**Appendix no. 2 to the Terms of Reference**

**DESCRIPTION OF THE SUBJECT OF ORDER**

Delivery, including unloading, carrying, mounting, launching of the devices and provision of the workstation instruction as well as its implementation in the **Clinical Research Support Centre in Białystok**

**The set comprises two metabolic chambers with equipment and accessories.**

**Modification at pts no I.4, I.7, IV.4**

**Modification at points II. 7., B.1.**

**NOTE!** The Contractor is obliged to enter the name and marking of the offered device below (type/model/catalogue number, full name and manufacturer's country) in a manner compliant with the markings located on information materials.

**Name and address of the Contractor: ………………………………………………………………………………………………….**

**Type/Model/Catalogue number (if applicable): …………………………………………………………………….**

**Manufacturer - full name ………………………………………………………………………………………………………**

**Manufacturer's country …………………………………………………………………………………………………………………..**

**Year of production: 2025**

1. **TECHNICAL, USAGE AND FUNCTIONAL REQUIREMENTS**

Description of the set

1. The set designated for testing human metabolic processes in strictly controlled environmental conditions, comprising two metabolic chambers.
2. Each chamber must constitute a tight, hermetic compartment with the surface in the range of 12 – 14 m3, with inner dimensions not below 2,8 x 2,0 x 2,2 m (length x width x hight), designed in consideration of the comfort of test participants and precision of calculations.
3. Outer dimensions of compartments should not exceed 3,6 x 2,8 x 2,8 m (length x width x height).
4. The chamber walls are made of insulated panels with thickness of at least 85 mm ensuring high tightness and thermal insulation – R with the value of at least 4 (K \*m2/W). The outer and inner surface of insulated panels is covered by galvanized steel with thickness of min. 0.5 mm. (The Ordering Party shall confirm the final type of external cladding from the assortment of the Contractor after conclusion of the agreement).
5. Inside the chamber, there is a ventilated wall which eliminates dead air zones. The chamber is equipped in a window at the back that enables an outside view.
6. Ventilation ducts, cabling and other necessary media will be built inside the walls.
7. ~~The set, secured against a drop of voltage in the form of inbuilt or external UPS system~~ The Contractor shall deliver UPS in order to maintain the connection with the server.

Characteristics of metabolic chambers and the accessories

1. A metabolic chamber must be equipped in locks that enable passing of meals and collecting biological samples without disrupting the test conditions.
2. Two additional culverts enabling conduct of cables and wires for the purposes of experiments
3. System facilitating a precise control of environmental parameters which guarantees steady conditions during the whole course of the test.
4. Inside each chamber there is a bed, a desk, fittings, washbasin, freezing toilet, mirror, TV. Installation of chambers provides the possibility of connecting devices to the power source and the internet (electrical sockets - volume and placement **to be agreed with the User after conclusion of the agreement**) which ensure comfort of patients during longer testing sessions.
5. Interior of the chamber may be covered with HPL material (**type and colour ranges** **to be agreed after conclusion of the agreement),** easy to clean
6. **The outer part** of the chamber covered with lining based on chipboard (**type and colour range to be agreed with the User after agreement conclusion)**
7. Each chamber shall be adapted to accommodate exercise equipment: stationary bicycle and treadmill (~~listed equipment supplied with the chamber~~). The chamber should be able to connect the above-mentioned equipment and allow monitoring of the patient's metabolic parameters during exercise. In this way, the chamber allows the study of energy expenditure and substrate burning both at rest and during physical activity.
8. Moreover, each compartment must be equipped in mounted air inlet grilles with dimensions not below 1500x500mm, air outlet grilles with minimum dimensions of 350x250mm – at least two, outlet of exhaust air with diameter of at least 80 mm. Dimmable lights should also be mounted.
9. Each of the chambers has a doorleaf with a possibility of emergency unblocking both from the outside and from the inside.

Air-conditioning control

1. The chamber air-conditioning system enables precise regulation of temperature in the minimum scope of 17–25°C with precision not worse than 1°C and humidity in the range of at least from 45 to 75 %Rh with precision and stability not worse than 5%Rh.
2. Air-conditioning units and heat exchangers placed above the ceiling enable regulating environmental conditions in the chamber whilst supporting diverse testing needs, including simulations of different thermal conditions.
3. The chamber is equipped in an advanced system of air exchange with filters and the recuperation system ensuring the flow of fresh air in the minimum scope of 10-50 m3/h and the flow of the recirculation air with capacity in the minimum scope of 10-500 m3/h ensuring permanent access of fresh air and maintaining proper pressure and the flow inside the room.
4. The system is equipped in industrial class elements: temperature sensors, humidity and pressure sensors as well as valves providing air samples into the analytical system which allows for precise calculation of the energy expenditure.
5. All the elements of the ventilation and air-conditioning system, cabling and pipelines consist of prefabricated, initially tested components.

