



SuperAlloy Industrial Co.

Investing A
Lightweight Future



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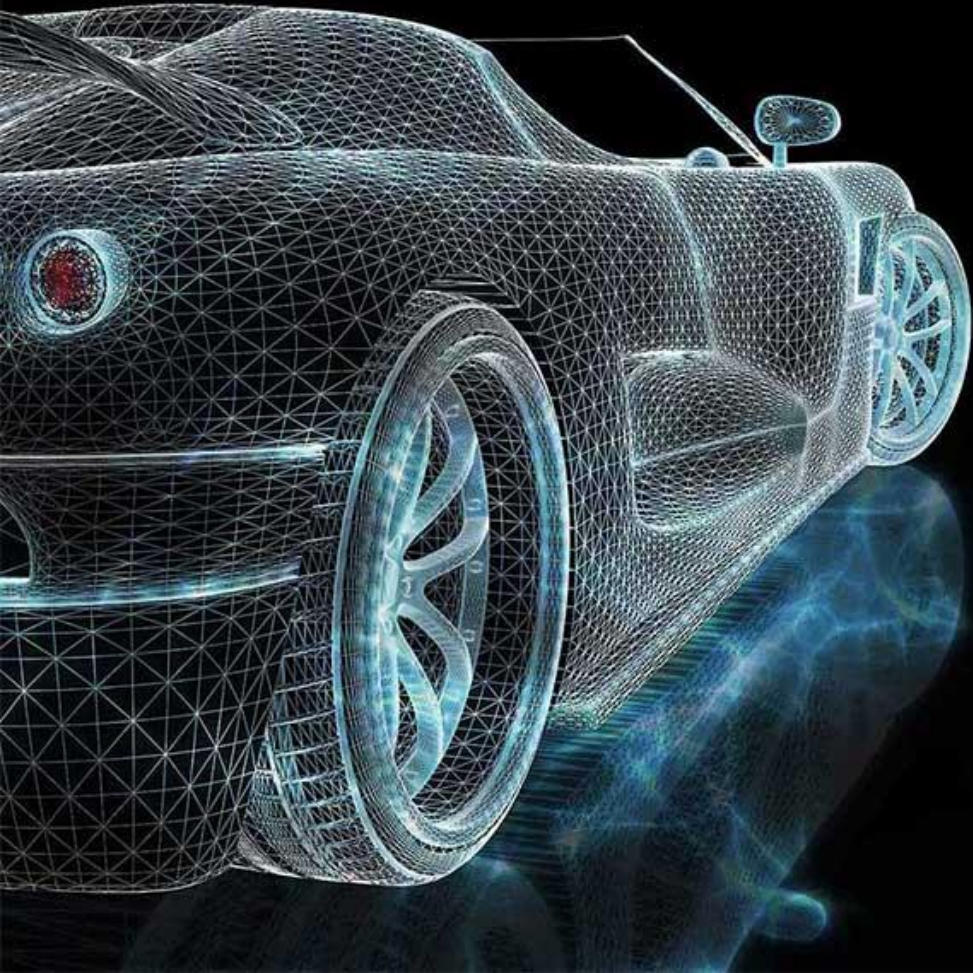
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Agenda



01 World Leading Aluminum Forged Wheel Supplier for Luxury and Premium Automobiles

02 Industry Trends Favor Growth in SAI's Business

03 Lightweighting is essential to xEVs

04 The SAI Vision for Future Growth

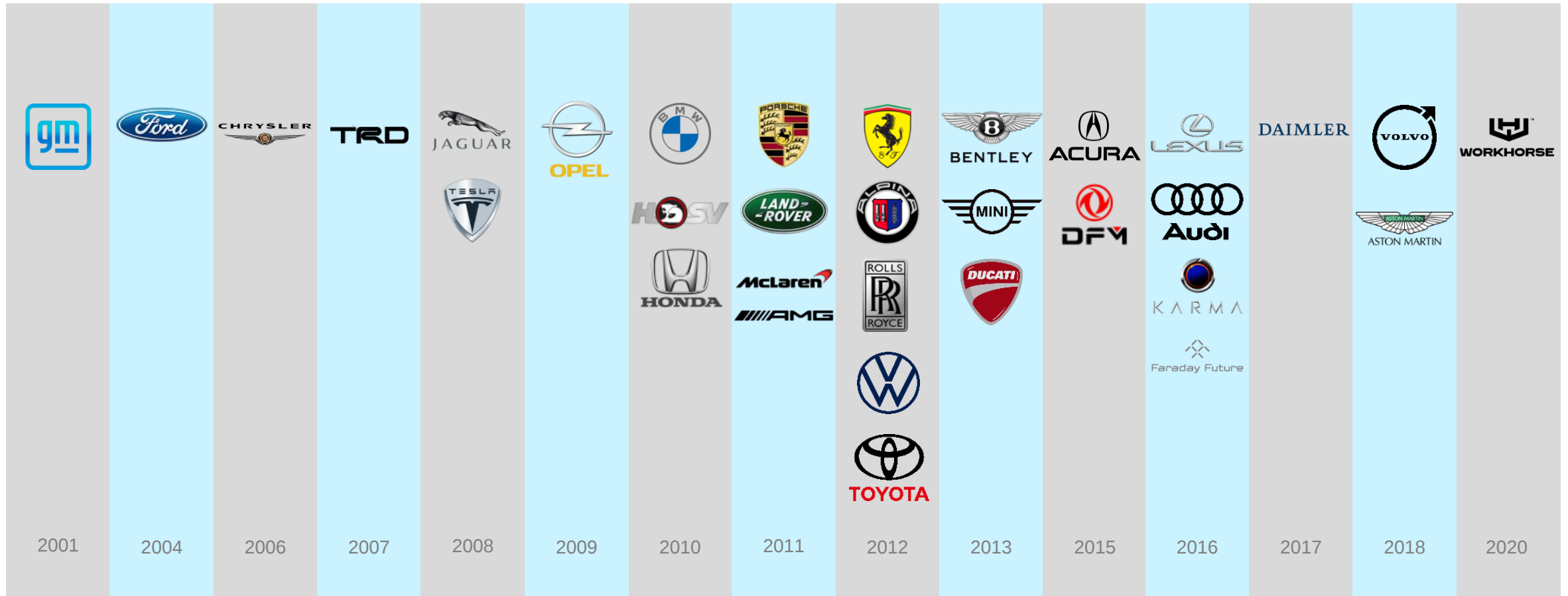
05 Financial Performance

The background of the slide is a dark, moody photograph of a Rolls-Royce vehicle. On the left, a large, multi-spoke aluminum forged wheel is visible, featuring the Rolls-Royce 'RR' logo in the center. To the right of the wheel, a portion of the car's door is shown, including a vertical door handle with the 'Rolls-Royce' logo. The image is partially obscured by a dark blue diagonal overlay on the left side, which serves as a background for the text.

World Leading Aluminum Forged Wheel Supplier for Luxury and Premium Automobiles

Tier-One Supplier to Top Global Brands

- ◆ 2 decades of design and manufacturing experience
- ◆ Top 5 Clients are Mercedes-Benz 、 Porsche 、 BMW 、 JLR and Toyota



