



Środowiskowe Laboratorium Ciężkich Jonów (Heavy Ion Laboratory)

Uniwersytet Warszawski/University of Warsaw

ul. Pasteura 5A, 02-093 Warszawa

Tel. No.: +(48 22) 8222123, Fax No.: +(48 22) 6592714

E-mail: slcj@slcj.uw.edu.pl

www: <http://www.slcj.uw.edu.pl>



Warsaw, 27 March 2015

NOTICE OF INITIATION OF PROCEDURE FOR AWARDING A PUBLIC CONTRACT WORTH OVER EUR 30,000

No. ŚLCJ UW 003/2015/IM,

hereinafter referred to as Contract Notice

1. Name and address of the Contracting Authority

Contracting Authority:

UNIWERSYTET WARSZAWSKI/UNIVERSITY OF WARSAW

ul. Krakowskie Przedmieście 26/28,

00-927 Warszawa

Authority responsible for the procedure:

Środowiskowe Laboratorium Ciężkich Jonów Uniwersytet Warszawski/Heavy Ion Laboratory

University of Warsaw

ul. Pasteura 5A

02-093 Warszawa

Mailing address:

ul. Pasteura 5A

02-093 Warszawa

Please send any enquiry or question relating to your bid to imazur@slcj.uw.edu.pl

2. The manner and procedure for awarding the contract

The contract shall be awarded pursuant to Article 4(8a) of the Public Procurement Law Act, consolidated text (Journal of Laws of 2013, item 907, as amended), hereinafter referred to as the Act of Law, under **an open tender procedure**, in accordance with Clause 7 of the Rules to Regulation No. 22 of the Rector of the University of Warsaw of 16 June 2014 on procedures, principles and forms for awarding by the University of Warsaw public contract for services, supplies and construction works, referred to in Article 4(8, 8a, 8b) of the said Act of Law.

3. Description of the subject-matter of the contract

Supply and delivery of two 4kW preamplifiers for the Warsaw Cyclotron

4. The time and place for submitting bids

The contract shall be awarded pursuant to Article 4(8a) of the Public Procurement Law Act



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1) The bid in a sealed envelope/packet shall be submitted to the premises of the Authority responsible for the procedure:

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ul. Pasteura 5A
02-093 Warszawa

2) The Bid shall be submitted no later than by 19 April 2015 by **12:00 hours**.

5. The method of preparation of bids

1) It is recommended that the Bid be submitted on the Bid Form constituting Appendix No. 1 to the Contract Notice.

2) The Bid shall include all information required in the content of the Contract Notice.

3) The Bid shall be signed by persons authorized to represent the Contractor (signatures and original stamps, signatures need to be affixed in a manner allowing identification of the signatory, e.g. personal name stamps).

6. The criterion for the evaluation and selection of bids

The Contractor for the service under this public contract award procedure shall be selected on the basis of the following criterion:

price	- 60 %
guarantee	- 20 %
failure-repair time	- 20 %

Percentages shall be calculated at ratio 1:1.

1. The price criterion.

60 points shall be given to the lowest price of the bids submitted, calculated in accordance with the following formula:

$$\text{Price points} = \frac{\text{lowest bid price} \times 60}{\text{evaluated bid price}}$$

2. The guarantee criterion.

20 points shall be given to the bid for the equipment with the longest guarantee of the bids submitted.

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Guarantee period points = $\frac{\text{guarantee period of evaluated bid} \times 20}{\text{longest guarantee period of evaluated bids}}$

3. The criterion of time to repair a failure preventing the operation of the subject-matter of the contract.

20 points shall be given to the bid with the shortest failure-repair time.

Time to repair points = $\frac{\text{failure-repair time of bid with shortest failure-repair time} \times 20}{\text{failure-repair time of evaluated bid}}$

The final score shall be the sum of the three components referred to above.

W = price + guarantee + time.

The maximum number of points possible to be scored shall be 100.

In the case where more than one bid has scored the same number of points in the ranking list, the final criterion for selecting the best bid shall be the price.

7. The contract completion date

1) The deadline (period) for the completion of the subject-matter of the contract: **no later than by 8 January 2016**

2) Bids offering longer completion dates shall be rejected.

