Attachment no. 1 to TENDER INQUIRY No. 1/2025 of 18.09.2025r.

DESCRIPTION OF THE SUBJECT MATTER OF THE ORDER

The subject of the order is **the supply and commissioning of a brand new (unused) (2 piece) EQUIPMENT FOR COATING AND AGGLOMERATION IN FLUIDIZED BEDS** with parameters no worse than those described below and in accordance with the requirements specified below.

LP.	TECHNICAL PARAMETERS AND EQUIPMENT
1.	EQUIPMENT FOR COATING AND AGGLOMERATION IN A FLUIDIZED BED – PILOT-SCALE:
1.1	Application: batch operation, variable capacity, agglomeration and coating of food products in the form of fine and agglomerated powders
1.2	Modular design of the fluid agglomerator with the possibility of using coating components, enabling the production of agglomerated, coated powders and pellets:
1.2.1	Design assumptions: the proposed equipment should be suitable for use in potentially explosive atmospheres - installation constructed from components suitable for use in ATEX zones - ST1, ST2 (category 2), temperature class T4 in accordance with Directive 2014/34/EU (ATEX114); the proposed fluidised bed agglomerator system with most components supplied pre-assembled.
1.2.2	Finish: all metal surfaces in contact with the product finished to 2B standard, with welds ground and smoothed, surfaces polished to a roughness of Ra<0.5, all plastic surfaces in contact with the product will be finished to food grade standard, made of materials approved for contact with food
1.3.	Construction: for food and nutraceutical products:
1.3.1	Parts in contact with the product: made of 316L stainless steel with external reinforcements made of 304 stainless steel; or made of PTFE or other plastic approved for contact with food and chemical ingredients in accordance with EU law
1.3.2	Non-product contact parts: made of 304 stainless steel or black steel, aluminium or galvanised steel (the use of black steel, aluminium or galvanised steel is only permitted in places and for components where the use of 304 stainless steel is not possible or not justified)
1.4	Product: agglomerated, coated powders and pellets with varying degrees of agglomeration (colours, flavours, half-products for dietary supplements):
1.5	Design and spatial assumptions for determining installation parameters:
1.5.1	Location: inside the building
1.5.2	Installation location above sea level: <100 m
1.5.3	The maximum height of the installation including the height to operate the equipment: 6 m
1.5.4	Maximum width of the installation including the width to handle the equipment: 4,5 m
1.5.5	Maximum length of the installation including the length to operate the equipment: 6 m
1.5.6	Minimum indoors ambient temperature: 15°C
1.5.7	Maximum indoors ambient temperature: 45°C
1.5.8	Minimum outdoors ambient temperature: -15°C
1.5.9	Maximum outdoors ambient temperature: 40°C
1.5.10	Barometric pressure at the location: 1001 mbar
1.5.11	Average humidity at 20 °C: information to be determined based on the location of the investment indicated in the Request for Quotation, taking into account weather conditions at different times of the year
1.6	General guidelines and performance requirements:
1.6.1	Maximum process temperature: ≥80°C
1.6.2	Air flow rate (minimum-maximum expected): ≥900 m3/h; ≤3000 m3/h
1.6.3	Binding solution spray capacity: ≥150 ml/min
1.6.4	Process capacity (minimum-maximum expected): for the drying process – 50-240 kg; for the granulation process – 50-210 kg; for the coating process – 50-170 kg (for the assumed parameters)

1.6.5	Note: The above conditions are a design scenario. The performance test will be based on this data set, although the maximum product yield is based on the assumption of product parameters and temperature profile that are most optimal in terms of performance. The equipment manufacturer will undertake to adjust the performance and capacity of all equipment to the best possible process conditions specified by the Investor. At the same time, it should be noted that the Investor would prefer to perform performance tests both at design parameters and at maximum parameters. This is to verify the compliance of the installation's performance with the assumptions, as well as to verify the performance and throughput of the equipment under the most optimal processing parameters.
1.7	Properties of the liquid fed and the powder produced on the device:
1.7.1	Bulk density of the product used: 0.4 g/cm^3
1.7.2	Binding solution used:
1.7.2.1	Water-based solution of maltodextrin
1.7.2.2	Concentration of the binding solution: 25%
1.7.2.3	Maximum viscosity of the binding solution: ≤350 mPa*s
1.8	Media consumption: the device supplier is requested to provide approximate media consumption in the following range – natural gas consumption (if applicable); water consumption (if applicable), compressed air consumption (if applicable), chilled water consumption (if applicable), steam consumption (if applicable), energy consumption broken down into individual main components of the installation (dryer, electric heaters, fans, pumps)
1.9	List of components included in the order:
1.9.1	Basic agglomerator equipment system:
1.9.1.1	Device housing and frame (purpose: stable mounting of the device and adaptation to agglomeration and coating operations; the product space and the filtering space should be two independent components; the investor plans to designate a technical area for the installation of the device support frame)
1.9.1.2	Product chamber/bowl (purpose: to provide an optimal working space for the device, enabling easy loading, control, unloading, cleaning and servicing of the working space; preferred cylindrical/conical shape of the container, with 1 observation window for direct observation of the process and a sampling port for taking samples during the process; with a trolley for easy manipulation of the chamber; with a space provided for the installation of an air distribution system)
1.9.2	Air intake system:
1.9.2.1	Air distributor (task: supplying process air to the main chamber of the device; the end part of the distributor made of AISI 316L steel; a distributor design in the form of a plate with notches/slots is required, with spray nozzles integrated into the plate; it is preferable that the air deflectors are mounted on a trolley that allows horizontal extension for maintenance and inspection of the equipment)
1.9.2.2	Filter chamber (task: to ensure optimal filtration space for the device; cylindrical shape preferred with 1 observation window for direct inspection of the condition of the filters; made of AISI 316L steel)
1.9.2.3	Dynamic filter (task: recovery of waste/non-agglomerated powder; filter chamber equipped with at least 5 dynamic filters in the form of fabric sleeves with a mesh size of ≤15 µm, mounted on stainless steel inserts; filtration system equipped with a compressed air blowing system during the fluidisation process based on a sequential controller; in order to facilitate filter maintenance, it is necessary to provide for the possibility of lowering the vertical filter chamber; an electric lowering system is preferred)
1.9.2.4	Inlet/atmospheric air filters (task: to bring the outside air drawn in by the system to the appropriate quality; a two-filter system, equipped with a coarse outside air filter and a safety filter, minimum standard F7+H11, preferably F9+H13; the filter system equipped with a measuring device for air pressure control, with local and electronic indication (on the HMI panel), as well as a humidity sensor to measure the absolute humidity in g H2O/kg of air in the process air

