Appendix 6

TECHNICAL SPECIFICATION AND TECHNICAL BID TEMPLATE

**18-Metre Articulated DIESELBUS\***

**\***hereinafter referred to as – the Vehicle

*!!! If any of the technical parameters or criteria cannot be met, please provide the respective reasons, and offer a feasible alternative solution.*

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| --- | --- | --- | --- |
| **Technical Parameter or Criterion** | **Customer’s Requirements, Characteristics, and Description** | **Tenderer’s Indication of Compliance with the Requirements** (yes – complies; no – does not comply), **and Commentary or Offer** | |
| **General Requirements** | |  | |
| Vehicle Category and Class | Category M3, Class I. | yes  no |  |
| Vehicle Type and Application | * Three-axle articulated low-floor bus (without steps in doorways and main gangways), designed and intended for the carriage of passengers within urban agglomeration. * The Vehicle shall be accessible to passengers with reduced mobility, including passengers in wheelchairs and passengers with prams. | yes  no |  |
| Climatic Operating Conditions | The Vehicle, its systems and subsystems shall function safely at ambient temperatures from -300C to +400C (relative air humidity 98% at temperatures of up to +250C). | yes  no |  |
| Vehicle Compliance | The Vehicle shall comply with the laws and regulations of the Republic of Latvia and with the provisions of Regulation (EU) 2018/858, as attested by the Vehicle type-approval certificate, including Requirements of Regulation (EU) 2019/1244 concerning the general safety of vehicles and the protection of vehicle occupants and vulnerable road users (GSR2). | yes  no |  |
| **Powertrain** | |  | |
| Engine | * Internal combustion diesel engine complying with the latest EURO VI exhaust standard, using modern advanced exhaust after-treatment systems. * The power of the diesel engine shall be sufficient to ensure the required dynamic characteristics of the Vehicle, efficient fuel consumption and durability of the engine. | yes  no | Please specify the engine model and power |
| Transmission | * Automatic transmission with at least 4 speed gears or automatic manual transmission. * Combination retarder, which combines hydrodynamic retarder and diesel brake and electric regenerative braking (if any). * The driveline shall be tuned and optimised in such a way to ensure smooth gear shifts, optimum engine operation and efficient fuel consumption. | yes  no | Please specify the type of transmission |
| Fuel type and consumption | * The engine must be powered by both standard summer/winter diesel (EN 590) and renewable diesel (HVO/EN 15940), as well as blends of these diesel and biofuels. * The fuel consumption of the Vehicle shall be determined according to the VECTO simulation or the results of the SORT-2 driving tests. | yes  no | Please indicate the fuel consumption |
| Mild hybrid solution (option) | It is permitted to supplement the diesel engine with an electric motor system in order to accumulate the electrical energy generated during regenerative braking and to use it to support the electric systems of the diesel engine and the Vehicle, with a view to improving fuel economy. | yes  no | Please specify a solution if this option exists |
| **Dimensions and Passenger Capacity** | |  | |
| Length | 17 900 – 18 750 mm | yes  no |  |
| Width | ≤ 2 550 mm | yes  no |  |
| Height | ≤ 3 400 mm | yes  no |  |
| Total Passenger Capacity | ≥ 150  (*the conventional space for standing passengers shall be calculated in accordance with the provisions of UN Regulation No. 107*) | yes  no | Please specify total passenger capacity |
| Number of Seats | ≥ 35  (*determined in accordance with the provisions of Regulation (EU) 2018/858*) | yes  no | Please specify the number of seats |
| Space for Passengers in Wheelchairs and for Passengers with Prams | 1+1  (*all installed in accordance with the provisions of UN Regulation No. 107*) | yes  no |  |
| **Accessibility and Passenger Compartment** | |  | |
| Passenger Doors | 4 (four) inward or outward opening two-leaf doors on the right side of the Vehicle, with pneumatic or electric drive. | yes  no | Please specify door type and drive type |
| Floor Height at Passenger Doors | ≤ 340 mm | yes  no |  |
