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**Electronic Tender Documentation**

**Delivery and installation of flow measurement system on Zhinvali HPP**

**1.1 Name of the procurement object**

Georgian Water and Power Ltd (GWP, ID 203826002) announces an electronic tender for:

**Delivery and installation of flow measurement system on Zhinvali HPP**

**1.2. Description of service / work (technical assignment), quantity / volume of the procurement object**

**Zhinvali HPP General Data**

The Zhinvali HPP consists of a 520 mio m3 reservoir retained by an embankment dam on the Aragvi

River.

Head 170 m water head and a 130 MW power plant. The scheme was commissioned in 1985.

The main characteristics of the project are the following :

Hydrology

* Average river flow at intake 43.8 m3/s

Dam

* Type Earth dam
* Structure With central clayey core
* Material Gravels and clay
* Foundation soil Conglomerate

Reservoir

* Function Seasonal water storage
* Normal water level 810 masl
* Minimum operational level 770 masl

Spillway

* Type Ungated overflow spillway, open channel
* Location Left bank
* Elevation 810 masl
* Length 600 m
* Design flood 1'240 m3/s

Bottom outlet

* Type Tower
* Number of openings 2 (5.0 x 5.0 m2)
* Elevation 762.8 masl
* Capacity 1'080 m3/s

Water intake

* Type Tower
* Capacity 115 m3/s
* Protection Two gates (service / maintenance)

Penstock

* Operation mode Pressurized
* Location low level
* Material Reinforced concrete and steel lining
* Length 648 m
* Diameter 5'500 - 5'300 mm

HPP

* Number of Units 4
* Type of turbines Francis (vertical)
* Total installed power P = 4 X 32.5 MW= 130 MW

Energy

* Annual production 430 GWh
* Transformers 2 x 220 MVA + 1 x 110 MWA
* Power line 110 kV, 220 kV

**The specification calls for flow measurement systems for each turbine**:

* Flow measurement systems for each Turbine penstock section
* Supplier must be presentrd price for delivery and installation duration for 2 set of equipments and for 4 set of equipments.
* Required accuracy of these flowmeter were defined by Zhinvali HPP / GWP with 1% Transducer mount shall be in accordance with the IEC60041 / ASME PTC 18

**Technical datas**

* Penstock diameter = 2.2m
* Valve fully open
* V = >0.5m/s
* Nominal pressure before the turbines: hydrostatic pressure, min - 13 bar
* Maximum pressure before the turbines: hydrostatic pressure, max - 17 bar

**Penstock Flow Measurement**

**Scope of supply**

* Flow measurement in the penstock
* Gross head 170 m.
* Discharge measurement 0-50 m3/s
* Control unit with integrated turbine efficiency monitoring

**Flow Measurement Methode**

* The flow measurement method (like Ultrasonic transit time) and according IEC60041/ ASME PTC18 for turbine efficiency testing and monitoring and shall provide a possible accuracy of 1 % on the measured flow (Q) value.
* The meter shall allow at least the calculation methods associated with the type of measurement arrangement in full pipelines under pressure

**Applicable Standards**

* IEC-60041(1991) - Tests of hydraulic turbines, accumulation pumps and pump-turbines, to determine their hydraulic performance.
* ASME PTC-18 (2011) - Hydraulic turbines and pump-turbines. Performance test codes.

**Design**

* The flow measurement system design shall be according IEC60041/ ASME PTC18 a.
* Protection cover system shall be designed for a waterproof application.

**Communication & Interfaces**

* The flowmeter must be able to be integrated into the Plant Distributed Control System (SCADA) directly through IEC 60870-5-104 protocol.
* The flowmeter must be able to be programmed by web-interface / web-browser, no proprietary software is accepted.
* Flow data transfer technology must be Ethernet with at least 10/100 BaseT -, protocol TCP/IP
* Flowmeter must include WIFI 802.11a/b/g/n or newer/faster
* Flowmeter must include 3G/4G cellular modem option
* Flowmeter must be available to integrate signal in Siemens PLC
* Each Flowmeter must be having LCD panel (where must be showed flow different data) and it is mandatory to save minimum 1-year history for each of measurements and this data must have possibility to convert in excel file.