1.9.2.5	Dehumidification system (task: cooling and dehumidifying the inlet air stream to the required inlet humidity using a water/air heat exchanger and/or an adsorption dehumidification wheel and reactivation energy)
1.9.2.6	Air heating system (task: heating the drying medium – air – to the inlet temperature required by the drying and agglomeration process; the system is equipped with a bypass damper for rapid cooling)
1.9.2.7	Anti-freeze system (task: protection of the inlet air processing and distribution system against freezing due to sub-zero temperatures; the system is equipped with a steam/air heat exchanger, regulated by a temperature sensor at the heat exchanger outlet and a control valve in the steam pipe
1.9.2.8	High-pressure process air fan (task: supplying the desired process air flow to the product chamber/bowl to ensure fluidisation); equipped with a frequency converter/inverter, enabling variable capacity operation and modulation of the process air flow
1.9.2.9	Inlet duct safety flap (task: to cut off the inlet air supply to the system in case of emergencies and downtime)
1.9.3	Air outlet system/Exhaust air system:
1.9.3.1	Exhaust/post-process air filters (task: to bring the internal air released into the atmosphere by the system to the appropriate quality and purity; dual-filter system, minimum standard F7, preferred F9 or H13; filtration system equipped with a measuring device for air pressure control, with local and electronic indication (on the HMI panel)
1.9.3.2	Additional dust extraction system (task: improving the cleanliness of exhaust air to a dust level of ≤0.2 mg/m3; continuous pneumatic system, manufactured to EX standard (for ST1 and ST2 dust); equipped with a dedicated collection container for accumulating precipitated dust
1.9.3.3	Post-process air filter bypass system (task: to increase the service life of the filters, to protect them from moist air generated during cleaning of the device; the system is equipped with additional auxiliary equipment – mechanical and electrical, and also includes the necessary modifications to the control system)
1.9.4	Pneumatic filling system (purpose: pneumatic feeding of the product from a container or tank (using a manual lance) to the fluidisation chamber; sealed system, equipped with a pneumatic cylinder, suction lance made of AISI316L steel, flow regulator; filling system control based on suction vacuum modulation using an air inlet flap
1.9.5	Pneumatic emptying system (task: pneumatic emptying of the product from the fluidisation/process chamber by suction into a steel barrel; sealed system, equipped with an outlet polyester filter in a housing made of AISI316L steel, with a pressure gradient indicator; equipped with an emptying hose connecting the process chamber to the receiving barrel; equipped with a pneumatically controlled butterfly valve for modulating the suction pressure, a control and reduction valve for cleaning the outlet filter during emptying of the process chamber, butterfly valve for modulating the outlet air flow rate to adjust the emptying speed; the emptying system must also be equipped with a double-acting automatic control valve to ensure a closed, leak-proof emptying process – the valve is integrated with the central control system of the device. The receiving tank is not in the scope of the order. The Buyer will undertake to supply a tank with required vacuum resistance
1.9.6	Spray system (task: spraying binder onto powder in a fluidised state, enabling an increase in the size of the powder particles and improving its physicochemical and rheological properties through agglomeration and coating; a system equipped with at least 6 spray nozzles (for granulation) and 12 spray nozzles (for coating), directed horizontal-radially and in accordance with the direction of air flow is required; the system should be equipped with the additional nozzle dummies/inserts made of plastic material (for each individual nozzle) and all the necessary accessories for spraying the binder, i.e. hoses and supply channels, a peristaltic pump (or another pump of equal efficiency and accuracy) equipped with a frequency converter to modulate the pump's performance; each nozzle should have its own independent pump head; the spraying system should be automatic (control and monitoring) and automatically adjust its parameters to the set and actual conditions and process recipes, as well as provide feedback on the spray intensity in g/min (or other specified unit) and the total spray volume in kilograms;

