Section 3a: Schedule of Requirements and Technical Specifications

SHEDULE OF REQUIREMENTS

Supply, installation and commissioning of main and auxiliary equipment, process control systems for pulp and recirculated white water cleaning, storage and transportation for the office paper production from wastepaper on a turnkey basis.

The procurement of equipment is conducted within the framework of Project "Supporting the Transition to a Green Economy in the Republic of Belarus" funded by the European Union and implemented by the United Nations Development Programme, No. 00081657.

A. Background information	**The procurement of equipment was divided into two stages**. **Stage 1** is carried out at the expense of the funds of the Unitary Enterprise "Paper Mill" of Goznak. So far, **Stage 1 has been completed**. **Stage 2** is to be implemented within the framework of the Project "Supporting the Transition to a Green Economy in the Republic of Belarus" funded by the European Union and implemented by the United Nations Development Programme, No. 00081657. Works conducted by Unitary Enterprise "Paper Mill" of Goznak in framework of Stage 2 are indicated in Item C below.
B. Equipment specifications for Stage 1 (Stage 1 has been completed) **The information is provided for the reference of potential Suppliers in order to consider equipment compatibility.**	**Stage 1** was carried out at the expense of the funds of the Unitary Enterprise "Paper Mill" of Goznak. Production capacity of the process line is 60 tons (bone dry) of waste paper per 24 hours. 1.1. The process line is carried out according to the diagram (Annex 1). 1.2. Specifications of the existing building, foundations, layout solutions for placement of equipment are demonstrated on drawings in Annexes 3-7. 1.3. Specifications of the main equipment of stage 1 of the process line, made by the company O.M.C. Collareda SRL: 1.3.1. High density pulper, model HC-10: – operating mode – periodic (batch); – max. loading of waste paper per batch – 1,800 kg; – stock concentration – 15–18%; – total volume of pulper vat– 14.5 m^3; – rotor type – "TWISTER"; – drive type – V-belt; – material for pulper vat – stainless steel. 1.3.2. Secondary pulper, model Epurex DS-2: – operating mode – periodic; – chamber volume – 2 m^3; – working concentration – 4.0–4.5%; – rotor type – profiled with three arms; – sieve mesh diameter – 4 mm; – material for case – stainless steel. 1.3.3. High Density Cleaner, model HDS 1200: – operating mode – continuous; – production capacity – 1200 l/min; – working concentration – 3.5–4.0%; – input pressure – 2.5–3.0 bar;

	– output pressure– 1.5 bar; – water pressure – 3.0 bar. 1.3.4. 1st stage fine pressure screen, model MC2: – working concentration – 2.0–4.0%; - motor power - 45 kW; – input pressure – 100–250 kPa; – pressure drop – 10–70 kPa (output-input); – rotor type – stepped; – type of basket – slot profiled; – slot width – 0.15 mm; – drive type – V-belt; – material for case – stainless steel. 1.3.5. 2nd stage fine pressure screen, model MC1: – working concentration – 2.0–4.0%; - motor power - 30 kW; – input pressure – 100–250 kPa; – pressure drop – 10–70 kPa (output-input); – rotor type – stepped; – type of basket – slot profiled; – slot width – 0.15 mm; – drive type – V-belt; – material for case – stainless steel. 1.4. Plate conveyor: – number of tension sensors – 8 items; – output signal – 4–20 MA. 1.5. The following specifications of the electric part were applied: – electric signals for drive control: 220V, 50 Hz, 1 phase; – voltage changer of 24 V of direct current (DC); – intermediate voltage relay (lighting system, auxiliary power battery for IT specialists) 220 V, 50 Hz, 1 phase; – equipment analog signals 4–20 mA/0–10 V; – electric signals for equipment control (pressure switches, level meters, proximity switches, microswitches, buttons, etc.) – all with 24 V of DC; – electric signals (on/ off), computer interface – all with 24 V of DC; – signals of electric lamps – 24 V of DC; – electric signals for solenoid valves – 24 V of DC; – engine voltage – 400V (±5%) or 690 VB, 50 Hz, 3 phases for operating of engine with variable speed and across-the-line starting (DOL) of the engine; – main voltage – 400 V; – frequency – 50 Hz. 1.6. The Siemens electric motors for drives with variable-frequency control were used for the main equipment. 1.7. The controller “Vipa” is used in the set of software and hardware devices for the automatic control system of the process line with the following components: – controller 315-2AG13; – input modules 324-1Bl00; – output modules 323-1BH60; – analog input modules 333-1KF02; – analog output modules 335-2hd01. The PC and SCADA Movicon 11 are used as software composition of the system of automatic control of the process line. 1.8. Type of used transmitters:

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– level transmitter PS-280/0-40;
– pressure transmitter PS-280/0-600;
– temperature transmitter TBT 1AAG10GZ Sick;
– electromagnetic flowmeter Optiflux 4000.
1.9. Other used equipment and converters:
– electric pneumatic positioner of type 3730-2;
– soft-starter SSW-06;
– electronic converter for electromagnetic flowmeter IFC 300;
– AC drive Yaskawa A1000.
1.10. Hand and automatic valves with the following specifications:
– valve type legend – BV=ball valve, FV=butterfly valve, NV=needle valve, GV Gate valve;
– connection type legend – F=Flange, W=Wafer, L=Lug, IT=Internal thread;
– actuator legend – HG=Hand wheel with gear, HW=Hand wheel, HL=Hand lever;
– material legend (body/trim/seat) – BV (SSCF8M/SS316/PTFE), FV (Painted cast ironG40/SS316/EPDM), GV (Painted cast iron /SS304/Metal).
1.11. Motor control system:

