



上汽红岩 中国力量

上汽红岩充换一体重卡应用概况

Overview of SAIC Hongyan charge & change electric heavy Truck

2021-12

上汽集团概况/SAIC Motor Overview

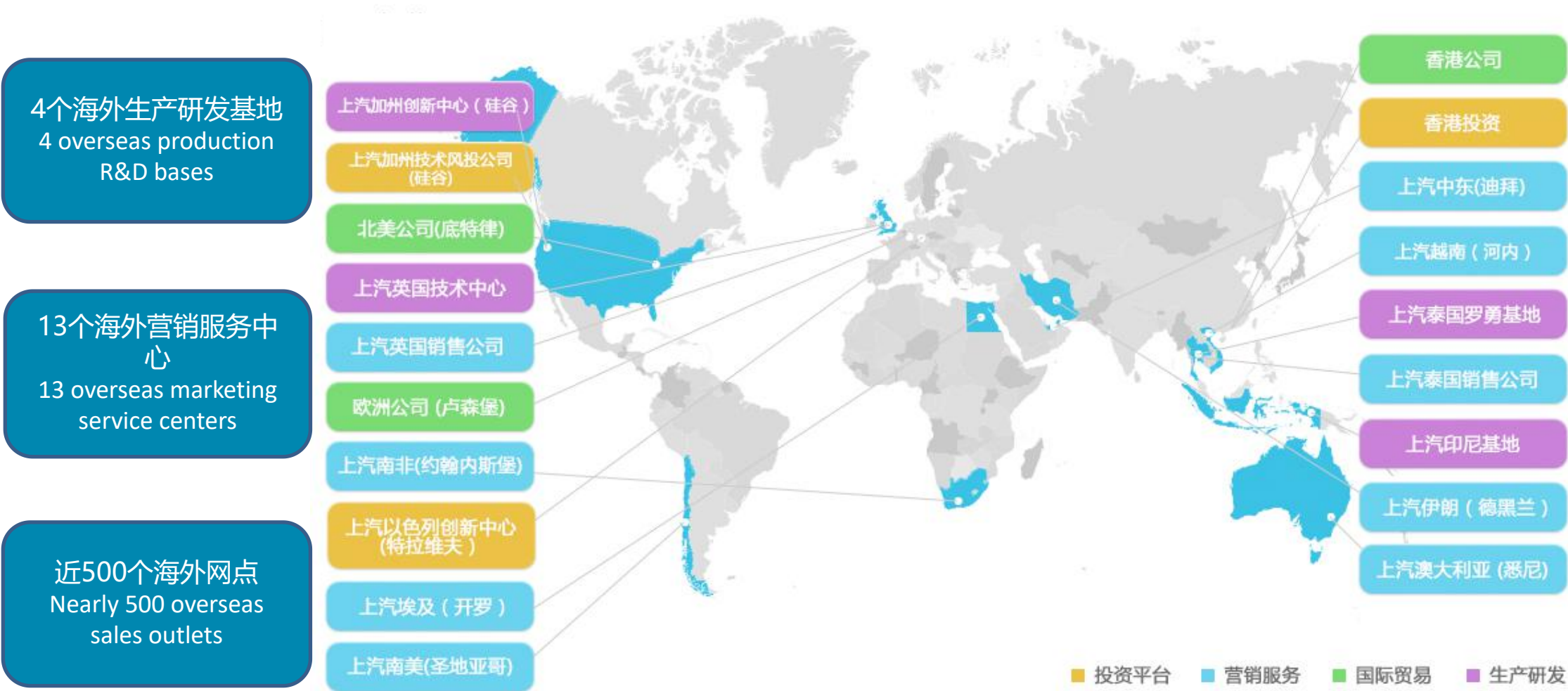


FORTUNE
500

- ✓ 2020年 连续**7**年进入《财富》百强名单
Entered the Fortune 100 list for 7 consecutive years in 2020
- ✓ 2020年 全球汽车行业排名第**7**位
Ranked 7th in the global automotive industry in 2020
- ✓ 2020年 中国车企第**1**名
No. 1 in China's auto companies in 2020

上汽红岩 中国力量

上汽集团全球布局/ SAIC Motor's global layout



上汽红岩 中国力量

上汽集团与上汽红岩/ SAIC Motor and SAIC Hongyan

上汽集团在售整车品牌 (共计15个)
SAIC Motor's vehicle brands on sale (15 in total)



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2021国内新能源重卡市场概况/Overview of the domestic new energy heavy truck market

