



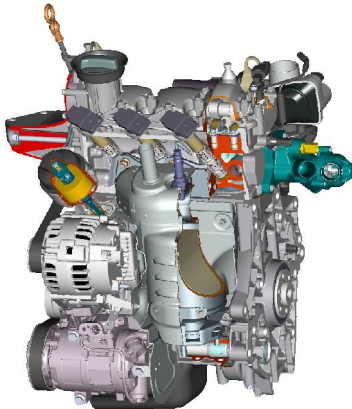
## SUSTAINABLE DEVELOPMENT

### The 1.2 HTP/40 and 47 kW engines

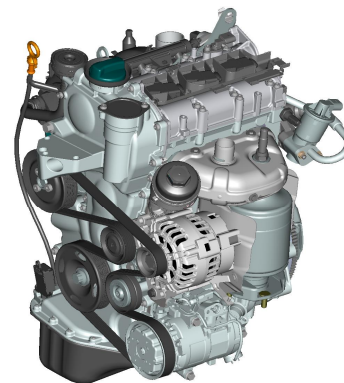
For the Fabia, we also offer two versions of the 1.2 HTP (High Torque Performance) engine to our customers:

- 40 kW (Three cylinder in-line engine with 2-valve OHC technology)
- 47 kW (Three cylinder in-line engine with 4-valve OHC technology and liquid cooling)

Engine 1,2 HTP 40kW



Engine 1,2 HTP 47kW



The advantage of these engines is a high torque at low engine speed and also low fuel consumption. Adequate dynamism at low cost is an ideal combination for customers that prefer the ecological and economical aspects of vehicle operation:

- Last, but not least, we attain low fuel consumption for regular driving as a result of:
  - high torque at low engine speed (for regular driving)
  - design optimisation leading to reduction of passive resistance
  - minimisation of engine weight (aluminium engine block and cylinder head, deployment of suitable plastics)

Combined fuel consumption in relation to vehicle type and equipment standard is in the range of 5.9 ÷ 6 l/100 km.

- Fulfilment of strict EU4 emission regulations, low CO<sub>2</sub> emission  
Deployment of the EOBD (Europe On Board Diagnostics) system that continuously checks and evaluates the functionality of all the components that influence the fulfilment of emission regulations. For the Fabia vehicles with the 1.2 HTP / 40kW and 47 kW engines, the CO<sub>2</sub> emission is in the range 141 ÷ 144 g/km.
- Optimised function of the catalytic converter  
For both 3-cylinder engine versions, an exhaust module has been deployed with the main catalytic converter close to the engine. The short passage of the exhaust gases from the combustion chamber to the catalytic converter ensures the quick build-up of the catalytic converters working temperature.
- Minimisation of oil consumption  
Optimisation of the design of the piston group and aeration of the crankshaft case has led to the attainment of minimum oil consumption.  
The customer may select the "so-called" extended service interval from 15.000 km up to 30.000 km (WIV).  
Deployment of WIV has led to a 50% engine oil costs saving and reduction of service expenses.



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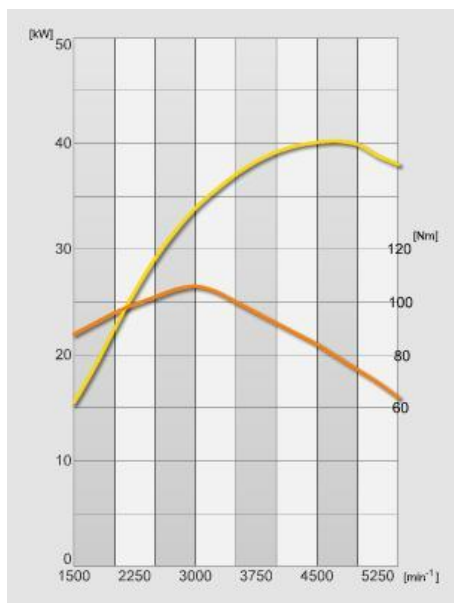
- Design from the viewpoint of easy recycling  
Recyclable materials were preferred in the construction of the engine and measures were realised to minimise the ecological burden. An example is the modern design of the oil filter, which allows for the easy removal and ecological liquidation of the filter insert. Great attention has also been devoted to the minimisation of the risk of the leak of operating fluids.

Technical specifications:	1,2 HTP 40kW	1,2 HTP 47kW
Number of cylinders	3	3
Engine capacity [cm <sup>3</sup> ]	1198	1198
Bore [mm]	76,5	76,5
Stroke [mm]	86,9	86,9
Maximum engine power - revs/min-1 [kW/rpm]	40/4750	47/5400
Maximum torque [Nm/rpm]	108/3000	112/3000
Emission regulation	EU 4	EU 4
Fuel	Natural 95	Natural 95

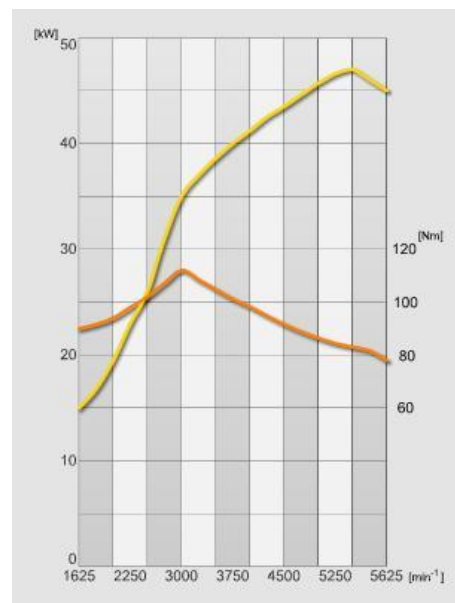
### Performance parameters:

■ Power    ■ Torque

**1.2 HTP 40 kW**



**1.2 HTP 47 kW**





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CAD software tools (Pro/ENGINEER) were used in the design of the engine and with the support of other CAx systems, strength simulation, vibration analysis, rapid prototyping and DMU analyses were done. The deployment of these technologies led to an improvement of the technical parameters of the engines by shortening the development time and saving energy.

The 1.2 HTP 40kW engine project in 2003 won the world competition PTC Awards in the "automotive industry" category. This competition is organised by Parametric Technology Corporation with the objective to introduce interesting projects realised with the support of the CAD system Pro/ENGINEER.

The 1.2 HTP / 40kW and 47 kW engines bring to the customer, not only a suitable engine performance/fuel consumption ratio, but also high, long-term quality, low operating costs and excellent ecological parameters.

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2008