<table>
<tr><th colspan="2">ELECTRIC AND GENERAL SPECIFICATIONS</th></tr>
<tr><td>Nominal operating voltage of insulation</td><td>up to 690 V</td></tr>
<tr><td>Insulation nominal voltage</td><td>up to 1000 V</td></tr>
<tr><td>Power main bus</td><td>3-phase</td></tr>
<tr><td>Main bus circuit</td><td>up to 2000 A</td></tr>
<tr><td>Auxiliary voltage for control</td><td>Vca 110–220–24</td></tr>
<tr><td>Frequency</td><td>50/60 Hz</td></tr>
<tr><td>Nominal circuit of short-circuit failure (1 sec)</td><td>Up to 50 kA</td></tr>
<tr><td>Buses</td><td>copper</td></tr>
<tr><td>Protective grounding (earthing) bus</td><td>100 mm^2</td></tr>
<tr><td>External level of safety</td><td>IP31</td></tr>
<tr><td>Internal level of safety</td><td>IP20</td></tr>
<tr><td>Standards</td><td>CEI/IEC</td></tr>
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1.12. The electric part is in compliance with standards CEI 02, CEI 64-8, EN 60430-1, EN 60204-1, CEI 11-1, CEI 11-17, CEI 11-18 ,CEI 1-37, EN 5081-1.
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<td>C. Works carried out by the Unitary Enterprise “Paper Mill” of Goznak at stage 2 of the project</td>
<td>
– design of an new additional building for placing new equipment and providing for Supplier;
– earthworks and manufacturing of equipment foundations;
– construction of a new additional building: the overall size 16×9 m, fast-built, lightweight structures of the type of sandwich panels;
– manufacturing of sewerage, ventilation and heating systems;
– making of passes, drive-by’s;
– works on equipping the household and fire water supply;
– works on storm sewage;
– supplying electricity to the new additional building;
– design and mounting/ installation of inside lighting networks;
– mounting of lifting equipment (beam crane);
-providing equipment storage and temporary working area for the
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	Supplier's engineer(s)/technician(s) at the installation site in Borisov.
D. Initial basic data for technical-economic calculation for Stage 2 equipment	**D.1.** Simplified **technological scheme** with taking into account the implementation of two stages of the project is shown in Annex 2. **D.2. Production capacity** of the whole process line should be **60 tons** per 24 hours. **D.3.** The **characteristics of the building** for placing new equipment are described in Annexes 8 and 9. **D.4. Type of manufactured products (after implementation of Stage 2):** -base for office paper of mark C (Copy base paper); - paper for producing exercise-books with basic weight 57 gr/m^2 and -other types of printing paper (offset paper) with basic weight 50-120 gr/m^2. **D.5. Type of fiber materials and chemical additives in the composition of manufactured products (after implementation of Stage 2):** – waste paper of marks МС-1А, МС-2А, МС-7Б according to GOST 10700-97 (3.01–3.19, 1.06, 1.06.01, 1.07, 2.03, 2.03.01, 2.04, 2.04.01, 2.05, 2.06, 2.07, 2.08, 2.09 – according to EN 643); content of moisture-proof waste paper is no more than 5%; ratio of each type of waste paper in composition of pulp mass: МС-1А (3.01, 3.02, 3.03, 3.04, 3.05, 3.06, 3.07) – 50–100%; МС-2А (3.13, 3.14, 3.15, 3.15.0, 3.16, 3.17, 3.18, 3.18.01, 3.19) – 10–50%; МС-7Б (1.06, 1.06.01, 1.07, 2.03, 2.03.01, 2.04, 2.04.01, 2.05, 2.06, 2.07, 2.08, 2.09, 3.08, 3.09, 3.10, 3.11, 3.12) – 0–20%; - Maximum ash content in the initial stock is 25%; – filler – chalk (calcium carbonate); – sizingagent – AKD. **D.6. Parameters of office paper of mark C**: - brightness – not less than 90% (ISO 2470); - dirtness – not more than 30 pcs/m^2 (ISO 5350-3:2007); - office paper ash content is up to 18%. **D.7. The parameters of pulp material before it's entry to refining process unit:** – degree of refining – 16–20°SR (ISO 5267-1); – average fiber length – 0.6–2.0 mm (ISO 16065-1); – stock concentration – 2.0–4.0% (ISO 4119);
E. Compatibility with the existing process line	The supplied equipment should be complied with the existing technological scheme (Annex 2), correspond to the selected technology of processing of pulp paper and the process specifications indicated above, be placed according to the selected equipment layout (Annexes 8 and 9). The Bidder shall carry out all works for complete integration of the automation system of the process line at Stage 2 of the project into the existing system of automation of the process line, carried out at Stage 1 (Annex 12). All the supplied equipment must be newly produced, not restored, not previously operated (for commercial purposes).
F. Scope of the assignment under the contract	**F.1.** Scope of the assignment includes: Visiting by the Supplier's team leader/staff the project site prior to start

