Q&A

"I am doing some work on a Citroen C3 sensodrive and it has "StARS" technology. What does StARS stand for and how does it affect the vehicle?"

Jack Burton - Garage owner - Norwich

StARS stands for **St**arter **A**lternator **R**eversible **S**ystem. The StARS combines the alternator and starter functions in a single component. Its main feature is that it stops the engine when the vehicle is stopped and instantaneously quietly restarts it when a gear is engaged or the brake pedal is released.

Its advantages include, when stopped, there is no noise, no vibration and no polluting gases are emitted. This system also saves fuel (up to 15% in town/city driving conditions according to the vehicle model) and reduces CO2 emissions (up to 15% depending on the model of the vehicle).

When in use, a vehicle is stopped on average 35% of the time and its engine is unnecessarily running at idle. This is when Stop and Start function comes into play. It momentarily stops the engine, while waiting at a red light for example, and starts it again when power is requested. The StARS starter alternator performs this function in a fully automatic manner and substantially reduces fuel consumption by up to 28% in **heavy urban traffic**.

These two major advantages make the starter alternator the ideal product, providing real gains in terms of consumption and comfort by eliminating both the noise and the vibrations of the engine in stop and start phase.

When the technology originally launched Valeo won the 2004 Engineer of the Year and the Pace Award in 2006 thanks to the ingenuity of the StARS starter alternator.

Unlike a traditional vehicle, there is no alternator or starter; StARS includes three main components:

- The starter-alternator
- Power cable
- The converter (PCU)

The StARS starter alternator combines the functions of the alternator and the starter. In starter mode, start is instantaneous and silent thanks to the belt which permanently connects it to the crankshaft. The alternator mode benefits from a new technology improving the electrical efficiency. The connection with the engine is by a belt and a dynamic tensioner.

The first belt transmits the torque between the conditioned air compressor and the crankshaft, the second belt transmits the torque between the starter alternator, the water pump and the crankshaft. The starter alternator is installed on a pivot on one side and on the tensioner on the other side. The tensioner pushes the machine so that the belt will be permanently tensioned.

The power cable transmits electrical currents allowing the machine to operate in the two directions in start or battery charge mode.

Each end of the cable is equipped with a connector. The installation direction is given by the bundle anchoring points in the vehicle.