

Zukunft deutsche Autoindustrie

NEW MANUFACTURING

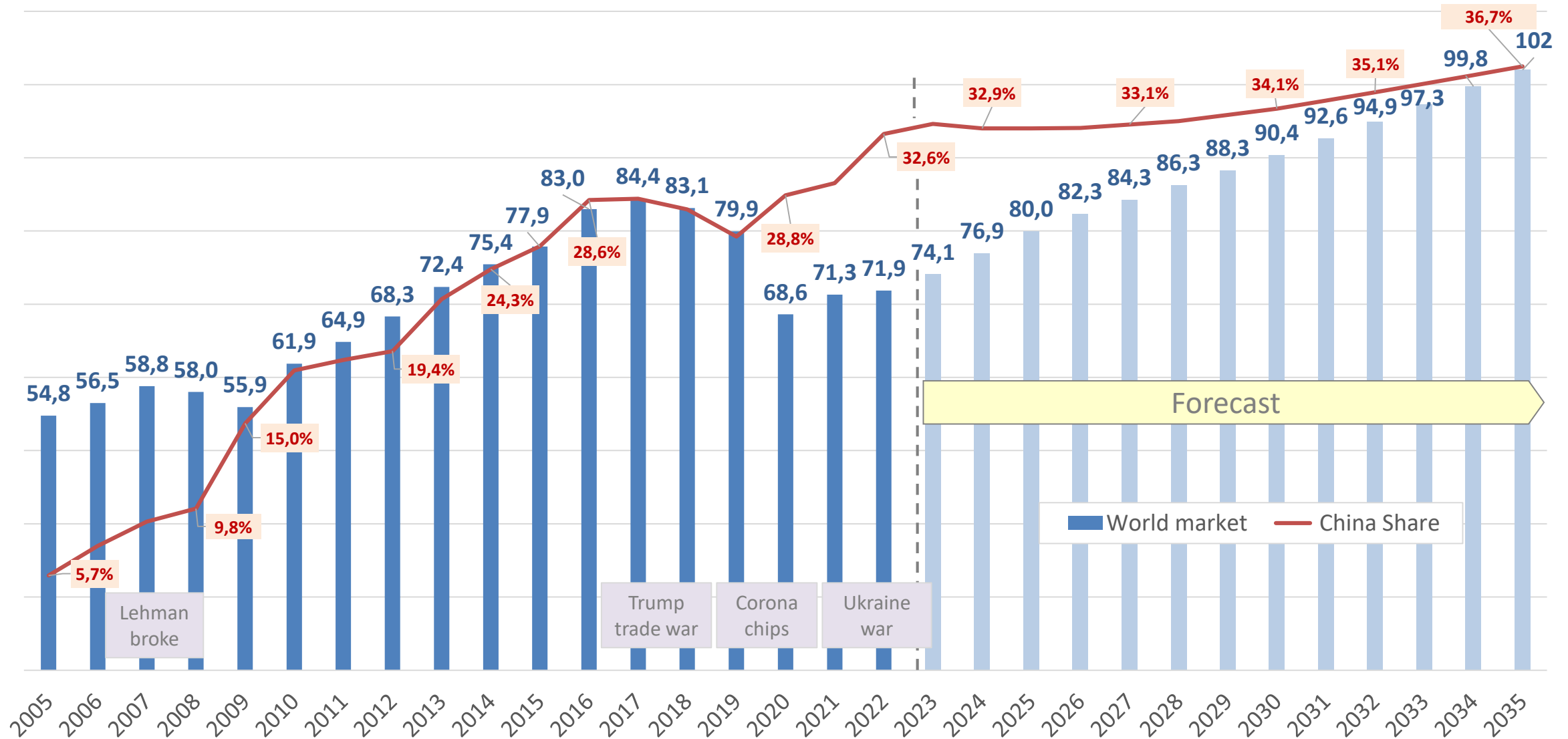
Prof. Dr. Ferdinand Dudenhöffer
Director, CAR-Center Automotive Research
Duisburg, Germany

