

**RETURN BIDS TO:  
RETOURNER LES SOUMISSIONS À:**

**Bid Receiving - PWGSC / Réception des  
soumissions - TPSGC**

**11 Laurier St./ 11 rue, Laurier  
Place du Portage, Phase III  
Core 0A1 / Noyau 0A1  
Gatineau, Québec K1A 0S5  
Bid Fax: (819) 997-9776**

**REQUEST FOR PROPOSAL  
DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government  
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services  
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

<b>Title - Sujet</b> Single Use Bioreactor 50-200L	
<b>Solicitation No. - N° de l'invitation</b> 31241-138728/B	<b>Date</b> 2014-03-11
<b>Client Reference No. - N° de référence du client</b> 31241-13-8728	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$PV-938-64827	
<b>File No. - N° de dossier</b> pv938.31241-138728	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2014-04-08</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Daylight Saving Time EDT	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Roy, Paul	<b>Buyer Id - Id de l'acheteur</b> pv938
<b>Telephone No. - N° de téléphone</b> (819) 956-6919 ( )	<b>FAX No. - N° de FAX</b> (819) 956-3814
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> Conseil national de recherches Canada Institut de recherche en Biotechnologie (porte 6 et 7) 6100, Royalmount Avenue Montréal, Québec H4P 2R2	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

**Vendor/Firm Name and Address**

**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**

Scientific, Medical and Photographic Division / Division de  
l'équipement scientifique, des produits photographiques et  
pharmaceutiques  
11 Laurier St./ 11 rue, Laurier  
6B1, Place du Portage  
Gatineau, Québec K1A 0S5

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>



Item Article	Description	Dest. Code Dest.	Inv. Code Fact.	Qty Qté	U. of I. U. de D.	Destination	Unit Price/Prix unitaire FOB/FAM	Plant/Usine	Delivery Req. Livraison Req.	Del. Offered Liv. offerte
2	shipping	Total		1	Chaque	\$	XXXXXXXXXXXX			
3	On-site Installation	Total		1	Chaque	\$	XXXXXXXXXXXX			
4	Massflow COntroller air to sparger	Total		1	Chaque	\$	XXXXXXXXXXXX			
5	Massflow contrroller CO2 to Overlay	Total		1	Chaque	\$	XXXXXXXXXXXX			

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## PART 1 - GENERAL INFORMATION

This bid solicitation cancels and supersedes previous bid solicitation number 31241-138728/A dated October 28, 2013 with a closing date of December 12, 2013 at 02:00 PM. A debriefing or feedback session will be provided upon request to bidders/offerors/suppliers who bid on the previous solicitation.

### 1. Security Requirement

There is no security requirement associated with the requirement.

### 2. Requirement

The Animal Cell Scale-Up Team at the National Research Council of Canada (NRC) has a requirement for a 200L working volume single use bioreactor system with one (1) cylindrical disposable bioreactor bag and outer support container, as per specification detailed at Annex A .

#### 2.1 Optional Requirement

The Bidder grants to Canada the irrevocable option to purchase two (2) additional Mass Flow Controllers (MFC). One calibrated for Air in DO control submerged aeration line. One calibrated for CO2 in pH control through overlay line. The option may only be exercised by the Contracting Authority and will be evidenced, for administrative purposes only, through a contract amendment.

The Contracting Authority may exercise the option within two (2) years of contract award by sending written notice to the Contractor at the prices stated at Annex B - Requirement.

### 3. Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

### 4. Trade Agreements

The requirement is subject to the provisions of the World Trade Organization Agreement on Government Procurement (WTO-AGP), the North American Free Trade Agreement (NAFTA), and the Agreement on Internal Trade (AIT)

## PART 2 - BIDDER INSTRUCTIONS

### 1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2014-03-01) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

## 1.1 SACC Manual Clauses

B1000T Condition of Material (2007-11-30)

## 2. Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

## 3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than ten (10) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

## 4. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the province of Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

## PART 3 - BID PREPARATION INSTRUCTIONS

### 1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

**Section I: Technical Bid ( two (2) hard copies), consisting of technical brochures/literature to verify compliancy and test data, if applicable.**

**Section II: Financial Bid ( one (1) hard copy)**

**Section III: Certifications (one (1) hard copy)**

If there is a discrepancy between the wording of the soft copy and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

## **Section I: Technical Bid**

In their technical bid, bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

### **1.1 Delivery**

Delivery must be completed by June 30, 2014.

