



PSA PEUGEOT CITROËN

WORLD MATERIALS FORUM 2015

Materials
breakthroughs
2050

Carlos TAVARES

2015, June 23rd

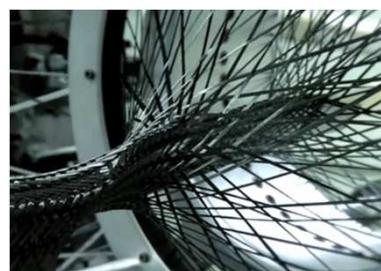


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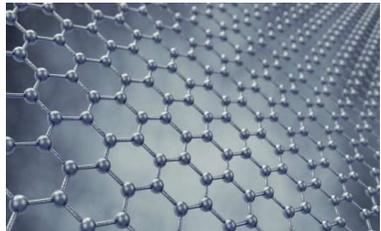
Material Breakthroughs mean...



✓ **Breaking Paradigms**



✓ **Demonstrating the genius of the “&” vs the tyranny of the “or”**



✓ **Accelerating research, speeding up progress and bridging industrial sectors**

For PSA, main goals for 2025 / 2030

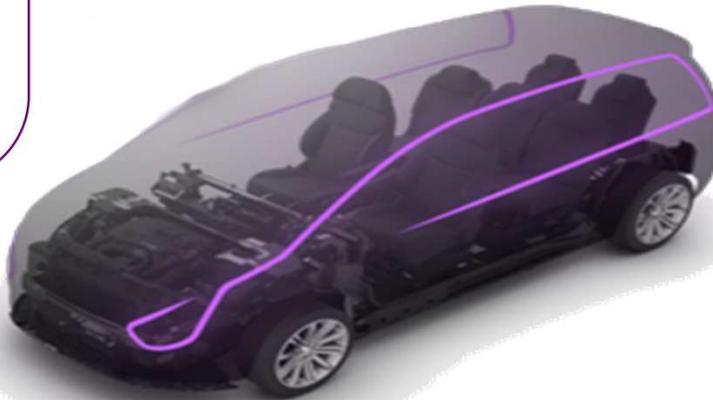
Attractivity



Connected vehicle / Safe and intuitive autonomous driving



Clean technologies



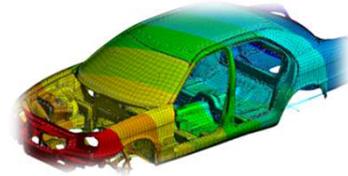
Everywhere in the world

For the automotive industry

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➤ Improve safety & reduce CO₂ emissions



➤ Improve autonomy & converge towards zero emission capability

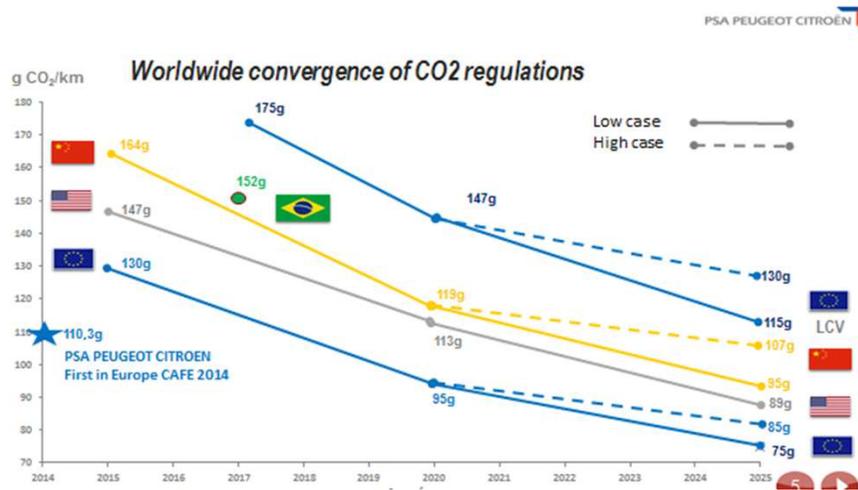
➤ Integrate connectivity & preserve security/safety