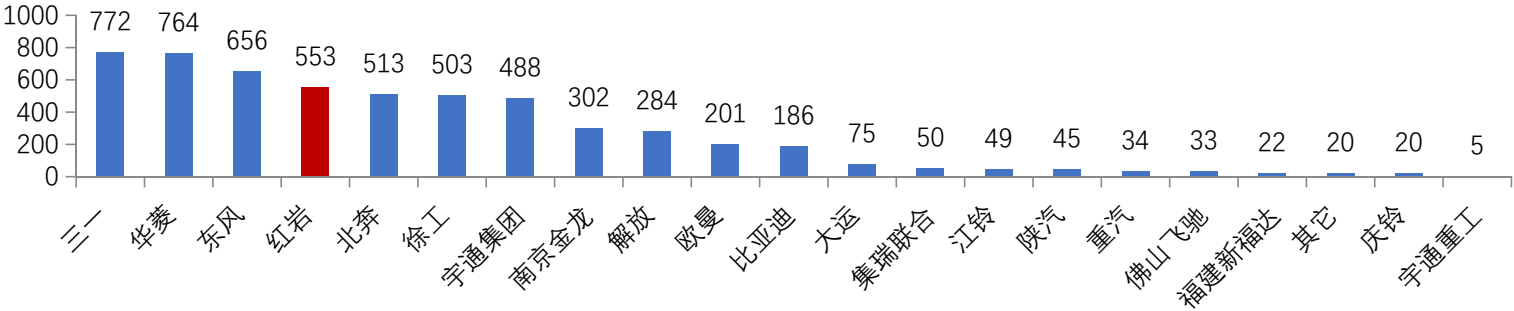
- **2021年1~9月份全国销售新能源重卡稳步提升，共计5575辆，以牵引车为主，占比53%，其次为专用车，占比31%；**
From January to September of 2021, the national sales of new energy heavy trucks increased steadily, totaling 5,575, Mainly tractors, accounting for 53% , followed by special vehicles, accounting for 31%;
- **红岩新能源重卡销售8月开始上量，1-10月累计销量份额9.92%，排名第6。**
Hongyan New Energy heavy truck sales have increased from August, with a cumulative sales share of 9.92% from January to October, ranking sixth.;

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2021国内新能源重卡市场概况/Overview of the domestic new energy heavy truck market

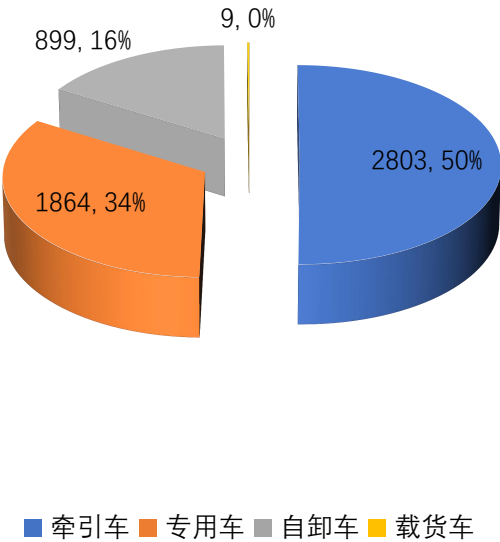
新能源1-10月销量企业分布

New energy heavy duty truck Sales by OEM from Jan. to Oct.



新能源1-10月销量车型分类

New energy heavy duty truck Sales by type from Jan. to Oct.



企业	1月	2月	3月	4月	5月	6月	7月	8月	9月	10月	总计	累计市场份额
三一	3	10	4	3	1	7	70	77	273	324	772	13.85%
华菱	17	11	39	104	128	83	131	84	77	90	764	13.70%
东风	67	30	37	60	33	79	102	82	66	100	656	11.77%
红岩					1	17	23	118	208	186	553	9.92%
北奔	6	17	64	7	80	33	29	79	107	91	513	9.20%
徐工	31	10	35	2	12	14	55	98	91	155	503	9.02%
宇通集团	18	8	47	12	7	43	85	86	74	108	488	8.75%
南京金龙	4	6	77	41	45	7	33	32	14	43	302	5.42%
解放	2	1	2		32	24	58	54	70	41	284	5.09%
欧曼			7		9	1	4	57	56	67	201	3.61%
比亚迪	10	19	30	3	24	8	12	21	19	40	186	3.34%
大运					3		63	5	3	1	75	1.35%
集瑞联合						41	2			7	50	0.90%
江铃				49							49	0.88%
陕汽					1	1		10	32	1	45	0.81%
重汽			1	1		29		2		1	34	0.61%
佛山飞驰						14	2		14	3	33	0.59%
福建新福达			3	12		6	1				22	0.39%
其它	3			3			1	8	5		20	0.36%
庆铃										20	20	0.36%
宇通重工		1		1			1		2		5	0.09%
总计	161	113	346	298	376	407	672	813	1111	1278	5575	