Agenda - New Manufacturing

1. Regulation & EV
2. TESLA – New Manufacturing, Scales & Profit,
3. What Else ?

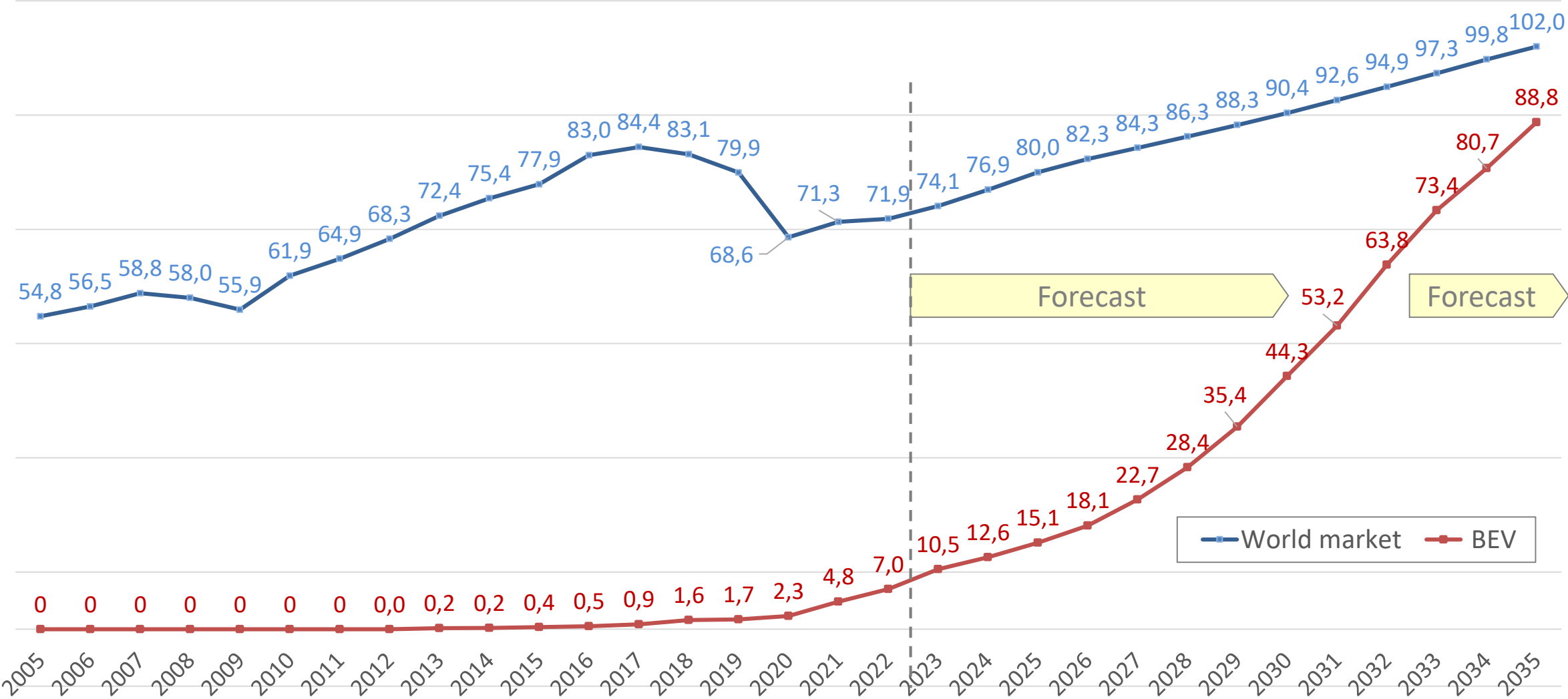
World Passenger Car Market

(in Mio. Vehicles)



