

	<b>INDIAN INSTITUTE OF TECHNOLOGY MADRAS</b> <b>Chennai 600 036</b>  Telephone: (044) 2257 4159 E-mail: raghur@iitm.ac.in	
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Prof. Raghunathan Rengasamy  
Project Coordinator

Ref: CHE/RAGN/2020/1150/SPLX  
Dated: 14.05.2020

Limited Tender No: CHE/RAGN/2020/1150/SPLX

**Due Date: 28.05.2020, 3:00pm**

**Pre-Bid meeting: - Not required.**

**Technical Bid opening meeting on Due Date: 28.05.2020, 4:00pm**

Dear Sir/Madam,

On behalf of the Indian Institute of Technology Madras, offers are invited for the supply of **“SYRINGE PUMPS WITH SOFTWARE SUPPORT”** conforming to the specifications given in **(Annexure-I)**.

**Terms and Conditions of Limited Tender**

1. **Preparation of Bids:** - The Limited tenders should be submitted under **Two bid system** (i.e.) Technical- and -Financial bid.
2. **Delivery of the tender:** - The tender shall be sent to the below-mentioned addresses either by post or by courier (duly sealed and super scribed on the envelope with the reference No and due date) so as to reach the following address before the due date and time specified in our Schedule:  
**Prof. Raghunathan Rengasamy,**  
**Department of Chemical Engineering,**  
**IIT Madras**  
**Chennai - 600 036**
3. **Price:** - The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges to **Department of Chemical Engineering**.
  - a. The offer/bid should be exclusive of taxes and duties. The percentage of tax & duties should be clearly indicated separately. IIT Madras is eligible for concessional GST and relevant certificate will be issued.
  - b. In case of import supply, the price should be quoted without custom duty. IIT Madras is exempted from levy of IGST on Imports and eligible for concessional custom duty (not exceeding 5%) and the price should be quoted on EX-WORKS and CIP (stating the Cost, Insurance, Freight separately) and indicating the mode of shipment.
4. **Terms of Delivery:** - The item should be supplied to our Departments as per Purchase Order. In case of import supply, the item should be delivered at the cost of the supplier to our Institution. The Installation/Commissioning should be completed as specified in our important conditions.
5. **Catalogue:** Original catalogue (not any photocopy) of the quoted model duly signed must accompany the quotation in the Technical bid
6. **Late offer:** - The offers received after the due date and time will not be considered
7. **Payment:** - No Advance payment will be made for Indigenous purchase. However, 90% Payment against Delivery and 10% after installation are agreed to wherever the installation is involved. In case

of import supplies the payment will be made only through 100% Letter of Credit i.e. (90% payment will be released against shipping documents and 10% after successful installation wherever the installation is being done).

8. **Advance Payment:** - No advance payment is generally admissible. In case of specific percentage of advance payment is required, the Vendor has to submit a Bank Guarantee from a Nationalized Bank of India equal to the amount of advance payment.
9. **On-site Installation:** - The equipment or machinery has to be installed or commissioned by the successful bidder within number of days (as prescribed by PI's) from the date of receipt of the item at site of IIT Madras.
10. **Warranty/Guarantee:** - The offer should clearly specify the warranty or guarantee period for the machinery/equipment.
11. **Validity:** Validity of Quotation not less than 60 days from the due date of tender
12. **Technical Bid Opening:** The technical bid will be opened on **28.05.2020 4:00pm at the Department of Chemical Engineering, IIT Madras** and the **financial bids** of those tenders who are technically qualified will be opened at a **later date under intimation to them.**
13. **Performance Security:**-The successful bidder should submit Performance Security for an amount of 5% of the value of the contract/supply within 21 days from the issue of work/purchase order. The Performance Security should be furnished in the form of an Account Payee DD / FD Receipt from the commercial bank (or) Bank Guarantee from any nationalized bank in India.
14. **Accept /Reject:** IIT Madras reserves the full right to accept / reject any tender at stage without assigning any reason.
15. **Settlement of Disputes:** Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within the city of Chennai in Tamil Nadu.
16. **Risk Purchase Clause:** - In the event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from other sources on the total risk of the supplier under risk purchase clause.
17. **Unsolicited offers:** "This notice is being published **for information only** and is not an open invitation to quote in this limited tender. Participation in this tender is by invitation only and is limited to the selected registered suppliers. Unsolicited offers are liable to be ignored. However, suppliers who desire to participate in such tenders in future may apply for registration as per procedure." The Website for Registration of vendors is <http://web.iitm.ac.in/supplier/> and the mail address for queries is "[workflow@rt.iitm.ac.in](mailto:workflow@rt.iitm.ac.in)".

