

Functional Description

Basic Contract Award for automated cleaning machines and equipment

1 Preliminary notes	3
2 Technical requirements	3
2.1 General technical requirements	3
2.2 Requirements of the machine	3
2.2.1 Electrotechnical requirements	3
2.2.2 Control technical requirements	4
2.3 Requirements for the Service	4
2.4 Dimensions and Weight	4
2.5 Requirements for work safety and health requirements	4
3 Laws, Directives and Standards	4
4 Terms of Delivery	5
5 Documentation	5
6 Documentation, Assembly and Instruction	5
7 Examination, Clearance, Final Approval, Test Operation, Maintenance	6
7.1 Mechanical engineering, measurement and test engineering approval	6
7.2 Test Operation	6
7.3 Final inspection	6
7.4 Maintenance	6
7.5 Requirements for the Full-Service	6
7.6 Replacement and spare parts	7
8 Services during the warranty period for claims for defects	7
9 Contact Persons	7
10 Glossary	8
11 Participating Departments	8
12 Appendix	8

Automated cleaning machines and devices

1 Preliminary notes

The call for tenders serves to ensure the sustainable procurement of automated machines and equipment for infrastructural facility management in office buildings, railway stations of DB AG as well as third Railway Undertakings (RUs), as well as cleaning services on rail vehicles.

It is planned to conclude framework agreements with 2 suppliers over a period of two years. The framework contract is not a service contract. It exclusively regulates the option of the purchasers entitled to request the contract to conclude individual contracts on the terms of the framework contract. There is no obligation to exercise this option. The client is also entitled to transfer the same services to other contractors.

Reference for automated cleaning: *This tender describes exclusively automated battery-operated scrubbers that navigate and clean the interior without interventions and react to people, pits, obstacles, etc. Conventional cleaning machines that requires operation by a person are not considered. In addition to the use of these machines, the focus of the framework contract is also the further development of automated cleaning in the railway station environment.*

2 Technical requirements

2.1 General technical requirements

The scrubbers are to be made of robust, sustainable and wear-resistant materials. The replacement of wear parts (suction lips, bristles, propellers, roller brushes) should be possible by the user without prior technical knowledge or tools. The replacement of suction lances may be carried out with the simplest tool (screwdriver, allen wrench, open-end wrench or similar). The replacement of components is to be simplified by a clear color coding for the user. The devices must comply with the provisions of the VDE (association of German electricians) guidelines, the act on technical equipment and the latest safety and accident prevention regulations of the respective professional associations.

Reference for automated cleaning: *For automated cleaning, reliable navigation in the indoor area must be ensured. This applies in particular to the reaction towards people, obstacles and pits. The area to be cleaned must be configurable, e.g. Through previously integrated ground plans. This also means that it is also possible to set a range in which the machine is not allowed to travel independently. In the event that no digital ground plan is available, a solution should also be provided. The response towards people and obstacles as well as the reading of map material, including the required format or the general method for orientation must be described.*

2.2 Requirements of the machine

Battery-operated devices should only be used with maintenance-free or low-maintenance rechargeable batteries. The automated cleaning machines require an optical (flashing lights) and acoustic (reversing sound) device and emergency stop switch for hazardous situations.

Reference for automated cleaning: *With the aid of the optical and acoustic devices, it should also be possible to alert personnel in the event of a dangerous situation for the robot (for example, when the robot is moved or lifted by humans during the automated cleaning).*

2.2.1 Electrotechnical requirements

Devices with mains plug should have a maximum mains voltage of 230V.

Automated cleaning machines and devices

2.2.2 Control technical requirements

The devices and machines are to be operated intuitively, i.e. Unambiguous control panel = one switch each for: On / Off, working / Ecomodus and uniquely assignable error messages during operation.

Reference for automated cleaning: For automated cleaning, there should be a control panel with touch-sensitive screen or clear switches, which can be used to start the cleaning process in the simplest way (graphic menu with symbols and labeling in German). In addition, the machine must also allow a manual mode in which a person runs the cleaning machine.

The software used for the automated procedure with the programming must be comprehensively documented and in the case of an inspection by supervisory authorities. The general safety standards and requirements for software development must be taken into account. In any case, service / manipulation of the software by any unauthorized person must be restricted.