Data analysis system

1. The analytical system of the metabolic chamber enables measurements of the oxygen usage (O₂) and production of carbon dioxide (CO₂) which enables precise determination of the energy expenditure and substrate oxidation.
2. The system is equipped in the technology of sample conditioning which ensures stability of the results. Air samples are dried, controlled in terms of temperature and pressure and then analysed by independent, industrial class gas analysers. All air samples are analysed by two autonomous sets of analysers in order to ensure high level of precision.
3. Control computers should be equipped with an in-built equipment software specific for the calorimeter, targeted at steering, calibration of the system and internal processing of data from sensors, communicating with the central computer for data collection and with the analysis-performing software.
4. The software collects data from all sensors in the whole system (rooms, analysers, devices for air processing) and it stores raw data in the time resolution not below 5 seconds. All raw data and calculated data are stored in csv files which facilitates their analysis and archiving or the storage of data in txt files subject to them having an organized structure (i.e. data are divided by commas or tabs) thanks to which they will be readable and possible to be opened in Excel. The software must enable exporting data to Excel files.
5. Control cabinets will be provided with the metabolic chambers in order to ensure full control over all electrical elements and systems inside the chamber. Each control cabinet will be connected to sensors and actuators enabling easy management of temperature settings, humidity settings and air flow control in each room independently. User interface built in the cabinet allows the tester for a swift service - both through the touch screen on the cabinet and remotely from the control panel in the laboratory room. Each control panel contains the following elements:
	1. screen display,
	2. configurable alarms,
	3. interface for connecting BMS systems,
	4. full controller based on the PLC technology,
	5. electrical switchgear for all system elements,
	6. dedicated set of software for steering, reading of sensors and communication.
6. Additionally, a set for methanol combustion will be provided that enables system validation. This set should contain methanol burner, safe container and precision analytical balance.

Data obtained from the metabolic chamber

1. Basic data (direct) cover the measurement of carbon dioxide volume exhaled by the patient, measurement of the oxygen volume used by the patient, level of activity and body temperature measured by means of ear sensors or skin sensors with at least 1-minute, 5-minute and 30-minute time resolution.
2. Data obtained from the software cover additionally energy expenditure (EE), thus, total energy spent by the patient, respiratory exchange ratio (RER) indicating the type of oxidised substrate and oxidation of carbohydrates informing of the volume of carbohydrates burnt by the patient's organism. Additionally, the application enables determining the cost of physical activity as a metabolic cost of movement with different intensity, post-meal thermogenesis, thus, energy used for digestion of meals and the basic metabolic rate (BMR) - standstill energy expenditure of the patient. The software also enables measuring the standstill metabolism, thus, energy expenditure in standstill, metabolism during sleep enabling analysis of night metabolic processes and reaction for the physical effort, i.e. use of energy during exercises with different intensity, which facilities the assessment of VO₂ max and the analysis of metabolic effect of intense exercises.

Implementation in the scope of service

1. The scope of service of the set covers areas which ensure full preparation of the personnel for servicing and conducting tests in the metabolic chamber, where:
	1. Technicians will be trained in the scope of basic diagnostics of defects, small repairs and they will take active part in the installation in order to better understand the system and its functions.
	2. Specialists will learn the basic principles of system operations, daily service, safety systems, correctness of system operations verification procedures, recommendations concerning the procedures for participants of tests and data management. Implementation should last at least 2 days. It should be carried out on the spot for groups of at least 8 participants.
	3. The scope of implementation for testers and coordinators focuses on designing tests with the use of calorimetric chambers, interpretation of data and data management. The implementation also covers possibilities of cooperation with the industry and other research institutions. Time dimension: at least 1 day, conducted on site for groups of at least 8 participants.
2. **General requirements**
3. The metabolic chamber is covered by a min. 3 years warranty, which shall commence upon commissioning and shall cover the entire kit, excluding consumables such as filters and calibration gases. The warranty ensures that any defects in the system, resulting from manufacturing or installation errors, will be repaired by the manufacturer.
4. The subject of order is factory new
5. The offered subject of order is complete, after installation and launching it is ready for use in line with its designation without additional investment purchases. Purchases of exploitation and usable materials, including medical goods of single use are not investment purchases,
6. The equipment allowed for sale in the territory of the Republic of Poland has all the required by law certificates, attestations, declarations etc. and it meets all the requirements in the scope of service safety standards. The Contractor undertakes to display to the Ordering Party, upon each demand, documents confirming compliance with the above-specified requirements,
7. Computer software forming part of the subject of the order must be in Polish and/or in English:
	* + license or licenses for the software/software passed onto the Ordering Party must be time-unlimited, entitling to the use of software in the scope necessary for the use of all device functions,
		+ updates of the software will be provided and installed at the cost of the Contractor in the period of the guarantee immediately after its introduction to trading without the necessity to apply for an update by the User,
		+ updates of the software, also stemming from third parties, will be provided and installed at the cost of the Contractor in the period of the guarantee immediately after its introduction to trading without the necessity to apply for an update by the User.

