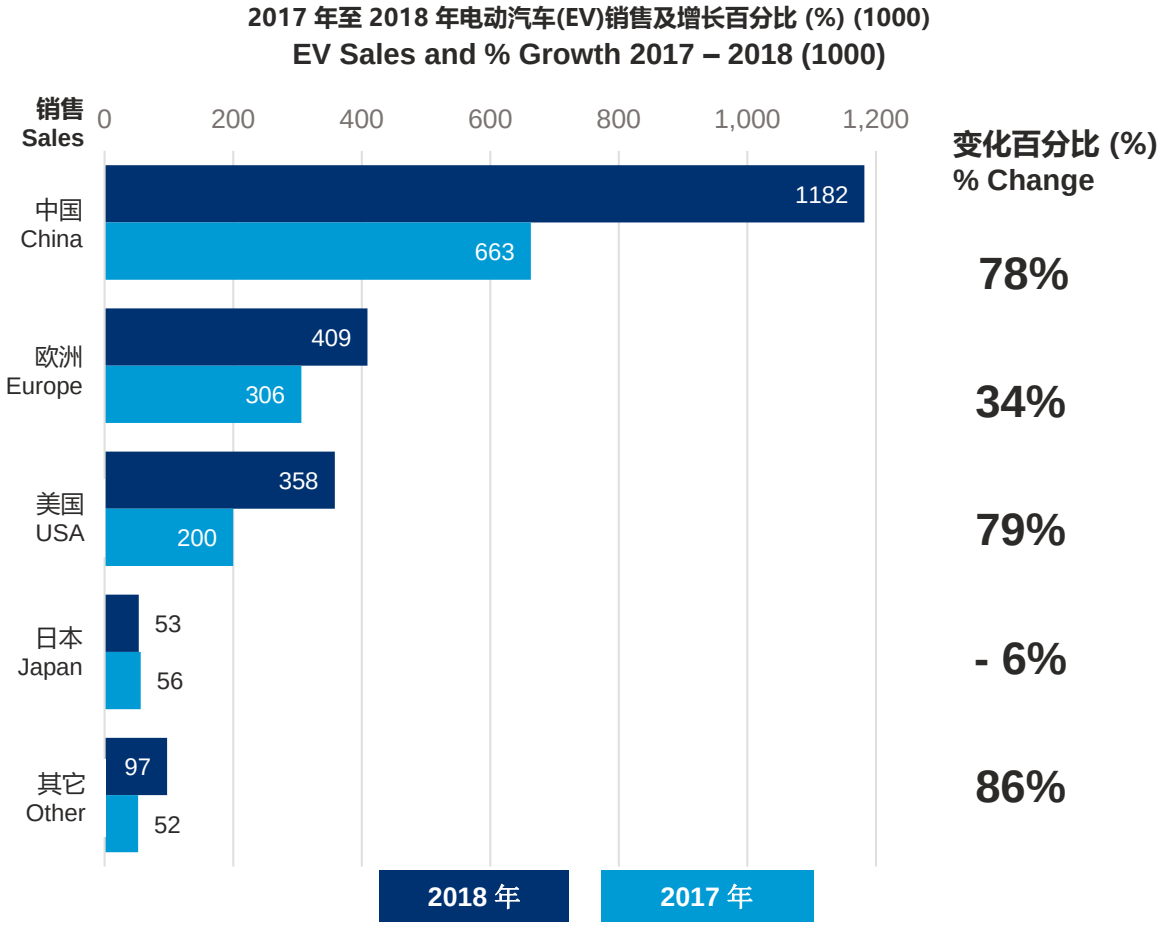


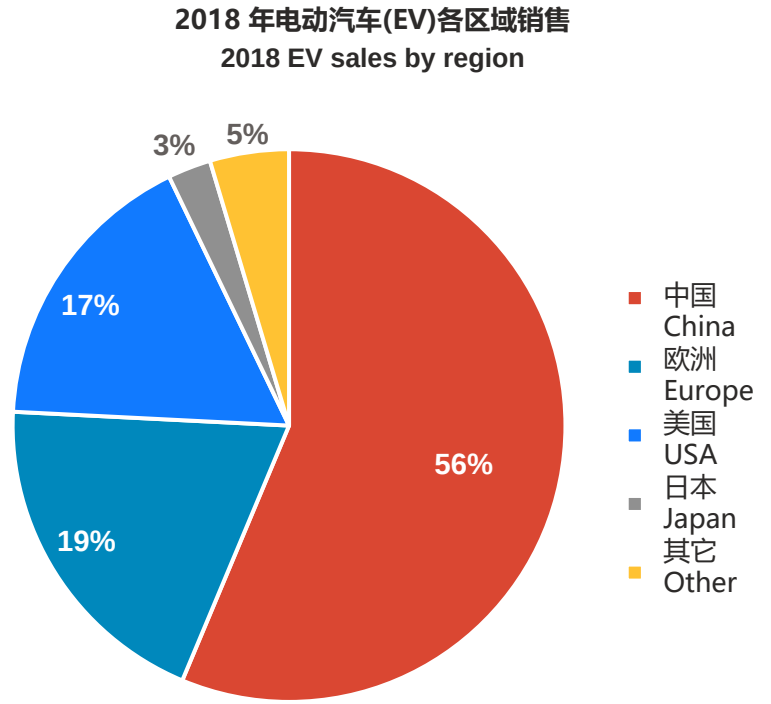
269	191	125	73

电池成本(美元/kWh)
Battery cost $/kWh

来源 Source： McKinsey Energy Insights 麦肯锡能源视角

纯电动汽车(BEV)市场正在迅速发展
The BEV market is growing fast



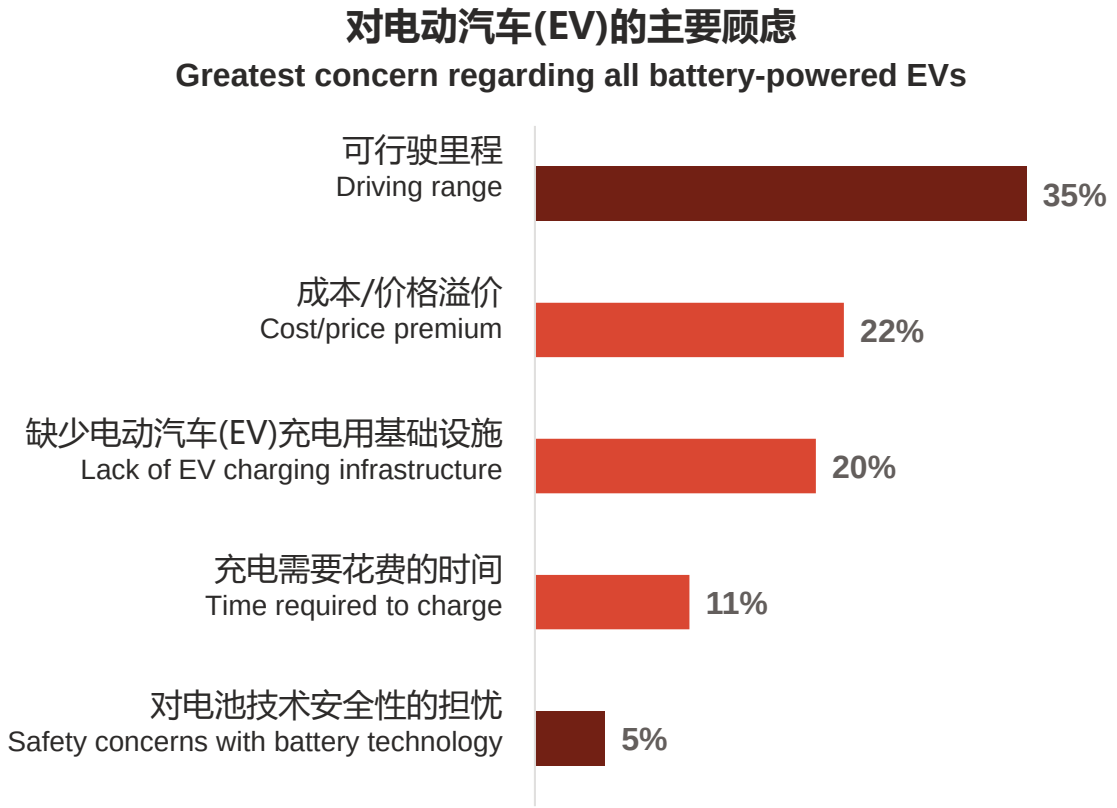


2017 年销售数据
130 万
2017 total sales
1.3M

2018 年销售数据
210 万
2018 total sales
2.1M

来源 Source: EVvolume.com

不过成本并不是消费者考虑的唯一因素
But cost is not the only consumer consideration



- **燃油汽车(ICE)用了一个世纪的时间**在消费者心中构筑了关于**安全性、可靠性和性能(续航能力)的期望值。**
- 汽车产业如何向电能交通迈进，**每个人都**在这些领域**重新思考解决方案。**

- **ICE vehicles have had a century** to form consumer expectations around **safety, reliability and performance (range anxiety).**
- The move toward e-mobility presents **opportunities to rethink solutions** in these areas.