1.9.7	Safety systems:
1.9.7.1	Explosion isolation and suppression system in the form of suppression/explosion relief valves (task: suppression of explosions and ensuring isolation and safety for specific system components):
1.9.7.2	System covering the following elements: air intake duct (valve made of stainless steel of the appropriate class; air exhaust duct (valve made of painted carbon steel or a solution of equivalent quality and durability)
1.9.7.3	Master system control unit, mounted on the wall/in a designated location. Integrated with the central control system of the device..
1.9.7.4	The following system components are required to be manufactured in accordance with the EX standard (task: to ensure safe conditions and operation of electrical equipment, limiting the possibility of explosions and fires):
1.9.7.4.1	Electrical sensors in the operating area of the device
1.9.7.4.2	Control/HMI panel
1.9.7.4.3	Air fan
1.9.7.4.4	Industrial computer in the control cabinet
1.9.7.5	Gas detection system (task: detection of organic solvent residues in the process air and determination of the LEL – lower explosive limit; if the LEL is exceeded in the exhaust air, the spray pump must be switched off; system equipped with an EX-rated measuring head, using infrared technology calibrated to detect acetone, isopropanol and ethanol; system equipped with a bypass system for regulating the exhaust air flow – used when the LEL concentration in the exhaust air cannot be controlled by the spray intensity due to the drying of products containing organic substances, a system ensuring the supply of fresh air to control the LEL value in the exhaust air)
1.9.8	Control system:
1.9.8.1	The locally installed HMI panel, fully wired and tested, must be located in a safe area. This panel will include the necessary interlocks and control functions required for the safe start-up, operation and shutdown of the drying and agglomeration system. It is preferred that the panel supplied be wall-mounted, in an AISI304 steel enclosure; based on a touch screen with a resolution/diagonal ≥19", equipped with a shielded keyboard and safety systems. Operating panel shall be fully-translated into Polish language.
1.9.8.2	The control system in the form of a complete system consisting of electronic and pneumatic switching devices, I/O terminals, sensors, actuators, control valves and the necessary software. The manufacturer is also expected to provide a UPS system to protect the PLC controller and PC from sudden power surges and outages – each device should have a dedicated UPS. The use of a UPS system is permitted only on parts of the control system, excluding the mechanical components of the device, in order to prioritise the prevention of data loss.
1.9.8.3	Control cabinet/system containing PLC controllers, IO systems, safety relays, Ethernet plug, drives, power distribution and soft-start motor starters, and other electronic and pneumatic components (fuses, circuit breakers, contactors, valve islands). The Buyer plans to designate a technical area for the installation of the control cabinet.
1.9.8.4	All PLCs, IOs, HMIs, power supplies, Ethernet connectors, soft-start motor starters, etc. supplied are expected to be of high quality. The same standard also applies to inverters and other electronic components.
1.9.8.5	The control system must provide optimal, quick and easy access to the process. Process parameters and installation status must be clearly organised in a GUI (Graphic User Interface) environment based on a reputable computer system/environment, guaranteeing fast response times and a complete HMI (Human Machine Interface). The HMI and control system must also provide a clear and transparent alarm and fault system, together with a system for archiving process parameters and error codes. The manufacturer is expected to provide access/viewing of the following parameters: inlet air temperature: setpoint/actual value, final state; product temperature: actual value, final state; outlet air temperature: actual value; air speed and flow (flow rate): setpoint/actual value; filter cleaning system control sequence: setpoint (interval); actual cold inlet air temperature; setpoint and actual adhesive spray output; process air pressure: setpoint/actual value; atmospheric pressure inside the

	device: setpoint/actual value; inlet air humidity: setpoint/actual value; outlet air humidity: actual value; gas and dust concentration: actual value
1.9.8.6	The manufacturer is expected to provide a system that allows tracking of process results, including the status of completed processes, discrepancies and errors. This system should allow data to be exported for further analytical processing (communication protocol agreed with the Investor)
1.9.8.7	The Manufacturer is expected to provide a system enabling remote maintenance work within the installed device and accompanying equipment
1.9.8.8	All instrumentation components (devices for measuring process parameters) are expected to be of high quality.
1.9.8.9	Control system enabling connection of the device and selected accessories to the SCADA system
1.9.8.10	Scope of work on the part of the supplier: delivery of the logic system, delivery of automation diagrams, delivery of wiring diagrams, delivery of PLC software, delivery of HMI software, commissioning/start-up and testing.
1.9.9	WIP system:
1.9.9.1	WIP station (task: preparation and distribution of cleaning solutions to the appropriate locations of the device in order to ensure an acceptable level of cleanliness while maintaining optimal cleaning time; system mounted on an AISI304 steel frame equipped with a drip tray; supply of media (cold, hot, demineralised water and compressed air) on the Investor's side; the WIP station system should be equipped with the following components:
1.9.9.1.1	Pipelines with all necessary equipment (valves, flow sensors, conductivity sensors, etc.), manufactured in accordance with DIN 32676, made of AISI316L steel (or a material of equivalent mechanical, chemical and thermal strength). Pipelines finished to food grade standard, with a roughness of Ra<0.8 µm, orbitally welded, with ground and smoothed welds
1.9.9.1.2	A high-performance cleaning agent pump with dry-running sensors (at least two – to protect the pump from dry running) and vent and drain valves (to ensure proper pump operation and hygienic conditions); a pump operating in a frequency converter system, enabling modulation of the pump's performance; the pump should provide a pressure of ≥14 bar
1.9.9.1.3	Circulation/internal pump with a dry-running sensor (to protect the pump from dry running) and vent and drain valves (to ensure proper pump operation and hygienic conditions); a pump operating in a system with a frequency converter, enabling modulation of the pump's performance; the pump should provide a pressure of ≥3 bar
1.9.9.1.4	A detergent container with a capacity of ≥25L, made of AISI316L steel (or a material of equivalent mechanical, chemical and thermal resistance)
1.9.9.1.5	An interface supporting the WIP station and the entire washing process, with a locally mounted I/O cabinet and valve islands. It is permissible to transfer the main power supply of the WIP station and the control system components to the main cabinet of the device.
1.9.9.2	WIP installation:
1.9.9.2.1	Pipelines with all necessary equipment (valves, flow sensors, conductivity sensors, etc.), made in accordance with DIN 32676, from AISI316L steel (or a material of equivalent mechanical, chemical and thermal strength). Pipelines finished to food industry standards, with a roughness of Ra<0.8 µm, orbitally welded, with ground and smoothed welds.
1.9.9.2.2	Washing heads/nozzles (preferably rotary heads), in a minimum quantity of 8 pieces, covering the following installation elements: filter chamber with filters, process chamber, air supply system and product loading and unloading system
1.9.9.2.3	High-pressure cleaning lance (for thorough cleaning with enhanced mechanical energy of all surfaces in the fluid bed processor, supplying cleaning solutions with approx. 16 bar of pressure, working in three distinct positions in the vicinity of fluid bed chamber) DODANE
1.9.9.2.4	WIP system manifold (for distributing the cleaning fluids needed for WIP cleaning to the various cleaning zones, including: filter chamber with filters, process chamber, air supply system and product loading and unloading system
1.10.	Design assumptions for selected areas of the system:

1.10.1	Explosion suppression system designed for product parameters specified by the Investor: ST1 and ST2 coefficients; maximum explosion overpressure (Pmax): 10 bar(g); Equipment components must be designed to withstand the specified overpressure without damage to components, and all such equipment will be externally reinforced if necessary.
1.10.3	Steel support structure and platforms: guidelines provided by the Manufacturer; assembly and materials provided by the Manufacturer.
1.10.4	Insulation and cladding: chamber transported in insulated form (if applicable); insulation on selected air ducts to be installed on site (if applicable). If the equipment is delivered in parts, their insulation and cladding will be carried out on site, for which the equipment manufacturer bears full responsibility and cost.
1.10.5	General finishing guidelines: All surfaces in contact with the product shall have ground joints and polished surfaces. All external joints shall be mechanically brushed with chips removed, and the external carbon steel shall be painted with primer or a solution of equal or better quality shall be used. Surfaces not in contact with the product shall have mechanically brushed welds with spatter removed, retaining 50% of the profile. External carbon steel shall be painted with primer or a solution of equal or better quality shall be used.
1.11	Documentation: The manufacturer of the device is obliged to provide complete documentation enabling proper installation, safe operation, shutdown and maintenance of the device. In addition, the manufacturer undertakes to provide all documents required by regulations and intra-Community law and good business practices, as well as other standard documents that should be attached when delivering production equipment, i.e. material certificates for components that come into contact with the product. All documentation shall be in English and/or Polish, with the final operating and maintenance instructions required to be in the local language in accordance with EU law, where applicable.
1.11.1	The manufacturer undertakes that drawings/documentation that require further modification in order to meet the Investor's guidelines or modifications resulting from changed data from suppliers will be provided as ‘as-built’ drawings together with operating and maintenance instructions.
1.12	Additional services expected from the Manufacturer/Seller:
1.12.1	Basic assumptions:
1.12.1.1	‘Days’ are understood to mean working days, i.e. 10 hours of uninterrupted work
1.12.1.2	The Investor is responsible for ensuring uninterrupted access to test material, all utilities and providing an operator for physical assistance
1.12.1.3	In the event of a problem with the equipment during start-up and commissioning, caused by factors beyond the Investor's control, the Manufacturer undertakes to provide a free service to resolve the problem
1.12.1.4	In order to ensure the availability of personnel, the Manufacturer shall be notified of the actions taken at least three (3) weeks prior to the date of arrival
1.12.2	Automation system engineering: The manufacturer shall provide all necessary information, i.e. diagrams and schematics for the correct control and regulation of the installation, in accordance with the specifications. This should include: P&ID diagrams, instrumentation specifications, functional descriptions (cause-and-effect diagrams, automation logic, control philosophy, interlock and alarm logic).
1.12.3	Participation in HAZOP analysis (Hazard and Operability Analysis): the Manufacturer/Seller is expected to participate in the HAZOP analysis for a minimum of 2 days.
1.12.4	Installation supervision: the Manufacturer/Seller is expected to participate in and supervise the engineering work related to the installation of the system. This means supervision for a minimum of 6 days by one or more employees of the Manufacturer/Seller in order to control the installation of critical parts of the system, i.e. the main unit, air handling system, washing systems, control cabinets. Employees performing supervision will be expected to be regularly present at the workplace for a period agreed by both parties, but not less than 6 days. For the remaining stages of installation work, exceeding the aforementioned 6 days, the Manufacturer/Seller is expected to appoint a person to perform cursory supervision of the remaining elements of the system.

1.12.5	Validation and qualification of the equipment: the Manufacturer/Seller is expected to appoint competent person to carry out and participate in validation, calibration and qualification of the delivered installation, for a minimum of 11 days.
1.12.6	Acceptance and commissioning:
1.12.6.1	FAT acceptance: the Manufacturer/Seller is expected to appoint a competent person to carry out and participate in the FAT acceptance, for a minimum of 2 days
1.12.6.2	Mechanical acceptance (SAT) and Commisioning: the Manufacturer/Seller is expected to appoint a competent person to participate in the mechanical acceptance and commissioning of the system components prior to official start-up, for a minimum of 11 days.
1.12.6.3	Process acceptance: the Manufacturer/Seller is expected to appoint a competent person to participate in the process acceptance of the installation (checking its functionality and efficiency), for a minimum of 13 days.
1.12.6.4	Training: the Manufacturer/Seller is expected to appoint a competent person to conduct full training of local operators, lasting a minimum of 2 days.
1.12.7	In the case of delivery of the device in the form of components, transport, unloading, installation and welding work within the whole are the responsibility of the Manufacturer/Seller. The work must be carried out on time, without unnecessary delays. The Investor shall ensure uninterrupted access to the construction site and all necessary resources (which shall be the responsibility of the Investor).
1.12.8	The Manufacturer/Seller undertakes to deliver complete detailed designs for the entire system, including the automation design, guidelines and process data, as well as other unspecified elements that are customarily included in the documentation, within 24 weeks of placing the order/signing the contract.
1.12.9	The Manufacturer/Seller undertakes to provide guidelines for all industries, including the construction industry and utilities, within a period not exceeding 10 weeks from the date of placing the order/signing the contract. This period also includes time for verification and acceptance by the Investor.
1.13	Payment terms: payment and settlement stages, upon completion of individual stages of work, shall be agreed and accepted jointly by the Investor and the Manufacturer/Seller. Formal issues and the form of payment shall be agreed and accepted jointly by the Parties, with the proviso that the advance payment may not exceed 40% of the order value. The following payment stages are preferred: 1. 40% advance payment, 2. 50% upon full completion of the design/engineering stage, FAT testing and declaration of readiness for shipment, 3. 10% after commissioning, acceptance and performance testing.
1.14	Delivery terms: after placing the order/signing the contract, delivery of large equipment/mechanical parts to the location specified by the Investor is expected within 47 weeks, and delivery of electronic equipment within 49 weeks.
1.15	The installation of the equipment, mechanical and electrical assembly are not the subject of the order. The transport of all equipment to the location indicated by the Investor remains the responsibility of the Supplier.
1.16.	Exclusions:
1.16.1	The delivery and installation of cables and connection wires as well as pneumatic lines between the equipment, switching devices and the main switchboard, as well as measuring instruments within the installation, are the responsibility of the Investor.
1.16.1	The Investor undertakes to obtain all licences, permits and certificates necessary for the performance of the contract by both parties.
1.16.3	The delivered installation should be complete and fully functional in terms of process.
1.17	**GENERAL TERMS AND CONDITIONS:**
1.17.1	The cost of packaging and delivery of the device to the Investor's plant is included in the price (transport and transport insurance are the responsibility of the Manufacturer);
1.17.2	The device must have CE declarations of conformity and must comply with Directive 2006/42/EC;
1.17.3	Warranty conditions: the Manufacturer undertakes to remove all defects in the delivered equipment resulting from material defects or faulty workmanship. The device should be covered by a warranty for a minimum period of 18 months (without hourly limits) from the