	of contract execution in order to: a) Become familiar with the company's premises/project site, local conditions and the company's and the Purchaser's requirements and expectations; b) Clarify and advise on technical and other responsibilities of the company and the Purchaser to adjust the technical specifications of Supplier to the local conditions; and c) Discuss and harmonize with company and the Purchaser (UNDP's Technical Consultant) the proposed work plan and schedule of the overall supply and installation process. **F.2.** Designing, manufacturing and supplying of a complete set of the technological equipment (main and auxiliary equipment) for Stage 2 in accordance with the requirements and equipment technical specifications as below and according to the requirements of an internationally recognized safety institution. **F.3.** Advising and providing technical documentation and specifications for replacement or modification of any existing production equipment, required for the safe, efficient and successful paper production process at Stage 2, not included in the Supplier's scope of equipment supply. **F.4.** "Turnkey" installation of the 2 stage project equipment: - Complete installation and start-up of the Stage 2 equipment from Secondary Pulper Epurex DS-2 (Annex 2 item 3) to the intermediate chest (Annex 2 item 10). Relocation of the existing HD cleaner HDS 1200 to the coarse screening stage. Connection of the existing equipment from the intermediate chest (Annex 2 item 10) to the 1st stage fine screen MC2 (Annex 2 item 11). Installation and full integration into the existing process line of a new flotation unit. Full integration of the automation control system of Stage 2 waste paper process line and flotation unit into the existing automation control system of the process line competed at Stage 1. - Lubricating new primary and auxiliary equipment; - Installation of the electric part, including control cabinets and cables; - Installation of the service platforms and fencing; - Adjustment of the whole modified process lines for Stage 2 equipment; - Testing (test run), starting up, commissioning and handing over to the Purchaser of the equipment and technologies supplied under the contract; - Training of the staff of the Unitary Enterprise "Paper Mill" of Gosznak (Organizing and implementing on the job training - theoretical and practical training of Unitary Enterprise "Paper Mill" of Goznak personnel on operation, technological safety as well as on maintenance of all production equipment supplied under the contract). **F.5.** Preparing and providing design and project documentation of the process, electrical and automatization part of Stage 2 of the project (Hard copy and electronic version. In English and Russian Languages); The End User (Unitary Enterprise "Paper Mill" of Goznak) and the Purchaser (UNDP's Technical Consultant) should approve the layouts/drawings before manufacture of equipment.

<table>
<tr><td></td><td>F.6. Providing documents for main and auxiliary equipment;
Documents on the main equipment include technical characteristics of the equipment (working parameters such as concentration, pressure, capacity and so on; materials and dimensions); documentation on auxiliary equipment includes characteristics of pumps, electric motors, valves, gates, pipelines as well as elements of the automation system.

F.7. Providing troubleshooting manuals.

F.8. Technical documentation for design and construction of foundations for installation of equipment and cable trays.

F.9. Providing a set of construction documentation including assembling drawings and detailed engineering drawings.

F.10. Providing technical passports for valves, instrumentation and control equipment, other materials.

F.11. Providing set of operating and maintenance documentation for Stage 2 equipment.

F.12. Providing standard Supplier’s warranty (which shall be not less than 12 months from the date of acceptance of the Goods and Works by the Purchaser) on parts and labor.</td></tr>
<tr><td>G. Equipment and services to be supplied under the contract</td><td>G.1. Equipment to be supplied as per the ITB Section 3a Technical Specifications requirements, services to be provided as per the ITB Sections 3a and 3b requirements.

G.2. The Supplier shall design its drawings for the manufacture of the equipment in accordance with the reference Technical Specifications of this ITB and reference drawings annexed to this ITB under Annex 1-12.

G.3. The Supplier shall verify the conformity of the equipment arrangement specified in the ITB drawings, based on the proposed equipment parameters. Requirements on supplementation and modification of the equipment arrangement in ITB Drawings, if any, shall be submitted the Purchaser for review and adjustment prior to the commencement of manufacturing of the equipment.</td></tr>
<tr><td>H. Location of assignment under the contract</td><td>A site in the area of the Unitary Enterprise “Paper Mill” of Goznak (Borisov, Minsk region, Belarus) with the specifications indicated in Annexes 8, 9.</td></tr>
<tr><td>I. Terms for Submission of technical documentation</td><td>
<table>
<tr><th>Technical documentation</th><th>Language Versions</th><th>Terms</th></tr>
<tr><td>Technical documentation for design and construction of foundations for installation of equipment and cable trays</td><td>Hard copy and electronic version. In English and /or Russian Languages</td><td>45 days after signing of contract</td></tr>
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Design and project documentation of the process, electrical and automatization part of Stage 2 of the project (process flow sheet for Stage 2; functional scheme of automatization; electrical part of the process flow with indication of equipment voltage)	Hard copy and electronic version. In English **and /or** Russian Languages.	90 days after signing of contract
Documents for main and auxiliary equipment	Hard copy and electronic version. In **English and Russian** Languages.	To be supplied with Goods, as well as by e-mail after shipment Goods
Troubleshooting manuals	Hard copy and electronic version. In **English and Russian** Languages	To be supplied by commissioning
Set of construction documentation including assembling drawings and detailed engineering drawings	Hard copy and electronic version. In **English and Russian** Languages	To be supplied by commissioning
Technical passports for valves, instrumentation and control equipment, other materials.	Hard copy and electronic version. In **English and Russian** Languages	To be supplied by commissioning
Set of operating and maintenance documentation for Stage 2 equipment	Hard copy and electronic version. In **English and Russian** Languages	To be supplied with Goods, as well as by e-mail after shipment Goods
Guidelines for disassembly, transportation and storage of the equipment	Hard copy and electronic version. In English **and / or** Russian Languages	To be supplied with Goods, as well as by e-mail after shipment Goods
List of recommended spare parts and consumables for a five (5) year period of equipment operation, including their current prices and suppliers	Hard copy and electronic version. In English **and / or** Russian Languages	To be supplied by commissioning

I.2. The Purchaser reserves the right to request from the Supplier additional documents as may be required for proper understanding and definition of installation and operation.

