

# The ever cleaner winds of change

A new European directive to reduce CO2 emissions comes into force in 2012. Bosch looks at measures manufacturers are taking to reduce emissions, and some of the emerging technology that you can expect to see soon.

Starting in 2012, the average CO2 emissions for 65% of all cars registered in the EU, across a manufacturer's entire range of cars sold, can not exceed 130g of CO2 per km, without incurring what could be a substantial financial penalty. The total fleet emissions limits become more restrictive over the following 3 years, while the penalties start high, and go higher every year.

The limits will be introduced with the following schedule: in 2012 65% of each manufacturer's newly EU registered cars must comply with the regulation, rising to 75% in 2013, 80% in 2014 and 100% by 2015.

Manufacturers whose fleet average exceeds the limit from 2012 will have to pay a penalty for each and every car registered, and the penalty will increase over time. The penalty will be €5 for the first g/km in excess of 130, €15 for the second g/km, €25 for the third g/km, and €95 for each subsequent g/km. From 2019, every g/km

over the limit will cost €95. The penalty will be made for all of the cars registered, not just the cars that exceeded the emissions limit. For example, if a manufacturer fails to register at least 65% of their car sales with CO2 emissions less than 130g/km, and their average is a respectively low 140g/km, the total penalty would be €710 for each and every car registered that year.

To reduce the vehicle emissions, manufacturers are taking a variety of steps including petrol downsizing, diesel downsizing, start/stop systems, hybrid & electric vehicles.

Typically, the additional cost of adding technology to a standard internal combustion vehicle is €350 for a start/stop system, €4,000 for a hybrid vehicle (combustion engine with electric motor) and €10,000 for a plug in electric vehicle.

With these new systems, new battery and vehicle technology is required. The Battery Management System (BMS) has

to coordinate the electrical system with the engine management. Its tasks include:

- Engine start/stop
- Managing generator and recuperation/regeneration
- Avoiding power peaks
- Prioritisation of electrical consumers
- Switching off idling consumers

When changing the battery of a start/stop vehicle, exact 'like for like' replacement is required.

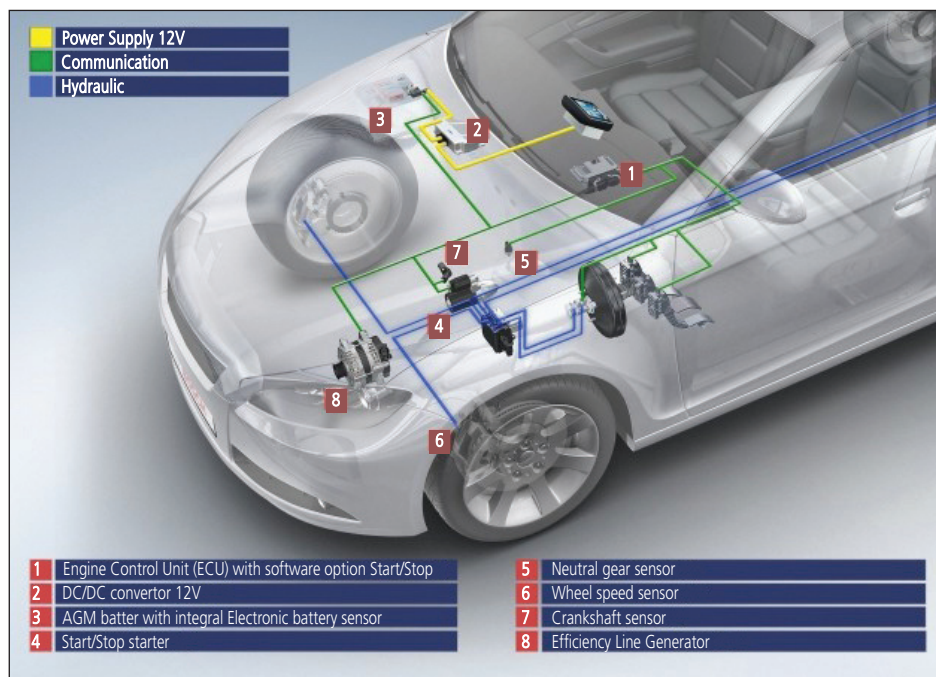
Choosing the right battery (e.g. using Bosch ESI, Tecdoc or a battery catalogue) is essential.

The battery has to be replaced by a qualified workshop – DIY battery change is not recommended.

If the wrong battery is fitted or is fitted incorrectly, the start/stop function may not work or will work with lower efficiency and fuel consumption will increase with higher CO2 emissions.

After the installation of the battery, the Battery Management System needs to know a new battery has been installed. The technical data of the newly installed battery e.g. Ah, A and product number (depends on electronic control unit) needs to be programmed into the vehicle. Without this information, the vehicle may refuse to start or may even break down hours or days later.

All Bosch KTS diagnostic tools have the functionality to reprogram the battery management system and also diagnose hybrid and electric vehicles. Bosch also offers training courses for working on high voltage vehicles and also testers specifically designed to work on electric vehicles and carry out 1000v insulation tests on the vehicle wiring (essential after working on these vehicles).



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