Company History Timeline

1994

Established in Yunlin,
Taiwan
Produced bicycle parts
and golf club heads



2000

First forged
aluminium wheel

2001

Supply aluminum
forged wheel to US
market

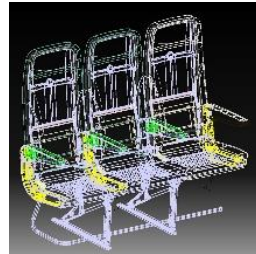


2011

Automobile
suspension
components

2012

Supply aluminum
forged knuckle to
EU market



2013

Aircraft seat
components

2017

Opening
German Plant:
SuperAlloy
Manufaktur GmbH



2020

Opening
Pingtung Plant
Recycled
material first
approved by
OEMs

2022

Became an
ASI member

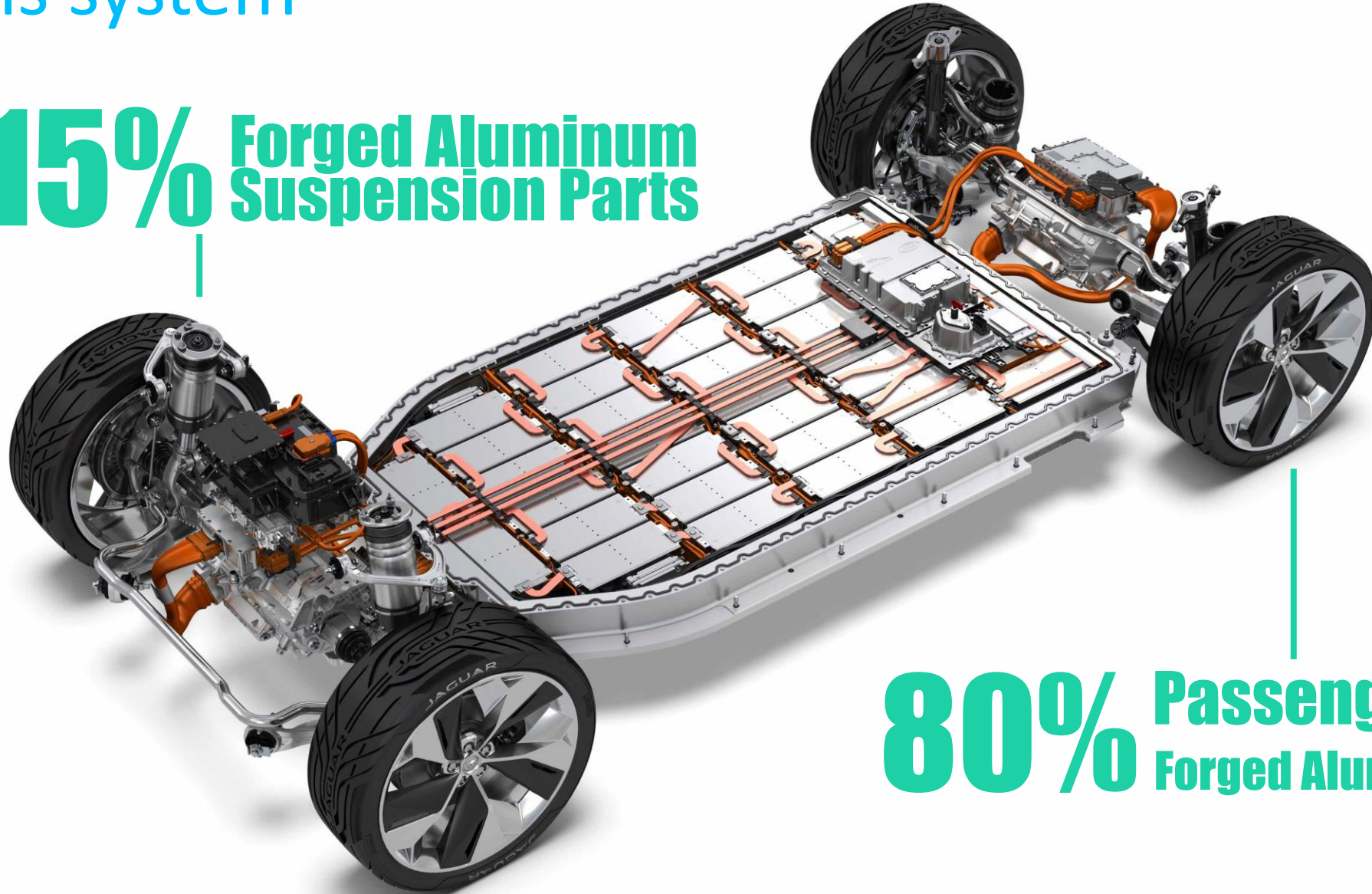




For 2 decades, we specialize in the manufacture of lightweight alloy products for the automotive industry
Forged wheels have historically been our key sales and profit driver

