

PRESS RELEASE

New VDL Futura double-decker: milestone in Futura family

- Comfortable double-decker carries up to 96 people
- Low fuel consumption means low CO₂ emissions
- Modular lightweight construction contributes to excellent profitability

VDL Bus & Coach introduces their new double-decker coach, the VDL Futura FDD2 – a tremendous new asset for intercity and holiday transport. As the successor to the successful VDL Synergy, the VDL Futura FDD2 is the next step in the evolution of double-decker coaches. With a capacity of up to 96 passengers, VDL Bus & Coach offers both the discerning holidaymaker and the intercity business passenger a comfortable and suitable transport solution. With its sophisticated, streamlined, modern design, the VDL Futura FDD2 is the next milestone in the high-end VDL Futura family and a perfect companion to the FHD2 and FMD2. The fuel-efficient powertrain in combination with the aerodynamic styling guarantee low fuel consumption and thus low CO₂ emissions. The VDL Futura FDD2 is the coach that not only optimally contributes to ‘Profit of Ownership’ but will also become the showpiece of many coach companies.

In 2010, VDL Bus & Coach launched the luxurious New Futura FHD2, which in 2012 was crowned with the prestigious title ‘Coach of the Year’. It formed the basis for an entirely new line of coaches, with the FDD2 as the current – and with a height of four metres, literal – high point.

Following in the tracks of the FHD2 and FMD2, the new FDD2 is the third branch in the Futura family. The Futura design language is clearly recognizable in the FDD2, yet this double-decker also has its own distinctive design features. The height of four metres gave the designers the opportunity to create a beautifully aerodynamic front – one that appears to be a single, continuous, curved window. In truth, however, this windscreen consists of multiple sections, to keep replacement costs down if it is ever damaged.

The design is accentuated by the daytime running lights in the dynamically designed, arrow-shaped headlight units and the contour lights above the windscreen. The interior is characterized by round corners, good workmanship, modern, light colours and lightweight materials. It radiates unity and harmony, making the traveller feel at ease during the longer commutes for which double-deckers are mainly deployed.

Design language

The new VDL Futura FDD2 is a true member of the Futura family, with the instantly recognizable VDL identity. The FDD2 is another fine example in the long tradition of VDL-built coaches. With its distinctive design and height of four metres it is a real eye-catcher on the road. The Futura family history is tangible in the prominent and very recognizable logo and the design language, as seen in the front, headlight units and design elements in the sides and back.

Luxurious limousine

The Futura FDD2 is available in two lengths: 13,085 mm (FDD2-130 for up to 84 passengers) and 14,145 mm (FDD2-141 for up to 96 passengers), both three-axle coaches. With wheelbases of 6,195 and 7,255 mm respectively, this results in tight turning radii of 21,450 mm and 24,300 mm, thanks in part to a maximum wheel deflection of 52°. With a front overhang of 2,280 mm for both models and a rear overhang of 3,110 mm, this new Futura FDD2 remains a highly manoeuvrable double-decker. The integral construction is similar to that of the FHD2, naturally with the necessary modifications for strength and stiffness that are required for a double-decker. The electronically controlled air suspension of the VDL Futura FDD2 is not purely for passenger comfort. The FDD2 combines excellent road holding with a high level of comfort, as its family members, the FHD2 and FMD2, have already amply proven. The VDL Futura FDD2 offers passengers the comfort and safety of a luxury limousine.

Modular construction as new standard

VDL Bus & Coach has taken the modular construction of coaches to great heights. The synergy between the FHD2 and FMD2 is a striking example of this. With the development of the FDD2, VDL Bus & Coach has further perfected this approach. The back of the new FDD2 is the spitting image of that of the FHD2, only a little higher. The arched shape has been retained, as have the aerodynamics. The FDD2 also shares the dynamically styled rear lights with the FHD2.

The modular construction system developed by VDL Bus & offers many synergistic benefits. For example, the basic front and rear axle modules for the FDD2 are identical to those of the FHD2. The modules are produced in the production halls at VDL Bus Modules in Valkenswaard. Then the modules are preassembled, after which they are joined together on a short production line. The separate manufacturing of the various components of the Futura coaches makes it possible to remove the raw material processing – welding, sawing, cutting – from the assembly area so assembly can be performed in an extremely clean and efficient manner. The modular construction techniques used by VDL Bus & Coach provide the highest possible level of optimization and efficiency.

Sandwich technique

The VDL Bus & Coach modular design approach makes it possible for the FDD2 to also take advantage of the latest techniques used in the FHD2 and FMD2, such as the exceptionally lightweight sandwich panel roof. VDL has further refined this technique, and in the FDD2 it is also used for the floor of the upper deck. As a result, the headroom on the lower deck has increased to a spacious 1,855 mm. The necessary strength of this floor element is achieved through use of an aluminium extrusion profile. Construction with a lightweight roof and upper-deck floor lowers the vehicle's centre of gravity, which results in excellent road-holding. One of the features of the lower-deck floor is its excellent insulation value, keeping road and engine noise to an absolute minimum.