8. Terms and conditions for participation in the procedure

In order to participate in the procedure the Contractor shall need to have the knowledge and skills necessary to the proper performance of the subject-matter of the contract. The Contractor shall attach to its Bid Form a certified copy of its entry to the National Court Register (KRS) (or the relevant register) issued not earlier than six months prior to the deadline for submission of bids.

9. Information concerning the furnishing of a bid bond and a performance bond

The Contracting Authority shall not require that a bid bond and a performance bond be furnished.

10. Information about the option to cancel the procedure

The Contracting Authority shall reserve the option to cancel the procedure without giving reasons therefor.

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11. Detailed description of the object of the contract

Object of the contract:

I. Item of delivery:

Two identical RF power amplifiers, each capable of delivering of at least 4 kW of RF power.

II. Particular requirements for the delivery item:

1. Power Amplifier parameters

- a. Working frequency range : 11 to 20 MHz.
- b. Output power: 4 kW minimum, continuous, on a 50Ω load. The amplifiers will work in pulse mode, with duty cycle from 10% to 95% and repetition rate 50-200Hz. The amplifiers will drive 75kW power amplifiers (tube based, common grid configuration).
- c. Output connector: coaxial, type N, or other agreed on with the Buyer.
- d. Input connector: type BNC preferred, or other agreed on with the Buyer.
- e. Input signal level at nominal output power: 1V_{pp} maximum.
- f. Input and output impedance: 50 ohm +/- 10% in the working frequency range.
- g. The output power stage: solid state or vacuum tube. The amplifiers should be immune to 100% reflected power when output forward power does not exceed 3 kW (for all phase angles). When output forward power exceeds 3kW amplifier must withstand up to 3 kW of reflected power. In the case of tube based design the tube should be easily obtainable on the European market, and the design of the amplifier should ensure, that the tube can be easily replaced by the user.
- h. Amplifier cooling: a forced air flow system or the deionized water flow. See paragraph 3.d. for details on the cooling system.
- i. If resonant circuit is used at the output stage it should be equipped with simple spark gap to protect the amplifier from damage.
- j. In order to meet safety requirements, and for proper operation of the amplifier the Seller should implement the following interlocks (at the minimum):
 - against the amplifier cooling medium flow stoppage
 - against amplifier or HV supply cabinet's door opening
 - against improper power supplies voltage sequencing during amplifier on and off (in the case of tube based design)
 - against excessive reflected power
- k. If tuned resonant circuits are used then tuning of each amplifier from the minimum to the maximum working frequency should take no longer than 10 minutes.

2. The front panel furnishing of the amplifier

- a. There should be a front panel to read-out and set parameters, one for each amplifier. Each front panel should display at least the following information:



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- status of each amplifier (on / off, in use / failure etc.)
 - reason of failure (including excessive reflected power), interlock status read-out
 - forward/reflected RF power within the RF ON pulse
 - value of tube's anode voltage and current (for tube based designs)
 - value of tube's grid voltage and current (for tube based designs)
 - value of DC supply current of the output stage (for solid state based designs)
- b.** The front panel should allow the operator to perform the following tasks:
- fully turn on and turn off the amplifiers (including power supplies)
 - reset interlocks
 - tune the amplifier to the required frequency (If tuned resonant circuits are used)
- c.** The amplifiers will be connected to cyclotron's SCADA system. The Buyer expects control signals from the console will be brought out to terminal blocks. The Seller may implement a local / remote (SCADA) switch in the console. Detailed signal list of signals for the SCADA system (including description, voltage levels etc.) should be made available to the Buyer no later than 1 month prior to planned shipment of the amplifiers to Warsaw.

3. AC Power and cooling systems:

The Buyer provides in the RF room, designed for installation of the subject of the contract, the following conditions:

- a.** AC Mains: 400V \pm 10%, 3 phase + neutral + protective earth, 50 Hz +4% / -6%, phase voltage imbalance \pm 3%, total available power: 500 kW, other parameters of the AC power are in accordance with PN-EN 50160:2002 with further amendments.
- b.** Operating temperature: +10°C to +40°C.
- c.** Humidity: max. 80%, noncondensing.
- d.** In order to cool of the subject of the contract Buyer has deionized water cooling system and forced air system.
- Forced air flow system can provide at least 3.2 m³/sec of air flow to ventilate the RF room.
 - The cooling water system is as follows:
 - conductivity: not more than 20 μ S / cm,
 - pressure: from 2.5 to 4.5 atm.
 - water flow: at least 2 x 12 dm³ / min for operating amplifiers,

4. Additional requirements:

- a.** If a water cooling system is used by the Seller, then RF system parts having direct contact with cooling water can not be made of brass. Only copper, nickel, bronze, Monel, Inconel, stainless steels (304L, 347) or titanium are allowed.
- b.** In spaces with high RF power levels the Buyer does not permit components made of polyvinyl chloride (PVC), polyamide (PA), or other materials with high dielectric loss and low softening temperature. Allowed are materials such as polyethylene (PE) or polypropylene (PP).