Focus on the strongest key components of the chassis system

15% Forged Aluminum
Suspension Parts



80% Passenger Vehicle
Forged Aluminum Wheels

Key Figures

3 Manufacturing
Sites

42 Car Brands
Supplied

10,001,475
Forged Wheels
Delivered

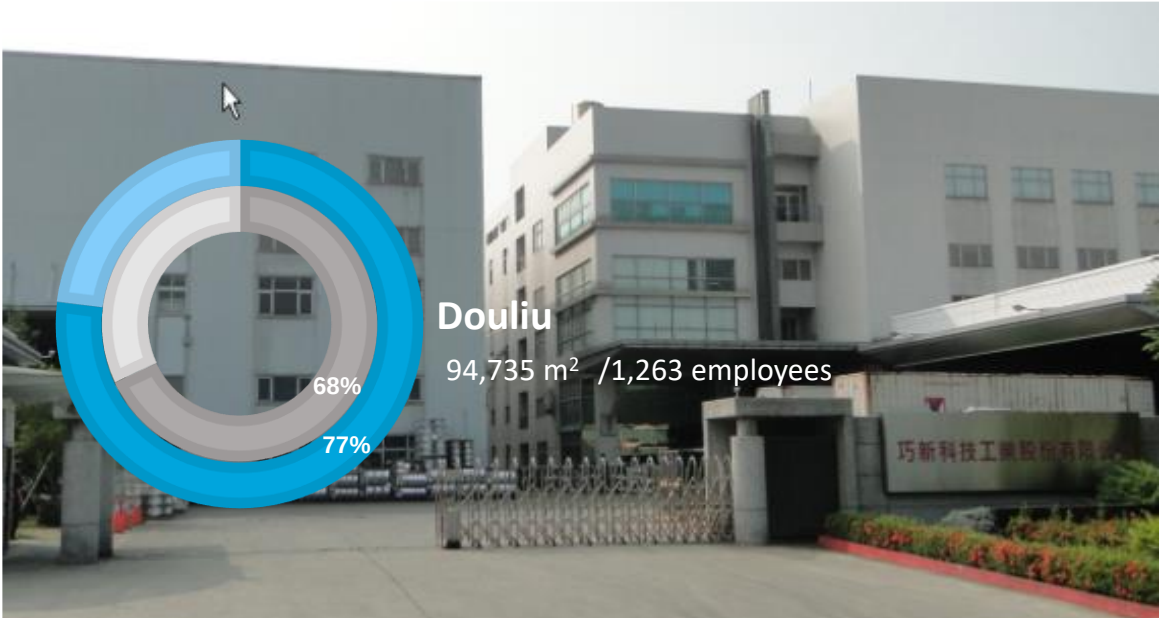
1,753 Wheel Models
Produced

1,547
Global Employees

3,242,616
Suspension Parts
Delivered

SAI is Proudly Made in Taiwan

*Staff accumulated till 2021 year end
2021 vs 2020 Capacity utilization rate

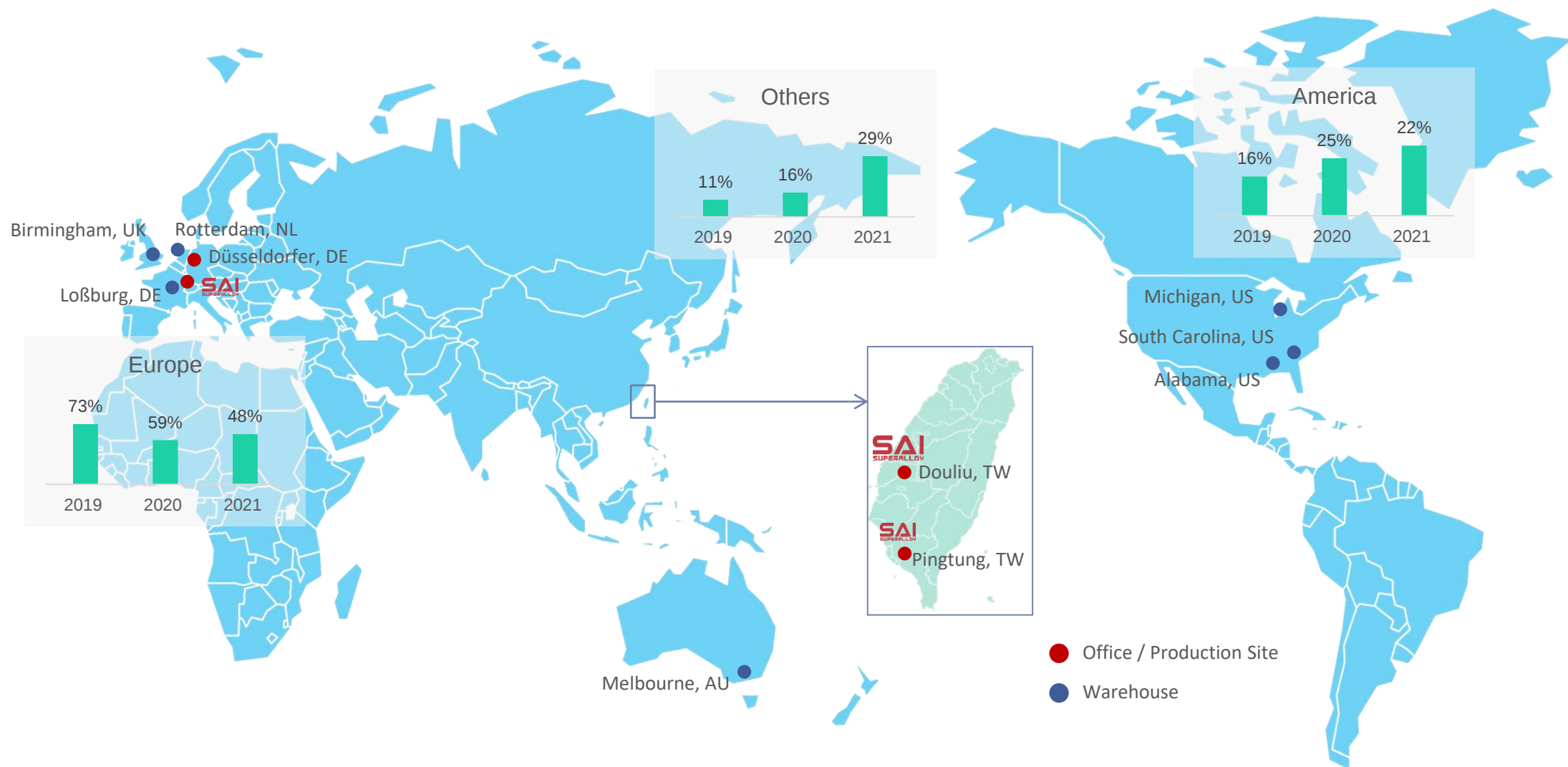


	Douliu	Pingtung	Freudenstadt
Forging	✓	✓	
Machining	✓	✓	
Polishing	✓	✓	
Painting	✓	✓	✓
Testing	✓		
Melting		✓	
Capacity(pcs)	700,000	300,000	400,000



Global Layout Aiming to the Market Trends

To support our brand customers, SAI has set up global sales, painting lines and warehouses, providing a consistently high level of service quality and supply reliability.



World-class Production Efficiency

SAI's excellent forged wheel manufacturing service:

- ◆ Support service of design, customization and pre-production
- ◆ Yield rate before painting process is above 97%
- ◆ Rigorous material, and functional and environmental tests to ensure the safety and highest quality of the wheel



Forging

8,000 Ton Forging
7,000 Ton Forging
Flow Forming
T6 Heat-Treatment



Machining

Turning
Milling
Diamond-Cutting
Dot Marking
Laser Etching



Polishing

Manual Grinding
Robotic Grinding
Dynamic (Vibration)-
Polishing
Physical (Mechanical)-
Polishing



Painting

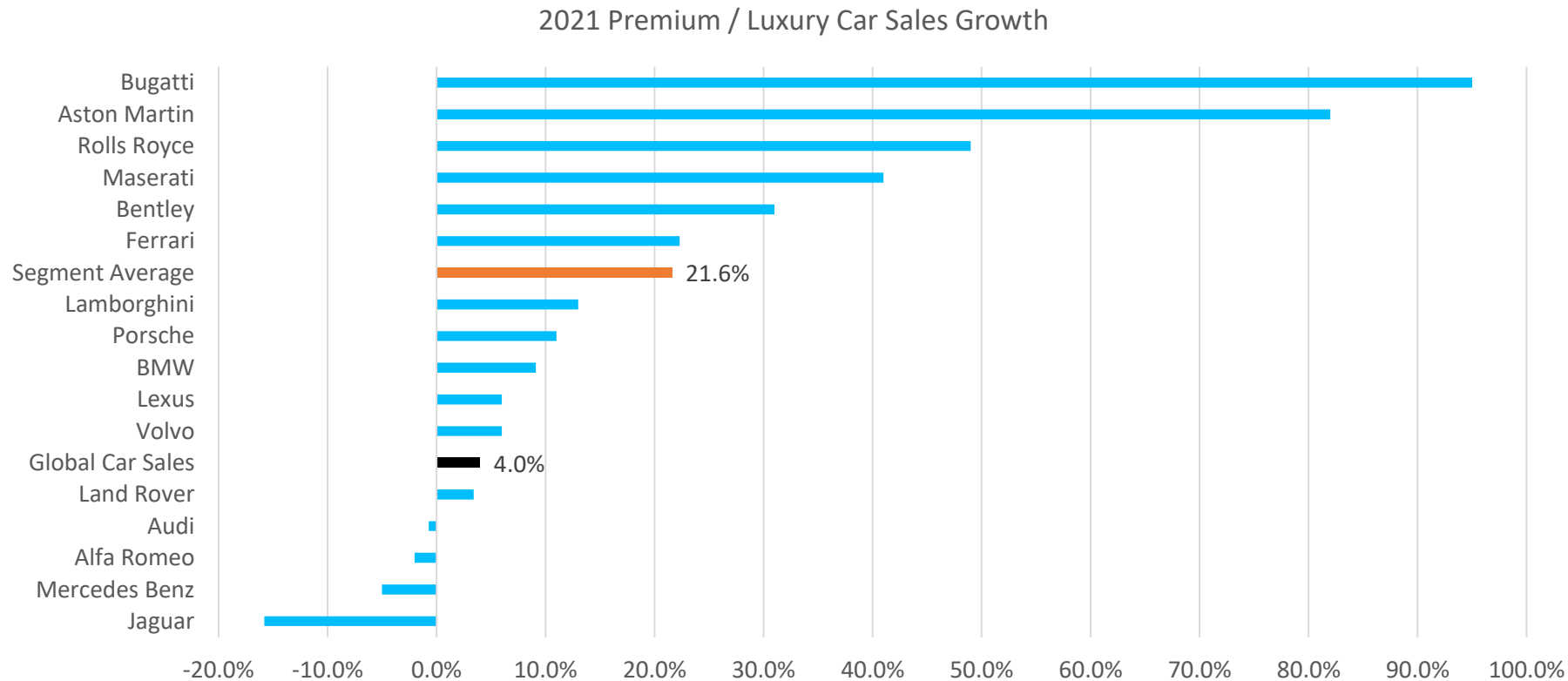
Manual Painting
Automated Painting
Masking
Powder Painting
Liquid Painting
Up to 6 Coats- 6 Bakes

Industry Trends Favor Growth in SAI's Business



Premium Segment is Outgrowing Overall Market

- ◆ Due to chip shortage, OEMs have ensured that the most profitable products will continue to roll off production lines at the expense of lower-margin stablemates.
- ◆ Customers of higher-priced vehicles tended to be more insulated during the pandemic, with incomes less disrupted and sources of wealth, such as the stock market and property markets, holding up well.
- ◆ Premium cars have remarkable growth of average 21.6% while global car sales only grew 4%. Aston Martin, Bentley, BMW, Rolls Royce, Porsche, Ferrari, Maserati, Lamborghini, Bugatti all hit new sales records.



Source: [Canalys](#)
Annual reports from makers

Industry Trends Create Multiple Growth OPPs

1. IEA released *World Energy Outlook 2021*

Countries around the world have made carbon neutral commitments. Finland in 2035, Austria and Iceland in 2040, the European Union, Canada, South Africa, Japan, the United Kingdom, France, Denmark and other countries have committed to 2050, and China announced that it will be realized by 2060.