Lightweight construction means savings

Modular construction results in considerable weight savings. Besides in the sandwich panel floor and roof, that VDL developed in-house, weight savings can also be found in the furnishings, the newly designed lavatory and the kitchen unit, all achieved through the use of lightweight materials and an optimized floorplan, even though the toilet has a large 80-litre septic tank for the storage of waste water.

With the new FDD2, VDL Bus & Coach has once again managed to attain a perfect balance between weight, materials and functionality. Perfection of the stiffness of the FDD2 can be attributed, in part, to the integral construction. This confirms the well-deserved reputation VDL Bus & Coach has earned for building lightweight buses and coaches.

Light weight plus a fuel-efficient powertrain means financial benefit for the coach operator. The vehicle's low kerb weight makes it possible to carry more passengers, and a light vehicle consumes less fuel. For the coach operator this means double benefit – more paying passengers and lower fuel costs – resulting in 'Profit of Ownership'.

Passengers

Even at the maximum capacity of 96+1+1 people, the interior of the new Futura FDD2 still provides a remarkable amount of room to move around. One of the most noticeable aspects of the new interior is the lack of sharp corners. All the modules in the coach, including the kitchen, stairways, lavatory, have bevelled or rounded corners. Immediately upon boarding, one's attention is drawn to the considerable room for movement that has been created at the front and centre entrance areas. Light-coloured, soft materials enhance the travel experience; you are conveyed to your holiday destination or business appointment in luxurious style, fit and well rested. This experience is further enhanced by the VDL Class 100 seats. More luxurious versions, Class 300 and Class 500, are also available as an option.

Comfort

The VDL Futura range puts passenger comfort at the top of the list. The FDD2 chassis, with its electronically controlled air suspension, guarantees a comfortable journey. The acoustic quality of the interior, the colour scheme and the natural curves of the soft design provide passengers with the best possible living environment. This is further enhanced by the incident light from the glass roof hatches, which also serve as emergency exits. The climate in the passenger compartment is centrally regulated, and the driver enjoys personal climate control. Here, too, VDL Bus & Coach relies on renowned partners.

Large 19-inch monitors are provided to allow the travellers to watch films or follow the route via the navigation system. A panoramic camera is available as an option, which makes it possible for everyone to enjoy the view in the direction of travel. As an option, small LCD screens can be provided for the passengers seated in the first row.

For the disabled the Futura FDD2 offers the possibility of a wheelchair ramp at the extra-wide centre door. In the area occupied by the rearmost seats on the lower deck, space can be made for one or two wheelchairs.

Accessible luggage area

During the design of the new VDL Futura priority was given to creating the largest possible luggage space. The luggage compartment, with a ceiling entirely free of obstacles, is a whopping 9.3 m³ (without sleeping area). The driver has plenty of room to move around inside. His task is made easier by carefully thought-out LED lighting. Three hatches with a low lift-over height and one door – with central locking – provide access to the compartment. The hatches are fitted with gas springs.

Ergonomic work area

The new VDL Futura FDD2 excels in comfort for the passengers and offers an excellent ergonomic working environment for the driver. The driver has a spacious workplace in this Futura too. Drivers of an FHD2 will immediately recognize the workplace. The seat and adjustable steering column can be positioned optimally relative to the dashboard and instrument panel to accommodate drivers of any height. Tests conducted by VDL Bus & Coach have shown that both tall drivers and their shorter colleagues can set their ideal seating position with ease.

The driver also has a good upward view. The VDL engineers sloped the upper-deck floor upwards at the windscreen, significantly increasing the upward viewing angle. This is of particular benefit to taller drivers, especially for high-hanging traffic lights and road signs. An additional advantage is the fact that the exterior mirrors could be positioned higher. These are now mounted at a height of two metres.

The mirror on the driver's side has a wide-angle mirror, and the one on the entry side has a blind-spot mirror, which is an extra convex mirror that provides a view of the entire side and front of the coach. The mirror arms can be folded in, to prevent damage in a coach wash for example. The mirror fixture on the entry side is also fitted with a LED entry light.

Logically grouped instruments

The cockpit – the driver's workplace – has the same stylish dashboard that is found in the other two Futura-family models. It is attractive, well-organized and ergonomic. The instrument clusters, displays and switches are grouped and arranged in a logical order.

The instrument panel is clearly visible and, through the central display, shows all kinds of information about the vehicle, fuel consumption, door status, smoke detector, etc. A bright display on the right side of the centre console shows the camera feeds from the upper deck, navigation system or rearview camera. The infotainment system is located beside it, right at one's fingertips. The console for the left arm, on the driver's window side, includes the switches, climate control panel and selector knob for the ZF AS Tronic automatic gearbox. Manual intervention is possible via the lever on the steering column, which also serves as the retarder control. The multifunction steering wheel also includes controls for the radio, telephone and cruise control.

