

PRESS RELEASE

New Citea city bus from VDL Bus & Coach – the technology

With the development of the Citea use was made of the many years of experience in the development of lightweight constructions which have been accumulated at VDL Bus & Coach. This has enabled the weight of this new city bus to remain at a minimum without making concessions to durability, lifespan or its residual value. As far as the drive line is concerned, the new city bus not only complies with the current Euro 4 emission standards, it can also be supplied with a Euro 5 diesel or an EEV engine with even less emissions than a Euro 5 engine.

New standards as the basis

The Citea is the first model in a new generation of city and scheduled service buses from VDL Bus & Coach. In fact, the new Euro 4 and Euro 5 emission standards were the most important reason for the development of this new generation of buses. The strongly modified housing of the engine environment meant that such big changes to the existing structures were necessary that the decision to develop a new generation of buses was inevitable. This also created the possibility of making changes to the design and the production technology and that there was full compliance with modern requirements.

Tried and tested configuration

Not every principle was then immediately abandoned. The Citea keeps the engine at the left rear, a configuration which has been used by this Dutch bus builder for a long time for its city and scheduled service buses and which has now more than proved itself. The radiator, oil cooler and intercooler have, however, moved to a position in the bodywork above the engine.

The major components of the ventilation system are located in a special module on the roof above the front axle. There is also space in this module for the condensor and other vital parts of the air conditioning.

Steel floor frame

Although the Citea is based to a great extent on the technological constructions which were used for the Ambassador, there are number of new developments. In this new city bus, for example, a galvanised steel frame is fitted under the floor, made of sandwich material, and this provides extra strength, greater loading capacity and the best possible anti-corrosion protection. This extra reinforcement was necessary in view of the increased GVW of the Citea compared to the Ambassador. Also new is that the bus is assembled

from the largest possible components. This has also the advantage that the strength of the bodywork has been given an extra impulse due to the disappearance of a large number of seams and connections.

For some of the details the constructors from VDL Bus & Coach sought and found new solutions such as for the interior lighting which runs as a strip along the side window and which is placed at such an angle that the passengers in both the inside and window seats have the same amount of light available.

Tried and tested drive line

The Citea CLF 120-250 has a tried and tested drive line which consists, as standard, of a Cummins engine with a ZF or Voith automatic gearbox with an integrated retarder. The Cummins engine, type ISBe, delivers 183 kW (250 HP) at 1800-2500 rpm and a maximum torque of 1020 Nm between 1200 and 1600 rpm. The engine complies with the Euro 4 emission standards by way of an SCR catalytic converter and AdBlue injection. Optionally, a DAF 9.2 litre engine, type PR 228 S, can be fitted. This engine delivers 228 kW (310 HP) and a maximum torque of 1275 Nm. Both engines are also available as Euro 5. Both drive lines are as well available in an EEV version which, as far as emissions are concerned, is at least as clean or even cleaner than a comparable bus fitted with a CNG drive.

Axle modules

The Citea is based on a number of modules which are partly built by VDL Bus International in Eindhoven such as the engine module, the cooling unit and the front and rear axle modules. Use is made in both these modules of ZF Lemförder wheel suspension elements, combined with a ZF portal axle in the rear axle module and a TRW steering system in the front axle module. The sophisticated construction of these two modules combines a very low step height of 340 mm with very great manoeuvrability due to a wheel angle of 55 degrees. The ZF portal axle has a final ratio of 5.13 or 6.20:1; the steering column is adjustable with pneumatic blocking. The Citea stands on 275/70 R22.5" tyres all round.

High-quality electronics

The Citea has a completely-integrated electronic CAN bus system which is based on the Kibus 32 multiplex system from Siemens VDO. The advantage of this network is that all electrically and electronically controlled elements are linked together in a bidirectional structure which offers, for example, an opportunity to build in a large number of safety features.

As an option, VDL Bus & Coach offers a facility for Quick Scan Diagnosis via the standard LCD screen on the dashboard for a quick analysis of many different technical functions in the vehicle.

Flexibility

The guide to the development of the Citea was to make a vehicle with the greatest possible flexibility. This is shown in a wide range of variants for the creation of a custom-made bus for any use and in accordance with the wishes of any operator. The driver module, for example, can be equipped with an Isri seat or with a seat from Grammer, Savas or other suppliers. As standard the dashboard has a fixed instrument panel.

The Citea has 31 or 33 seats depending on the model. The seats in the forward section of the city bus are fitted without legs using cantilever supports on the side wall. The seats in the rear section and on the rear axle are integrated in polyester mouldings. This makes the cleaning and maintenance of the floor easier. The maximum number of seated and standing passengers is about 100 within a total vehicle length of 12 metres. The length is divided over a wheelbase of 6 metres and a front and rear overhang of 2.6 and 3.4 metres respectively. The height is 2.8 metres and the step height is 34 cm for all doors. Three 'kneeling' systems can optionally be delivered, one of which has an all-round kneeling function which reduces the floor height across the whole length and width to 27 cm during entry and exit. Another system has a kneeling function which allows the whole right-hand side of the bus to lower to a height of 25 cm and there is a third variant which lowers the floor only at the entry door to a height of 25 cm. There is a wheelchair platform as standard with a hand-operated extractable access ramp fitted and, as an option, an electrically-operated access ramp can be supplied.

Other benefits

The Citea city bus can be delivered with three double-leaf doors with a maximum portal width of 1200 mm. The inward swinging doors are fitted as standard but doors which swing outwards and sliding swing doors can optionally be fitted. The bus complies, of course, with the European 2001/85/EC directive.

Because of its low mass and the consequent economical fuel consumption, the Citea has an action radius of more than 600 kilometres on a 280 litre tank. The first Citea prototypes have already been subjected to extensive strength calculations. At the same time, they are also subject to practical tests both on the test track and with operators after which production can be started. VDL Bus & Coach expects to produce some hundreds of Citea city buses each year for the European market.

Eindhoven, 21 May 2007

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