

## Polluting emissions, not a problem anymore

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The emission reduction process started relatively recently for the powered two-wheel vehicles. The first stage, Euro 1, was introduced in 1999, followed in 2003 by Euro 2. The third stage is already clearly defined and will be implemented in January 2006. The gap between Euro 0 and Euro 3 is considerable with minus 94 % of carbon monoxide and hydrocarbon emissions, and minus 50 % of nitrogen emissions. This drastic reduction of the limit values has been coupled with more severe test cycles

The reduction emissions process has been supported by a series of innovations: 2- way oxidation catalyst, secondary air injection, 3-way catalyst with oxygen sensor control, electronic engine management, and fuel injection.

A comparison between PTW and car emissions performances indicates that Euro 3 motorcycle is comparable to Euro 3 passenger car (the total of the 3 pollutants is even lower in the case of motorcycles). In fact the limit values for motorcycles follow passenger car limits, with a reduced time period between stages. A second comparison point: carbon dioxide emissions (CO<sub>2</sub>), which contributes to the greenhouse effect. The average CO<sub>2</sub> emissions for petrol-engine cars are above the highest level of motorcycle CO<sub>2</sub> emissions. The third comparison point: fuel cost. The average fuel consumption for petrol-engine cars is above the highest level of motorcycle fuel consumptions.

After this major progress, it is important to estimate the evolution of the situation in the middle term. The future PTW emissions on major pollutants were researched by an independent expert chosen by the Commission: the Laboratory of Applied Thermodynamics (LAT) from the Aristotle University of Thessaloniki. LAT calculated the PTW emissions from 1999 up to 2012 and concluded that PTW exhaust emissions show a good and very often better trend compared to the overall emissions of road transports.

In order to complement the significant progress already achieved by the motorcycle industry, the manufacturers are currently planning the development of new products that will respect the emissions limit values during the useful life of the product and control the petrol evaporative emissions. A new directive in which manufacturers contributed strongly will framework this future progress and harmonise the implementation dates on new and old models. It is expected to be issued by the Commission in 2006.

In conclusion the major advantages of PTW need to be reminded especially on climate change, with fewer emissions of greenhouse gases, and on fuel cost, with lower consumption. The technological progress planned by the manufacturers will ensure a legitimate recognition of PTWs as environmentally friendly products.