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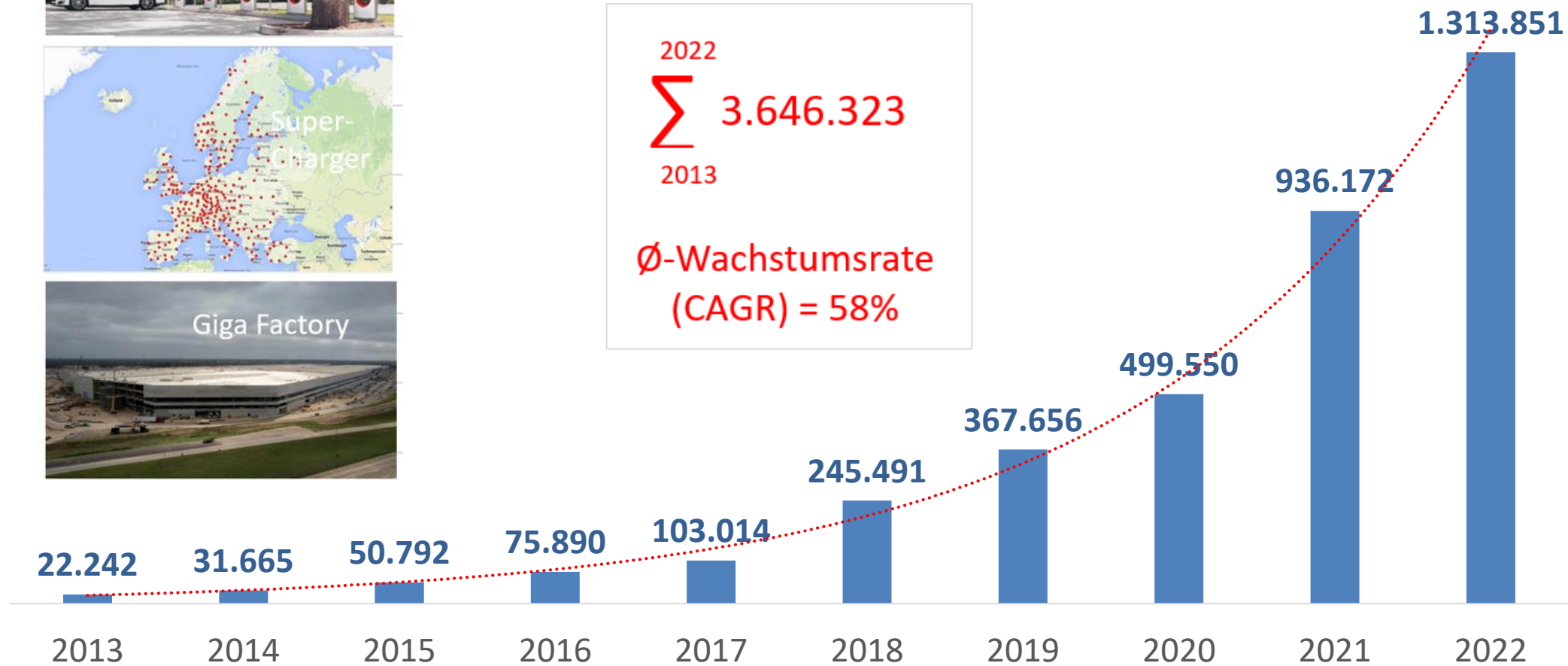


