PAGAMON

Automotive Industry

Point of View

New emissions regulations and standards influence automakers' strategy

Since 2017, the automotive industry faces new challenges to meet current environmental constraints. Changes in approval procedures, tightening of CAFE regulations and incentives for the development of electric vehicles are some of the factors that are currently influencing the short, medium and long-term strategy of automakers, forcing them to adapt quickly to a new way of conceiving mobility.

*1 – « **W**orldwide harmonized **L**ight vehicles **T**est **P**rocedures » **and CO2 emission standards***

Introduced in 1992, the New European Driving Cycle (NEDC) was for nearly 30 years the reference cycle for measuring fuel consumption and pollutant emissions for vehicle approvals in Europe. However, it soon became clear that the NEDC cycle, based on overly theoretical tests, did not provide data in line with actual fuel consumption. Too low accelerations, lack of consideration of the car's equipment, rapidly stabilized gear ratios, etc. are the factors that led to the redefinition of the emissions measurement process to lead to the implementation of the new WLTP cycle in 2017.

WLTP vs NEDC: The main evolutions

- Change from 1 test cycle to several dynamic cycles
- More realistic driving behaviors (stops, gear changes) and use of various driving situations (city, highway, countryside etc.)
- Extended distances from 11 to 23km
- Average speed increases from 34km/h to 46.5km/h and maximum speed reaches 131km/h with the WLTP cycle compared to 120 km/h with NEDC cycle
- Consideration of additional equipment in the WLTP cycle such as roof bars, heated windshields etc.

Already more reliable and more realistic than the NEDC cycle, the WLTP cycle is completed by a second test: the RDE (Real Driving Emissions). To conduct the RDE test, a car is driven on public roads and in a wide variety of weather and traffic conditions. Equipment is installed on the vehicle and collects data to check that the legislative limits for pollutants such as NOx (nitrogen oxide) are not exceeded.

Since 2018, manufacturers are required to use this new certification process. However, European countries still have the right to use the NEDC values for their communication and taxation and must convert the new WLTP data to an NEDC Back Translated value. By the end of 2020, the same NEDC

BT values will be used to calculate penalties for the CAFE regulation, which is strengthening year after year.

2 – *CAFE Regulation*

The CAFE (Corporate Average Fuel Economy) regulation allows the measurement of the average CO2 emissions of registrations or production (depending on the country) during a calendar year. Depending on the area of application, regulatory thresholds are defined, and if these are exceeded, manufacturers may be exposed to penalties.

Previously set at 130g of CO2 per kilometer in Europe, the emission limit was reduced on January 1, 2020 to 95g of CO2 per kilometer (adjustable according to vehicle weight) for private vehicles and 147g/kilometer for commercial vehicles. In case of non-compliance with this emission limit, manufacturers will have to pay penalties of 95 euros per additional gram per vehicle sold, an amount that can quickly become quite substantial.

The redefinition of certification protocols and the switch to WLTP are therefore unfavorable to manufacturers in the calculation of their emissions. Indeed, the WLTP protocol being, as developed above, much closer to reality than the old NEDC test protocol, emissions values have seen their levels increase. If in 2020, the NEDC BT values will be used, in 2021, the WLTP values, even less lenient, will be the reference values.

In order to help manufacturers cope with these new environmental regulations, the European Union has introduced a number of bonuses/incentives as part of the CAFE objective to help companies in their efforts to optimize and develop less polluting vehicles:

1) The "Eco-Innovation" bonus: manufacturers who develop new technologies to reduce their CO2 emissions will be granted emission credits of up to 7g of CO2 per kilometer.

2) The "Phase-In" bonus: In 2020, while carmakers adapt their offers to the new regulations, the 5% of registrations with the highest level of CO2 will be eliminated from the calculations.

3) The "Super Credits" bonus: vehicles with emissions lower than 50g/kilometre can obtain a multiplier bonus (a vehicle emitting less than 50g will count for 1.3 vehicles in the final calculation). This incentive encourages manufacturers to develop hybrid or electric vehicles.

