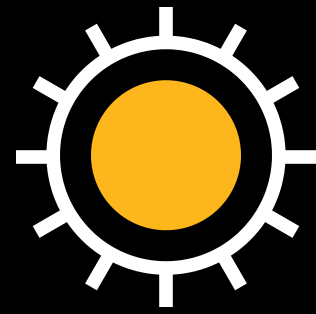
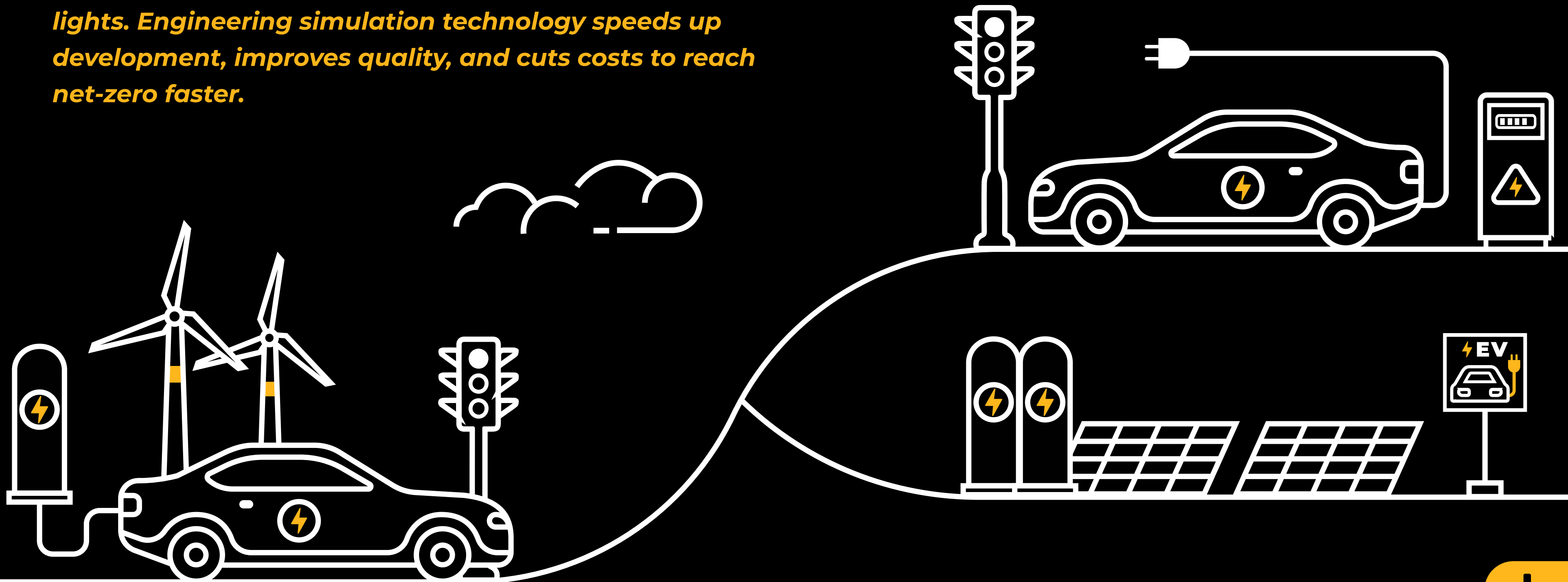