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| **Flowmeter - Technical Data Specification** | | | |
| **1** | **General** |  | **Requirements** |
| 1.1 | Fluid Velocity Range |  | 0 m/s up to ±20 m/s (or more on request); bidirectional |
| 1.2 | Calculation of flow accordance |  | IEC-60041/ASME PTC18 |
| 1.3 | Flow data transfer technology |  | Ethernet port with at least 10/100 BaseT – TCP/IP |
| 1.4 | Transit Time |  | < 1ns |
| 1.5 | Minimum measuring range |  | 0-50 m3/s |
| 1.6 | User/parameterization interface |  | By web browser / no proprietary software accepted |
| **2** | **Communication interfaces and protocols** |  |  |
| 2.1 | Ethernet |  | Ethernet ports with at least 10/100BaseT |
| 2.2 | Wireless |  | WIFI 802.11a/b/g/n or newer/faster |
| 2.3 | Cellular |  | 3G/4G cellular modem option |
| 2.4 | Modbus RTU+RCP, Master+Slave |  | built in in the control unit  (no external devices/interfaces accepted) |
| 2.5 | IEC 60870-5-104 |  | built in in the control unit  (no external devices/interfaces accepted) |
| 2.6 | Security of all relevant external digital communication interfaces |  | SSL/TLS 1.3 or newer |
| **3** | **Environmental conditions** |  |  |
| 3.1 | Ambient temperature |  | -20 … +70 °C |
| 3.2 | Relative Humidity |  | 5-95 % @ 25 °C |
| 3.3 | Installation height |  | up to 1000 masl |
| **4** | **Power supply** |  |  |
| 4.1 | Rated voltage | | 24-48VDC / 90-260 VAC |
| **5** | **Analog and digital Signals (Outputs/Inputs)** | |  |
| 5.1 | Analog Outputs | min. No of Analog outputs 4-20 mA | 4 (more as an option) |
| 5.2 |  | Resolution (bits) | 16 |
| 5.3 |  | Accuracy 25°C | ±0.1 %FS |
| 5.4 |  | Linearity | ≤ 0.04 % FS |
| 5.5 |  | Temperature drift | ≤ 70 ppm/K |
| 5.6 |  | Galvanic isolation | Full galvanic isolation |
| 5.7 |  | Overload protection | Integrated |
| 5.8 | Analog Inputs | min. No of Analog inputs 4-20 mA | 3 (more as an option) |
| 5.9 |  | Galvanic isolation | Full galvanic isolation |
| 5.10 | Digital Outputs | Galvanic isolation | Full galvanic isolation |
| 5.11 |  | min. No of digital outputs 4-20 mA | 9 digital output relays with configurable switched contacts (more as an option) |
| 5.12 |  | Output type | Relay with NO/NC changeover contact or solid-state with comparable electrical characteristics |
| 5.13 | Digital Inputs | Galvanic isolation | Optically Isolated |
| 5.14 |  | min. No of digital inputs 4-20 mA | 1 (more as an option) |
| **6** | **Flow Transducers** |  |  |
| 6.1 | Number of Transducers |  | Up to 20 path system according layout & needed |
| 6.2 | Galvanic isolation |  | Full galvanic isolation |
| 6.3 | Separation of transducers to flow meters |  | up to 300m |
| 6.4 | Degree of protection |  | IP 68 |
| 6.5 | Maximum pressure |  | at least up to 80bar |
| 6.6 | Probe frequency |  | 1 MHz |
| 6.7 | Transducer Material |  | Stainless steel 316L |
| 6.8 | Water temperature range |  | -30 °C to +70 °C |
| 6.9 | Relative humidity range |  | 100% |
| 6.10 | Type/Way of installation |  | Mounting from inside or outside |

**Note:**

* **Please note, the equipment must be of European manufacture!**
* **Delivery and Installation work must be executed from May 15 till June 15, 2024**
* **Guarantee minimum 2 years**

**1.3 Estimation**

The bidder must submit the estimates according to Annex N1 in Excel format.