➤ Improve attractive designs & preserve quality



CO2 emission reduction & Safety improvement through weight saving

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308 II vs 308 I



Paradigm has changed in the 2010's

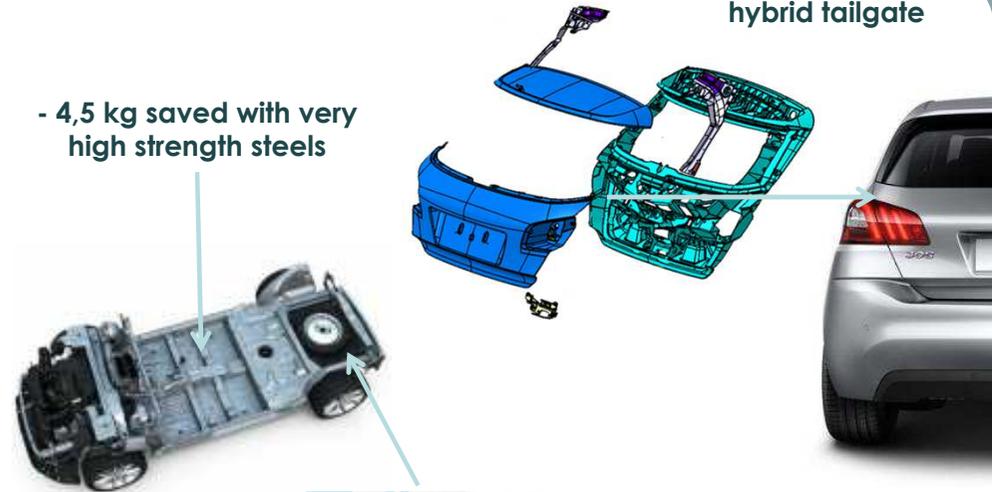
-140kg
-20% CO2
5* EuroNcap



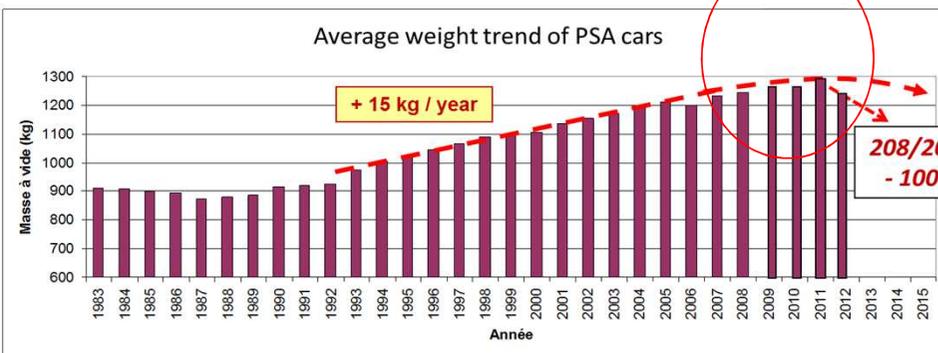
Several lightweight solutions

- 4,5 kg saved with very high strength steels

- 4 kg saved with hybrid tailgate



- 3 kg saved with composite floor



WMF - 2015 june 23th

CO2 emission reduction & Safety improvement through weight saving , with cost neutrality

MATERIAL TREND: « Race comes to the crunch »

HIGH and VERY HIGH STRENGTH COMPLEXE STEELS
 Weight saving potential : (10 to 15%) **~ 50/70 kg**
 material cost = reference = less than 1€/kg

Use all the potential
 of steel technology

ALUMINUM ALLOYS
 Weight saving potential : (30%) **~ 150 kg**
 Material cost increased by 2 to 3 / ref
 + Investment impact

Use more
 aluminium, specially
 on BIW (powertrain is
 already in aluminium)

POLYMERS / COMPOSITES
 Weight saving potential : (30 to 50%) **~ 200 kg**
 Material cost = x 3 to 15 / ref
 + Investment impact