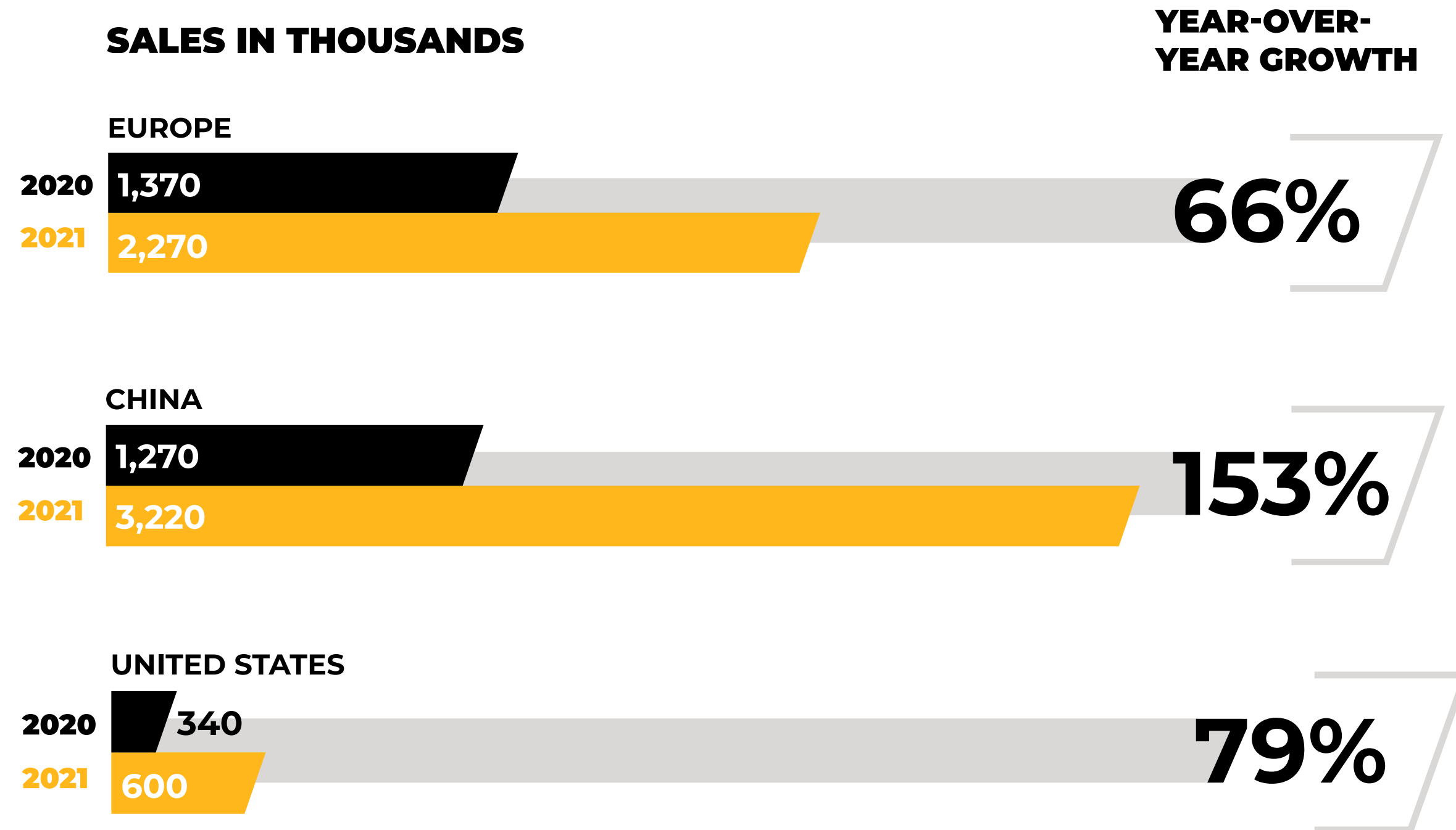
The Race to Electric Mobility




The road to electric vehicle cost-parity is riddled with red lights. Engineering simulation technology speeds up development, improves quality, and cuts costs to reach net-zero faster.



A banner year for plug-in vehicles



6.7  **MILLION**

plug-ins were sold globally in 2021. That's 2x as many as in 2020

Global EV sales will reach

25  **MILLION**

by 2030

Source: Ansys, McKinsey & Company



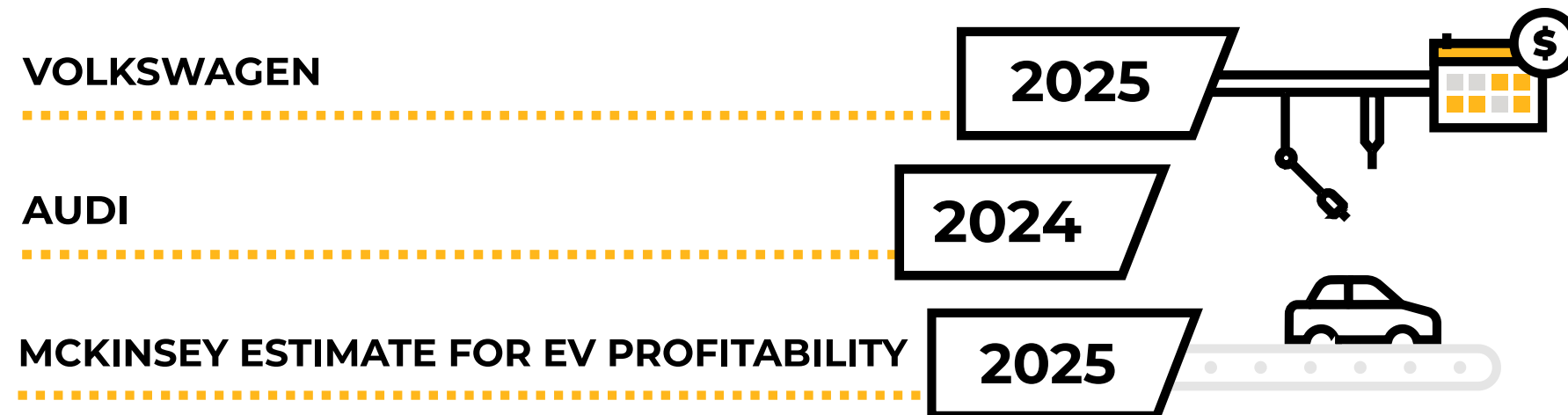
Achieving net-zero emissions means putting the brakes on costs to market