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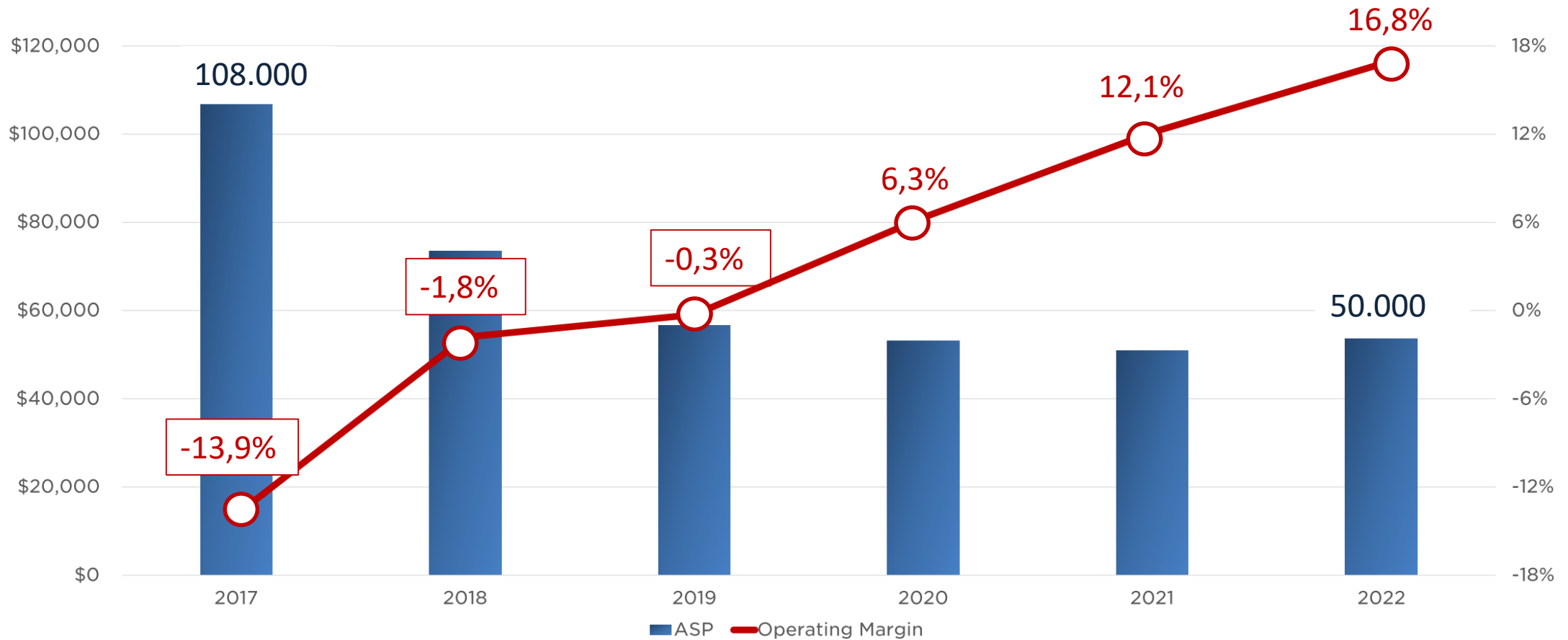
Global Warming & Electric Vehicles