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- c. The object of delivery should include a repair kit, containing nonstandard or made to order components which are subject to wear, and nonstandard, specialized tools needed for ongoing repairs. Nonmetric (ie. imperial) tools the Buyer sees as nonstandard.
- d. Noise and interference of the RF power signals measured at the 3.5 kW power level with a $50 \Omega \pm 10\%$ resistive load should not exceed the following values:
 - mains interference: -40 dBc
 - harmonics : -13 dBc
 - other noise (wideband): -50 dBc
 - other noise in 3 kHz band: -60 dBc (around the output frequency)
- e. The item of delivery has to meet the following requirements:
 - workplace safety: according to PN-EN 60215:2003
 - environmental impact: the Seller should have the product certified to European PN-EN 55011:2010 standards, and environmental / sanitation standards, or have the ability to perform measurements on compliance with those standards
 - fire safety requirements of the European Union

5. Delivery and installation:

- a. The Seller will assemble the equipment in the RF room, in the building located at Pasteura 5A Street, Warsaw, Poland. The RF room dimensions are 11.4m x 12.3m x 3.2 m (length x width x height). In some spots, the height in the RF room is limited by ceiling joists by 0,7m. The doors leading into the RF room allow transportation of objects with a maximum height of 2.2 m and a width of 1.45 m. In an agreed by both parties time, at least 3 weeks before the actual installation begins, the Seller will provide documentation regarding the installation of the subject of the contract at the Buyer's site.
- b. The Seller will provide the Buyer with entire technical documentation of the item of delivery, including mechanical, electrical, elektronik etc.

6. Site Acceptance Tests:

- a. The Seller, together with the Buyer, shall do Site Acceptance Tests according to previously agreed, by both parties, protocol. The Buyer may, but is not obliged, to take part in the Factory Acceptance Tests.
- b. The Buyer requires, that at least two types of Site Acceptance Test are to be performed : frequency tuning tests (short term) and long term.
 - short term test will consist of tuning of both amplifiers to a selected by the Buyer frequency. Then, while connected to the dummy load, the amplifiers will work for half an hour with various PWM and power levels. After that, the 75kW amplifier will be switched in as a load, and the test will continue for another half an hour. The whole procedure will be repeated for 5 different frequencies.
 - long term test will consist of tuning of both amplifiers to a selected by the Buyer frequency. Than the amplifiers will work for 72 hours non-stop with the cyclotron as a load, with various PWM and power levels. The procedure will be repeated for 2 different frequencies.



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- c. To pass Site Acceptance Tests both amplifiers will have to operate failure-free, and within technical specifications, during all the above mentioned tests.

Maintenance services

Provision of a guarantee for the systems and equipment for a period of one year from the commissioning of individual items of equipment and systems. Commissioning shall be carried out by authorized maintenance technicians of the manufacturer working as part of the board comprising at least two employees of the Buyer. The Seller shall provide guarantees for the equipment certified by the manufacturers.

Execution, at least once a year, of inspections carried out by a team with maintenance licenses granted to them by the manufacturer and persons holding certificates of the maintenance services department of the manufacturer.

Delivery of consumables that are required during the guarantee period. All consumables provided shall be approved by the manufacturers of the equipment.

Delivery of consumables during inspections.

Assurance of service readiness. Service readiness shall be provided on a successive basis.

Assurance of the maximum repair time of less than 32 calendar days from the time of notification of failure or defect. Equipment repair times shall be confirmed by the authorized maintenance service providers.

12. Appendices

- 1) Bid Form – Appendix No. 1
- 2) Template Agreement – Appendix No. 2

Director
of Heavy Ion Laboratory of University of Warsaw

Prof. Krzysztof Rusek, PhD