### **1.2 Installation and Start-Up**

The installation and start-up of the Bioreactor is the responsibility of the vendor, and must be performed by vendor factory-trained, certified technical representative.

Start-up procedure will be performed (simulated) using RO1 water.

### **1.3 Training**

On-site user training for at up to two (2) operators for a period of up to three (3) days at the time of start-up is to be included in the price quoted. All travel and accommodation costs must be included in the lot price.

### **1.4 Service and Support**

1. The vendor must offer on site technical support for the system. This support must be available during normal business hours, Monday to Friday between 08:00 to 16:00. Response time for on site technical support must not exceed 48 hours following request.

2. Technical phone support, support via the Internet must also be included with the purchase. Response for service queries must be within 48 hours or less.

Also, provide the following with your bid:

- a) Location of available service facilities (after sales service and repair). List the service facilities closest to the destination.

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- b) Locations of available replacement parts for consumables to major components.

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### 1.5 Manuals

One copy of all available up to date operation and maintenance manuals in English and/or French for the proposed single use bioreactor system must be provided with each system.

### 1.6 Contacts

Bidders are requested to provide the following: Information pertaining to Article 5.3 Contractor Representatives under Part 6, Resulting Contract Clauses.

### 1.7 Spare parts List

The Bid should include a spare parts price list (unit and quantity prices) for all replacement parts and consumables for the bioreactor

The submitted price list is provided for price support purposes only. The Bidder hereby acknowledges that, terms and conditions submitted as part of price lists do not form part of the Contract and are superseded by PWGSC terms and conditions.

### Section II: Financial Bid

The bidder must quote a firm unit prices all inclusive Delivery Duty Paid (DDP), Montreal, Québec, Incoterms 2000, the Goods and Services Tax (GST) and/or the Harmonized Sales Tax (HST) extra, as applicable. Freight charges to destination and all applicable Customs duties and Excise taxes must be included.

### Section III: Certifications

Bidders must submit the certifications required under Part 5.

## PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

### 1. Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

## 1.1 Technical Evaluation

All proposals submitted shall be completed in full and provide all of the information requested in the Request for Proposal (RFP) detailed in the line item details to enable a full and complete evaluation. If the requirement is not addressed in the bidder's proposal, the proposal will be considered incomplete or non-responsive and will be rejected. The onus is on the bidder to provide all the information necessary to ensure a complete and accurate assessment.

### Factors for Evaluation

1. **PRICING BASIS (MANDATORY):** Prices must be firm, DDP Delivered Duty Paid.
2. **ABILITY TO MEET THE TECHNICAL REQUIREMENT (MANDATORY):**
  - a) **For Items Defined by Specifications:**  
The bidder must cross reference the mandatory technical criteria contained herein to their supporting technical documentation.
  - b) **Provision of Supporting Technical Documentation:**  
Supporting technical documentation must be provided with the bid at time of bid closing. Technical brochures or technical data **MUST** be provided to verify compliancy to the technical mandatory specifications.
3. **COMPLIANCE WITH THE TERMS AND CONDITIONS OF THIS REQUEST FOR PROPOSAL (MANDATORY)**
4. **FOR CANADIAN SUPPLIERS ONLY:** Please note that the requirements of the Federal Contractors Program for Employment Equity may apply - see herein. (MANDATORY if applicable)

## 1.2 Financial evaluation

A0220T      Evaluation of Price      2010-01-11

## 2. Basis of Selection

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price including the optional requirement will be recommended for award of a contract.

## **PART 5 - CERTIFICATIONS**

Bidders must provide the required certifications and related documentation to be awarded a contract.

The certifications provided by bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default in carrying out any of its obligations under the Contract, if any certification made by the Bidder is found to be untrue whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority may render the bid non-responsive or constitute a default under the Contract.