Tesla Car Sales



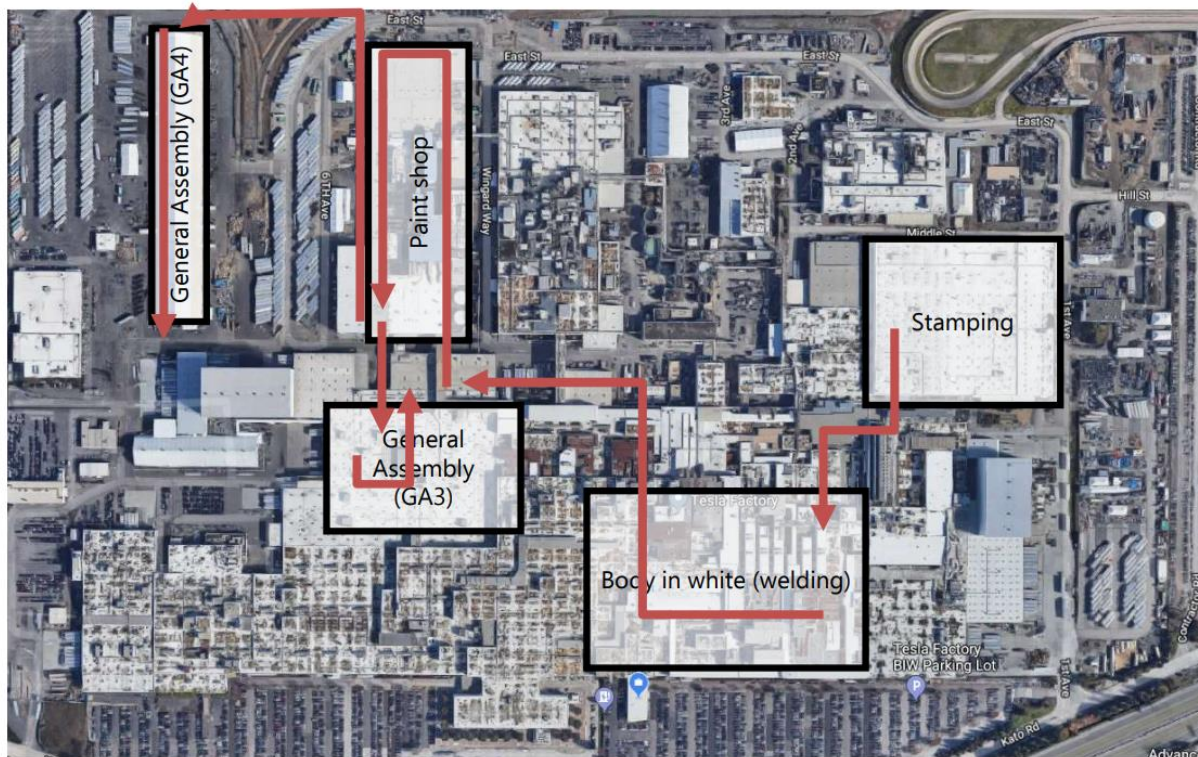
TESLA & SCALES

Vehicle Average Selling Price versus Operating Margin

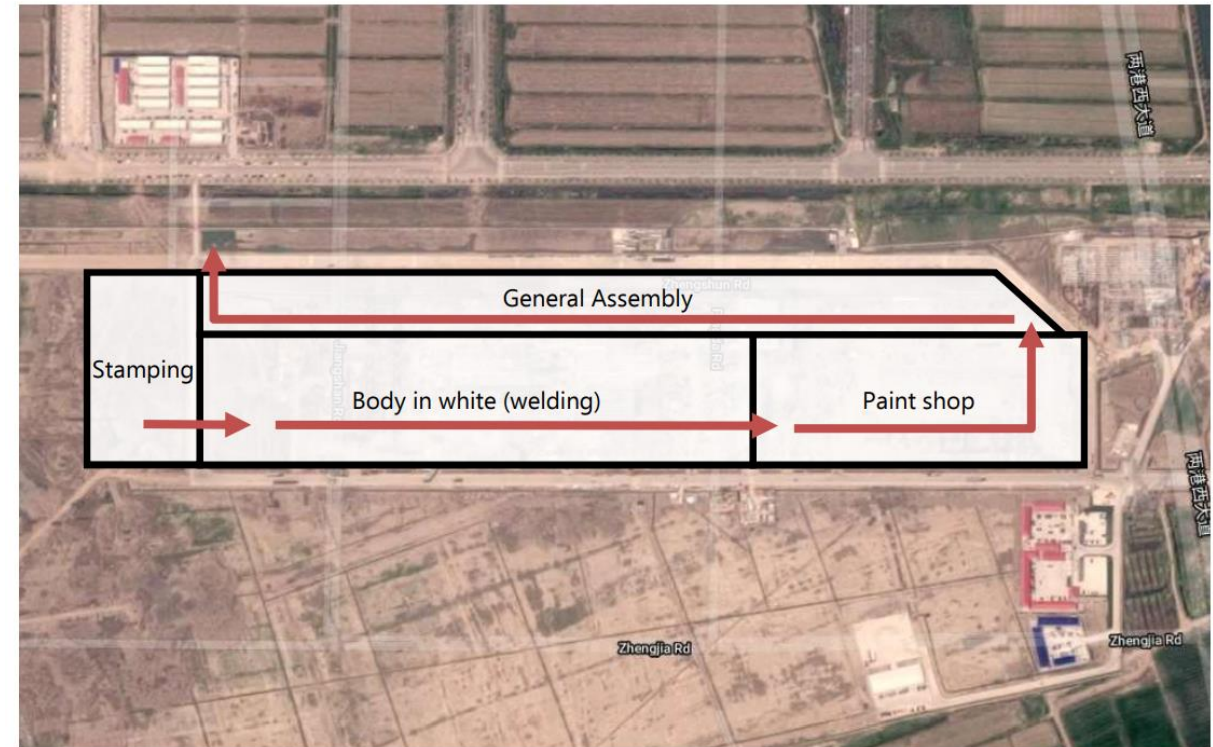


TESLA & SCALES

Factory Lay-Out and Production Cost