“ If we cannot make BEV mobility affordable, we will be in trouble.”

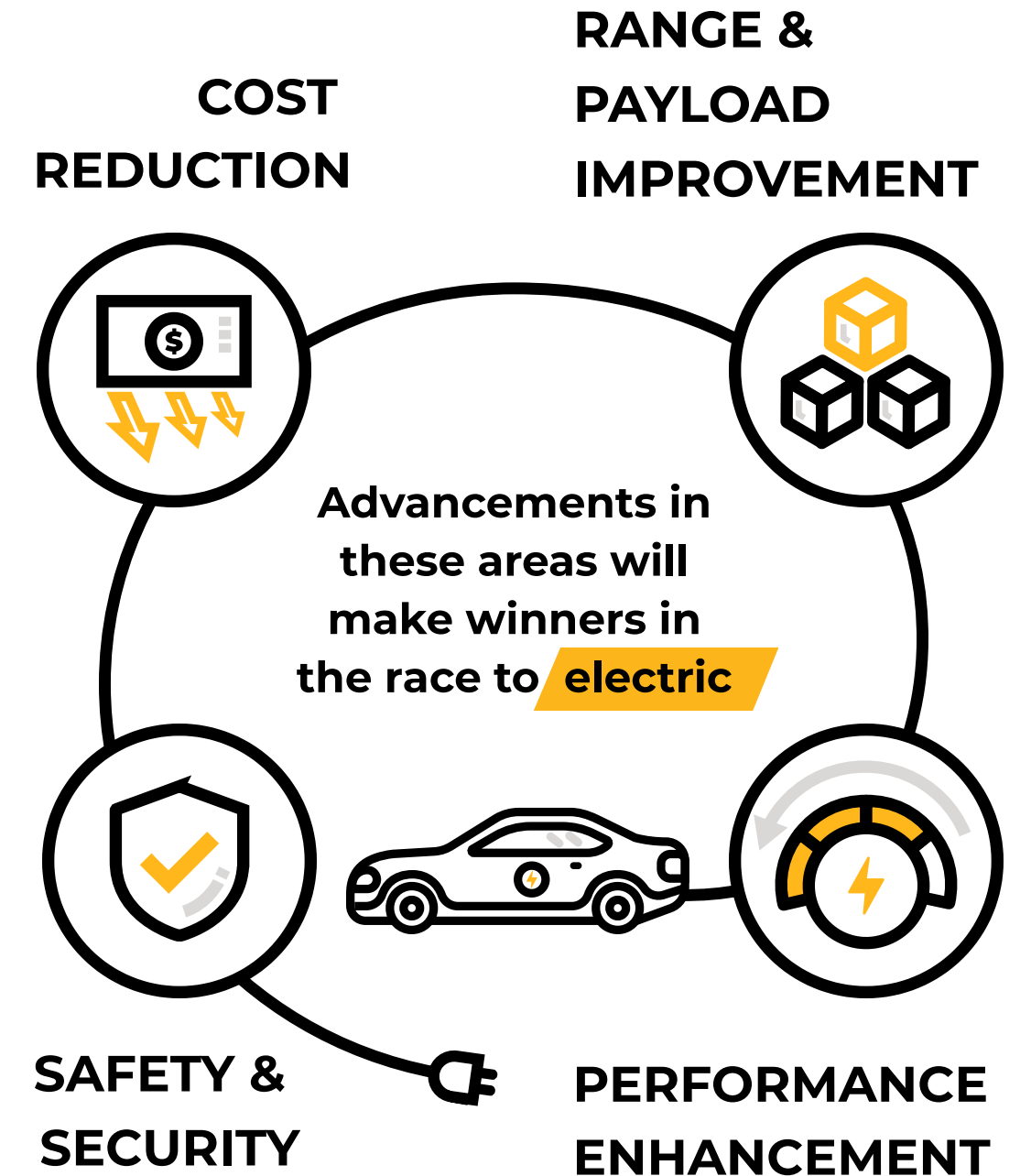
Gilles Le Borgne, EVP Engineering, Renault Group