	date of commissioning of the installation or a minimum of 24 months (without hourly limits) from the date of shipment or the date of notification of readiness for shipment.
1.17.4	Process warranty conditions: issues related to the process functionality warranty shall be determined and accepted jointly by the Investor and the Manufacturer/Seller.
2.	EQUIPMENT FOR COATING AND AGGLOMERATION IN A FLUIDIZED BED – LAB-SCALE:
2.1	Application: batch operation, variable capacity, agglomeration and coating of food products in the form of fine and agglomerated powders
2.2	Modular design of the fluid agglomerator with the possibility of using coating components, enabling the production of agglomerated, coated powders and pellets:
2.2.1	Design assumptions: the proposed equipment should be suitable for use in potentially explosive atmospheres – specific parts of installation constructed from components suitable for use in ATEX zones - ST1, ST2 (category 2), temperature class T4 in accordance with Directive 2014/34/EU (ATEX114); the proposed fluidised bed agglomerator system with most components supplied pre-assembled.
2.2.2	Finish: all metal surfaces in contact with the product finished to 2B standard, with welds ground and smoothed, surfaces polished to a roughness of Ra<0.5, all plastic surfaces in contact with the product will be finished to food grade standard, made of materials approved for contact with food
2.3.	Construction: for food and nutraceutical products:
2.3.1	Parts in contact with the product: made of 316L stainless steel with external reinforcements made of 304 stainless steel; or made of PTFE or other plastic approved for contact with food and chemical ingredients in accordance with EU law
2.3.2	Non-product contact parts: made of 304 stainless steel or black steel, aluminium or galvanised steel (the use of black steel, aluminium or galvanised steel is only permitted in places and for components where the use of 304 stainless steel is not possible or not justified)
2.4	Product: agglomerated, coated powders and pellets with varying degrees of agglomeration (colours, flavours, half-products for dietary supplements):
2.5	Design and spatial assumptions for determining installation parameters:
2.5.1	Location: inside the building
2.5.2	Installation location above sea level: <100 m
2.5.3	The maximum height of the installation including the height to operate the equipment: 2,1 m
2.5.4	Maximum width of the installation including the width to handle the equipment: 2,3 m
2.5.5	Maximum length of the installation including the length to operate the equipment: 4 m
2.5.6	Minimum indoors ambient temperature: 15°C
2.5.7	Maximum indoors ambient temperature: 45°C
2.5.8	Minimum outdoors ambient temperature: -15°C
2.5.9	Maximum outdoors ambient temperature: 40°C
2.5.10	Barometric pressure at the location: 1001 mbar
2.5.11	Average humidity at 20 °C: information to be determined based on the location of the investment indicated in the Request for Quotation, taking into account weather conditions at different times of the year
2.6	General guidelines and performance requirements:
2.6.1	Maximum process temperature: ≥80°C
2.6.2	Air flow rate (minimum-maximum expected): ≥200 m3/h; ≤450 m3/h
2.6.3	Binding solution spray capacity: ≥150 ml/min
2.6.4	Process capacity (minimum-maximum expected): for the drying, granulation and coating – 2-12 kg (for the assumed parameters)
2.6.5	Note: The above conditions are a design scenario. The performance test will be based on this data set, although the maximum product yield is based on the assumption of product parameters and temperature profile that are most optimal in terms of performance. The equipment manufacturer will undertake to adjust the performance and capacity of all equipment to the best possible process conditions specified by the Investor. At the same time, it should be noted that the Investor would prefer to perform performance tests both at design parameters and at maximum parameters. This is to verify the compliance of the