| Height in Gangways and at Doors of the Passenger Compartment | ≤ 1950 mm | yes  no |  |
| Boarding and Deboarding Assistance Equipment | Manually folding (as an option – electromechanically retractable), compliant with the provisions of UN Regulation No. 107, installed at the 2nd door to facilitate boarding into the Vehicle for passengers with reduced mobility. | yes  no |  |
| Bodywork Tilting Function (*kneeling*) | The Vehicle body shall be capable of being tilted to the right side to lower the boarding height to 240-260 mm relative to the surface of the road. | yes  no |  |
| HVAC System | Energy efficient and optimised heating and air conditioning system (integration of a fuel-powered autonomous heater is permissible).   * Integration of the heat pump into the heating system (as an option) to improve heating efficiency and/or electricity/fuel economy. | yes  no |  |
| Passenger seats | Durable seats of ergonomic structure that provide maximum comfort to passengers.   * For finishing of seat cushion and backrest should be used a high-quality and sustainable synthetic material, which has following properties:   + high wear and tear resistance,   + resistance to vandalism,   + dirt and water repellent properties,   + fire resistance,   + easy to clean and quick to dry. | yes  no | Please indicate possible alternative materials for seat finishing |
| **Chassis, Axles and Suspension** | |  | |
| Load-bearing Structure | The elements of the chassis frame shall be made of premium quality stainless steel or equivalent material, the corrosion resistance and strength properties of which are not worse. | yes  no |  |
| Axles | * Front (steering) axle with independent suspension. * Rear and central axle with lowered frame (portal) and double wheels. * Axles shall be fitted with mechanical stabilisers (if the design so provides) to ensure adequate dynamic stability of the vehicle and to improve steerability and safety. | yes  no |  |
| Tyres | 275/70 R22.5   * The labelling of tyres regarding performance rating shall meet at least the following classes: * Fuel efficiency (rolling resistance) — B * External noise — A * Wet grip — C | yes  no | Please specify a different tyre size if necessary |
| Suspension | * Electronically Controlled Air Suspension (ECAS). * Adaptive shock absorbers (as an option) to improve driving comfort and vehicle dynamic stability. | yes  no |  |
| Clearance | ≥ 135 mm  (*at rated tyre pressure, rated suspension height and full Vehicle load*) | yes  no |  |
| Additional Equipment | Central lubrication system (CES) providing automatic lubricant supply to steering axle, steering gear and articulated joint gear assemblies (if the design so requires). | yes  no | Please specify a CES solution if this option exists |
| **Dynamic Characteristics** | |  | |
| Maximum Speed Limit | ≥ 85 km/h   * A possibility (as an option) to provide dynamic speed limiting (DSLS), using real-time location data (GPS) of the Vehicle and an appropriate remote management system. | yes  no | Please specify a DSLS solution if this option exists |
| Maximum Road Up-hill Gradient | 12%  (*a fully loaded Vehicle shall be able to overcome the maximum up-hill road gradient, starting to drive from any point of such road*) | yes  no |  |
| Average Acceleration | ≥ 1,2 m/s2  (*with the Vehicle developing a speed from 0-20 km/h*) | yes  no |  |
| **Safety Systems and Driver Assistance Systems** | |  | |
| Fire Extinguishing System | The Vehicle shall be equipped with an effective automatic fire extinguishing system for engine compartment, which corresponds to requirements of UN Regulation No. 107. | yes  no |  |
| Advanced Driver Assistance Systems | * The Vehicle shall be equipped with all mandatory Advanced Driver Assistance Systems (ADAS) required by GSR2. * Additionally (as an option), Advanced Emergency Braking System (AEBS), optimized for urban traffic conditions, shall be installed. | yes  no |  |
| Devices for Indirect Vision | It shall be possible (as an option) to equip the Vehicle with a system of camera-monitor devices which would replace the functionality of exterior rear-view mirrors. | yes  no |  |
| **Maintenance and Servicing** | |  | |