2. By 2026, automotive aluminum content will increase by 12% compared to 2020

According to Aluminum Association, it is confirmed that aluminum is the fastest-growing automotive material, and the content of each car is expected to increase to 514 pounds by 2026. The design evolution of lightweight structure is driving the development and demand of aluminum, and the market penetration rate continues to increase.

3. Automakers will apply more recycled aluminum parts to reduce carbon emissions

BMW requires suppliers to use more than 50% of recycled aluminum by 2025; JLR increases the proportion of recycled aluminum used, which can reduce the carbon emissions of the production process by 26% within a few years. Audi, Toyota, and VW have all launched plans to use recycled aluminum. **Compared with primary aluminum, secondary aluminum manufacturing can reduce energy consumption by up to 95%.**



Source: Ducker Frontier
Industry News
2021/2022 Industrial White Papers

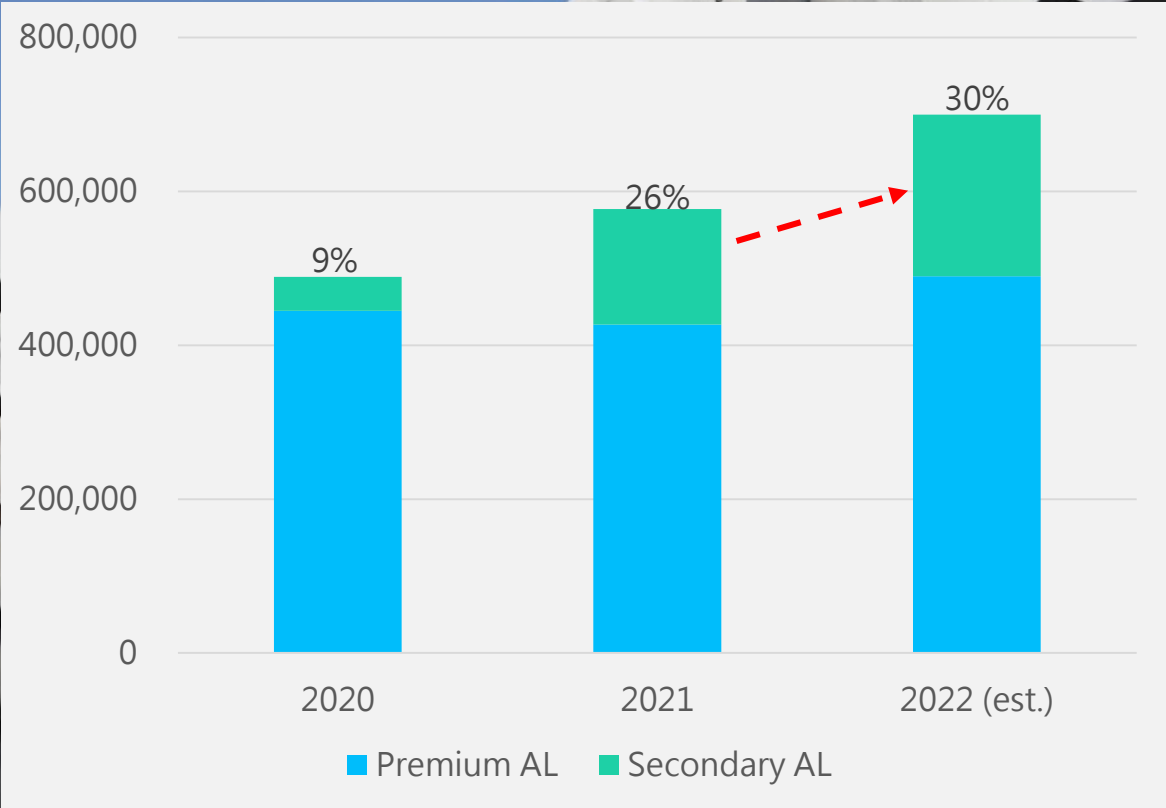
Material Shortage, Inflation, and Automakers' Carbon Neutrality Goals Speed Up SAI's Secondary Aluminum Forged Wheels Demand

Carbon Neutrality	Automakers
2030	Porsche, Bentley
2035	Toyota
2039	Daimler, JLR
2040	GM, Volvo
2045	Hyundai
2050	VW, Audi, Ford, RR, Nissan



Source: [Trading Economics](#)

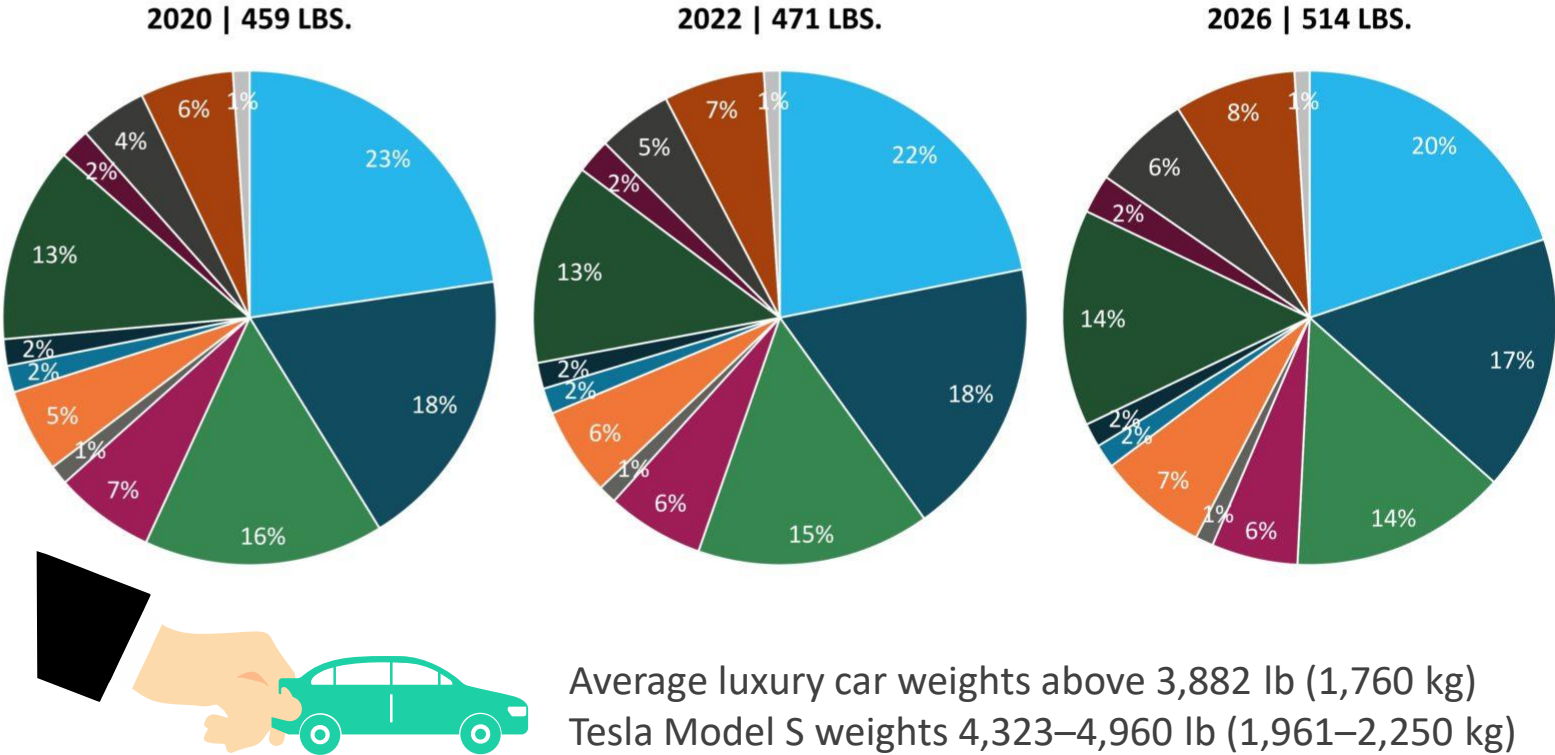
★SAI Secondary Aluminum Forged Wheels
Increased from 9% in 2020 to 26% in 2021
Estimated to 30% in 2022



Vehicles Will Use More Aluminum Components for Lightweighting

System PPV	2016	2020	2022	2026
Engines	110	104	103	102
Transmissions & Drivelines	83	85	86	86
Wheels	65	72	72	73
Heat Exchangers	32	30	30	29
Heat Shields	6	6	6	6
Suspensions/Cradles/Subframes	21	25	27	37
Steering Components	8	8	8	8
Brakes	8	8	8	8
Closures	41	59	62	73
CMS	7	9	11	13
Body Stamping	11	20	23	33
Other Body	14	28	31	41
All others	5	5	5	5
Total	411	459	471	514

As closures and body structures continue to grow in aluminum penetration, suspension components are also projected to increase in share. Parts dedicated to battery electric vehicles (e.g. battery box, motor housing, converter housing, BMS housing, etc.) will also expand its use of aluminum to offset weight gain.