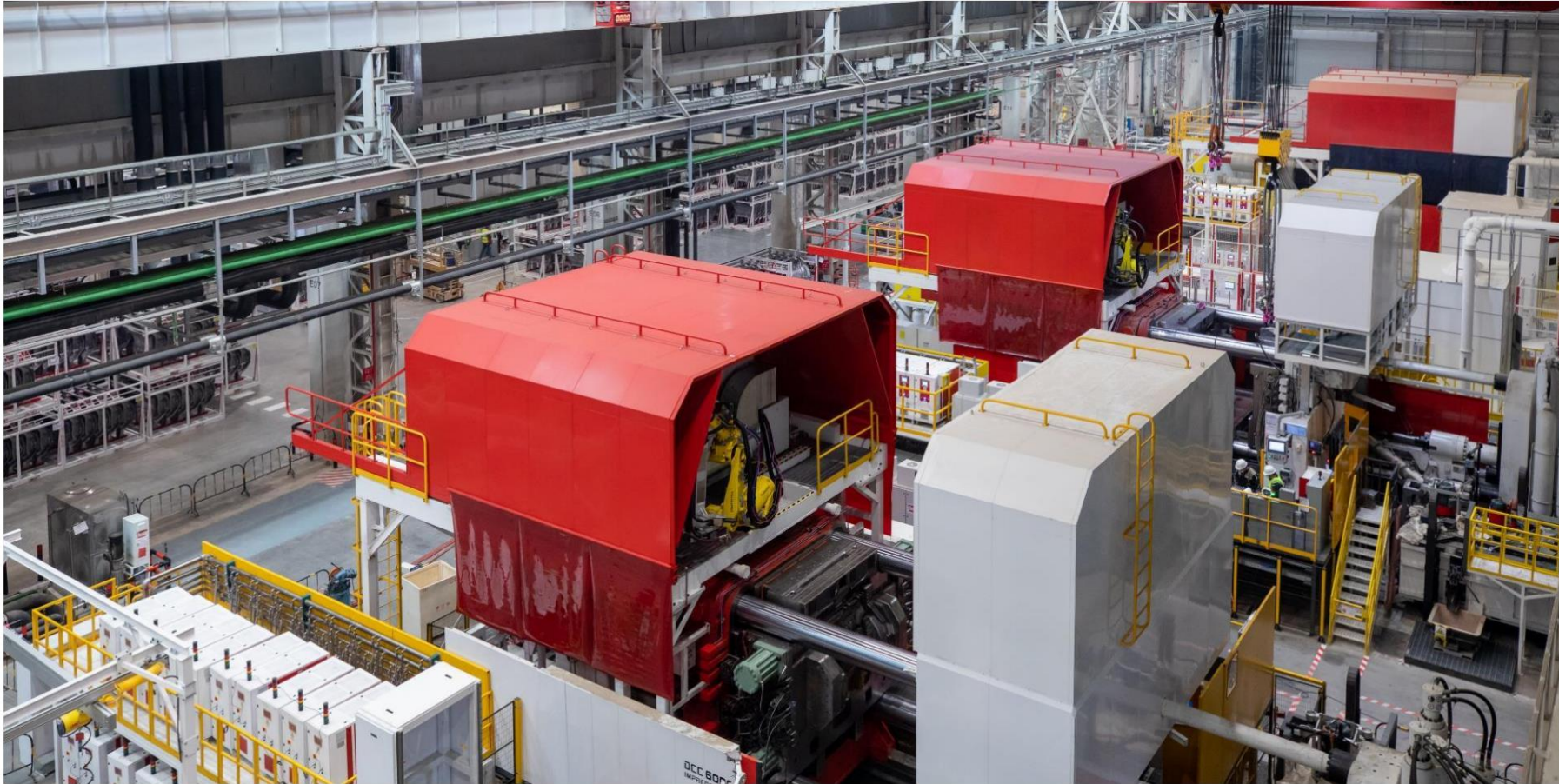
Model 3 In Fremont, CA



Model 3 In Gigafactory Shanghai

TESLA & SCALES

Saving Production Steps



Gigafactory Shanghai

Model Y DIE CAST

Front and rear end pressed in one pass replace around 60 individual parts.