	installation's performance with the assumptions, as well as to verify the performance and throughput of the equipment under the most optimal processing parameters.
2.7	Properties of the liquid fed and the powder produced on the device:
2.7.1	Bulk density of the product used: 0.4 g/cm^3
2.7.2	Binding solution used:
2.7.2.1	Water-based solution of maltodextrin
2.7.2.2	Concentration of the binding solution: 25%
2.7.2.3	Maximum viscosity of the binding solution: ≤350 mPa*s
2.8	Media consumption: the device supplier is requested to provide approximate media consumption in the following range – natural gas consumption (if applicable); water consumption (if applicable), compressed air consumption (if applicable), chilled water consumption (if applicable), steam consumption (if applicable), energy consumption broken down into individual main components of the installation (dryer, electric heaters, fans, pumps)
2.9	List of components included in the order:
2.9.1	Basic agglomerator equipment system:
2.9.1.1	Device housing and frame (purpose: stable mounting of the device and adaptation to agglomeration and coating operations; the product space and the filtering space should be two independent components; the investor plans to designate a suitable area for the installation of the device frame)
2.9.1.2	Product chamber/bowl (purpose: to provide an optimal working space for the device, enabling easy loading, control, unloading, cleaning and servicing of the working space; preferred cylindrical/conical shape of the container, with observation space for direct observation of the process, charging and discharging port and a sampling port for taking samples during the process; with a space provided for the installation of an air distribution system; the product container is expected to be mounter on hinges for easy access; the area between product and filter housing to be protected by inflatable seal or other type of sealing not worse in terms of safety)
2.9.2	Air intake system:
2.9.2.1	Air distributor and manifold (task: supplying process air to the main chamber of the device; the end part of the distributor made of AISI 316L steel; a distributor design in the form of a plate with notches/slots is required, with spray nozzles integrated into the plate.)
2.9.2.2	Filter chamber (task: to ensure optimal filtration space for the device; cylindrical shape preferred with observation space for direct inspection of the condition of the filters; made of AISI 316L steel; the upper part of filter housing is expected to be integrated into the frame of the machine; the lower part is expected to be installed on hinges for easy maintenance and cleaning; both parts protected by inflatable seal or other type of sealing not worse in terms of safety)
2.9.2.3	Dynamic filter (task: recovery of waste/non-agglomerated powder; filter chamber equipped with at least 5 dynamic filters in the form of fabric sleeves with a mesh size of ≤15 µm, mounted on stainless steel inserts; filtration system equipped with a compressed air blowing system during the fluidisation process based on a sequential controller; in order to facilitate filter maintenance, it is necessary to provide for the possibility of lowering the vertical filter chamber; an electric lowering system is preferred, manual lowering is acceptable)
2.9.2.4	Inlet/atmospheric air filters (task: to bring the outside air drawn in by the system to the appropriate quality; a filter system, equipped with an air filter of the minimum standard of H13 (HEPA); the filter system equipped with a measuring device for air pressure control, with local and electronic indication (on the HMI panel), as well as a humidity sensor to measure the absolute humidity in g H2O/kg of air in the process air)
2.9.2.5	Dehumidification system (task: cooling and dehumidifying the inlet air stream to the required inlet humidity using a water/air heat exchanger and/or an adsorption dehumidification wheel and reactivation energy)
2.9.2.6	Air heating system (task: heating the drying medium – air – to the inlet temperature required by the drying and agglomeration process; system based on electrical heater equipped with the temperature sensor located inside the fluid bed)

2.9.2.7	Anti-freeze system (task: protection of the inlet air processing and distribution system against freezing due to sub-zero temperatures; the system is equipped with a steam/air heat exchanger, regulated by a temperature sensor at the heat exchanger outlet and a control valve in the steam pipe)
2.9.2.8	High-pressure process air fan (task: supplying the desired process air flow to the product chamber/bowl to ensure fluidisation); equipped with a frequency converter/inverter, enabling variable capacity operation and modulation of the process air flow from HMI level; process fan shall be equipped with the silencer to provide the acceptable noise level)
2.9.2.9	Inlet duct safety flap (task: to cut off the inlet air supply to the system in case of emergencies and downtime)
2.9.3	Air outlet system/Exhaust air system:
2.9.3.1	Exhaust/post-process air filters (task: to bring the internal air released into the atmosphere by the system to the appropriate quality and purity; dual-filter system, minimum standard M6+F9; filtration system equipped with a measuring device for air pressure control, with local and electronic indication (on the HMI panel), as well as a humidity sensor to measure the absolute humidity in g H2O/kg of air in the process air (ATEX-made)
2.9.4	All mentioned air handling components shall be made as an one air handling unit, consisting of all the necessary connections, electrical components (including cabinet). The air handling unit will be installed in the proximity of 7,5 meters from the fluid bed granulator.
2.9.5	Manual filling system (purpose: manual, gravimetrical feeding of the product from a container, bag or box (using a funnel or similar means) to the product chamber; sealed system, with pneumatic support)
2.9.6	Pneumatic emptying system (task: pneumatic emptying of the product from the fluidisation/process chamber by suction into a steel barrel; sealed system, equipped with an outlet polyester filter in a housing made of AISI316L steel; equipped with an emptying hose connecting the process chamber to the receiving barrel; the receiving tank is in the scope of the order; the discharge unit shall be mobile, placed on rollers)
2.9.7	Spray system (task: spraying binder onto powder in a fluidised state, enabling an increase in the size of the powder particles and improving its physicochemical and rheological properties through agglomeration and coating; a system equipped with at least 2 spray nozzles directed horizontal-radially and in accordance with the direction of air flow is required; the system should be equipped with all the necessary accessories for spraying the binder, i.e. hoses and supply channels, a peristaltic pump (or another pump of equal efficiency and accuracy) equipped with a frequency converter to modulate the pump's performance; each nozzle should have its own independent pump head; automatic spraying system is preferable but manual is also acceptable (with a possibility to control and monitor the parameters – using mass flow measurement – actual spray rate in g/min as well as the total sprayed mass in kilograms)
2.9.8	Safety systems:
2.9.8.1	The process-gas contacted components are required to be manufactured in accordance with the EX standard (task: to ensure safe conditions and operation of electrical equipment, limiting the possibility of explosions and fires)
2.9.8.2	Gas detection system (task: detection of organic solvent residues in the process air and determination of the LEL – lower explosive limit; if the LEL is exceeded in the exhaust air, the spray pump must be switched off; system equipped with an EX-rated measuring head, using infrared technology calibrated to detect acetone, isopropanol and ethanol; system equipped with a bypass system for regulating the exhaust air flow – used when the LEL concentration in the exhaust air cannot be controlled by the spray intensity due to the drying of products containing organic substances, a system ensuring the supply of fresh air to control the LEL value in the exhaust air)
2.9.9	Control system:
2.9.9.1	The locally installed HMI panel, fully wired and tested, must be located in a safe area. This panel will include the necessary interlocks and control functions required for the safe start-up, operation and shutdown of the drying and agglomeration system. It is preferred that the panel supplied will be mounted into the fluid bed housing/frame; based on a touch screen