新能源重卡应用场景/ New Energy Heavy Truck Application Scenarios

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农林牧渔	采矿业	建筑业	煤炭业	制造业	批发零售业	快递业	集装箱	化工业	轿运车	冷链物流	公共服务
粮食运输(T/C) Grain transportation 果蔬(绿通) (T/C) Fruits and Vegetables (Green Pass) 畜禽运输(C) Livestock and poultry transportation 木材运输(T/C) Wood transportation	坑口运输(K) Pithead transportation 矿坑至洗选场(K) Mine to washing field 洗选场至使用地(T/K) Washing field to use place 油田(S) oilfield	工程建设(K) Engineering Construction 城市渣土(K) Urban muck transportation 砂石料运输(T/K) Sand and gravel transportation 粉粒物料运输(T/S) Powder material transportation 商砼运输(S) Concrete transportation 钢材运输(T/C) Steel transportation 大件运输(T) bulk transportation	坑口运输(K) Pithead transportation 洗选场至堆场(K) Washing field to storage place 堆场至港口/使用地(T/K) Storage place to port/use place	粉粒物料运输(T/S) Powder material transportation 入厂物流(C) Inbound logistics 整车专线运输(T/C) Vehicle dedicated line transportation	城区配送(C) City distribution 中短途支线(T/C) Middle and Short distance branch line 长途干线(T/C) Long-distance trunk line	中短途支线(C) Middle and Short distance branch line 长途干线(T) Long-distance trunk line	港口内运转(T) In-port transportation 短途, 港口至堆场(T) Short-distance port to yard 长途, 堆场至需求地(T) Long-distance storage yard to demand place	长途运输(T) Long-distance transportation 短途运输(T/S) Short-distance transportation	乘用车运输(T/S) Passenger car transportation	长途运输(T) Long-distance transportation 短途运输(T/S) Short-distance transportation	消防车(S) Fire truck 市政环卫(S) Municipal Sanitation Vehicle 军车(S) military vehicle 清障车(S) Wrecker truck

- 1、经济续航里程≤150km/ Economic cruising mileage≤150km
- 2、能源补充设施/ Energy supplement facility
- 3、法规限制（如危险品车） Regulation restrictions (such as dangerous goods vehicles)
- 4、TCO价值/ TCO

制约因素
Constraints

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目标场景
Target scene

牵引车(T)	自卸车(K)	载货车(C)	专用车(S)
长途高速标载 (T1)	城建渣土 (K1) Urban muck transportation	日用百货(C1) Daily necessities	商砼运输 (S1) Concrete transportation
快递运输 (T2)	砂石煤炭(K2) Sand and coal transportation	绿通运输 (C2)	市政环卫(S2) Municipal Sanitation
煤炭运输 (T3)/Coal transportation	工程建设(K3) Engineering Construction	入厂物流(C3) Inbound logistics	粉粒物料车 (S3)
危险品运输 (T4)	坑口运输 (K4) Pithead transportation	快递快运(C4)	清障车 (S4)
集装箱运输(T5)/container transportation		能源建材 (C5)	危化品 (S5)
轿运车 (T6)			随车吊 (S6)
散装罐(T7)			消防 (S7)
砂石料运输 (T8) Sand and gravel transportation			畜禽运输 (S8)
重载运输 (T9)/Heavy-duty transportation			冷链运输 (S9)
			中置轴轿运(S10)



新能源重卡客户结构/New energy heavy truck customer structure

- 受制于当前市场需求及换电站基础设施建设的限制，当前新能源重卡客户主要以行业B类客户为主。
Subject to current market demand and restrictions on the construction of power station infrastructure, current new energy heavy-duty truck customers are mainly business customers.



商砼运输
Concrete transportation



市政环卫
Municipal Sanitation

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纯电动重卡客户痛点/ BEV heavy truck pain point

■ 纯电动重卡痛点/ BEV heavy truck pain point

- 1. 购车成本高, 电池价占整车一半;
The cost is high and the battery price occupies half of the vehicle
- 2. 电池衰减焦虑;
Battery life concerns
- 3. 充电时间长, 单次充电1.5-2小时;
Long charging time, 1.5-2 hours per charge

当前策略/ Current strategy

业务模式创新/ Business model innovation

车电分离+换电模式/ Separation of car and battery + Change battery :

- 1、客户租赁动力电池, 降低购车门槛;
Customers lease power batteries to lower the threshold for car purchase
- 2、客户无需担忧电池衰减;
Customers do not need to worry about battery degradation
- 3、换电3~5分钟, 提高运营效率;
Change the battery for 3~5 minutes to improve operation efficiency