This can reduce costs by up to 40%

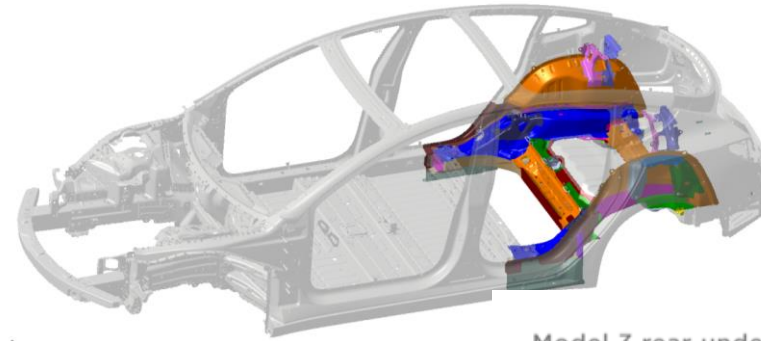
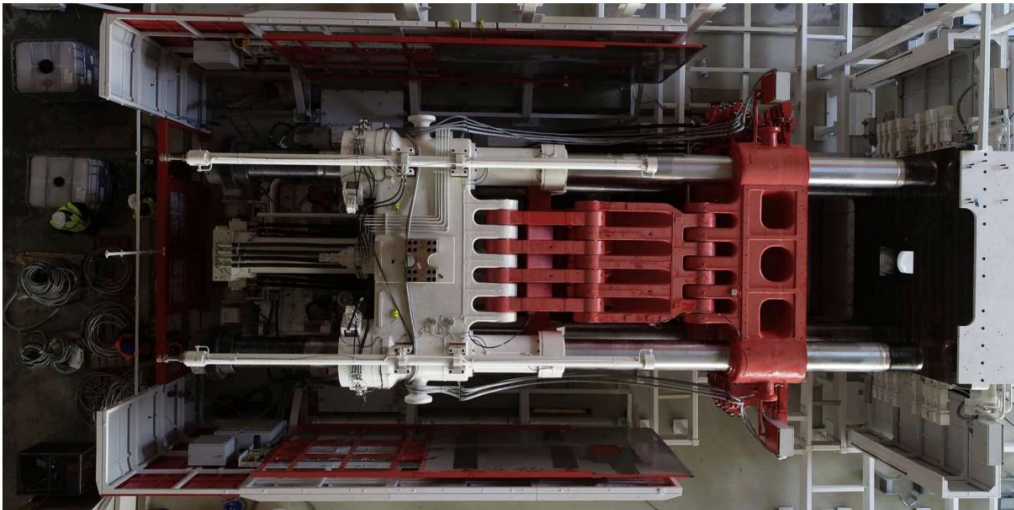
TESLA & SCALES

Saving Production Steps

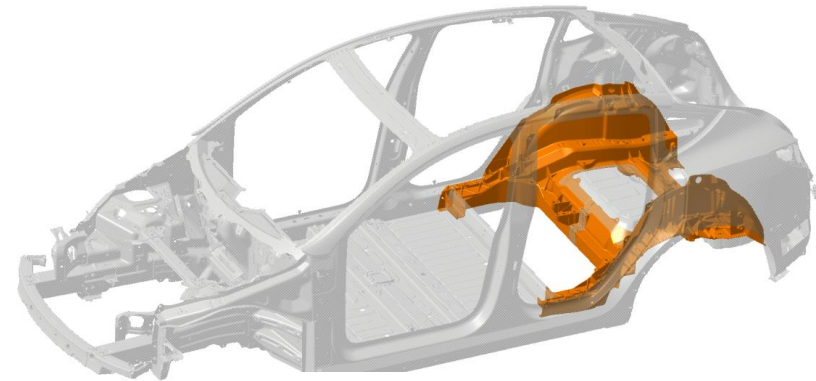
GIGAFACTORY SHANGHAI - MODEL Y DIE CAST



GIGAFACTORY BERLIN - GIGA CASTING



Model 3 rear underbody
70 pieces of metal



Model Y rear underbody
2 pieces of metal (eventually a single piece)

TESLA & SCALES

Austin Texas: Next Step Forward

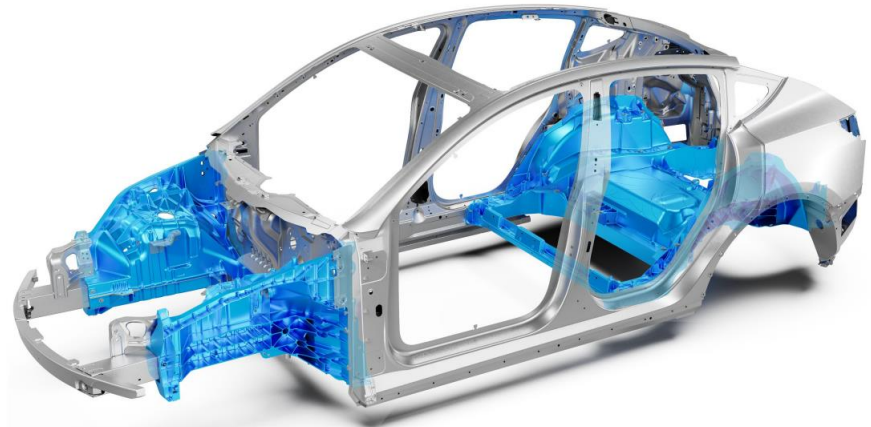


TESLA & SCALES

Austin Texas: Next Step Forward



Model 3 body structure
171 pieces of metal highlighted



Austin-made Model Y body structure
2 pieces of metal highlighted
>1,600 fewer welds