I declare that the above-specified subject of order offered by the Contractor represented by me fulfils the technical, exploitation, quality and functional requirements in the above tables and all other requirements concerning it specified in the Terms of Reference and in attachments enclosed with it.

**Name, address, contact person, telephone number, email of the guaranteed service:.....................................................................................................................................................................................**

**Eligible electronic signature of the Contractor**

**Appendix no. 4 to the Terms of Reference**

**and Guarantee Terms**

Delivery, including unloading, carrying, mounting, launching of the devices and provision of the workstation instruction as well as its implementation in the **Clinical Research Support Centre in Białystok**

**The set comprises two metabolic chambers with equipment and accessories.**

**Modification below**

"Guarantee period not less than 36 months

A scoring period of 36 months to 48 months.

NOTES:

the length of the guarantee period must be stated in whole months,

in the event that the Contractor:

- does not enter any guarantee period, the Ordering Party will assume that the Contractor provides the minimum guarantee period (36 months),

- enters the warranty period in incomplete months, the Ordering Party will calculate the warranty period by rounding down,

- enters a warranty period shorter than the minimum (36 months), the Ordering Party will reject the offer as non-compliant."

**Offered guarantee period: …………………………**

**NOTE!** The Contractor shall be obliged to enter the above-offered period of guarantee.

 Eligible electronic signature of the Contractor

**Appendix no. 5 to the Terms of Reference**

**Guarantee terms, warranty terms of the guaranteed service**

Delivery, including unloading, carrying, mounting, launching of the devices and provision of the workstation instruction as well as its implementation in the **Clinical Research Support Centre in Białystok**

**The set comprises two metabolic chambers with equipment and accessories.**

**Modification at point 11**

1. The term “set” shall be understood as all goods as well as software delivered and launched as part of the conduct of the order in question.
2. The period of guarantee for the set commences on the date of conclusion of defect-free handover protocol for the device.
3. The period of warranty for the set commences on the date of conclusion of defect-free handover protocol for the device and it amounts to 24 months.
4. In the period of guarantee, maintenance overhauls/service overhauls stemming from the requirements of the manufacturers and the tests of the set components, validation and repairs of devices comprising the set shall be conducted at the cost of the Contractor which means, in particular, that materials and replacement parts applied for repairs, overhauls of technical state, maintenance, regulation and the work and travel time of the service crew in the guarantee period - shall be incurred by the Contractor.
5. Maintenance/service overhauls shall be conducted within the term agreed with the Direct User of a given device.
6. The Contractor shall conduct, in the period of guarantee, at least one inspection of the device per year (if the manufacturer recommends more frequent maintenance overhauls/service overhauls, then in line with point 4). The last overhaul of the technical state in the period of guarantee shall be realized no sooner than 3 months prior to the term of completion of the guarantee period.
7. The performer of the above-specified overhauls and repairs shall be the service confirming each time its actions by means of the technical sheet provided by the Ordering Party or in the technical passport or in another document attached to the set.
8. Regardless of the provisions in the guarantee card, the provisions contained in this document shall apply, unless individual provisions on the card or in the passport are more beneficial for the Ordering Party.
9. To carry out services, maintenance works, the service crew of the Contractor shall obtain access to the device within the term established with the Direct User of the device.
10. The reaction time of the service crew from the moment of notification of commencement of the repair - to the maximum of 3 working days (Saturdays, Sundays and bank holidays are not considered working days). Telephone contact or online diagnosis and repair conducted by a service crew member shall also be deemed a service crew reaction.
11. Repair, that is, removal of faults or defects in the subject of order shall end within the term up to 7 working days counted from the date of commencement of the repair. In case when the damaged part requires verification or producing, the time necessary to carry out the repair will be agreed individually with the Ordering Party
12. If there is a necessity to conduct the repair outside the place of device installation, the Contractor shall collect the damaged component of the device and provide it to the Direct User after completed repair at his own cost and risk.
13. The Contractor undertakes to replace the device component into a new one (identical copy by default) after 3 guarantee repairs within the term of 7 working days counted from the date of reporting by the Ordering Party to the Contractor of the fourth occurrence of the defect/fault of a given component.
14. The Contractor cannot refuse to remove the defects regardless of the level of costs related thereto.
15. Claims on account of guarantee may be pursued also after the expiry of the term of the guarantee if the Ordering Party submitted to the Contractor the occurrence of the fault in the guarantee period.
16. The guarantee period shall be prolonged by the time in which it was impossible to use the device on account of its unfitness whilst each full day of unfitness of the device shall cause prolongation of the period of guarantee by one day. A day/days of device unfitness shall also be the day/days during which the repair is conducted. Time of planned overhauls and tests compliant with the requirements of the manufacturer of the device does not extend the period of guarantee.
17. The Contractor of the agreement shall ensure access to the replacement parts and service for at least 8 years from the date of the handover protocol.
18. The use of entitlements on account of the warranty shall occur according to the principles specified in the Civil Code.