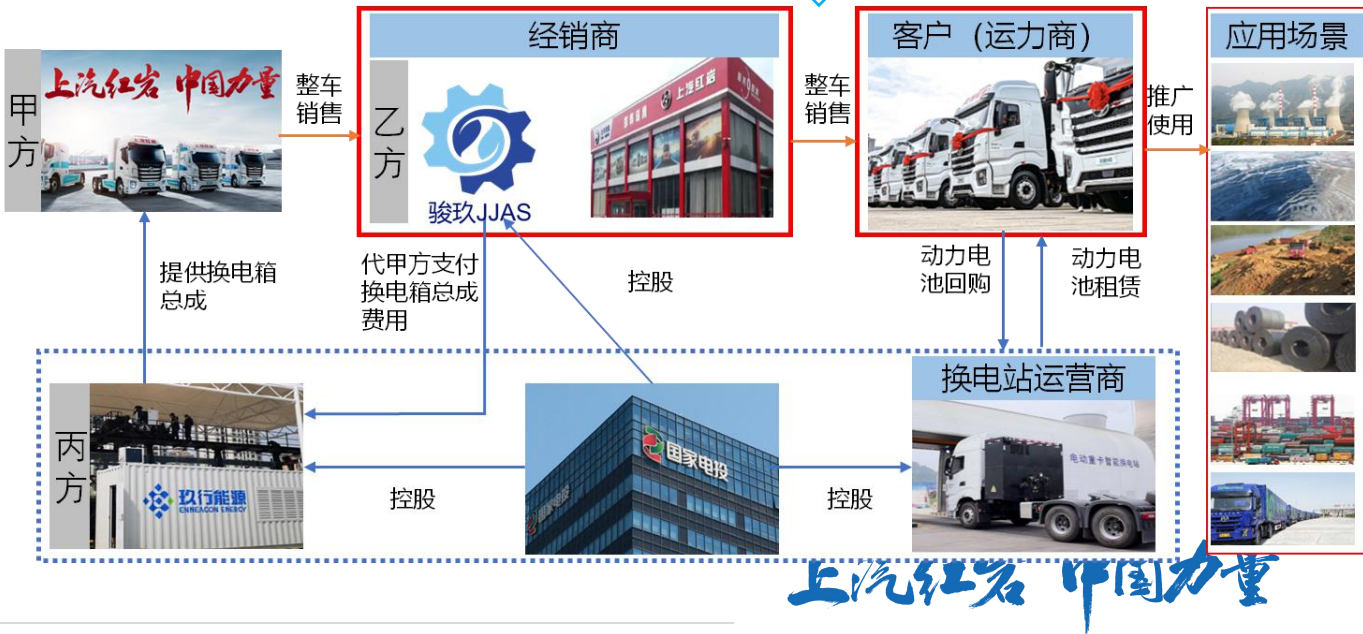
未来策略
Future strategy

技术突破/
Technological breakthrough

- 1. 动力电池成本逐年下降;
The cost of power battery is decreasing year by year
- 2. 长寿命电池技术突破;
Long-life battery technology breakthrough
- 3. 快充技术突破。
Fast charging technology breakthrough



锂电池售价趋势 (元/Wh)
Lithium battery price trend (Rmb/Wh)



换电重卡市场应用趋势/The market application trend of battery swap heavy trucks

换电重卡销量增长迅猛，已成为市场趋势，带动纯电动重卡销量的增长。

The rapid growth in sales of charge&change BEV heavy trucks has become a market trend, driving the growth of electric heavy truck sales.

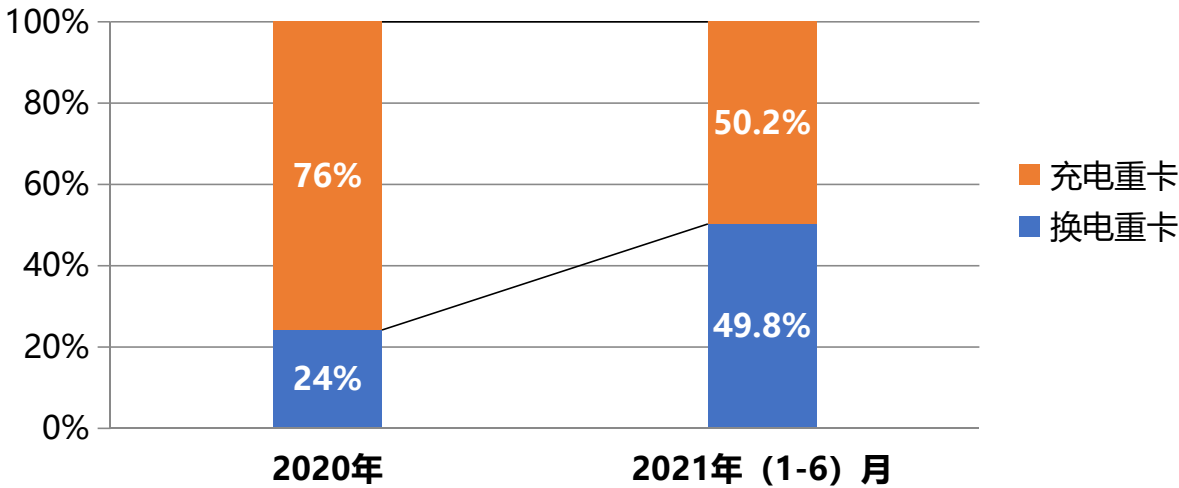
◆ 2021年上半年换电重卡销量占比上升到49.8%，相比2020年增长一倍。

In the first half of 2021, the proportion of the sales of charge and change BEV heavy truck risen to 49.8%, which has doubled compared with 2020.

◆ 2021年上半年纯电动车型整体销量也相比2020年同期上升了58%。

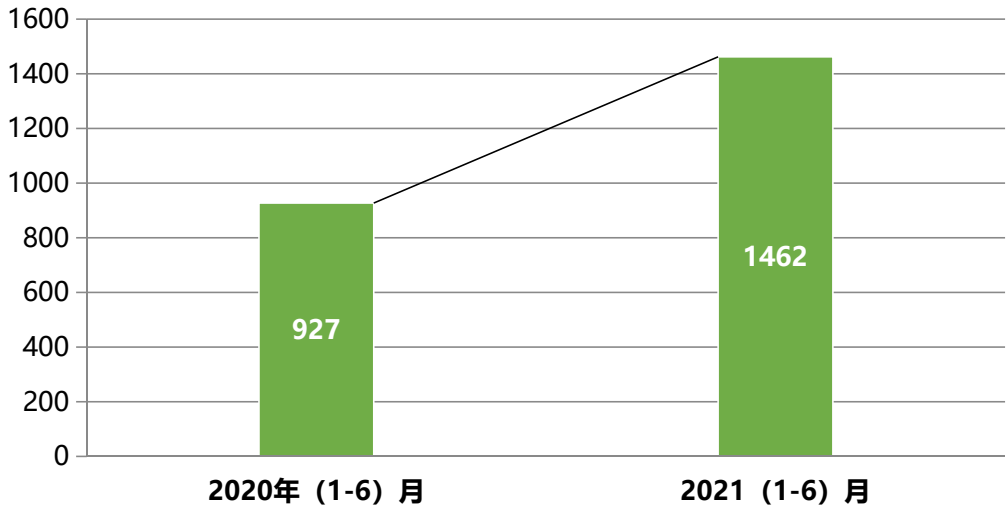
The overall sales of pure electric models in the first half of 2021 also increased by 58% compared to the same period in 2020.