I.3. Prior to manufacturing the Supplier shall submit overall drawings, documents of equipment as well as installation procedures for the equipment to the Purchaser for approval.

I.4. The Purchaser's approval shall not relieve the Supplier from any obligations as specified in the ITB to meet its requirements to amend

	drawings or equipment due to failure, omissions, troubles, defects or damage during warranty period. **I.5.** The Supplier shall bear all necessary expenditures to provide documents, drawings and other information required by the Purchaser. **I.6.** All documents and drawings submitted by the Supplier shall have a title: Project "Supporting the Transition to a Green Economy in the Republic of Belarus" funded by the European Union and implemented by the United Nations Development Programme, No. 00081657. "Equipment for Stage 2". **I.7.** All drawings shall be drawn on the International Standards Organization (ISO) "A" series of drawing sheets standardizing where possible on A3 size. All drawings shall be conformed to IEC 617 and ISO 3272. **I.8.** Operating and maintenance manuals: The Manuals' contents shall be as complete and specific as possible, and specific to the materials and equipment supplied under the contract. Nomenclature or reference to any one item shall be consistent throughout the Manuals. The Manuals shall provide not only advice on the routine maintenance tasks but also give instruction on the correct operation of the equipment. Use shall be made of drawings, diagrams, pictures or actual photographs when they add to the understanding and clarify the text. Precautions and warnings related to safety of life and equipment shall be included in the Manuals. The Manuals shall contain a complete and accurate description of the equipment, its assembly and dismantling as well as of all components (with the part number of each individual item or part). A list stating clearances, tolerances, temperatures, fits etc. is to be made part of the Manuals. One section shall describe regular and preventive maintenance procedures and shall indicate the inspections required at regular intervals, the inspection procedure, the devices and tools required for inspection, the routine for equipment calibration and adjustment, the regular safety checks and similar steps. The Manuals shall also contain a list of fuels and lubricants to be used, if any, their grades, lubrication points, consumption rates, regularity and methods of replacement of lubricants.
J. Reporting requirements under the contract	The Supplier will make a brief report to the Purchaser at the end of each month (from the date of contract signing) on the progress of contract implementation.
K. Packing, transportation, storage requirements under the contract	**K.1.** Transportation, unloading and storage of the equipment shall be performed by or under the responsible direction of the Supplier. An appropriate period for transportation shall be considered. **K.2.** All parts of the equipment supplied and installed under this contract shall be protected and insured from the date of manufacturing until delivery to the installation site in Borisov against damage of any kind at the Supplier's cost. **K.3.** All parts of the equipment shall be packed at the place of manufacturer suitably protected against corrosion, water, sand, heat, frost, atmospheric conditions, shocks, impacts, vibrations, etc. Dismantling shall be done into convenient parts/sections so that the

	weights and sizes are suitable for transportation to the installation site and for handling on the site. All packaging costs shall be included in the contract price. **K.4.** All equipment shall be marked with correct designation shown on the Supplier's detailed drawings and other documents (packing lists, spare part lists, operating and maintenance manuals, etc) to ensure being suitable for installation at the installation site. **K.5.** All equipment shall be effectively protected against damage during transportation from the place of manufacture to the installation site and during storage en route to the installation site, if any. Large parts shall be supported to distribute their masses uniformly and thus avoid any permanent deformation. If large parts are stored in the open air, they shall be provided with weather-resistant and fire-resistant covers.
L. Equipment storage and temporary working area at the equipment installation site	Equipment storage and temporary working area for the Supplier's engineer(s)/technician(s) will be provided at the installation site in Borisov by Unitary Enterprise "Paper Mill" of Goznak.
M. Electricity power supply at the temporary working area of the equipment installation site	**M.1.** Electricity required for the Supplier temporary working area will be supplied by Unitary Enterprise "Paper Mill" of Goznak. All the costs for electricity which is used for this purpose shall be borne by Unitary Enterprise "Paper Mill" of Goznak. **M.2.** Power supply available in Belarus is 220/380 V (single/triple phase), 50 Hz AC. The use of 380 V/triple phase is preferred by the Unitary Enterprise "Paper Mill" of Goznak.
N. Installation, inspection at equipment installation site, training for operators under the contract	**N.1.** The Supplier shall dispatch experienced installation supervision staff to the installation site in Borisov to conduct assembly and installation of the equipment, supervise the assembly and installation, testing (test run), starting up, commissioning and handing over the equipment to the Purchaser. The activities shall include: - Assembly, installation and connection of the equipment. - Test run of the equipment on the system operation and relevant function. - Trial run of the equipment with the actual products. - Start actual production under Supplier's engineer(s)/technician(s) supervision. **N.2.** The Purchaser shall not be responsible for any costs and other needs of the Supplier's staff, i.e. accommodation, food, transportation and travel, fuel, insurance, daily allowance and expenses, etc. (if any). The Supplier shall include such and related costs (salary) costs into the contract price. **N.3.** The Supplier shall delegate experienced and qualified staff to train operating personnel of the Purchaser in Borisov, Republic of Belarus (on-site training in accordance with an agreed schedule and programme for machine operators, use and maintenance training for all involved personnel). The language of instruction shall be English or Russian or Belarusian. In the case of English being the language of instruction, interpretation to Russian or Belarusian will be provided by the Purchaser