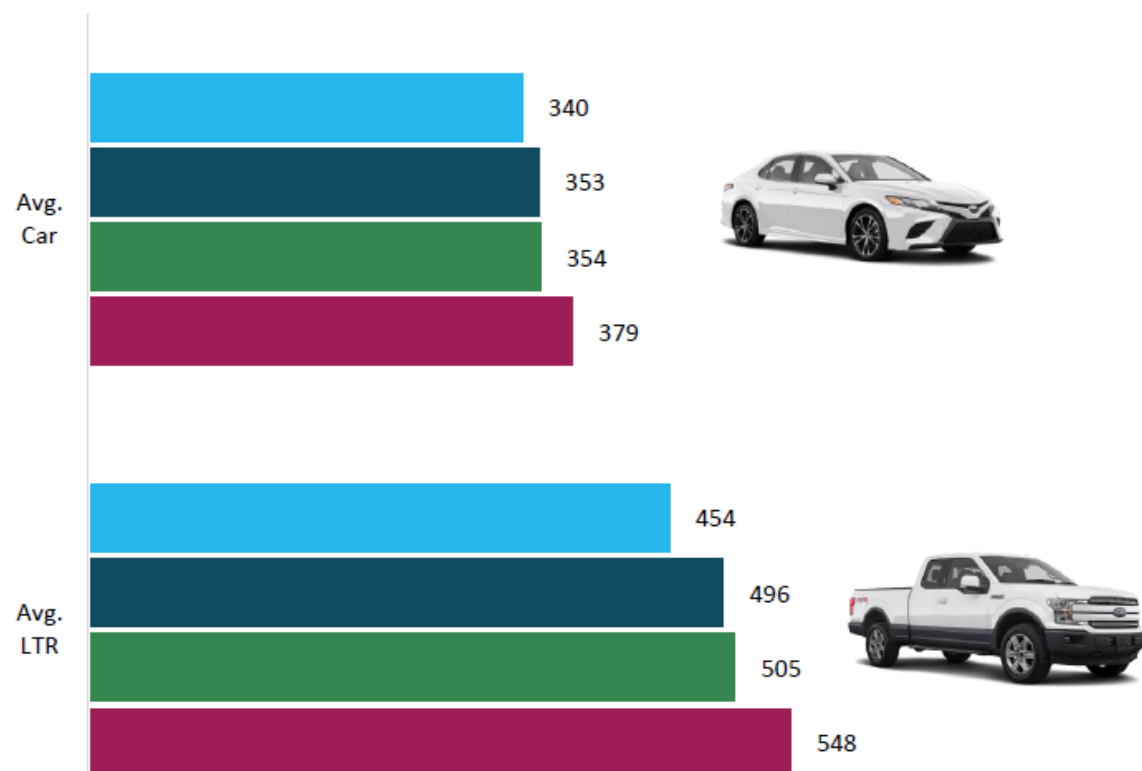
Source: DuckerFrontier April 2020

Source: [Ducker Frontier](#)

D/E Segments and Sports Cars Use More Aluminum Components than Average to Achieve Lighter Weight, Safer and Better Handling

Vehicle Segments PPV

■ 2016 ■ 2020 ■ 2022 ■ 2026



According to the INFINITY BUSINESS INSIGHTS research report, **the global forged aluminum wheel market reached USD 3.604 billion in 2020, CAGR 5.86% from 2021 to 2027**

Source: DuckerFrontier April 2020

Segment	2016 PPV	2020 PPV	2022 PPV	2026 PPV
A Segment Car	297	304	N/A	N/A
B Segment Car	248	258	259	294
C Segment Car	285	270	278	288
D Segment Car	366	423	427	471
E Segment Car	537	519	626	834
Average Car	340	353	354	379
Segment	2016 PPV	2020 PPV	2022 PPV	2026 PPV
B Segment LTR	251	241	258	260
C Segment LTR	314	357	364	412
D Segment LTR	402	410	435	477
E Segment LTR	574	654	671	721
Average LTR	454	496	505	548
Segment	2016 PPV	2020 PPV	2022 PPV	2026 PPV
Total Average	411	459	471	514

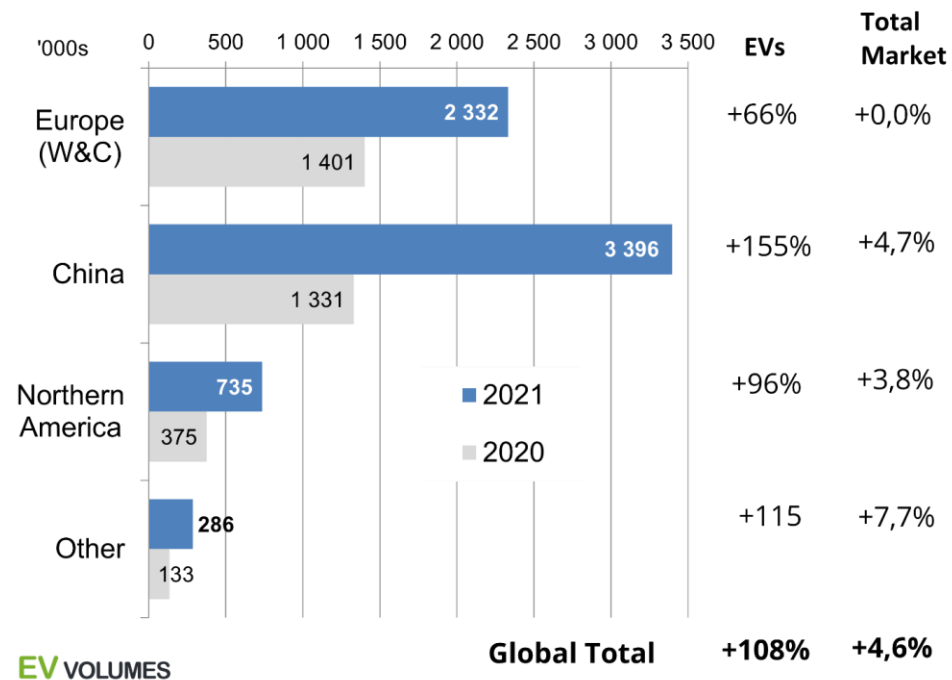
Source: [Ducker Frontier](#)

Global sales performance of new electric vehicles

China leads the EV-transition in 2021

BNEF expected the global share of EVs in new sales to increase by 50%, from 4% to 6% in 2021, and rising further to 8% in 2022, actually it increased 108% to 8.4% share. Bloomberg has underscored that internal combustion has already peaked.