### **1. Certifications Required Precedent to Contract Award**

#### **1.1 Integrity Provisions - Associated Information**

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section 01 Integrity Provisions - Bid of Standard Instructions 2003. The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

#### **1.2 Federal Contractors Program for Employment Equity - Bid Certification**

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list ([http://www.labour.gc.ca/eng/standards\\_equity/eq/emp/fcp/list/inelig.shtml](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)) available from Employment and Social Development Canada (ESDC) - Labour's website.

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

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## PART 6 - RESULTING CONTRACT CLAUSES

### 1. Security Requirement

There is no security requirement applicable to this Contract.

### 2. Requirement

The Animal Cell Scale-Up Team at the National Research Council of Canada (NRC) has a requirement for a 200L working volume single use bioreactor system with one (1) cylindrical disposable bioreactor bag and outer support container, as per specification detailed at Annex A .

#### 2.1 Optional Requirement

The Contractor grants to Canada the irrevocable option to purchase two (2) additional Mass Flow Controllers (MFC) and one calibrated for Air in DO control submerged aeration line. Another one calibrated for CO2 in pH control through overlay line. The option may only be exercised by the Contracting Authority and will be evidenced, for administrative purposes only, through a contract amendment.

The Contracting Authority may exercise the option within two (2) years of contract award by sending written notice to the Contractor at the prices stated at Annex B - Requirement.

### 3. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual*

(<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

#### 3.1 General Conditions

2010A (2014-03-01), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

### 4. Term of Contract

#### 4.1 Delivery Date

All the deliverables must be received on or before (***to be filled in only at contract award***).

#### 4.2 Shipping Instructions - Delivery at Destination

Must be delivered DDP Delivery Duty Paid (Montreal, Quebec) Incoterms 2000 for shipments from a commercial contractor.

The Contractor will be responsible for all delivery charges, costs, and risks of transport, shipping insurance and customs clearance, including the payment of customs duties and taxes.

### 4.3 Performance validation Testing

Following delivery, installation and start-up, the proposed single use bioreactor system will have to successfully complete the following tests:

4.3.1 Temperature control performance test: The temperature control will be tested for set points of 15°C and 40°C at minimum and maximum working volume. RO1 water will be used for testing. The controller must work according to the essential specifications (section 2.3 of Annex A) over a 24-hours period for each set points and working volume conditions.

4.3.2 Agitation rate control performance test: During the testing period of test 4.3.1, the agitation rate control will be tested for a set point of 20 rpm for both working volume conditions. The controller must work according to the specifications (section 2.4 of Annex A).

4.3.3 pH control performance test: After completion of tests 4.3.1 & 4.3.2, the pH control will be tested for set points of 6.0 and 8.0 pH unit for both working volume conditions. The controller must work according to the specifications (section 2.8 of Annex A).

4.3.4 Dissolved oxygen control performance test: The culture will be inoculated and the DO control will be tested for set points of 10%, 40% and 80% of air-saturation for the provided control strategy. The controller must work according to the specifications (section 2.6 of Annex A).

## 5. Authorities

### 5.1 Contracting Authority

The Contracting Authority for the Contract is:

Paul Roy  
Public Works and Government Services Canada  
Acquisitions Branch  
Commercial Consumer Products Directorate  
11 Laurier Street, 6A2, Phase III  
Place du Portage, Gatineau, Quebec, K1A 0S5  
Telephone: (819) 956-6919  
Facsimile: (819) 956-3814  
E-mail address: paul.roy@tpsgc-pwgsc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

### 5.2 Technical Authority (*to be filled in only at contract award*)

The Technical Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work.

Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

### 5.3 Contractor's Representative (*to be filled in by the Bidder*)

The telephone number of the person responsible for :

#### General enquiries

#### Delivery Follow-up

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Telephone No. \_\_\_\_\_ Telephone No. \_\_\_\_\_

Facsimile No. \_\_\_\_\_ Facsimile No. \_\_\_\_\_

E-mail address: \_\_\_\_\_ E-mail address: \_\_\_\_\_

## 6. Payment

### 6.1 Basis of Payment - Firm Price

1. In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor shall be paid a firm price of \$ to be filled in at contract award, Goods and Services Tax or Harmonize Sales Tax extra, if applicable.
2. No increase in the total liability of Canada or in the price of the Work resulting from any design changes, modifications or interpretations of the Specifications, will be authorized or paid to the Contractor unless such design changes, modifications or interpretations have been approved, in writing, by the Contracting Authority prior to their incorporation in the Work.