	or End User. Training is preferably but not obligatory to be conducted during commissioning of the equipment. Training shall include the following basic activities: - Introduction of the equipment and system. -Explanation of the various circuits of the equipment. -Basic maintenance and repair work. -Safety procedures. -Safety maintenance of equipment.
O. Labor safety environmental hygiene	All personnel of the Supplier at the installation site shall be aware of and fol all regulations related to labor safety and environmental hygiene. The Supplier is responsible for purchasing the labor insurance (if any required) for all its personnel at its own expense.
P. Applicable standards	Installation of the equipment shall be in accordance with the appropriate standards and the manufacturer's recommendations guidelines.
Q. Surface treatment painting requirements un the contract	**Q.1.** All equipment shall be supplied with complete and reliable surface treatment and painting. Unless otherwise specified by the manufacturer the coating and painting shall be carried out in accordance with DIN 55928 "Corrosion protection of steel structures by the application of organic or metallic coatings". **Q.2.** All the methods, processes and materials used for surface treatment and painting shall comply with relevant safety rules and health standards and do not contaminate the environment. **Q.3.** Coating materials shall be standard products of a reputable manufacturer with strong experience in the field of corrosion protection of the type of equipment to be supplied under the contract.
R. Equipment testing requirements under contract	**R.1.** The tests on the equipment shall be conducted at the manufacturer's works and after completion of equipment assembly and erection at the installation site in Borisov. The tests shall be carried out by the Supplier without extra charge in order to determine whether the materials and equipment comply with the Specifications. **R.2.** Following the tests at the site the Supplier shall at its own expense rectify any defect and replace any defective part as directed by or to the satisfaction of the Purchaser. **R.3.** Acceptance of tests, approval of assemblies, tests and test procedures and acceptance of pertinent test certificates, or waiving of inspections and/or tests shall in no way relieve the Supplier of its contractual obligations for furnishing the Goods and related services in accordance with the provisions of the Contract.
S. Unit of measurement	The units of measurement shall be System international (SI) units unless otherwise approved by the Purchaser. If the other units of measure are used on the drawings or documents, the SI equivalents shall be added in parallel. Temperature shall be changed into Centigrade degree (°C).
T. Spare parts requirements	**T.1.** The Supplier shall warranty supply of spare parts following purchase orders of the Purchaser. The supplied spare parts shall be carefully packed

incidental services under the contract	for long-term storage under the site conditions. Each item of spare parts shall be clearly marked or labeled on the outside of its packing with its description and number. All spare parts supplied shall be interchangeable with each other and with the parts for which they are intended to be replaced. **T.2.** List of recommended spare parts and consumables for a five (5) year period of equipment operation, including their current prices and suppliers shall be provided by the Supplier before commissioning of the equipment. **T.3.** In the event of termination of production of the spare parts the Supplier shall make advance notification to the Purchaser/ Unitary Enterprise "Paper Mill" of Goznak of the pending termination, in sufficient time to permit the Purchaser/ Unitary Enterprise "Paper Mill" of Goznak to procure needed requirements; and Following such termination, furnishing at no cost to the Purchaser/ Unitary Enterprise "Paper Mill" of Goznak, the drawings and specifications of the spare parts, if requested. Supplier shall ensure the availability of spare parts for at least five (5) years.
U. Warranty	**U.1.** The Supplier shall provide its standard warranty on parts and labor for a minimum period of 12 months from the date of signing the equipment acceptance certificate by the Purchaser. **U.2.** The maximum response time for maintenance complaint from Unitary Enterprise "Paper Mill" of Goznak (i.e. time required for Supplier's maintenance engineer to report at Unitary Enterprise "Paper Mill" of Goznak after a request call /fax/ e-mail is made or letter is written) shall not exceed 10 working days. **U.3.** If the Supplier, having been notified, fails to remedy the defect(s) within the stipulated period, the Purchaser/ Unitary Enterprise "Paper Mill" of Goznak may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.
V. After sales servicing	**V.1.** The Supplier shall provide after sales servicing and maintenance of the equipment following purchase orders of the Purchaser for a minimum period of five (5) years from the date of signing the equipment acceptance certificate by the Purchaser. **V.2.** Service and maintenance centre(s) for the after sales servicing of Goods supplied under contract should be available in Belarus / in the adjacent countries / in other countries (providing the company can provide after sales servicing and maintenance within 10 working days following the request of the Purchaser/ End User). Service and maintenance should be provided within maximum 10 working days following the request of the Purchaser/ End User including the travel time. Contact details of the functional service and maintenance centre(s) shall be provided by the Supplier.