来源 Source: 德勤 Deloitte

电动汽车(EV)在实现安全性上的挑战
EVs present unique safety challenges

锂电池很可靠，然而一旦出现故障，极易引发爆燃或触电危险。

在严重故障的情况下保持锂电池的完整性和合理温度对于保障安全来说至关重要。

理想材料需具备以下特点：

- 强度高
- 达到 V0 阻燃等级
- 电气绝缘
- 长期耐高温

Li-ion batteries are incredibly reliable; however, when they fail, they pose a fire and electrocution hazard.

Maintaining the integrity and temperature of Li-ion batteries in the event of critical failure is vital to safety.

The ideal material will have:

- High strength
- V0 flammability
- Electrical insulation
- Long term heat stability

火灾隐患
FIRE RISK

危险
DANGER

消费者期望产品安全可靠
Consumers have come to expect reliability

EV 的活动部件更少，且可靠性将从根本上优于 ICE。

不过，对材料的要求程度也完全不同。

- 更长的加热和冷却循环
- 可应对电池热量的冷却系统
- 高电压

理想材料需具备以下特点：

- 长期耐高温
- 抗腐蚀性
- 耐化学性

EVs have fewer moving parts and will be inherently more reliable than ICEs.

However, the stresses on the materials will be fundamentally different.

- Longer heating and cooling cycles
- Complex cooling systems to manage battery heat
- High voltage

The ideal material will have:

- Long term heat stability
- Corrosion resistance
- Chemical resistance

可行驶里程和性能问题仍待解决
Range and performance still need to be solved

锂电池技术发展已至瓶颈，因此增加可行驶里程将需要通过辅助技术实现。

Li-ion battery technology is reaching its maximum potential, so range gains will likely come from ancillary technologies.

轻量化将是增加可行驶里程的一个要素。

根据燃油汽车(ICE)的发展经验我们知道，每减轻10%的重量，效能就会提升6%到8%。

Lightweighting will be essential to increasing range.

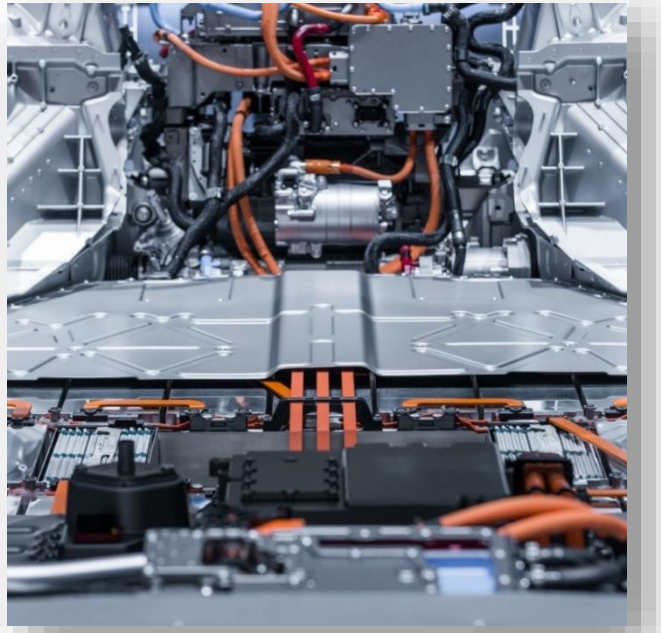
We know from ICEs that a 10% weight reduction yields 6-8% greater efficiency.

超快速充电和更优质的充电用基础设施也很必要，而且需要更先进的材料技术支持。

Ultra-fast charging and greater charging infrastructure will also be necessary and require advanced material technologies.

超快速充电使用高功率电流对电池进行快速充电，这会产生大量热量，必须对这些热量进行处理。

Ultra-fast charging uses high current power to charge batteries quickly, causing tremendous amounts of heat that must be managed.



泛达®PA66产品解决方案助您应对这些挑战
Vydyne® PA66 is ready to meet all these challenges

		安全性 Safety	可靠性 Reliability	性能 Performance
J 系列 **J series**	**抗腐蚀级**PA66产品适用于电子连接器等应用。 **Corrosion-resistant** PA66 for use in electrical connectors	+	+	+
ECO 系列 **ECO series**	**阻燃级**PA66产品适用于电子连接器和线束等应用。 **Flame-retardant** PA66 for use in electrical connectors, wiring and harnesses	+	+	
HR 系列 **HR series**	**耐高温**及**耐水解级**PA66产品适用于冷却系统等应用。 **High-temperature** and **hydrolysis resistant** PA66 for use in cooling systems.		+	+
抗冲改性级 **Impact modified**	**抗冲击级**PA66产品适用于电池外壳和应对噪声、振动与声振粗糙度(Noise/Vibration/Harshness)相关应用。 **Impact-resistant** PA66 for use in battery enclosures and NVH applications.	+	+	+

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