EV margins put tremendous pressure on profitability. Simulation drives efficiencies throughout the development chain to offset market pressures and help OEMs remain competitive.

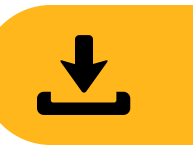
THE YEAR WHEN ELECTRIC VEHICLE MANUFACTURERS PLAN TO SEE A PROFIT:



SIMULATION SUPPORTS:



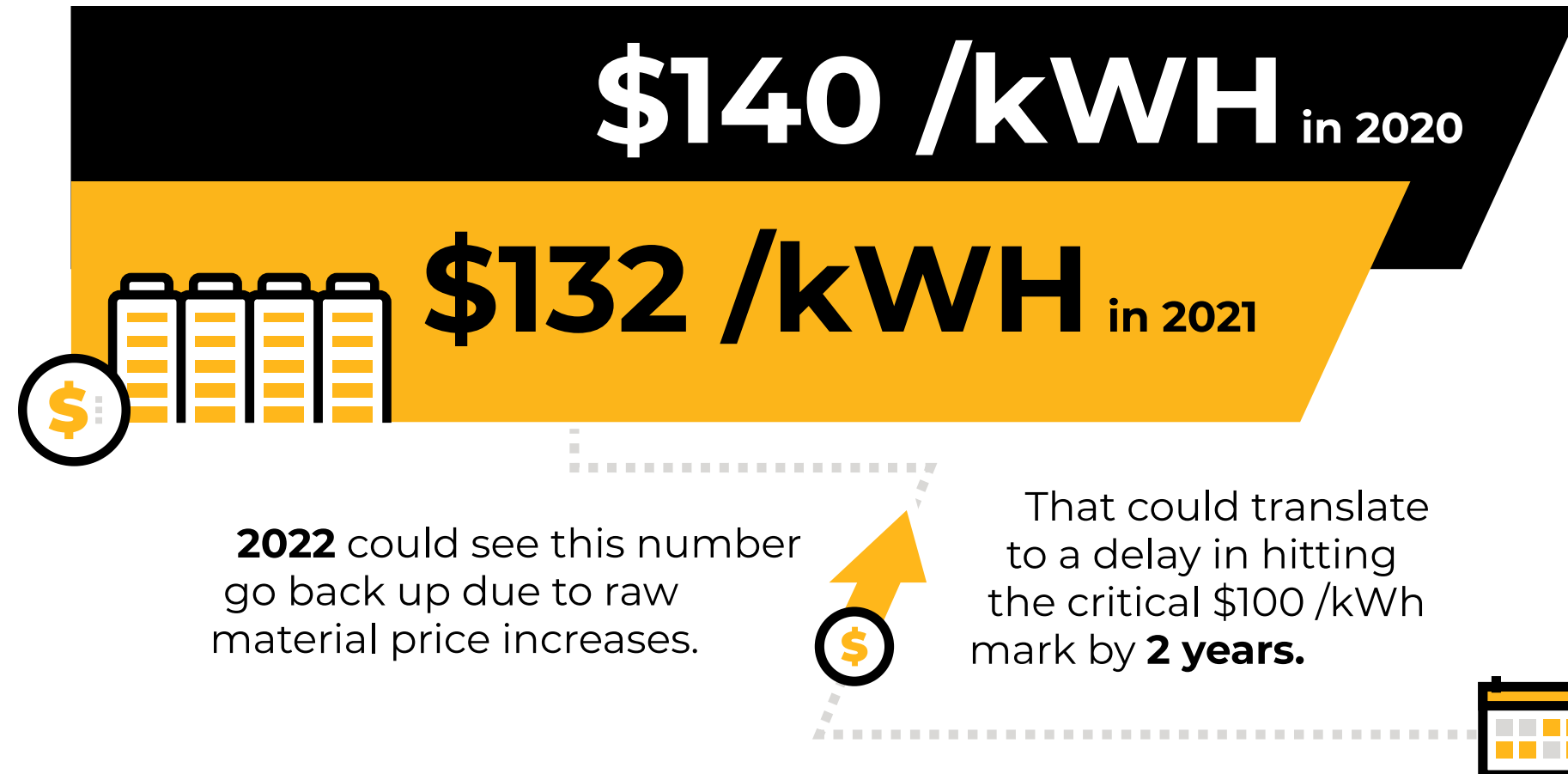
Source: Ansys, Autocar.co.uk, Autoexpress.co.uk, Electrek.co, McKinsey & Company, Morningconsult.com