纯电动充/换电重卡销量占比
Pure charge BEV / charge&change BEV heavy truck sales proportion



数据来源：商用车上牌（上户）数据
Data source: Commercial vehicle registration data

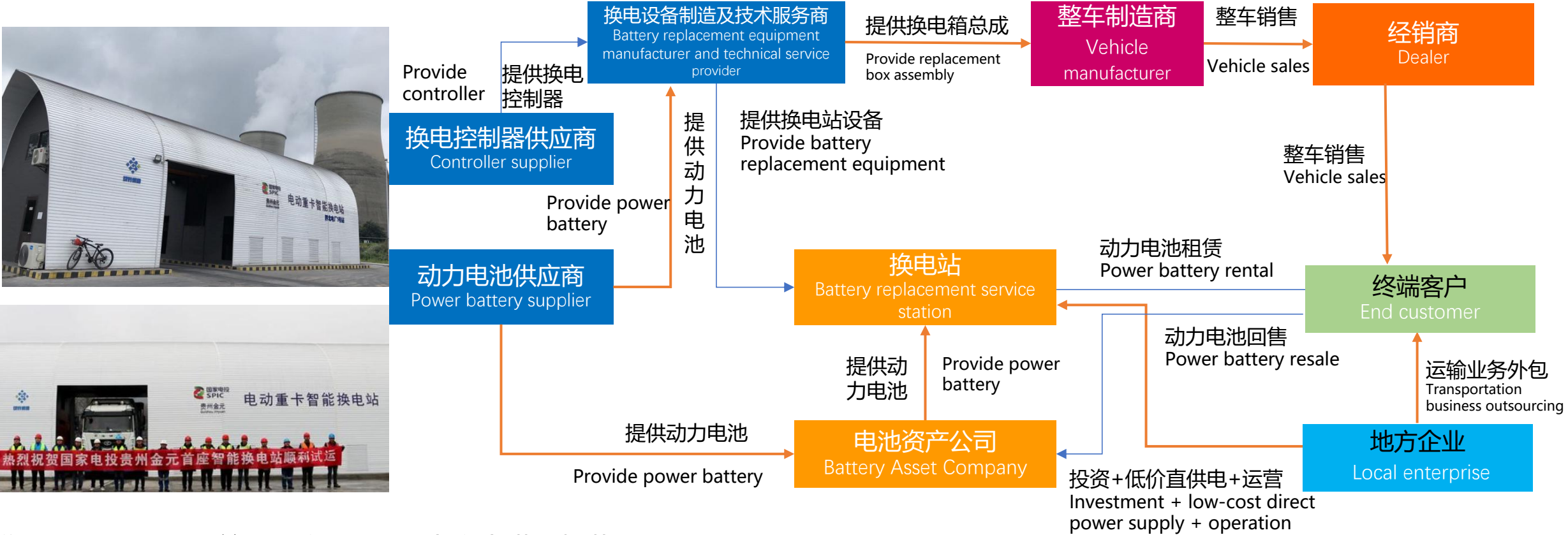
同期纯电动重卡销量对比
Comparison of pure electric heavy truck sales during the same period



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换电重卡生态链/ Charge&Change BEV heavy truck ecological chain

- 以贵州金元电站场景为例，引入换电站运营方、电池资产公司两个相关方搭建车电分离模式。
Take the scenario of Guizhou Jinyuan Power Station as an example, introduce power-swap operators and battery asset companies to build a vehicle-electricity separation mode.



作业场景：运煤，单程距离50km，半空半满，标载
Operating scenario: coal transportation, one-way distance of 50km, half empty and half full, standard load;

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换电重卡经济性/ Economical of battery replacement heavy truck

- 以6x4换电牵引车为例，配备CATL282kwh动力电池。业务模式为用车方采购无动力车身，并租赁电池使用；
Take 6x4 tractor as an example, equipped with CATL282kwh power battery. The business model is to purchase unpowered car bodies and lease batteries for use;
- 案例单车日均行驶里程300km，综合能耗为1.5kwh/km，年运行300天；
For example, the average daily mileage of heavy trucks is 300km, the comprehensive energy consumption is 1.5kwh/km, and the annual operation is 300 days;