W. Certification	The offered equipment must be from the manufacturers adhering to ISO quality system. The copy of valid ISO certificate must be included in the Bid. Quality certification systems equivalent to ISO will also be considered.

ALLOCATION OF RESPONSIBILITIES BETWEEN SUPPLIER, BENEFICIARY AND PURCHASER

1	Development and signing of the contract	Supplier and Purchaser
2	Kick-off meeting. Visiting by the Supplier's team leader/staff the project site prior to start of contract execution in order to: a) Become familiar with the company's premises/project site, local conditions and the company's and the Purchaser's requirements and expectations; b) Clarify and advise on technical and other responsibilities of the company and the Purchaser to adjust the technical specifications of Supplier to the local conditions; and c) Discuss and harmonize with company and the Purchaser (UNDP's Technical Consultant) the proposed work plan and schedule of the overall supply and installation process	Supplier, Purchaser and Beneficiary (End User)
3	Preliminary planning distribution layout of the main equipment in the annex building;	Beneficiary
4	Basic Engineering Design (BED) for the Stage 2 equipment;	Supplier
5	Advising and providing technical documentation and specifications for replacement or modification of any existing production equipment, required for the safe, efficient and successful paper production process at Stage 2, not included in the Supplier's scope of equipment supply;	Supplier
6	Technical documentation for layout of the equipment for Stage 2, design and construction of foundations for installation of equipment (with static and dynamic loads) and cable trays;	Supplier
7	Design of annex building for placing new equipment;	Beneficiary
8	Provision of documentation necessary for the certification of the equipment in Belarus, if required;	Supplier
9	Certifications and authorizations (Police and Fire Department permissions);	Beneficiary
10	Safety inspection and certification of local authorities according to the local law; any other certifications as required by the local law;	Beneficiary
11	Permits to operate equipment, if required by the local law;	Beneficiary
12	Possible modifications to be made on safety inspector's request;	Beneficiary
13	Detailed Engineering in order to issue all the documents needed for installation. Detailed Engineering includes but is not limited by piping layout, pipe support layout, cable tray layout, documentation of the process, electrical and automatization part of Stage 2 of the project;	Supplier
14	Preparing and providing design and project documentation of the process, electrical and automatization part of Stage 2 of the project (Hard copy and electronic version in English and Russian Languages) and providing of these documents for the approval to Unitary Enterprise "Paper Mill" of Goznak;	Supplier
15	Approval the layouts/drawings before manufacture of equipment;	Beneficiary
16	Earthworks and manufacturing of equipment foundations;	Beneficiary
17	Construction of a new additional building: the overall size 16×9 m, fast-built, lightweight structures of the type of sandwich panels;	Beneficiary

18	Manufacturing of sewerage, ventilation and heating systems;	Beneficiary
19	Making of passes, drive-by's;	Beneficiary
20	Works on equipping the household and fire water supply;	Beneficiary
21	Works on storm sewage;	Beneficiary
22	Supplying electricity to the new additional building (to electrical cabinets);	Beneficiary
23	Design and mounting/ installation of inside lighting networks;	Beneficiary
24	Mounting of lifting equipment;	Beneficiary
25	Designing, manufacturing and supplying of a complete set of the technological equipment (main and auxiliary equipment) for Stage 2 in accordance with the requirements and equipment technical specifications as below and according to the requirements of an internationally recognized safety institution;	Supplier
26	Providing equipment storage and temporary working area for the Supplier's engineer(s)/technician(s) at the installation site in Borisov;	Beneficiary
27	Supply of electricity required for the Supplier temporary working area;	Beneficiary
28	"Turnkey" installation of the 2 stage project equipment: a) Complete installation and start-up of the Stage 2 equipment from Secondary Pulper Epurex DS-2 (Annex 2 item 3) to the intermediate chest (Annex 2 item 10); b) Relocation of the existing HD cleaner HDS 1200 to the coarse screening stage; c) Connection of the existing equipment from the intermediate chest (Annex 2 item 10) to the 1st stage fine screen MC2 (Annex 2 item 11); d) Installation and full integration into the existing process line of a new flotation unit; e) Full integration of the automation control system of stage 2 waste paper process line and flotation unit into the existing automation control system of the process line competed at stage 1; f) Lubricating new primary and auxiliary equipment; g) Installation of the electric part, including control cabinets and cables; h) Installation of the service platforms and fencing; i) Adjustment of the whole modified process lines for stock preparation; j) Testing (test run), starting up, commissioning and handing over to the Purchaser of the equipment and technologies supplied under the contract; k) Training of the staff of the Unitary Enterprise "Paper Mill" of Gosznak (Organizing and implementing on the job training - theoretical and practical training of Unitary Enterprise "Paper Mill" of Goznak personnel on operation, technological safety as well as on maintenance of all production equipment supplied under the contract); **l)** Testing (test run), starting up, commissioning and handing over to the Purchaser of the equipment and technologies supplied under the contract.	Supplier
29	Protection from static electricity and grounding of all equipment;	Supplier
30	Providing documents for main and auxiliary equipment; Documents on the main equipment include technical characteristics of the equipment (working parameters such as concentration, pressure, capacity and so on; materials and dimensions); documentation on auxiliary equipment includes characteristics of pumps, electric motors, valves, gates, pipelines as well as elements of the automation system;	Supplier
31	Providing troubleshooting manuals;	Supplier
32	Providing a set of construction documentation including assembling drawings and detailed engineering drawings;	Supplier

33	Providing technical passports for valves, instrumentation and control equipment, other materials;	Supplier
34	Providing set of operating and maintenance documentation for Stage 2 equipment;	Supplier
35	Providing standard Supplier's warranty (which shall be not less than 12 months from the date of acceptance of the Goods and Works by the Purchaser) on parts and labor;	Supplier
36	Recommendations for the use of raw materials with the supplied equipment	Supplier

TECHNICAL SPECIFICATIONS

The data in the "Description/Specifications of required Goods" column of the table below shall be read in conjunction with the Schedule of Requirements above.