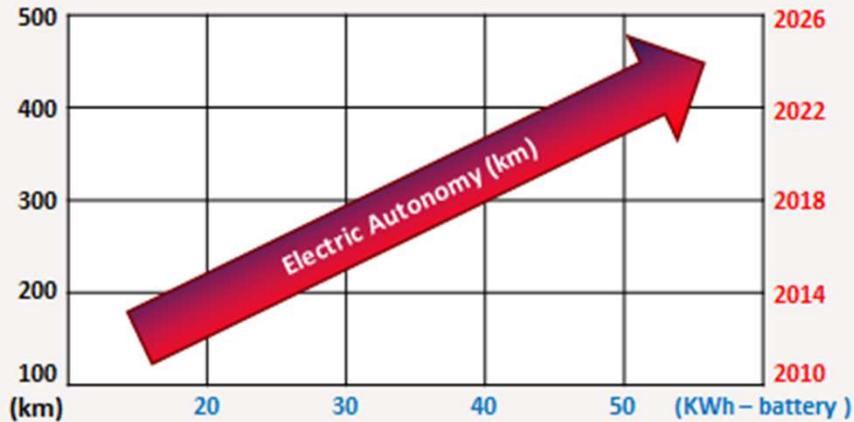
Study like alternative
 to aluminium **and start**
to use composites for
structural parts (rear
 floor EMP2)

Next challenge:
95g CO2/km by 2020
 =
-100kg / 5* EuroNcap /
Attractive cars /
At the same
production cost

EV paradigm : Increase autonomy & Preserve cars' roominess

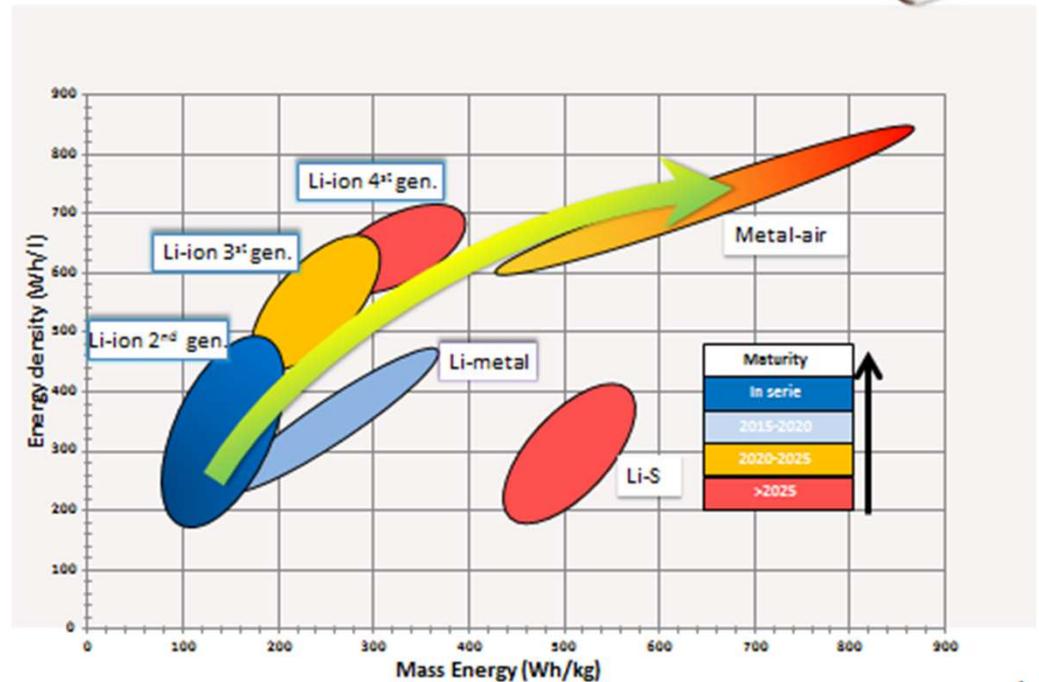


Expected increase of EV autonomy with Lithium-ion technology with a constant weight / size battery pack



New materials & technologies should provide autonomy & size/weight optimization

Expectation of technology evolution



Chemical evolution on cathodic, anodic and electrolyte materials to improve cells' efficiency



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