### 6.2 Milestone Payments

Canada will make milestone payments in accordance with the following schedule:

- a) 90% of the total contract cost, payable within 30 days of delivery of the system at destination, and
- b) 10% of the total contract cost will be payable within 30 days of successfully completing the Performance Testing detailed at 4.3 of the Contract and final acceptance.

### 6.3 SACC Manual Clauses

H1001C

Multiple Payments

(2008-05-12)

## 7. Invoicing Instructions

The Contractor must submit invoices in accordance with the information required in section 10 of 2010A General Conditions - Goods (Medium Complexity).

Original copy to consignee with one copy to the **Contracting Authority**.

## 8. Certifications

### 8.1 Compliance

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing associated information are conditions of the Contract. Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the associated information, or if it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

## 9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the province of Ontario.

## 10. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) 2010A (2014-03-01) General Conditions - Goods (Medium Complexity);
- (c) Annex A, Technical specifications ;
- (d) Annex B, Requirement ;
- (e) the Contractor's bid dated (insert date of bid) \_\_\_\_\_

## **Annex A**

### **Technical specifications**

**1.0** The Animal Cell Scale-Up Team at the National Research Council of Canada (NRC), Montreal has a requirement for one (1) 200L working volume single use bioreactor system dedicated to the production of recombinant proteins and viruses using animal cell expression systems. The proposed single use bioreactor system must include one (1) cylindrical disposable bioreactor bag and outer support container. All necessary accessories for control and/or monitoring of temperature, pH, dissolved oxygen and agitation rate must be included. The proposed single use bioreactor system must comply with all essential specifications and requirements found in the bidding document.

## **2.0 Mandatory Technical Specifications**

**The delivered equipment must have the following specifications:**

### **2.1. The Single Use Bioreactor System:**

**2.1.1** The proposed single use bioreactor system must use stirrers like the ones used in continuous stir tank bioreactors.

**2.1.2** The single use bioreactor system must include the following components:

**2.1.2.1** One cylindrical disposable bioreactor bag: The bag must be supplied with agitator assembly (stirrer), sparger, filter inlet and outlet ports, plus ports for integration of sensor probes and line sets. The bag must be supplied sterile and ready-to-use. More specifically, the bag must minimally provide apertures for the following connections:

- 1)One (1) for base solution addition.
- 2)One (1) for medium addition.
- 3)One (1) for inoculum addition (seeding).
- 4)One (1) for overlay aeration.
- 5)One (1) for gas exhaust.
- 6)One (1) for bottom drain harvest.
- 7)One (1) for extra addition needs.
- 8)One (1) for submerged aeration (DO control).
- 9)At least three (3) side ports for temperature, DO and pH sensors.

### **Reference in Bid:**

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**2.1.2.2** The cylindrical disposable bioreactor bag: The bag must allow operating cell culture at working volumes between 50 and 200 liters.

### **Reference in Bid:**

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**2.1.2.3** One outer support container (or bagholder): The bagholder must be able to support the operation with the cylindrical disposable bioreactor bag up to  $\geq 200$  L.. The bagholder must be jacketed for temperature control via water circulation. The bagholder must also be:

- a. constructed with 304 L or better grade stainless steel.

- b. installed on mobile skid.
- c. equipped with a motor fixation device.

**Reference in Bid:** \_\_\_\_\_

**2.1.2.4** Control & monitoring unit: The control & monitoring unit must provide control and/or monitoring of at least the following culture parameters further detailed in the indicated sub-sections:

- Temperature (2.3)
- Agitation Rate (2.4)
- Overlay and submerged aerations (2.5)
- Dissolved Oxygen (2.6)
- pH (2.8)

**Reference in Bid:** \_\_\_\_\_

**2.2.** The control & monitoring unit must also include an operator interface to provide displays of the actual values of monitored parameters and to allow entries of desired set-point values for controlled parameters.

