



The Golf

Environmental Commendation



Economical by nature

The Environmental Commendation for the Golf

With the Golf we have successfully maintained a technological edge for 35 years now. Today this is one of the most environmentally compatible cars in its class, reflecting Volkswagen's awareness of its responsibility for its products.

In order to reduce the environmental impacts of the Golf to a reasonable minimum, we subjected the full life cycle of the vehicle, from manufacture through utilisation to disposal and recycling, to a Life Cycle Assessment. This forms the basis for the Environmental Commendation in which Volkswagen documents the environmental progress achieved by its vehicles, components and processes in direct comparison with their predecessors. Of course, we also take into account the environmental impact of the production of the fuel consumed during the vehicle's service life.

In a Life Cycle Assessment in line with ISO 14040 the first step is to document all the relevant types and quantities of material and the types and quantities of energy consumed in the production, use and recycling of the product. Step

two is a Life Cycle Impact Assessment which classifies the environmental impact of the product into categories such as global warming, photochemical ozone creation, soil and water acidification and eutrophication. This is followed by interpretation of the findings of the first two steps. The general objective is to develop vehicles and components in such a way that, in their entirety, they have better environmental properties than their predecessors.

For the Life Cycle Assessment of the Golf we compared three diesel models, a Golf 1.6 TDI¹, a Golf 1.6 TDI BlueMotion Technology² and a Golf BlueMotion³ with 1.6-litre TDI engine (all 77 kW) with a similarly engined predecessor. For the petrol-engined models, a Golf 1.2 TSI⁴, a Golf 1.2 TSI BlueMotion Technology⁵ (both 77 kW) and a Golf BiFuel⁶ with 75 kW/72 kW were compared with a similarly engined predecessor.

The Environmental Commendation

We use Environmental Commendations to inform our customers, our shareholders and other stakeholders within and outside the company how we are making Volkswagen's vehicles, components and production processes more environmentally compatible and what we have achieved in this respect. The information in this Environmental Commendation is based on a Life Cycle Assessment of the Golf which has been verified and certified by the technical inspection organisation TÜV NORD. The TÜV certificate confirms that the Life Cycle Assessment is based on reliable data and that the methods used to compile it comply with the requirements of ISO standards 14040 and 14044



Improved environmental performance

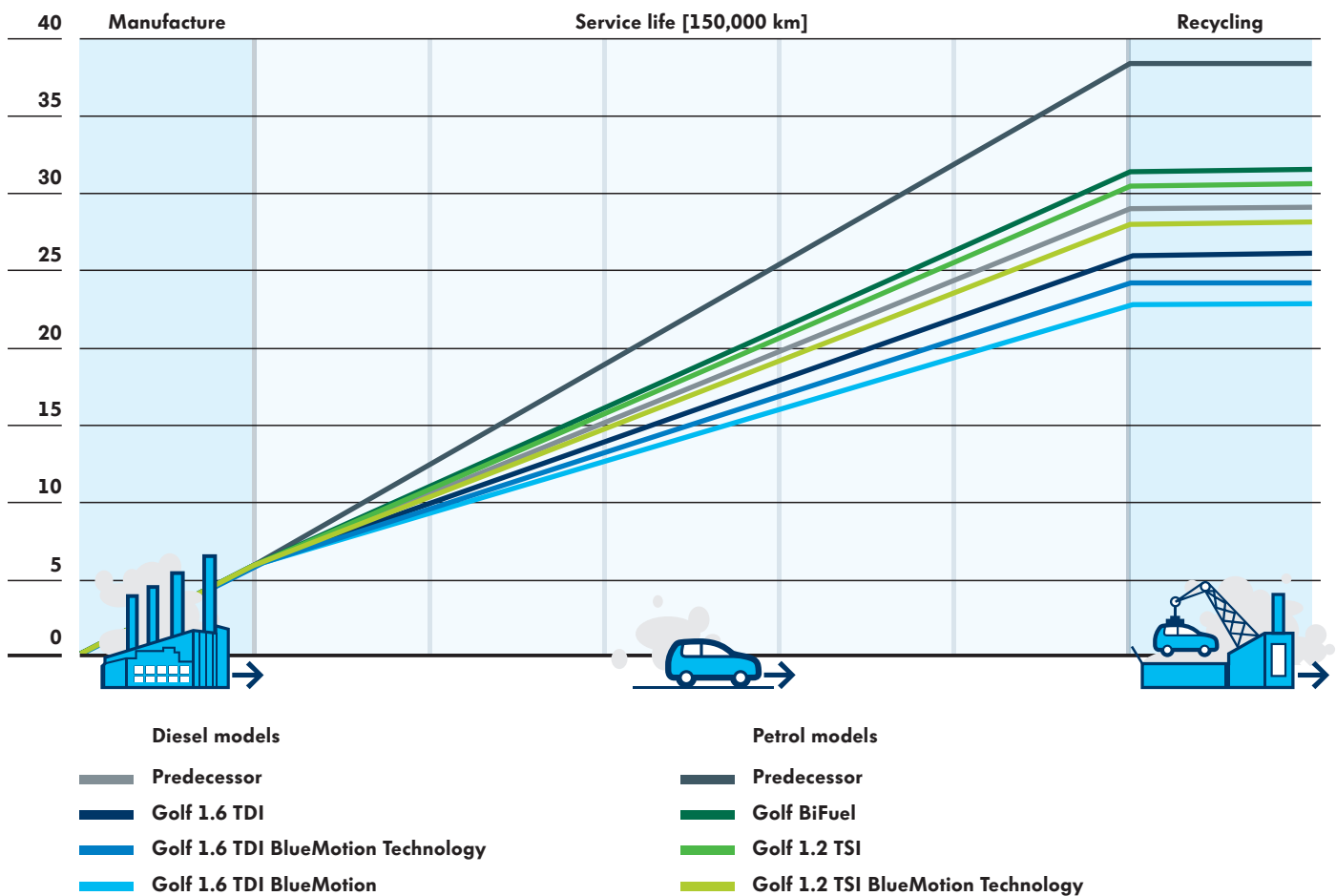
All current models assessed comply with the Euro 5 exhaust emissions standard.