Eligible electronic signature of the Contractor**Appendix no. 6 to the Terms of Reference**

**DESCRIPTION OF THE SUBJECT OF ORDER**

Delivery, including unloading, carrying, mounting, launching of the devices and provision of the workstation instruction as well as its implementation in the **Clinical Research Support Centre in Białystok**

**The set comprises two metabolic chambers with equipment and accessories.**

1. **PROCEDURE OF DELIVERY OF THE DEVICES**
2. Prior to commencing the realization of the order subject (after agreement conclusion) the Ordering Party shall indicate an authorized person - Direct User with whom the Contractor shall cooperate concerning procedures of delivery and handover of the subject of the order,
3. Delivery, unloading, instalment, launching of devices and provision of working instructions as well as their implementation shall be realized at the cost and effort of the Contractor. Engagement of the MUB employees in actions related to unloading or carrying the devices is excluded,
4. Devices shall be delivered in proper original packaging ensuring safety to the subject of delivery against the impact of any harmful factors,
5. Devices shall be delivered to premises specified by the Direct User or by the authorized person,
6. The Contractor shall be responsible for installing and launching devices being conducted by persons with the proper knowledge and experience as well as licensing should these be required by the law,
7. The Contractor shall bear all the costs related to connecting the devices and/or elements of the equipment to the existing installation and/or costs of modification of such an installation. The Contractor shall furthermore bear the costs of any potential construction works related to adjusting the ceiling (strengthening) or walls in the room in which the set will be installed. **The Contractor shall disassemble the elements of the suspended ceiling (post obtaining consent of the Ordering Party and the Guarantor of the construction works) found in the room and after connecting the metabolic chambers to the necessary installations - remounting of the ceiling.** The Contractor shall be responsible for securing the areas in which the assembly, installation and launching of the device shall be carried out. The Contractor undertakes to leave the areas in which assembly and installation works will be conducted in the ready and completed state,
8. The Contractor shall be obliged to clean and collect packaging and other materials (pallets, cardboards, foil etc.) and utilize them in line with the DNSH principle after the delivered devices from the rooms to which they were delivered and from all other rooms in which the above packaging and materials were stored,
9. All damages to the property of the Ordering Party appearing at the fault of the Contractor during the conduct of actions related to the delivery and assembly of the subject of the order shall be removed by the Contractor at his own expense and effort,
10. The Ordering Party shall not be held liable with respect to the risk of loss or damage of the subject of the order delivered and left in the premises or in the area of the User/Ordering Party prior to signing the handover protocol.
11. **PROCEDURE OF HANDOVER OF THE DEVICES**
12. The procedure of handover shall commence up to 3 working days from the date of submission by the Contractor of his readiness to collect the device. Readiness to conduct the handover may be reported and accepted by the Ordering Party solely: after delivery and launching of all devices forming part of the order, implementing the working instructions and establishing the preferable term with the Direct User. Partial handovers are excluded.
13. The Contractor submits readiness for the handover to the person authorized by the Ordering Party to contact the Contractors, that is, the person specified in the agreement as the person responsible for the realization of the subject of the order.
14. The handover shall end with signing of defect-free handover protocol after a comprehensive realization of the subject of order. Validity of the handover protocol is confirmed jointly by signatures of three parties:

- Contractor (is his representative) of the subject of order;

- Direct User (or authorized person) of the subject of order;

- Person responsible (or authorized) to realize the subject of order from the MUB Procurement Department.

1. The handover protocol shall be elaborated in 2 copies.
2. Upon signing the handover protocol the Contractor shall pass onto the User the following documents in Polish (an absolute condition for signing the handover protocol is the provision of all, complete, below-specified documents):
	* + Working instructions / device service instructions;
		+ Device passport
		+ Guarantee Card
3. Upon signing the handover protocol by the Ordering Party is burdened with the risk of loss or damage of the device.

eligible electronic signature of the Contractor