**Reference in Bid:** \_\_\_\_\_**2.3 Temperature control:**

- 2.3.1 The proposed single use bioreactor system must use the degree Celsius scale and must use a jacketed vessel for heating and cooling.
- 2.3.2 The bioreactor system must be able to maintain the culture temperature of the bioreactor to a desired set point within the range from 15°C to 40°C within a +/- 0.5°C deviation range.
- 2.3.3 The bioreactor's temperature controller must allow for set point entry to the 0.1°C accuracy.

**Reference in Bid:** \_\_\_\_\_**2.4 Agitation rate control:**

- 2.4.1 The proposed single use bioreactor system must include a motor, able to maintain the agitation rate of the bioreactor's culture to a desired set point within the minimal range from 20 to 100 rpm within a +/- 5 rpm deviation range
- 2.4.2 The bioreactor's agitation rate controller must allow for set point entry to at least the 5 rpm accuracy.

**Reference in Bid:** \_\_\_\_\_**2.5 Configuration of gas controllers for overlay and submerged aerations:**

The proposed single use bioreactor system must be equipped with 4 electronic Mass Flow Controllers (MFC) with the following specific configuration:

- a. One MFC calibrated for Air in overlay aeration.
- b. One MFC calibrated for CO<sub>2</sub> in submerged aeration.
- c. One MFC calibrated for O<sub>2</sub> in submerged aeration.
- d. One MFC calibrated for N<sub>2</sub> in submerged aeration.
- e. All MFC must be equipped with a solenoid valve to prevent gas leak when gassing is not required.
- f. The entry increment precision for each of the above MFC must be equal or better than 0.2 L/min.
- g. The accuracy of each of the above MFC must be equal or better than  $\pm 1\%$  of full scale.

**Reference in Bid:** \_\_\_\_\_**2.6 Dissolved oxygen control:**

- 2.6.1 The proposed single use bioreactor system must be equipped with two (2) DO probes and be able to maintain the dissolved oxygen concentration (DO) of the culture in the bioreactor vessel to a desired set point within the minimal range from 0 to 100% of air-saturation and within a  $\pm 5\%$  deviation range.
- 2.6.2 The bioreactor's DO controller must allow for set point entry to at least the 1% air-saturation accuracy.

**Reference in Bid:** \_\_\_\_\_

- 2.7 The DO sensor measurements(s) must be inside the cylindrical disposable bioreactor bag.

**Reference in Bid:** \_\_\_\_\_

- 2.8 pH Control: The proposed single use bioreactor system must be equipped with two (2) pH probes and be able to maintain the pH of the culture in the bioreactor vessel between 6 and 8 pH unit within a  $\pm 0.1$  pH unit deviation range.

**Reference in Bid:** \_\_\_\_\_

- 2.9 The pH sensor measurement(s) must be inside the cylindrical disposable bioreactor bag.

**Reference in Bid:** \_\_\_\_\_

- 2.10** The proposed single use bioreactor system must have at least three (3) fixed-speed peristaltic pumps for liquid addition, each equipped with a pump head.

**Reference in Bid:** \_\_\_\_\_

- 2.11** The proposed single use bioreactor system must be equipped with load cells.

**Reference in Bid:** \_\_\_\_\_

- 2.12** Electrical/electronic module(s): Power supply must be 208VAC; 60Hz; 3 Ph. and/or 208VAC; 60Hz; 1 Ph., and/or 110-120 VAC; 60Hz

**Reference in Bid:** \_\_\_\_\_

- 2.13** Dimensions (or foot print) of the proposed bioreactor must be not larger than 2.0 m (W) x 2.0 m (L) and 2.5 m (H).

**Reference in Bid:** \_\_\_\_\_

## Annex B Requirement

Bidders must fill out the following:

	Qty	Unit Price
<b>A)</b> Single Use Bioreactor System in accordance with the mandatory specifications detailed at Annex A. Delivery, Installation, start-up of the system and training must be included in the lot price.	01	_____ \$
<b><u>Optional Requirements:</u></b>		
<b>B)</b> Mass Flow Controllers (MFC) calibrated for Air in DO control submerged aeration line	01	_____ \$
<b>C)</b> Mass Flow Controllers (MFC) calibrated for CO2 in pH control through overlay line	01	_____ \$
<b>Total (A+B+C):</b>		_____ \$

The options may only be exercised by the Contracting Authority and will be evidenced, for administrative purposes only, through a contract amendment.