Urban/non-urban/combined, L/100 km; g CO₂/km

- ¹ 5.7/3.9/4.5 L/100 km; 119 g/km
- ² 5.2/3.5/4.1 L/100 km; 107 g/km
- ³ 4.7/3.4/3.8 L/100 km; 99 g/km
- ⁴ 7.1/4.9/5.7 L/100 km; 134 g/km
- ⁵ 6.5/4.5/5.2 L/100 km; 121 g/km
- ⁶ (LPG) 12.7/7.2/9.2 L/100 km; 149 g/km

True to our goal of ensuring that each new model outperforms its predecessor in ecological terms, the latest Golf presents a better balance sheet over its full life cycle with regard to its environmental impact. The improvements are largely accounted for by lower fuel consumption and the resultant drop in driving emissions and the accompanying reduced environmental impact of the fuel production process.

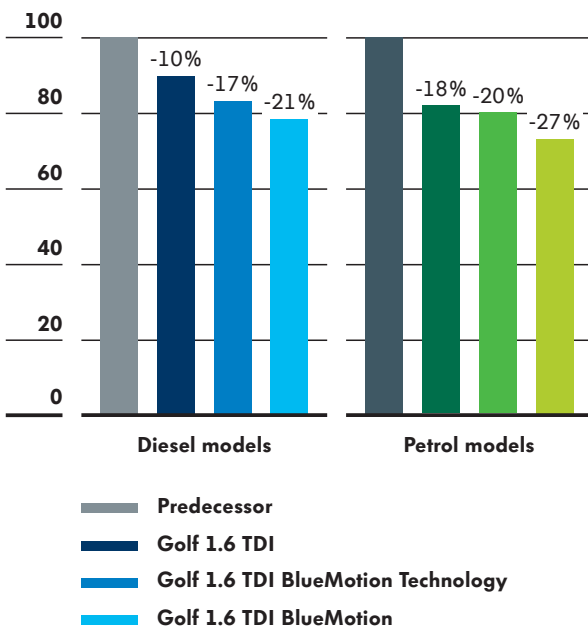
Comparison of impact on global warming potential t CO₂ equivalents



For an assumed lifetime mileage of 150,000 kilometres our calculations for the diesel models indicate life-cycle emissions (measured in CO₂ equivalents) of 26.2 metric tons (1.6 TDI), 24.3 metric tons (BlueMotion Technology) and 23.1 metric tons (BlueMotion). This means that the 1.6 TDI shows a 10% improvement over its predecessor, while the BlueMotion Technology model records an improvement of 17% and the Golf BlueMotion 21%.