	with a resolution/diagonal ≥15", with necessary safety systems. Operating panel shall be fully-translated into Polish language.
2.9.9.2	The control system in the form of a complete system consisting of electronic and pneumatic switching devices, I/O terminals, sensors, actuators, control valves and the necessary software. The manufacturer is also expected to provide a UPS system to protect the PLC controller and PC from sudden power surges and outages – each device should have a dedicated UPS. The use of a UPS system is permitted only on parts of the control system, excluding the mechanical components of the device, in order to prioritise the prevention of data loss.
2.9.9.3	Control cabinet/system containing PLC controllers, IO systems, safety relays, Ethernet plug, drives, power distribution and soft-start motor starters, and other electronic and pneumatic components (fuses, circuit breakers, contactors, valve islands). It is expected that the control cabinet will be integrated with the equipment frame/housing.
2.9.9.4	All PLCs, IOs, HMIs, power supplies, Ethernet connectors, soft-start motor starters, etc. supplied are expected to be of high quality. The same standard also applies to inverters and other electronic components.
2.9.9.5	The control system must provide optimal, quick and easy access to the process. Process parameters and installation status must be clearly organised in a GUI (Graphic User Interface) environment based on a reputable computer system/environment, guaranteeing fast response times and a complete HMI (Human Machine Interface). The HMI and control system must also provide a clear and transparent alarm and fault system, together with a system for archiving process parameters and error codes. The manufacturer is expected to provide access/viewing of the following parameters: inlet air temperature: setpoint/actual value, min/max value, final state; product temperature: actual value, min/max value; outlet air temperature: actual value; air speed and flow (flow rate): setpoint/actual value, min/max value; filter cleaning system control sequence: setpoint (interval); actual cold inlet air temperature; setpoint and actual adhesive spray output; process air pressure: setpoint, min/max value, actual value; atmospheric pressure inside the device: setpoint/actual value; inlet air humidity: setpoint, min/max value, actual value; outlet air humidity: actual value;
2.9.9.6	The manufacturer is expected to provide a system that allows tracking of process results, including the status of completed processes, discrepancies and errors. This system should allow data to be exported for further analytical processing (communication protocol agreed with the Investor)
2.9.9.7	The Manufacturer is expected to provide a system enabling remote maintenance work within the installed device and accompanying equipment
2.9.9.8	All instrumentation components (devices for measuring process parameters) are expected to be of high quality.
2.9.9.9	Control system enabling connection of the device and selected accessories to the SCADA system
2.9.9.10	Scope of work on the part of the supplier: delivery of the logic system, delivery of automation diagrams, delivery of wiring diagrams, delivery of PLC software, delivery of HMI software, commissioning/start-up and testing.
2.10	Design assumptions for selected areas of the system:
2.10.1	Explosion suppression system designed for product parameters specified by the Investor: ST1 and ST2 coefficients; maximum explosion overpressure (Pmax): 10 bar(g); Equipment components must be designed to withstand the specified overpressure without damage to components, and all such equipment will be externally reinforced if necessary.
2.10.2	Steel support structure and platforms: guidelines provided by the Manufacturer; assembly and materials provided by the Manufacturer (if necessary).
2.10.3	Insulation and cladding: chamber transported in insulated form (if applicable); insulation on selected air ducts to be installed on site (if applicable). If the equipment is delivered in parts, their insulation and cladding will be carried out on site, for which the equipment manufacturer bears full responsibility and cost.
2.10.4	General finishing guidelines: All surfaces in contact with the product shall have ground joints and polished surfaces. All external joints shall be mechanically brushed with chips removed,