There should be a secure remote monitoring facility for the cleaning machine, from which authorized persons can monitor the status of the cleaning machine via a smartphone, tablet or PC ("error", "cleaning", "cleaning completed", "help" etc). Remote control or intervention into the cleaning program should not be possible.

2.3 Requirements for the Service

The service standards must be uniform according to the specifications of this tender in Germany. For the region of Germany, there must be an immediate contactable person (alternatively also delivery / service partners possible) available at any point of time. An additional optional consultation at the site of service for the operating technicians is possible.

The Contractor shall provide a full service for all individual contracts concluded under the contract framework.

2.4 Dimensions and Weight

The following minimum requirements apply:

- Min. 1000 m² / h ground coverage
- Min. 20 liters water container
- Min. 40 cm working width
- Min. 3.00 hours of battery life under full load
- Max. 6.00 hours charge cycle
- Max. 79 dB(A) noise level (DIN45635)

2.5 Requirements for work safety and health requirements

All devices and machines must be tested by the TÜV (Technical Supervisory Association).

3 Laws, Directives and Standards

The system provided by the contractor shall comply with the laws, directives and standards applicable at the time of the award of the contract as well as the recognized rules of technology.

Automated cleaning machines and devices

4 Terms of Delivery

The delivered devices and machines are free at the place of service according to the delivery address of the order of DB Services GmbH at the expense and risk of the contractor. The delivery period for new devices is a maximum of 4 weeks from the date of order. The complete scope of delivery and services can be found in Appendix 1 to the functional description of services "Price composition". The date of the delivery and the initial registration must be announced to the client at the least seven days in advance.

5 Documentation

The complete documentation is to be written in German language and handed over in triplicate and reproducible. The parts of the documentation, which have been created by means of EDP, are transferred to data carriers in addition to the paper form. The documentation must comply with the requirements of the EC Machinery Directive.

This includes the following points:

- Technical description,
- Operating instructions,
- Compilation drawings of the mechanical, pneumatic, hydraulic and electrical / electronic assemblies,
- Electrical wiring diagrams in ePlan,
- Replacement and wear parts catalog including suppliers, delivery times, article numbers, prices and transaction deadlines, as well as a list of requirements,
- CE - marking; EG – Declaration of Conformity,
- Troubleshooting information,
- Maintenance instructions including deadlines,
- Electrical measurement protocols for the respective components,
- Plan of the necessary repeating tests,
- Risk assessment and the resulting safety and dangers,
- Designation and description of the work to be carried out by the operator without loss of the manufacturing guarantee (e.g. replacement of wear parts and minor repairs),
- Test and acceptance certificates of the hardware components used,
- All drawings must be handed over as a copyable copy and * .dxf or * .dwg file in the software AutoCad 2010 and higher,
- Data carriers which, in the event of a system fault, enable the system to be put back into a fully operational state, including control software, passwords etc.
- Creation of revision plans on the basis of the assigned stockpiles,
- Telephone list with contact persons

6 Documentation, Assembly and Instruction

The contractor will carry out a free initial registration for up to 3 device users for each individual device at the site. The required training documents and instructional information are provided free of charge and in sufficient numbers. The training must be completed at the beginning of the trial period.

Automated cleaning machines and devices

7 Examination, Clearance, Final Approval, Test Operation, Maintenance

7.1 Mechanical engineering, measurement and test engineering approval

After the delivery of the system, the machine technology and, if necessary, the measurement technology or the test engineering approval is carried out with the customer.

In the case of this clearance, the completeness of the scope of delivery as well as the completeness of the documentation of the system must at least be presented, in accordance with item 5 of the present functional description of performance.

In the case of measurement or test engineering clearance, the corresponding functions of the system are to be demonstrated on relevant components.

After the approval of mechanical engineering, measurement and test engineering, the machine is put into test operation at the servicing location.

7.2 Test Operation

The uninterrupted and interference-free test operation, which takes place immediately after the training and commissioning, is 2 weeks and is carried out by the customer. The contractor supervises the trial operation by means of on-call duty.