单车能耗经济性对比		
计算期内 能耗经济性对比	电车	油车
单公里电费及服务支出（元）	0.945	2.475
单车每年电费及服务支出（万元）	9.072	23.76
单车每年电池租赁支出（万元）	12.00	0.00
单车每年节约能耗费用（万元）	2.688	
单车5年累计节约能耗费用（万元）	13.44	
油电节约率	11.31%	

单车购置成本及使用成本对比		
项目	换电重卡 无动力车身	油车
采购价（万元）	40	36
购置税（万元）	0	3.19
计算期发动机保养费（万元）	0	2.40
计算期尿素费（万元）	0	2.50
合计（万元）	40	44.09
单车节约成本（万元）	4.09	
节约比例	9.27%	

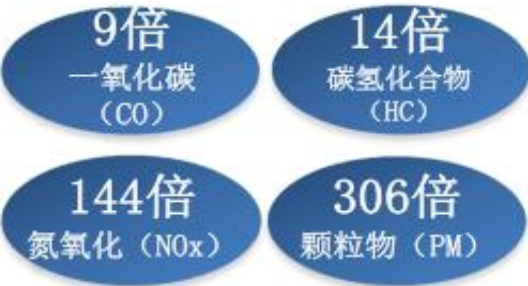
统筹考虑能耗经济性、车辆购置成本和使用成本，5年单车合计节约17.53万元，油电节约总比例达10.76%
Considering energy consumption economy, vehicle purchase cost and use cost, a total of 175,300 RMB was saved in 5 years, and the total ratio of fuel and electricity savings reached 10.76%



换电重卡减碳能力/Carbon reduction capacity of battery replacement heavy trucks

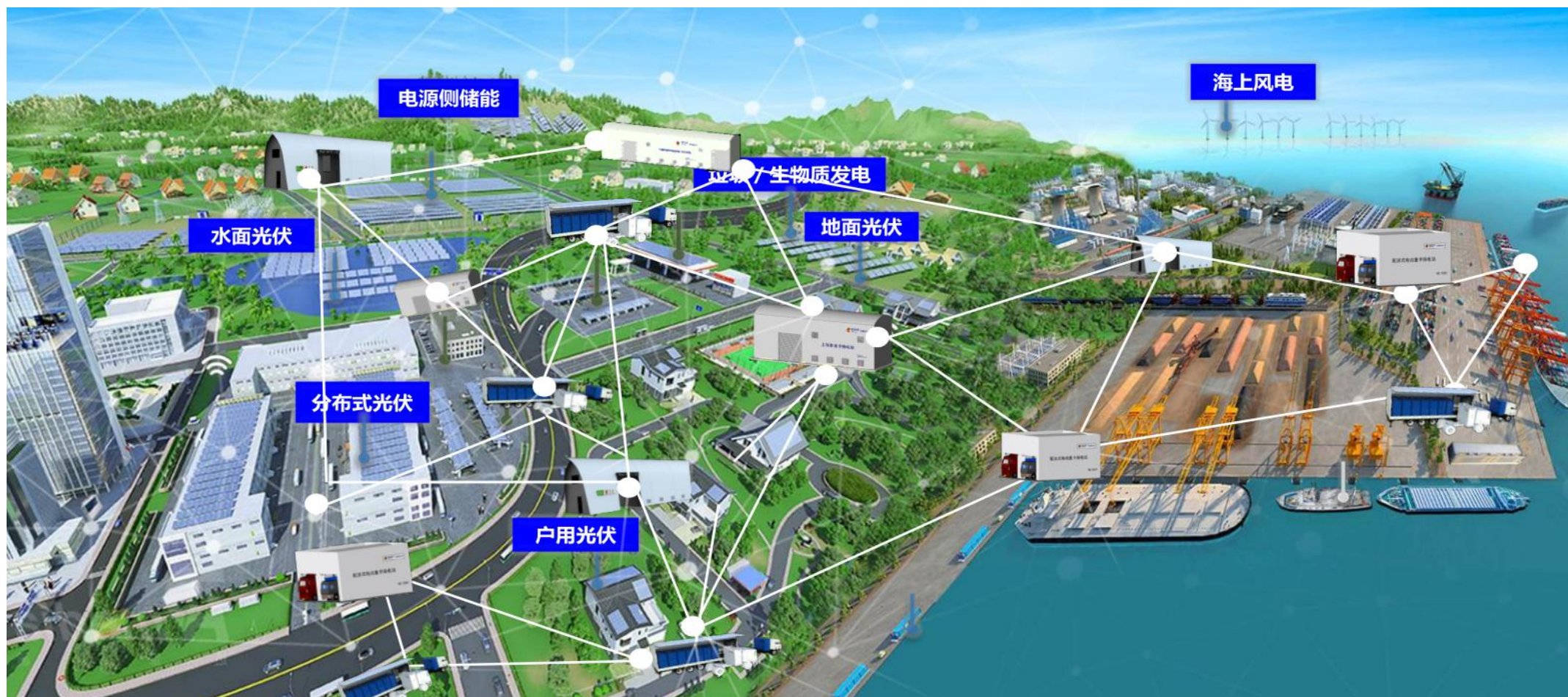
每辆电动集卡全天行驶里程400km，按照每公里油耗0.4升计算，100辆电动集卡可以减少燃油消耗584万升/年。