BEV+PHEV SALES AND % GROWTH

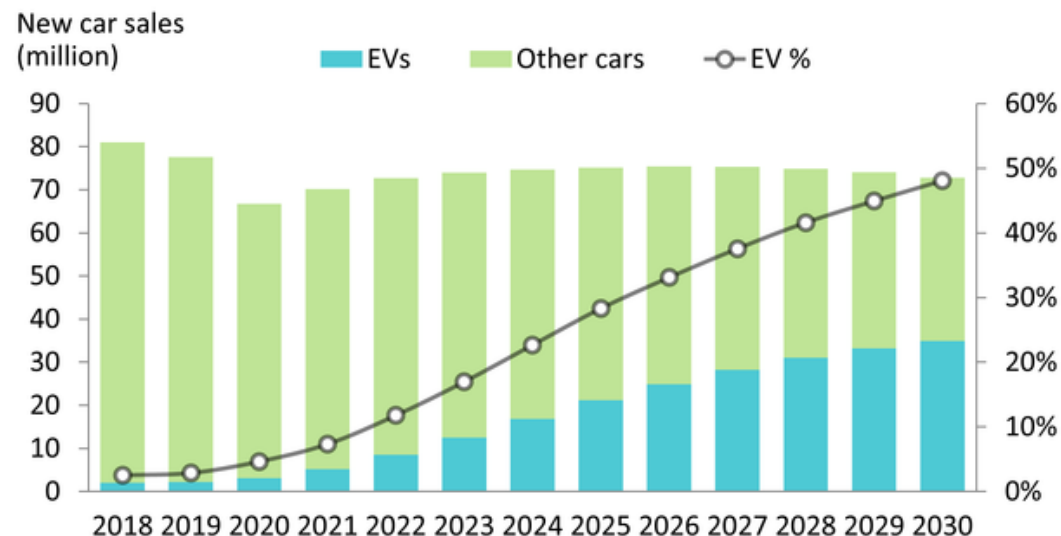


資料來源: [EV Volumes](#)
[Green Car Reports](#)

All net growth in global car sales in 2021 came from EVs

Automakers sold 6.6 million plug-in vehicles in 2021, more than double the 3 million sold in 2020, and more than triple the 2.2 million sold in 2019. Estimated 48% of new car sales in 2030.

Global passenger car sales*



*Excludes commercial vehicles

Source: Canalis estimates, January 2021



Lightweighting is Essential to xEVs

SF90 STRADALE

Comparison of Forged and Cast Wheels

The instant energy output of EV motors create higher torque and acceleration, and the physical requirements for the rim are significantly higher.

Forged		Cast
	Strength	
	Durability	
	Elongation	
	Impact Resistance	
	Fuel Economic	
	Unsprung Weight	
	Vehicle Handling	

Example Wheel Size	Cast Wheel	Forged Wheel	Weight Reduction Ratio
19x9.5	15.70kg	11.77kg	-25%
20x11	18.08kg	13.01kg	-27%
21x10	21.30kg	14.91kg	-30%

*The difference in weight is related to the shape and rim load
*Tested wheels are same size with similar design

SAI Supplies **26** xEVs (**5** BEV : **21** PHEV)

Porsche Taycan 2x models (2019-today)



Jaguar I-Pace (2018-today)



BMW i8



Tesla Model X (2015-2018)



Tesla Roadster (2008-2012)



McLaren Artura



Ferrari Stradale



Porsche Panamera 4 E-hybrid



Volvo Polestar S60/V60



Range Rover SVA



Bentley Bentayga Hybrid



Lexus LC500 HEV



Porsche Cayenne E-hybrid



Acura NSX HEV





2019 Taycan

Front: 21x9.5 (13.609kg)

Rear: 21x11.5 (14.667kg)



All-electric Car

More than 20,000 Taycans were delivered in 2020, its debut sale year, representing 7.4% of the total Porsche volume.



2020 Bentayga



20x10 (17.241kg)



Plug-in Hybrid Luxury SUV

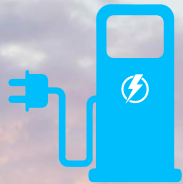
The Hybrid models of Bentayga S and Bentayga Speed each feature their own imposing 22" wheel designs.

2021 Artura



Front: 19x8.5 (9.139kg)

Rear: 20x10.5 (11.024kg)



Plug-in Hybrid Sports Car

The new McLaren Artura hybrid supercar is set for launch by the end of 2021, with McLaren referring to its new petrol-electric two-seater as its first 'High-Performance Hybrid' model.

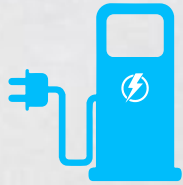




2022 296GTB

Front: 20x9 (12.469kg)

Rear: 20x11 (13.862kg)



Plug-in Hybrid Sports Car

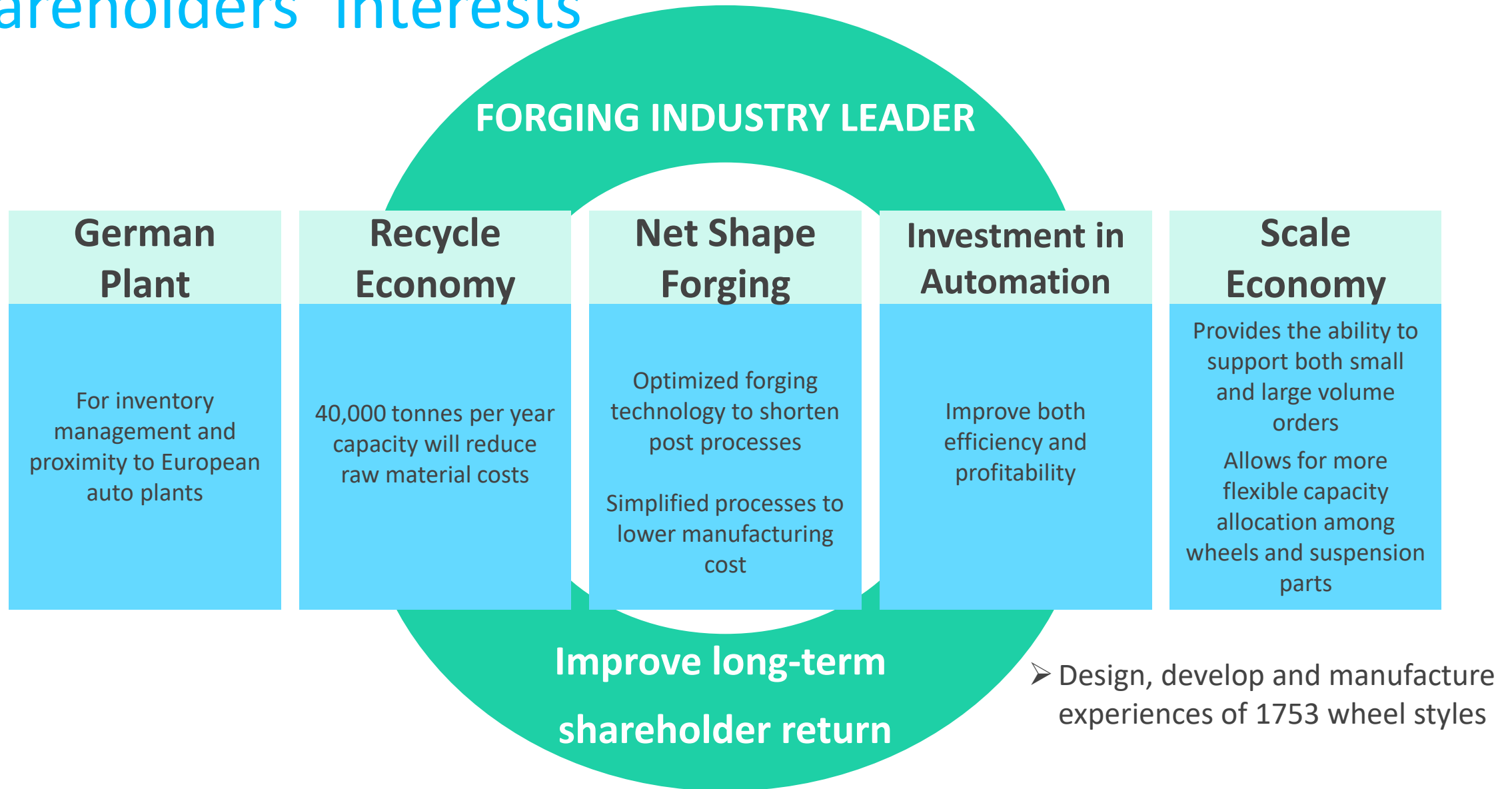
296 GTB was presented as the first "real Ferrari with six cylinders". The sports car is scheduled to go on sale in 2022.