	and the external carbon steel shall be painted with primer or a solution of equal or better quality shall be used. Surfaces not in contact with the product shall have mechanically brushed welds with spatter removed, retaining 50% of the profile. External carbon steel shall be painted with primer or a solution of equal or better quality shall be used.
2.11	Documentation: The manufacturer of the device is obliged to provide complete documentation enabling proper installation, safe operation, shutdown and maintenance of the device. In addition, the manufacturer undertakes to provide all documents required by regulations and intra-Community law and good business practices, as well as other standard documents that should be attached when delivering production equipment, i.e. material certificates for components that come into contact with the product. All documentation shall be in English and/or Polish, with the final operating and maintenance instructions required to be in the local language in accordance with EU law, where applicable.
2.11.1	The manufacturer undertakes that drawings/documentation that require further modification in order to meet the Investor's guidelines or modifications resulting from changed data from suppliers will be provided as 'as-built' drawings together with operating and maintenance instructions.
2.12	Additional services expected from the Manufacturer/Seller:
2.12.1	Delivery of spare parts package, ensuring the continuous operation, consisting of the most quick-wearing components from the fluid bed module, containing the following elements (at least): set of pneumatic seals; two sets of process filters; two set of discharge filters; set of O-ring seals; ≥25 meters of silicone hose
2.12.2	Basic assumptions:
2.12.2.1	'Days' are understood to mean working days, i.e. 10 hours of uninterrupted work
2.12.2.2	The Investor is responsible for ensuring uninterrupted access to test material, all utilities and providing an operator for physical assistance
2.12.2.3	In the event of a problem with the equipment during start-up and commissioning, caused by factors beyond the Investor's control, the Manufacturer undertakes to provide a free service to resolve the problem
2.12.2.4	In order to ensure the availability of personnel, the Manufacturer shall be notified of the actions taken at least three (3) weeks prior to the date of arrival
2.12.3	Automation system engineering: The manufacturer shall provide all necessary information, i.e. diagrams and schematics for the correct control and regulation of the installation, in accordance with the specifications. This should include: P&ID diagrams, instrumentation specifications, functional descriptions (cause-and-effect diagrams, automation logic, control philosophy, interlock and alarm logic).
2.12.4	Participation in HAZOP analysis (Hazard and Operability Analysis): the Manufacturer/Seller is expected to participate in the HAZOP analysis for a minimum of 1 days.
2.12.5	Installation supervision: the Manufacturer/Seller is expected to participate in and supervise the engineering work related to the installation of the system. This means supervision for a minimum of 1 day by one or more employees of the Manufacturer/Seller in order to control the installation of critical parts of the system, i.e. the main unit, air handling system, washing systems, control cabinets. Employees performing supervision will be expected to be regularly present at the workplace for a period agreed by both parties, but not less than 1 day. For the remaining stages of installation work, exceeding the aforementioned 1 day, the Manufacturer/Seller is expected to appoint a person to perform cursory supervision of the remaining elements of the system.
2.12.6	Validation and qualification of the equipment: the Manufacturer/Seller is expected to appoint competent person to carry out and participate in validation, calibration and qualification of the delivered installation, for a minimum of 7 days.
2.12.7	Acceptance and commissioning:
2.12.7.1	FAT acceptance: the Manufacturer/Seller is expected to appoint a competent person to carry out and participate in the FAT acceptance, for a minimum of 1 days. The Buyer allows performing the FAT acceptance test in virtual form.

2.12.7.2	Mechanical acceptance (SAT): the Manufacturer/Seller is expected to appoint a competent person to participate in the mechanical acceptance and commissioning of the system components prior to official start-up, for a minimum of 2 days.
2.12.7.3	Process acceptance: the Manufacturer/Seller is expected to appoint a competent person to participate in the process acceptance of the installation (checking its functionality and efficiency), for a minimum of 3 days.
2.12.7.4	Training: the Manufacturer/Seller is expected to appoint a competent person to conduct full training of local operators, lasting a minimum of 2 days.
2.12.8	In the case of delivery of the device in the form of components, transport, unloading, installation and welding work within the whole are the responsibility of the Manufacturer/Seller. The work must be carried out on time, without unnecessary delays. The Investor shall ensure uninterrupted access to the construction site and all necessary resources (which shall be the responsibility of the Investor).
2.12.9	The Manufacturer/Seller undertakes to deliver complete detailed designs for the entire system, including the automation design, guidelines and process data, as well as other unspecified elements that are customarily included in the documentation, within 24 weeks of placing the order/signing the contract.
2.12.10	The Manufacturer/Seller undertakes to provide guidelines for all industries, including the construction industry and utilities, within a period not exceeding 10 weeks from the date of placing the order/signing the contract. This period also includes time for verification and acceptance by the Investor.
2.13	Payment terms: payment and settlement stages, upon completion of individual stages of work, shall be agreed and accepted jointly by the Investor and the Manufacturer/Seller. Formal issues and the form of payment shall be agreed and accepted jointly by the Parties, with the proviso that the advance payment may not exceed 40% of the order value. The following payment stages are preferred: 1. 40% advance payment, 2. 50% upon full completion of the design/engineering stage and FAT testing and declaration of readiness for shipment, 3. 10% after commissioning, acceptance and performance testing.
2.14	Delivery terms: after placing the order/signing the contract, delivery of large equipment/mechanical parts and electronic equipment to the location specified by the Investor is expected within 26 weeks.
2.15	The installation of the equipment, mechanical and electrical assembly are not the subject of the order. The transport of all equipment to the location indicated by the Investor remains the responsibility of the Supplier.
2.16	Exclusions:
2.16.1	The delivery and installation of cables and connection wires as well as pneumatic lines between the equipment, switching devices and the main switchboard, as well as measuring instruments within the installation, are the responsibility of the Investor.
2.16.1	The Investor undertakes to obtain all licences, permits and certificates necessary for the performance of the contract by both parties.
2.16.3	The delivered installation should be complete and fully functional in terms of process.
2.17	**GENERAL TERMS AND CONDITIONS:**
2.17.1	The cost of packaging and delivery of the device to the Investor's plant is included in the price (transport and transport insurance are the responsibility of the Manufacturer);
2.17.2	The device must have CE declarations of conformity and must comply with Directive 2006/42/EC;
2.17.3	Warranty conditions: the Manufacturer undertakes to remove all defects in the delivered equipment resulting from material defects or faulty workmanship. The device should be covered by a warranty for a minimum period of 18 months (without hourly limits) from the date of commissioning of the installation or a minimum of 24 months (without hourly limits) from the date of shipment or the date of notification of readiness for shipment.
2.17.4	Process warranty conditions: issues related to the process functionality warranty shall be determined and accepted jointly by the Investor and the Manufacturer/Seller.

At the supplier selection stage, the ordering party allows for the possibility of carrying out reference visits in order to verify technology similar to the offered one operating in industrial conditions.

Monika Walewska

Elektronicznie podpisany przez Monika Walewska
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