根据统计，每使用1千瓦时的清洁电力，就相当于节约了0.32kg标准煤，同时减少污染排放0.272kg碳粉尘、0.997kg二氧化碳（CO₂）、0.03kg二氧化硫（SO₂）、0.015kg氮氧化物（NO_x）。根据计算的发电系统年度总发电量，具体年减排量如下表所示：



减排项目	首年减排	5年累计减排
节省标煤煤耗(t)	7475.2	37376
减排碳粉尘(t)	6353.92	31769.6
减排CO ₂ (t)	23289.92	116449.6
减排SO ₂ (t)	700.8	3504
减排氮氧化合物(t)	350.4	1752

绿色换电生态圈/Green Ecosystem of battery replacement



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智能化应用-港口牵引/ Intelligent application-Port traction



队列行驶跟车距离 < 15m 有效提升通行能力50%以上	泊车入位时间 < 70s 优于一个熟练驾驶员	精确停车精度 < 3cm 满足港口作业精准定位要求
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- 具备一拖四队列行驶、自动换道、与有人集卡混行和各类闸口自动通行，自动泊车、轮胎吊和桥吊下精准停车等核心功能
It has core functions such as one-to-four queue driving, automatic lane changing, mixed traffic with manned trucks, automatic passage at various gates, automatic parking, tire cranes, and precise parking under bridge cranes.

- 应用智驾技术整体能耗下降10%
Application of intelligent driving technology reduces overall energy consumption by 10%

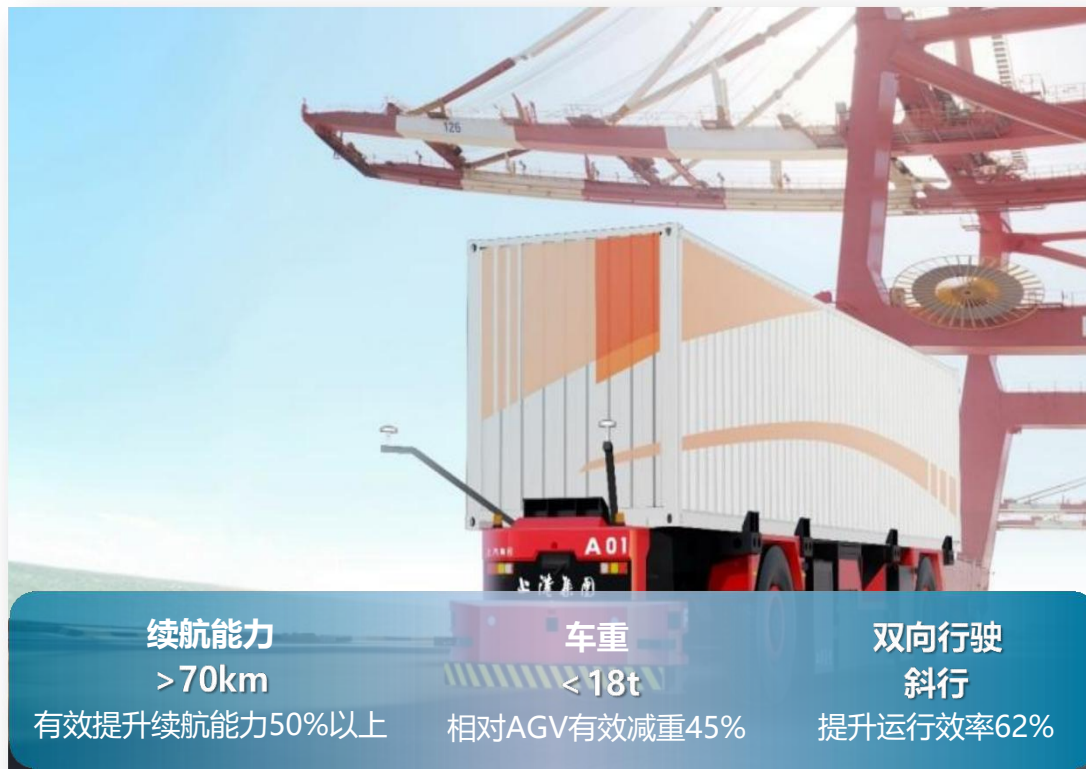
- L4智能重卡覆盖LNG、纯电、燃料电池三种能源形式
L4 smart heavy truck covers three energy forms: LNG, pure electricity, and fuel cell

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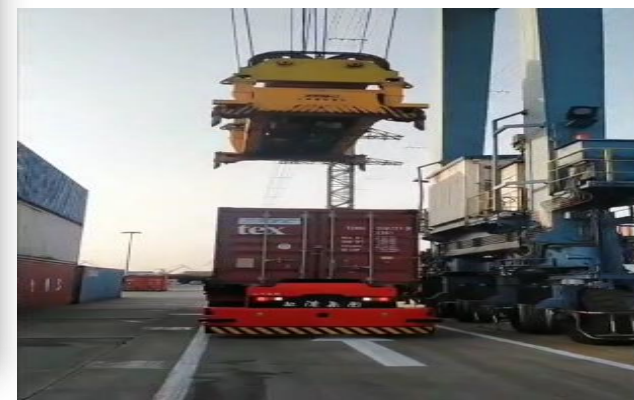
智能化应用-港口AGV/ Intelligent Application-Port AGV