It is therefore becoming particularly crucial to develop hybrid and electric vehicles, especially since in 2020 the Euro6DFull standard has lowered the limits on emissions of fine particles, which will have a major impact on future vehicles powered by internal combustion engines.

3 – *The Euro6 standard*

Euro Standards are European Commission standards that define pollutant emissions (nitrogen oxide, carbon monoxide, hydrocarbons, fine particles), their means of measurement, their emission limits, etc. CO2 is not included in these standards because it is not a polluting gas but a greenhouse gas that contributes to global warming.

The Euro 6 standard, which was implemented in 2014, is the continuation of a series of "Euro" standards introduced in 1990. It has contained several components and developments since then: Euro6b, Euro6c, etc. In order to meet the emission targets imposed by these standards, manufacturers have no choice but to incorporate new technical features into vehicles, such as particle filters, which increase their manufacturing costs.

Normes	Textes de référence (directives)	Date de mise en application (tous types)	NOx (g/kWh)	CO (g/kWh)	HC (g/kWh)	Particules (g/kWh)
Euro 0	88/77	01-10-1990	14,4	11,2	2,4	-
Euro I	91/542 (A)	01-10-1993	9	4,9	1,23	0,36
Euro II	91/542 (B)	01-10-1996	7	4	1,1	0,15
Euro III	1999/96	01-10-2001	5	2,1	0,66	0,13
Euro IV	1999/96	01-10-2006	3,5	1,5	0,46	0,02
Euro V	1999/96	01-10-2009	2	1,5	0,46	0,02
Euro VI	Règlement (CE) n° 595/2009	31-12-2013	0,4	1,5	0,13	0,01

Source: Website of the Ministry of Ecological and Solidarity Transition

4 – *Manufacturers' reaction to stricter standards*

In order to meet these new standards, manufacturers are forced to adapt their strategies to both maintain their market share and avoid the financial penalties that can weigh on the annual results of groups.

Firms must therefore play simultaneously on different key elements:

1) Production costs

   In order to comply with the new emissions requirements, manufacturers must add certain devices to their engines, such as particle filters, which contribute to a significant increase in production costs. For this reason, they must succeed in lowering their costs in order to absorb this increase as much as possible and ensure that this has no impact on the margin or the selling price of the vehicles to the final customer.

2) The development of hybrids and electrics

   As the various standards limit the release of CO2 and other fine particles, manufacturers are increasingly turning to hybrid and electric vehicles, which are exempt from penalties but also try to take advantage of the many incentives and CAFE bonuses linked to the development of these vehicles. Hybrids and electric vehicles are revolutionizing the market today and not all

automakers are at the same point of progress in the development of their ranges. For this reason, there has recently been a notable acceleration in the development of the electric offer and investments to work on the competitiveness of models, which will soon be essential: no less than 50 new models are expected between 2020-2022.

3) Optimization of existing ranges

As WLTP tests take into account additional equipment, it also becomes a lever and a means of action for manufacturers to limit their emissions and penalties. We are indeed witnessing a redefinition/optimization of the ranges in terms of options and accessories. Spare wheels, for example, which add weight to the car and contribute to an increase in fuel consumption, are being replaced by puncture-proof kits that save grams of CO2. Some options such as heavier rims or roof bars that change the aerodynamics and increase fuel consumption are eliminated or have their prices increased in an attempt to discourage customers from buying.

The optimization of the ranges can also be seen in the development of accessories that can be added in the aftermarket, as it is the case for the universal roof bars available in many points of sale and compatible with many models.

Thus, the new CO2 standards have a direct impact on automakers' strategies, whether in terms of production costs, marketing strategy, range construction or, more directly, the amounts invested in R&D to develop electric and hybrid cars.

These different regulations are redefining the challenges that the automotive sector is facing and are rewriting the cards alongside equally crucial issues such as the autonomous car or car-sharing.