Storage space

The driver also has an easily accessible storage space, 24- and 12-volt sockets and a USB connection. The digital tachograph is conveniently located in the dashboard to the right of the driver. The dashboard for the co-driver has been changed from those found in the other Futura family members. Additional functionality has been added here, such as a fold-out table for a laptop. There is a standard cupboard, optional space for a refrigerator and a microphone within hand's reach.

For intercity transport the driver's workplace can be optionally expanded to include a payment table.

Safety

In accordance with European legislation that will come into force on 1 November 2015, the VDL Futura FDD2 is equipped with the latest active braking system 'AEBS' (Advanced Emergency Braking System) that assists the driver in identifying and quickly braking in emergency situations. AEBS recognizes slow moving objects and those that have come to a stop. It uses a radar system

integrated in the front, recognizes slow moving objects and those that have come to a stop in the coach's driving lane and responds accordingly. The ACC (Adaptive Cruise Control) system is available as an option. This combines the safety system with a comfort function.

The new European regulations will also make the Lane Departure Warning System (LDWS) mandatory. When the vehicle strays from the intended lane the driver is warned of the need for corrective steering through vibration of the seat. Hill Hold, the system that prevents the vehicle from rolling back when pulling away on a slope is standard, as is 'ESP' (Electronic Stability Program). ESP keeps the coach steering in the intended direction when it is necessary to brake firmly in a curve or on a slippery road surface and helps the driver maintain control during avoidance manoeuvres.

Rely on proven quality: DAF MX-13

The DAF MX-13 is a trusted steed in the VDL Futura. This new VDL Futura FDD2 is also fitted with a product from the Dutch technology city of Eindhoven: the MX-13 375. This Euro 6 engine produces 375 kW (510 hp) and 2500 Nm of torque within a broad range from 1,000 to 1,425 rpm.

The MX-13 is a six-cylinder inline engine with a displacement of 12.9 litres. The common rail injection system allows high injection pressures of up to 2,500 bar for optimum combustion. This results in the lowest possible emission and noise levels and the best possible fuel efficiency. The MX-13 has a variable geometry turbocharger (VGT). All this contributes to the favourable Total Cost of Ownership (TCO) of the Futura FDD2. The service interval is fixed at 90,000 km. Behind the MX-13 the trusted ZF AS Tronic 12 AS 2701 BO transmits the power to the driven axle with a reduction of 2.93 for extra comfort. At 100 km/h the engine runs at 1,230 rpm. For the coach operator this powertrain represents a substantial contribution to the 'Profit of Ownership', while for the environment it means further reduction of the coach's already favourable CO₂ emissions per passenger kilometre score.

Careful consideration

Both before and throughout the design process the design team was assisted by a panel of experienced double-decker drivers. This provided many insights that have been incorporated in the new VDL Futura FDD2. It was part of the quality plan that VDL Bus & Coach established in preparation for development of the new Futura FDD2 double-decker to optimize the design process: input from those with real-world experience. The ultimate goal was not only that the FDD2 should be cost-effective but also to make it as attractive as possible for the owner, driver, and above all the passengers. Prior to the development process for this VDL Futura FDD2, VDL Bus & Coach consulted numerous users of the predecessor, Synergy, to learn what improvements and changes they would like to see in their new double-decker. Then the VDL engineers and designers went to work with the information obtained from these customer interviews. The result is a synthesis of what the engineers wanted to see achieved in terms of technical design and the customers' wishes. The ultimate goal for VDL Bus & Coach is to create an experience for the passengers that is on par with that of a luxury limousine. VDL Bus & Coach strives to create an optimal travel environment for the passenger, with the most pleasant on-board climate possible in the VDL Futura FDD2.

VDL Bus & Coach

The core activities of VDL Bus & Coach consist of the development, manufacturing, sales and after-sales of a wide range of buses, coaches and chassis modules and the purchase and sales of second-hand buses. Manufacturing takes place in the Netherlands and Belgium. VDL Bus & Coach



places high value on quality, safety, durability, the environment, low fuel consumption, comfort and low maintenance costs. Sales of VDL Bus & Coach products take place through a worldwide network consisting of corporate-owned sales offices, importers and agents in more than 30 countries. This makes it possible to offer custom-made transport solutions. For after-sales and maintenance, the client can count on rapid, hassle-free assistance from VDL Bus & Coach employees in any of the many service locations. An extensive distribution network ensures that spare parts and accessories are delivered to the requested destination as quickly as possible. VDL Bus & Coach is one of the largest bus producers in Europe.

VDL Groep

VDL Bus & Coach is part of VDL Groep. VDL Groep, with its head office in Eindhoven (The Netherlands), is an international industrial company focused on the development, production and sales of semi-finished products, buses & coaches and other finished products and the assembly of cars. Since the founding in 1953 this family-owned company has grown to include 87 operating companies, spread over 19 countries with more than 10,400 employees. The strength of VDL Groep lies in the mutual cooperation between the companies.

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