Supply, installation and commissioning of main and auxiliary equipment, process control systems for pulp and recirculated white water cleaning, storage and transportation for the office paper production from wastepaper on a turnkey basis

The procurement of the equipment is conducted within the framework Project "Supporting the Transition to a Green Economy in the Republic of Belarus" funded by the European Union and implemented by the United Nations Development Programme, No. 00081657.

Functional designation: Cleaning of waste paper pulp (secondary paper pulp) from polluting particles, storage of pulp and its transportation as well as cleaning of recirculated white water from suspended solids with using automatic process control systems;

Location: Unitary Enterprise "Paper Mill" of Goznak, Borisov Town, Minsk region, Belarus.

Item/s to be Supplied	Technical characteristics and requirements
I. **Main equipment**	
1. Pulp chest with volume 90-100 m^3, consisting of:	Stock concentration – from 4.0 to 5.0%; Finishing surface treatment (the requirements are applied to the equipment indicated in items 1.1-1.9 according to the material): welded surfaces and seams – sand blasting; stainless steel surfaces – sand blasting; carbon steel surfaces – painting (stamping); cast iron – painting (stamping); paint type – wear-resistant coating;
1.1. Tank and supports;	Material of tank – stainless steel (stainless steel with quality not less than AISI 304 grade (ISO 15510: 2014); material of supports – carbon steel;
1.2. Foundation bolts;	Material – carbon steel;
1.3. Flange joints at input (inlet) and output (outlet):	Material – stainless steel / aluminum / duraluminum;
1.4. Manhole (Inspection door);	Available; Location: on the cover of the tank or on the body of the tank;
1.5. Flat cover with vent,	Available; Man walking possibility is required in case the inspection window is located on the cover of the chest;
1.6. Level transmitter flange;	Available;
1.7. Flange for agitator (diffuser);	Available;

1.8. Agitator;	Max. power of motor – 30 kW Motor protection – IP55 Propeller material – stainless steel Shaft material – solid wear-resistant metal Material for fencing of drive – carbon steel
1.9. Pump	Function – for pumping of stock; Technical parameters of the pump are defined after calculation of mass balance;
2. Reject tank with volume 5 m^3, consisting of:	Stock concentration – from 2.0 to 4.0%; Finishing surface treatment (the requirements are applied to the equipment indicated in items 2.1-2.9 according to the material): welded surfaces and seams – sand blasting; stainless steel surfaces – sand blasting; carbon steel surfaces – painting (stamping); cast iron – painting (stamping); paint type – wear-resistant coating;
2.1. Tank and supports;	Material of tank – stainless steel (stainless steel with quality not less than AISI 304 grade (ISO 15510: 2014); material of supports – carbon steel;
2.2. Foundation bolts;	Material – carbon steel;
2.3. Flange joints at input (inlet) and output (outlet):	Material – stainless steel / aluminum / duraluminum;
2.4. Manhole (Inspection door);	Available; Location: on the cover of the tank or on the body of the tank;
2.5. Vent on the roof;	Available;
2.6. Level transmitter flange;	Available;
2.7. Support for the vertical agitator;	Available;
2.8.Vertical/ horizontal agitator;	Max. power of motor – is calculated by the Supplier depending on the type of the agitator; Motor protection – IP55; Propeller material – stainless steel; Shaft material – solid wear-resistant metal; Material for fencing of drive – carbon steel (in case of Vertical Agitator);
2.9. Pump;	Function – for pumping of stock; Technical parameters of the pump are defined after calculation of mass balance;
3. 1st stage pressure coarse screen consisting of:	Stock concentration – from 2.0 to 4.0%; degree of pulp cleaning (90-97%); content of non-fiber materials in the cleaned pulp (up to 0.5%); minimum fiber material loss (up to 5% without consideration of wet strength fiber materials); Finishing surface treatment (the requirements are applied to the equipment indicated in items 3.1-3.9 according to the material): Stainless steel surfaces – sand blasting; carbon steel surfaces – painting (stamping);