The environmental achievements of the petrol models are also respectable, with CO₂ equivalent emissions of 30.6 metric tons (1.2 TSI), 31.2 metric tons (BiFuel) and 28.3 metric tons (BlueMotion Technology). The LPG-fuelled BiFuel records a saving of 18% in terms of global warming potential, with a 20% improvement for the 1.2 TSI and a 27% reduction for the 1.2 TSI BlueMotion Technology.

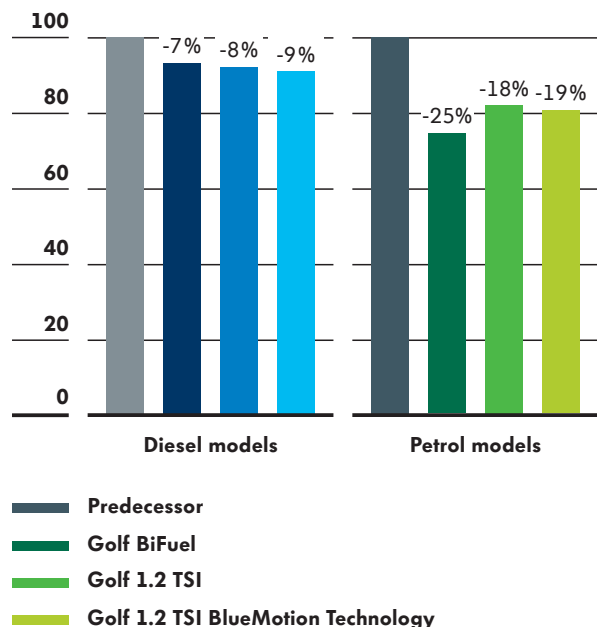
Reduction in global warming potential over full life cycle for diesel and petrol models in %



The true scale of this reduction is illustrated by the fact that the entire production process for a Golf 1.2 TSI generates approximately 5.7 metric tons of greenhouse gases.

We have therefore achieved our objective of continuing the technical development of our vehicles at the same time as making them more environmentally compatible. In addition, the reduction in fuel consumption and the associated savings in terms of fuel production lead to a further easing of the burden on the environment, for example in terms of emissions that can lead to impairment of local air quality (photochemical ozone creation potential). Further details on the Life Cycle Assessment of the Golf can be found in the Background Report to the Environmental Commendation at www.environmental-commendation.com.

Reduction in photochemical ozone creation potential over full life cycle for diesel and petrol models in %





Environmental Description, Golf

Generally improved environmental profile over the full vehicle life cycle compared with the predecessor model due to lower fuel consumption and reduced emissions

Global warming potential – less CO₂ emissions overall*

- Diesel models: -10% (TDI*), -17% (BlueMotion Technology*), -21% (BlueMotion*)
- Petrol models: -18% (BiFuel*), -20% (TSI*), -27% (BlueMotion Technology*)

Reduced photochemical ozone creation potential (improvement of local air quality)*

- Diesel models: -7% (TDI*), -8% (BlueMotion Technology*), -9% (BlueMotion*)
- Petrol models: -25% (BiFuel*), -18% (TSI*), -19% (BlueMotion Technology*)

Reduced driving emissions (CO₂)*

- Diesel models: 119 g/km (TDI*), 107 g/km (BlueMotion Technology*), 99 g/km (BlueMotion*) compared with 135 g/km (predecessor)
- Petrol models: 149 g/km (BiFuel*), 134 g/km (TSI*), 121 g/km (BlueMotion Technology*) compared with 176 g/km (predecessor)

Reduction of fuel consumption through

- tyres with optimised rolling resistance
- BlueMotion Technologies (start-stop system, regenerative braking)
- smart lightweight design (hot stamping, use of aluminium and magnesium components)
- electrical components with optimized efficiencies
- reduced drag and friction

Resource conservation through

- use of long-lasting components (maintenance-free particulate filters and catalytic converters, long-life lamps)
- longer servicing and oil change intervals
- no hydraulic fluid required as a result of electro-mechanical power steering
- lifetime oil fill for transmission

Eco-friendly materials

- use of renewable materials (e.g. for filters and floor matting)

* Applies to the actual vehicles assessed in this test series. See inside for fuel consumption and emissions figures

The Golf

Environmental Commendation

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December 2010
Art. No. 015.1240.03.18

www.volkswagen.com



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www.fsc.org Cert no. SGS-COC-005333
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