**1.4 Form and place of delivery of goods**

Georgian Water and Power Ltd (GWP) Place of delivery:

Warehouse of "Georgian Water and Power" – **Zhinvali HPP**

**1.5 Payment terms**

Payment will be made by consignment, with non-cash payment within 30 (thirty) calendar days after receiving the goods and signing of the relevant acceptance certificate and / or relevant documents. In case of requesting an advance payment, you must submit an advance payment guarantee, which must be issued by a bank licensed by Georgia or a bank of a member country of the Organization for Economic Cooperation and Development (OECD) – can be negotiable.

**1.6 Data to be uploaded / submitted by the bidder in the electronic tender:**

1. Price table (in accordance with Annex N1);

2. Extract from the Register of Entrepreneurs and Non-Entrepreneurial (Non-Commercial) Legal Entities, which must be issued after the announcement of this electronic tender;

3. Consent to these tender conditions, for which a signed tender application must be submitted;

4. Information on the materials used Quality certificates issued by the relevant authorities.

5. The warranty must apply to the material, companies that offer higher warranty period will be given priority during selection.

6. The supplier must present the quality certificates corresponding to the country where the material will be produced.

7. Offer must be valid for – 90 days

**Note:**

1. All documents and / or information created by the bidder uploaded in the electronic tender must be signed by an authorized person (if necessary, a power of attorney must be uploaded);
2. All documents and / or information created by the bidder must be confirmed by the electronic signature of the authorized person or the electronic stamp of the company.
3. *If the bidder is a foreign enterprise that is not registered in Georgia, bidder can send the bid via e-mail, which is indicated in the contact information of this tender documentation.*
4. *Also, if some technical problem will arise, during bid submission on tender site, the bidder can send a proposal on the e-mail specified in the tender documents. We would like to state that the proposal must be submitted by e-mail no later* ***than 18:00 on January 22, 2024***

**1.7 Signing a contract**

Within the framework of this e-tender, a single contract will be concluded in accordance with the draft contract and the tender proposal attached to this tender.

**1.8 Other requirements**

1.8.1 At the time of submission of the proposal, the bidder should not be:

• in the process of bankruptcy;

• In the process of liquidation;

• In a state of temporary suspension of activities.

1.8.2 Presentation of prices is allowed only in the national currency of Georgia (GEL). Prices should include all costs and taxes (including VAT) provided by this tender.

1.8.3 The bid submitted by the bidder must be valid for 30 (thirty) calendar days from the date of receipt of bids.

1.8.4 The Procurer (Georgian Water and Power LLC (GWP, JSC 203826002) reserves the right to set the deadline for the tender, change the terms of the tender, notify the tender participants in a timely manner, or terminate the tender at any stage.

The Procurer (Georgian Water and Power Ltd (GWP, ID 203826002)) will identify the winning supplier to the Tender Commission and notify all participating companies of the decision. The Purchaser (Georgian Water and Power Ltd (GWP, ID 203826002)) is not obliged to provide the participating company with a verbal or written explanation of any decision regarding the competition.

The Purchaser (Georgian Water and Power LLC (GWP, ID 203826002)) reserves the right to verify any information received from the Bidders, as well as to obtain information about the Bidder Company or its activities. If it is proved that the information provided by the bidder is not true or falsified, the bidder will be disqualified.

Please note that the Purchaser (Georgian Water and Power Ltd (GWP, ID 203826002) will not receive any oral inquiries for additional information, except by telephone.

***Note: Any other information obtained by other means will not be official and does not give rise to any liability on the part of the Purchaser (Georgian Water and Power LLC (GWP, ID 203826002)).***

**1.9 Information for e-tender participants**

1.9.1 Any questions during the tender process must be in writing and the online Q&A mode of tenders.ge portal must be used;

1.9.2 To participate in the electronic tender, the company must be registered on the website [www.tenders.ge](http://www.tenders.ge)

1.9.3 Instructions for participation in the electronic tender on tenders.ge can be found in the attached file



**I got acquainted**

/ Signature of the authorized person of the participating company /

**Contact information:**

Procurement representative

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