| Diagnostics and Repairs Equipment | * Together with the first Vehicle, 2 (two) complete sets of special equipment shall be delivered, including software necessary for conducting complete diagnostics and repairs of all systems. * Additionally, it shall be possible to order the delivery of 5 (five) more diagnostics sets (for a separate fee). | yes  no |  |
| Technical Documentation | * All necessary Vehicle use (operation), maintenance, repairs and diagnostics instructions, diagrams and schematics shall be delivered or provided access to. * A detailed and illustrated spare parts catalogue shall be delivered or provided access to. | yes  no |  |
| **Information System Equipment** | |  | |
| General Requirements | * The Supplier shall ensure the installation and connection of devices of an On-board Integrated Information System (IBIS) selected and provided by the Customer, as well as the connection and assembly of the relevant 24V power supply. * The Supplier shall coordinate the specifications for the placement, installation, connection, and compatibility of software of IBIS devices with the Customer before the start of production of the Vehicle. | yes  no |  |
| Information System (Driver’s) Control Unit | Tablet with an Android operating system and a touch screen of at least 10” (*to be provided by the Customer*). | yes  no |  |
| Passenger Information System (PIS) | * At least 2 LCD passenger compartment monitors with two separate 17-inch information screens (*devices to be provided by the Customer, but housing, fastenings and assembly in the vehicle to be provided by the Supplier*). * LED external panels in the front, rear and on the sides of each section of the Vehicle (*devices to be provided by the Customer, but housing, fastenings and assembly in the vehicle to be provided by the Supplier*) * Audio announcement playback system:   + Audio amplifier with a linear audio input and microphone input (*to be provided by the Supplier*)   + Speakers in the interior of the Vehicle and on the exterior of the Vehicle (at doors) in an appropriate quantity (*to be provided by the Supplier*)   + Microphone, installed on a flexible stand, inside the driver’s cab (*to be provided by the Supplier*) | yes  no |  |
| Video Surveillance System (CCTV) | * Digital (IP) colour video cameras in an appropriate quantity to view the passenger compartment, door areas and the carriageway outside the Vehicle (*devices to be provided by the Customer, but installation in the Vehicle to be provided by the Supplier*). * Video surveillance monitor (no smaller than 15-inch) inside the driver’s cabin of the Vehicle with the possibility to display online video from any camera (*devices to be provided by the Customer, but installation in the Vehicle to be provided by the Supplier*). * Video surveillance terminal and software (with licenses) with recording function and transfer to the Customer’s server (Digifort) (*to be provided by the Customer*). | yes  no |  |
| Passenger Counting System (APC) | The Vehicle shall be equipped with an automatic passenger counting system enabling automated data analysis and transfer to the Customer’s planning, coordination, and control system (*devices to be provided by the Customer, but installation in the Vehicle to be provided by the Supplier according to the APC manufacturer’s specification*). | yes  no |  |
| Local Data Exchange Network | * 5G/LTE/GPS communication device (router) and internal Ethernet network switches with POE functionality (*devices to be provided by the Customer, but installation in the Vehicle to be provided by the Supplier, coordinating the placement with the Customer*). * The Vehicle shall be equipped with an Ethernet network (at least 1000BASE-TX) used uniformly by all IBIS devices (*to be provided by the Supplier*) * GPS (GNNS)/LTE combined antenna (to be provided by the Customer) which must be installed appropriately on the roof of the Vehicle (to be provided by the Supplier). | yes  no |  |
| Electronic Ticket Control System | The Vehicle shall be pre-equipped with installation sites and connections sites for ticket selling and control devices, including all the necessary relevant communications and power supply and installation (*to be provided by the Supplier, coordinating the placement and connections with the Customer*). | yes  no |  |

[Updated on May 6, 2025]