Faults during the test operation must be eliminated within 24 hours. 24 hours after the faults are removed, the test operation will start again.

7.3 Final inspection

The final inspection of the system takes place at the place of service after commissioning by the contractor, after completion of the training and after the successful trial operation.

If there are significant defects during the final inspection, the final inspection can be rejected until these defects are remedied. Significant defects are deficiencies which influence the function or performance of the system. The lack of documents required for the final inspection (documentation, markings, etc.) is also to be considered as a significant lapse. Defects found during the final inspection test, as well as missing parts of the system, must be noted in the final inspection report.

Insignificant defects and residual work are recorded in the final inspection report. They do not attribute to the refusal of the final approval. For the processing of these deficiencies, a deadline shall be specified in the final inspection protocol.

The system is only regarded as approved when the customer has signed the acceptance report. With the final inspection, the risk is transferred to the customer.

7.4 Maintenance

Free annual maintenance on leasing equipment for the duration of the respective leasing contract or for equipment for the duration of the defect liability. The maintenance includes all wear parts and technical maintenance and repairs.

7.5 Requirements for the Full-Service

Preservation and restoration of the desired condition of automated cleaning machines and devices according to the manufacturer's specifications (e.g. inspections and/or maintenance) at fixed dates / operating hours and at an agreed flat-rate cost.

Automated cleaning machines and devices

This includes:

- Checking of the functionality and safety devices
- Removal of malfunctions within the specified time limit (see Point 8)
- Change of lubricants
- Calibration of functional settings (electrical, mechanical, hydraulic, etc.)
- Test run and final check
- Safety check according to legal regulations
- Delivery of a replacement machine for the period or repair/ maintenance, if failure occurs after 24
- All regular inspections and maintenance according to manufacturer's instructions
- Inclusive of all wear parts and consumable materials (in particular rubber parts, brushes, dirt traps, scraper rubber, pad holder, bristles etc.)
- Inclusive of all expenses on working times and materials
- Inclusive of all costs for arrival and departure, including mileage driven in kilometers
- Inclusive of batteries and chargers
- Inclusive of all repair and maintenance parts
- For automated cleaning especially software maintenance (incl. Software licenses) with security updates and data backup

7.6 Replacement and spare parts

The contractor shall draw up a spare and wear parts catalog with the components, which shall be replaced (with indication of the time limits).

Furthermore, the contractor shall draw up a list of the initial requirements for the spare parts and wearing parts, including delivery times, order numbers, prices and exchange periods, which are to be kept in his experience. This initial requirement list is part of the scope of delivery. The contractor undertakes the responsibility to have the spare parts available for at least 10 years.

Reference for automated cleaning: *The delivery also applies in particular to security updates and, if applicable, further software updates for the software used.*

8 Services during the warranty period for claims for defects

s. Section 3 of the framework agreement

9 Contact Persons

To clarify technical and commercial questions, please contact the following contact persons:

Commercial issues	
Central purchasing DB AG	Thomas Klaus, Tel.: 030 297 56584
Technical issues	
Performance management real estate	Kai Haubenreißer, Tel.: 030 297 53355
IT Projects / IT operations	Daniel Pfau, Tel.: 030 297 53318

Automated cleaning machines and devices

10 Glossary

The following terms defines the functional description of the service:

Term	Definition / explanation
Demand	Individual, verifiable property that the product must or should meet.
Must	These claims are binding on the contractor without any deviations. A non-filling will lead to exclusion.
Option	All optional claims are binding. The client reserves the right not to assign these options at any time or at a later date.
Function	Non-binding requirements for main and sub- offers
Specification	Performance-related technical requirements for the main or sub- module
Standards	Claims retrieved from the regulations shall be compulsorily observed.
Operation	Demands arising from the use of the system or the company's infrastructure
Alternative	Alternatively, you can choose between two (or more) possibilities, as well as the possibility to choose between two (or more) things.
Eventual	Possibly occurring, for possible special cases
Servicing	Requirements as a result from inspection, maintenance and repair (e.g., exchange periods, accessibility, etc.).

11 Appendix

Annex 1 to the functional description of services: Price composition