	cast iron – painting (stamping); paint type – wear-resistant coating;
3.1. Case and flange joints;	Material of case – stainless steel; Material of flange joints - stainless steel / aluminum / duraluminum;
3.2. Turning roof;	Material – stainless steel;
3.4. Balanced rotor;	Material – stainless steel;
3.5. Basket with holes;	Material – stainless steel; Holes type – round truncated/ cone profiled; Holes diameter – 1.4–1.8 mm; Clear area of the basket – from 15 to 20%;
3.6. Mechanic sealing with water;	Material – stainless steel;
3.7. Motor;	Max. Motor Power – 90 kW; Motor type – three-phases with short-circuit coil; Motor protection – IP55;
3.8. Pressure gauges at inlet and outlet;	Available;
3.9. Water flow meter for sealing water	Available;
4. 2nd stage pressure coarse screen consisting of:	Stock concentration – from 2.0 to 4,0%; Content of suitable fiber in waste is up to 5% (without consideration of wet strength fiber materials); Finishing surface treatment (the requirements are applied to the equipment indicated in items 4.1-4.9 according to the material): Stainless steel surfaces – sand blasting; carbon steel surfaces – painting (stamping); cast iron – painting (stamping); paint type – wear-resistant coating;
4.1. Case and flange joints;	Material of case – stainless steel; Material of flange joints - stainless steel / aluminum / duraluminum;
4.2. Turning roof;	Material – stainless steel;
4.4. Balanced rotor;	Material – stainless steel;
4.5. Basket with holes;	Material – stainless steel; Holes type – round truncated/ cone profiled; Holes diameter – 1.6–2.0 mm; Clear area of the basket – from 15 to 20%;
4.6. Mechanic sealing with water;	Material – stainless steel;
4.7. Motor;	Max. motor power – 30 kW; Motor type – three-phase with short-circuit coil; Motor protection – IP55;
4.8. Pressure gauges at inlet and outlet;	Available;
4.9. Water flow meter for sealing water	Available;
5. Floating unit for cleaning of excess white water from Paper machine producing paper for Stage 2 is consisting of:	Type – radial; Capacity – 200 m^3/h; Concentration at inlet (average) – 300 mg/l; Concentration at inlet (maximum) – 1200 mg/l; Clarified water concentration – up to 30-50 mg/l;

	Efficiency of flotation unit - 85-97%; Solids in the white water is up to 0,12%; ash content of solids is up to 60%. Continuous removal of bottom sediments; Finishing surface treatment (the requirements are applied to the equipment indicated in items 5.1-5.7 according to the material): welded joints and stainless steel surfaces – sand blasting; carbon steel surfaces – painting (stamping); cast iron surfaces – painting (stamping); paint type – wear-resistant coating;
5.1. Floating tank;	Material – stainless steel;
5.2. Maintenance walkway;	Material – carbon steel;
5.3. Aeration unit;	Type-vertical; Efficiency of air dissolution in water – not less than 95%;
5.4. Compressor;	Available;
5.6. Dosing pumps;	Available;
5.7. Control board;	Produced as a color touch panel;
5.8. Automatic unit for preparation and dosing of chemical agents	Programmed logic controller – available; ETHERNET – with a port for remote signal transmission; Text information display – in two languages (English/ Russian);
5.9. Pressurization pump;	Available; Max. motor power – is defined by the Supplier depending on the construction;
II. **Auxiliary equipment and materials**	
1. Pumps (except the pumps for main equipment indicated in items 1.9; 2.9; 5.6, 5.9);	Designation: for adjustment of pulp concentration; In the quantity required for fitting of all equipment at Stage 2 of the project;
2. Electric Motors (except electric motors for main equipment indicated in items 1.8; 2.8; 3.7; 4.7);	Protection level – IP55; In the quantity required for fitting of all equipment at Stage 2 of the project;
3. Valves (except item 8);	Designation: for closing/opening of pipelines for pulp supply to the main equipment; Material – stainless steel; In the quantity required for fitting of all equipment at Stage 2 of the project;
4. Pipelines;	In the quantity required for fitting of all equipment at Stage 2 of the project; Material of pipelines: stainless steel;
5. Control cabinets;	Designation: for manual control of the main equipment and its emergency stop; Available;
6. Electrical cabinets;	Designation: for electricity supply to main and auxiliary equipment; for restricting access of staff to electric high voltage system; Available;
7. Instrumentation / Control equipment;	In the quantity required for Stage 2 eqguipment operation (except item 8);

	Designation: for visual control of process flow parameters (level, pressure);
8. Automation control system, consisting of: – controllers «Vipa»; – software for Automatic control system; – level, pressure and temperature transmitters and flow meters; - actuating units; – manual and control valves; – cables, cable trays and other materials (Principal scheme of automation of the stage of coarse screening is demonstrated in Annex 12)	Available set of protection and licensed software; Software for automatic control system of the preparatory division should be fully integrated with the existing automation system of the process line completed at stage 1; All analog input and output controller signals should be unified to 4-20 mA. All discrete input and output controller signals should be unified with power of 24 V of DC; Personal computer and SCADA Movicon 11;
9. Spare parts;	Set of spare parts for warranty period of all equipment at stage 2 of the project;
10. Set of spare parts and lubrication materials for commissioning and start-up of all equipment at Stage 2 of the project;	Available;
11. Set of foundation bolts and plates for all equipment at Stage 2 of the project (за исключением п.1.2; 2.2);	For firm fixation of main and auxiliary equipment to the foundations; Available;
12. Service platforms and ladders shielded for servicing and maintenance of new equipment (except item 5.2. for main equipment);	Available;
13. Warranty period for all supplied equipment for stage 2 of the project	Not less than 12 months;
III. **Certification**	
15. The offered equipment must be from the manufacturers adhering to ISO quality system. The copy of valid ISO certificate must be included in the Bid. Quality certification systems equivalent to ISO will also be considered.	