The SAI Vision for Future Growth

SAI strengthens competitiveness and maximizes shareholders' interests



Extensive Testing Ensuring Safety and Quality

- ◆ Complete quality system and professional safety laboratory testing.
- ◆ Develop QA technology, testing processes and accumulate related big data.
- ◆ Continuous improvement to achieve higher quality standards and better services.
- ◆ SAI wheels adhere to international standards, including **VIA JWL INMETRO**



Bending Fatigue
Radial Fatigue
13 Degree Impact
30 Degree Impact
Bi-axial Test

Metrology Measurement CMM
Fatigue Material Test Tensile
Brinell hardness ARL spark O.E.S.
Vicker hardness Rockwell hardness
Metallography microscope



Functional Tests

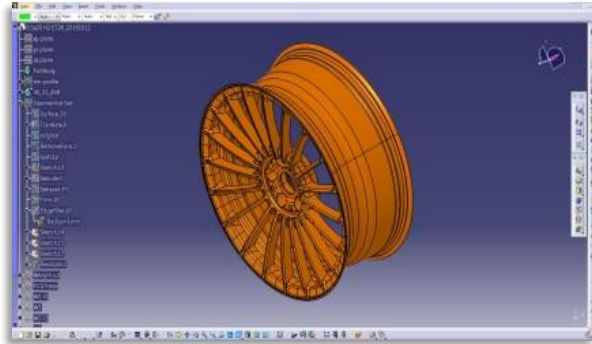


CASS Gasoline Resistance
Salt Spray Chip Resistance
Thermal Shock Solvent Rub
Water Resistance Cycle Crack
Filiform Corrosion Color
Xenon (Weathering Resistance Test)

Physical-Mechanical Tests

Environmental Tests

SAI Design & FEA Capability

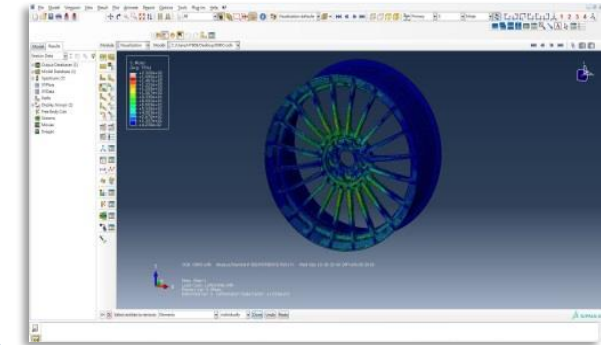


ABAQUS
HyperWorks
LS DYNA
Fe-safe
DEFORM
FORGE
Simufact Forming

Siemens NX (CAD/ CAM)
CATIA V5-6 (CAD)
Creo (CAD)
Autodesk Inventor (CAD)
MasterCAM (CAM)
Autodesk Powermill (CAM)

**CAD
CAM**

CAE



**Simulation
Ability**

Radial & Rotary Analysis
Impact Analysis
Stiffness Analysis
Natural Frequency
Mold Flow

Research & Development Capability

01

Microstructure-Processes-Properties
Evaluation

02

Optimization on Forging Processes

03

Near Net Shape Forging

04

Composite Materials

05

Lightweight Magnesium Alloys

06

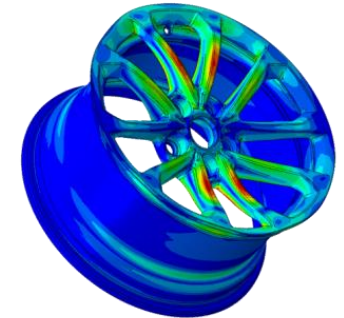
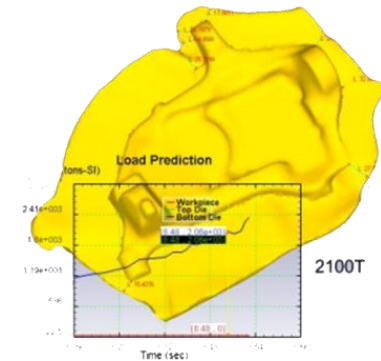
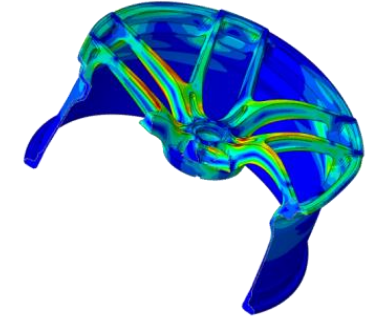
CAE/CAD Design on
Chassis Products

07

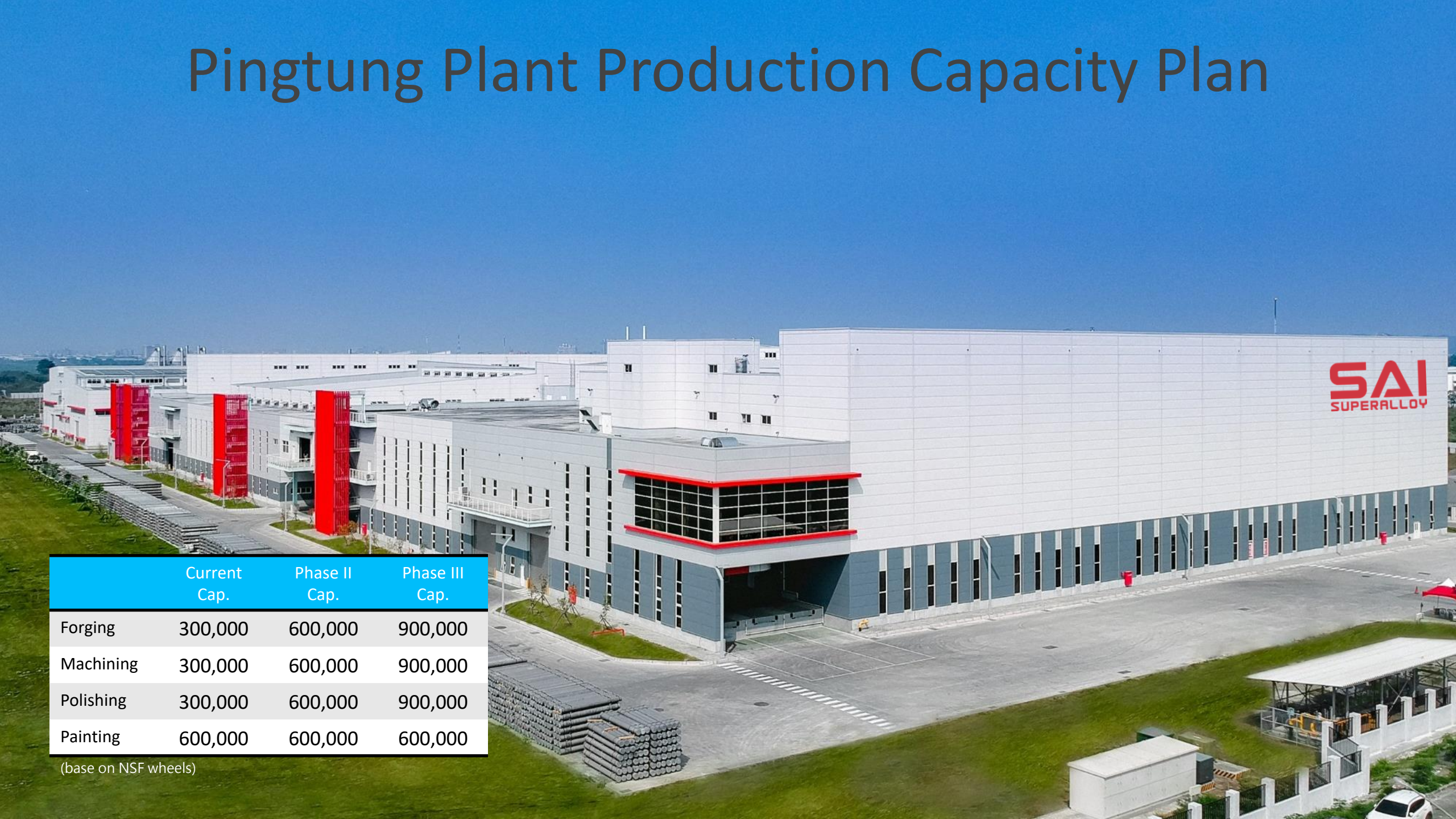
Modularization of Automotive
Structural Parts

08

Automation Equipment Development



Pingtung Plant Production Capacity Plan



	Current Cap.	Phase II Cap.	Phase III Cap.
Forging	300,000	600,000	900,000
Machining	300,000	600,000	900,000
Polishing	300,000	600,000	900,000
Painting	600,000	600,000	600,000