- AIV覆盖纯电，燃料电池两种能源形式
AIV covers pure electricity and fuel cell two forms of energy



- 具备港内道路自动换道、斜行、双向行驶、轮胎吊和桥吊下精准停车等核心功能
It has core functions such as automatic lane changing, oblique driving, two-way driving, tire crane and precise parking under bridge crane in the port



- 相对传统AGV，成本降低53%，重量降低45%，续航能力提升40%，车速提升62%
Compared with traditional AGV, the cost is reduced by 53%, the weight is reduced by 45%, the endurance is increased by 40%, and the vehicle speed is increased by 62%

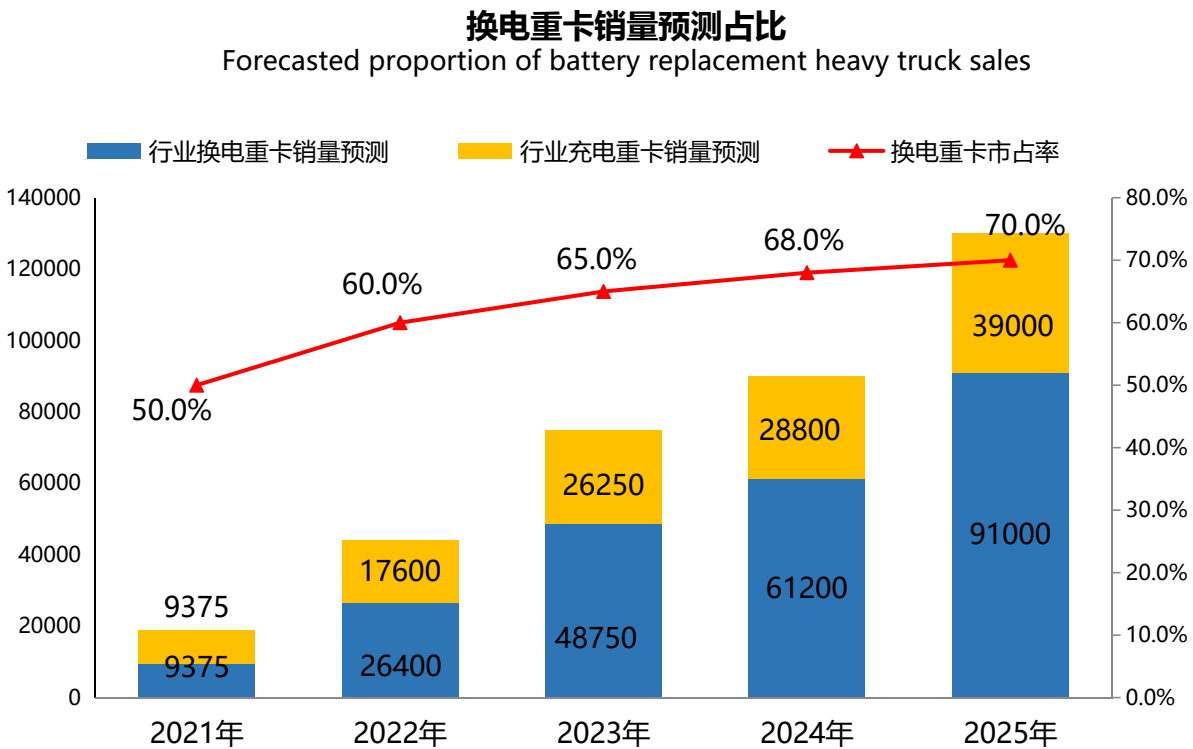
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市场趋势预测/ Market trend forecast

■ 随着行业政策的利好及市场成熟，换电重卡的市场占比预计将逐年增大，至2025年达到70%，9万余台，25-30Gwh的总电量需求规模。

With the favorable industry policies and the maturity of the market, the market share of battery replacement heavy trucks is expected to increase year by year, reaching 70% by 2025, with more than 90,000 units, and a total power demand scale of 25-30Gwh.

分类/Classification	2021F	2022F	2023F	2024F	2025F
新能源行业预测（辆） New energy industry forecast	18750	44000	75000	90000	130000
换电重卡行业预测（辆） Forecast of battery replacement heavy truck industry	9375	26400	48750	61200	91000
换电重卡预测占比 Predicted proportion of battery replacement heavy trucks	50.0%	60.0%	65.0%	68.0%	70.0%



数据来源：上汽红岩十四五规划+案头分析
Data source: SAIC Hongyan 14th Five-Year Plan + Desk Analysis

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面向未来的上汽红岩第六代重卡

Future-oriented SAIC Hongyan sixth-generation heavy truck



国际级安全品质

International safety quality



乘用车级舒适

Passenger-grade
comfort



行业最全能源组合

The industry's most
comprehensive energy
portfolio



万变个性定制

Personalized customization



软件定义重卡

Software-defined
heavy truck



东方醒狮全新外观设计

New appearance design



红岩杰虎H6
GENHOO H6

红岩杰狮H6
GENLYON H6

红岩杰豹H6
GENPAW H6

« HONGYAN »

THANKS

谢谢