Next Step: Mexiko

Größte Gigafactory der Welt



In der Fabrik könnten auch Chips oder Batterien produziert werden

- Künftige Fertigung ist Baukastensystem, bei dem Modulgruppen zusammengesteckt werden.
- Ziel sei, alle 45 Sekunden ein Auto

75% weniger Silicon carbide (SiC) Halbleiter

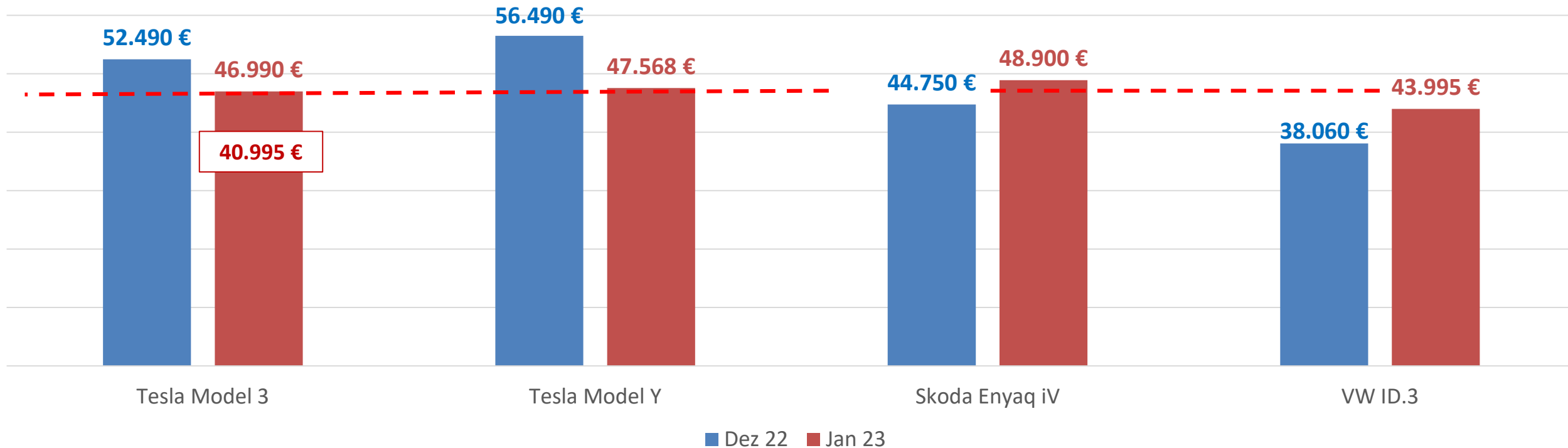
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TESLA, SCALES & GUERILLA PRICING

Pricing German Car Market

Jay C. Levinson
Guerilla-Marketing, mid 80-ies



Global Warming & Electric Vehicles

Worldwide sales of EV (BEV + Plug-In)

$$\text{TESLA} = \sum_{2013}^{\text{Dez. 2022}} 3.646.323$$



TESLA (2022) = 1.31 Mio. BEV sales

$$\text{BYD} = \sum_{2009}^{\text{Dez. 2022}} 3.000.000$$



BYD (2022) = 1.86 Mio. BEV+PHEV sales

To sum up



NEW
MANUFACTURING
FOR
MEGA SCALES

Car Symposium 2023

3. - 4. Mai 2023, RuhrCongress Bochum



Carlos Tavares

Chief Executive Officer,
Stellantis



Christophe Périllat

Chief Executive Officer,
Valeo



Dr. Holger Klein

Chief Executive Officer,
ZF Friedrichshafen AG



Michael Steiner

Member of the Board for Research & Development, Dr.
Ing. h.c. F. Porsche AG



William Li

Founder & Chief Executive Officer,
NIO