(base on NSF wheels)

SuperAlloy Industrial v2.0 Strategy



Solution Provider of Forged Products in Mobility Industry



**Recruitment
and
Retention**



**High Quality
Safe and
Lightweight
Products**



**Advanced
Engineering
and Material
Technology**



**Intelligent
Plant**



**Global
Allocation**

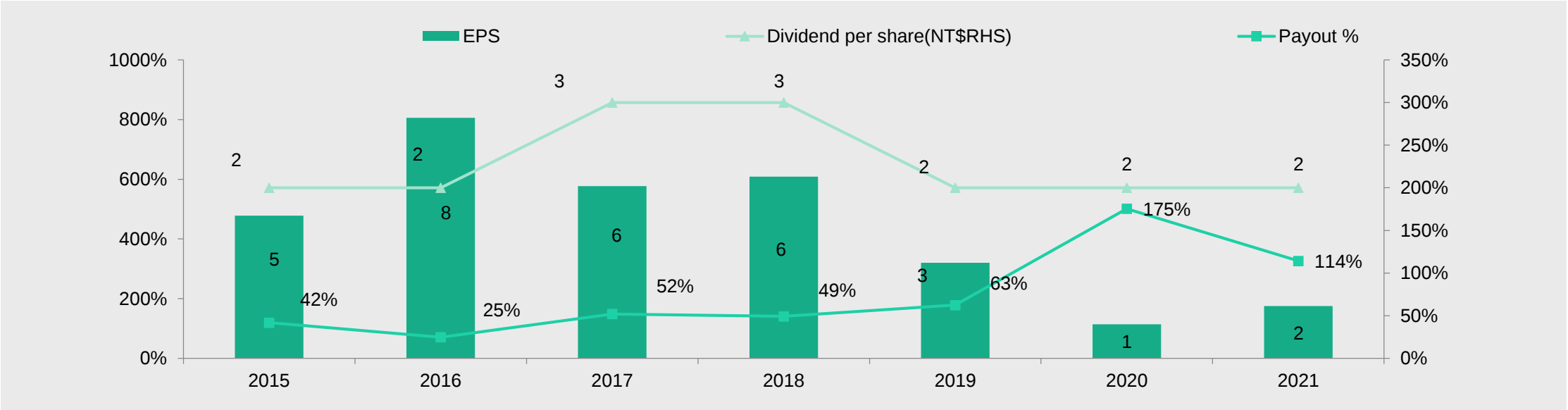
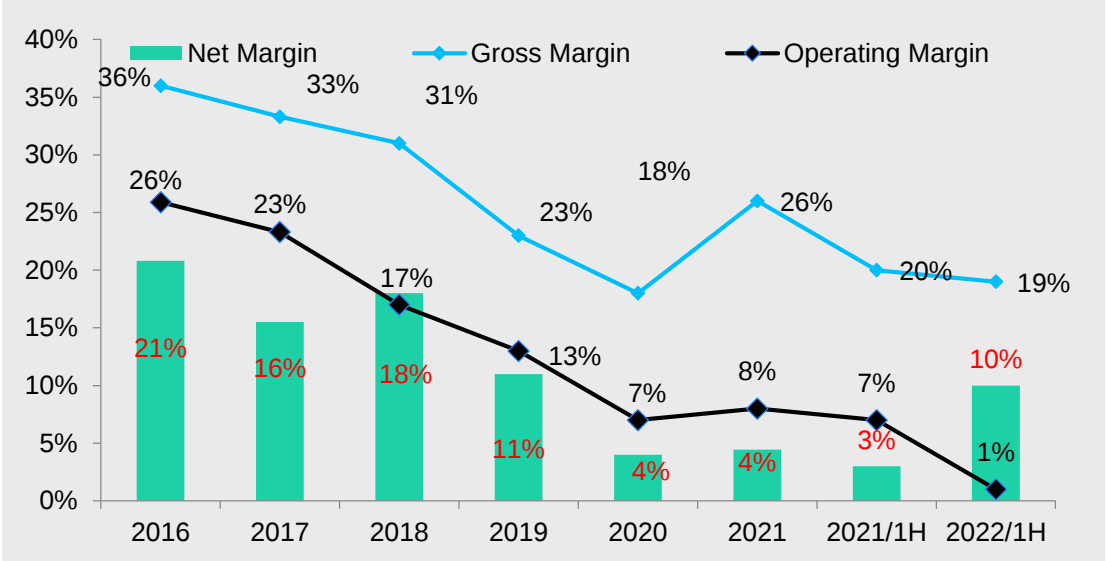
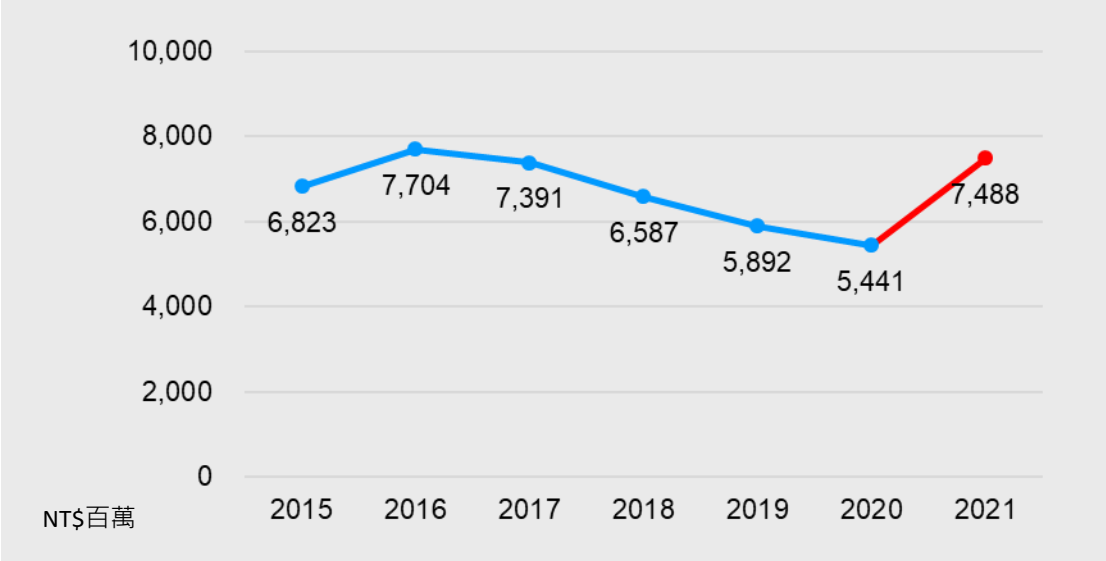


**Corporate
Social
Responsibility**

A yellow sports car, possibly an Aston Martin, is shown from a side profile. It has a black roof rack and is parked on a paved surface. The background features a mountain range under a sunset sky. A dark blue diagonal overlay covers the left side of the image.

Financial Performance

Key Financial Indicators



2020-20221H Balance Sheet

NT\$ million	2020	2021	2021/1H	2022/1H
TOTAL ASSETS	16,820	16,444	16,456	17,149
Cash	1,247	1,135	1,245	1,226
NR & AR	795	875	876	785
Inventory	5,072	4,972	4,960	5,546
PP&E	9,274	8,678	8,893	8,440
Others	432	784	482	1,152
TOTAL LIABILITIES	9,580	9,264	9,501	9,826
Bank Loans	8,238	7,827	7,201	7,880
AP	120	66	101	105
Others	1,222	1,371	2,199	1,841
TOTAL EQUITY	7,240	7,179	6,955	7,323
	2020	2021	2021/1H	2022/1H
A/R turnover days	51	41	42	46
Inventory turnover days	184	209	169	229
A/P turnover days	82	94	98	80
Cash conversion cycle	153	156	113	195

20221H v 20211H Profit Performance

NT\$ million	2022/1H	2021/1H	YoY
Sales Revenue	3,340	3,787	(12%)
Gross Profit	639	749	(15%)
Operating Profit	26	267	(90%)
Income before Tax	405	134	202%
Net Income	338	114	196%
EPS (NT\$)	1.73	0.58	198%

Thank you