Batteries hold the key to cost-parity with internal combustion engine vehicles

Battery pack prices need to fall under \$100/kWh for widespread adoption to happen.

LITHIUM-ION BATTERY PACK PRICES AVERAGED:



75% of the battery cell price is determined by the material.

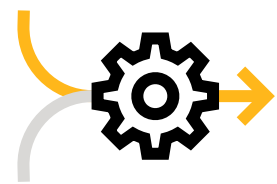
Engineering simulations, battery modeling, battery management systems, and material information management systems are critical to getting cost reductions back on track.

Source: Ansys, Bloomberg NEF, Greencarreports.com, Statista



Accelerating overall cost reductions for OEMs is necessary even when battery prices fall

SIMULATION ACCELERATES OVERALL COST REDUCTIONS FOR OEMS:



VALUE-NEUTRAL DECONTENTING

Remove and simplify controls in the cockpit.



OPTIMIZING RANGE FOR URBAN MOBILITY

Reduce battery capacity from 50 kWh to 40 kWh.



PARTNERING WITH OTHER AUTOMAKERS (AND TECHNOLOGY PROVIDERS)

Share EV platforms, plants and procurement.



STREAMLINING FINAL ASSEMBLY

Purpose-built EV platforms for maximum efficiency.

ENGINEERING SIMULATION CAN SAVE MORE TIME AND MONEY

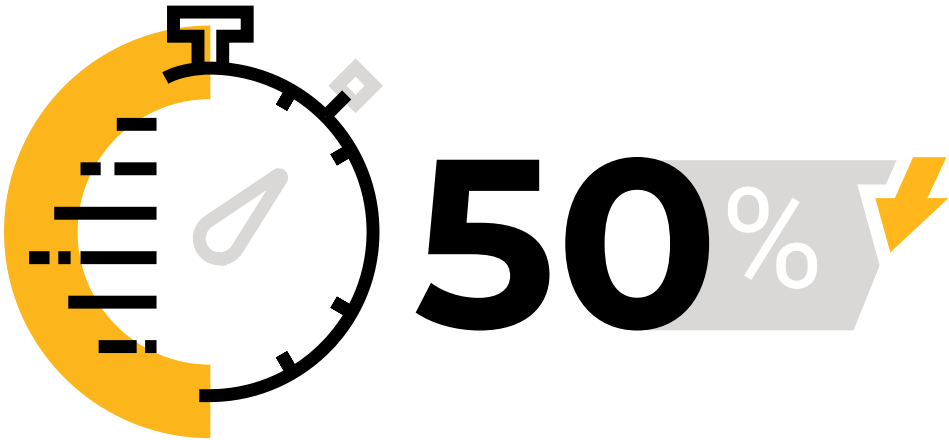
Motor topology, winding type, and cooling system designs can be analyzed for overall system impact. Safety analysis and embedded software solutions allow for meeting safety targets 2x faster than more manual approaches.



Engineering simulation technology is the solution for cutting costs to market

Producing an e-vehicle is **40%** more expensive than an ICE vehicle, according to Stellantis CEO Carlos Tavares².

SIMULATION TECHNOLOGIES ARE BRINGING THOSE COSTS DOWN: 



reduction in overall electric vehicle development time



reduction in AC drive development time



improvement in power density and energy efficiency

Source: Ansys, Autocar.co.uk



Contact us to learn more about Ansys solutions for Electrification. 



Sources: Aberdeen RR, Ansys, Argonne, Autocar.co.uk ², Autoexpress.co.uk ¹, Bloomberg NEF, Electrek.co, Greencarreports.com, Insideevs.com, McKinsey & Company, Morningconsult.com, Statista