Yours sincerely,

**Prof. Raghunathan Rengasamy,  
Department of Chemical Engineering,  
IIT Madras  
Chennai - 600 036**

**TECHNICAL SPECIFICATION**

**Scope of supply:**

Single/ multiple syringe pumps for independent and simultaneous operation of 4 syringes and required software support.

**Quantity:**

Single/ multiple syringe pumps: **Minimum number required to serve the purpose detailed in the technical specifications.**

Software for operating from computer: **1 No.**

High precision glass syringe of largest mountable volume (with tubing connector) compatible with the quoted pump: **4 Nos.**

High precision glass syringe of smallest mountable volume (with tubing connector) compatible with the quoted pump: **4 Nos.**

**Technical Specifications:**

1. Pump should be able to **operate 4 syringes independently and simultaneously** (If single pump cannot do this, multiple number of pumps may be quoted). Independent control means that flow in one syringe does not depend on the flow in other syringes. In other words, there should be separate pushing mechanism for each syringe.
2. Both **infusion and withdrawal** options should be available with all the pumps.
3. The pump should be able to maintain a minimum flow of **20 picoliters /minute.**
4. The pump should be able to maintain a maximum flow of at least **100 milliliters/minute.**
5. If there are multiple pushers available on a pump, there should be at least one pusher which can apply a maximum linear force greater than or equal to **290 Newtons.**
6. If there are multiple pushers available on a pump, all the pushers should be able to apply a linear force greater than or equal to **200 Newtons.**
7. All pumps should be compatible with softwares such as **C, C++, MATLAB, PYTHON, LAB VIEW** etc. For example, starting/ stopping the pump, setting up flow rates and flow rate profiles should be possible from the commands from the above software.

8. In order to use the pumps for different applications, we expect the availability of **library support** (list of commands for operating the pump through COM port or ethernet).
9. Each pump should be able to **communicate with other pumps** for synchronization purpose.
10. All pumps should have the facility to mount syringes having volume from **1 ml to 50 ml**.
11. Facility for automatic refilling without removing syringe (without sucking air) using a **3/2-way valve at the outlet of syringe is highly recommended**.
12. Also, include **high precision glass syringes of largest mountable volume and smallest mountable volume (each 4 numbers)** compatible with the pump in the quote.
13. Quote should be inclusive of any other items, which are essential for operating all the pumps from computer.
14. The warranty period for the equipment should be **at least a year**.
15. If all the specifications from (1) to (14) are satisfied by one or more bids, then, only those bids will be technically qualified. If no bid satisfies specification (11), and at least one bid satisfies all other specifications, then, specification (11) will not be considered for qualifying the technical bid.

We would like to receive a **table indicating conformance or not for the specifications** and details as given below. **Without this, the quotation will be rejected.**

<b>Serial number</b>	<b>Query</b>	<b>Response</b>
<b>1.</b>	Number of syringes that can be mounted on single syringe pump (Specify the number)	
<b>2.</b>	If multiple numbers are possible in (1.), is independent operation of multiple syringes possible? (Yes/No)	
<b>3.</b>	Number of pump modules required to independently operate 4 syringes (Specify the number)	
<b>4.</b>	Both infusion and withdrawal options available for all the pumps? (Yes/No)	
<b>5.</b>	Minimum flow rate (Specify the value and unit)	
<b>6.</b>	Maximum flow rate (Specify the value and unit)	
<b>7.</b>	Fluctuation in the flow	
<b>8.</b>	Maximum force supplied by the pump (Specify value in Newtons)	
<b>9.</b>	Volume of smallest mountable syringe (Specify the volume of the syringe)	
<b>10.</b>	Volume of largest mountable syringe (Specify the volume of the syringe)	
<b>11.</b>	Can the pump be operated from computer? (Yes/No)	
<b>12.</b>	Bidirectional communication interface with a computer – USB and/or RS-232 (Specify compatibility- USB, RS-232 or both)	

<b>13.</b>	Can the pump be operated from the following softwares?	
	C (Yes/No)	
	C++ (Yes/No)	
	MATLAB? (Yes/No)	
	PYTHON? (Yes/No)	
	LABVIEW? (Yes/No)	
<b>14.</b>	Specify the operations possible from the above platforms (e.g. Start/Stop, Set the flow rate, Set flow rate profile etc)	
<b>15.</b>	Is there facility for automatic refilling of syringe using a 3/2-way valve or any other mechanism? (Yes/No)	
<b>16.</b>	If Yes for (15), give details.	
<b>17.</b>	Operating voltage (Specify the voltage)	
<b>18.</b>	Warranty period of the machines?	
<b>19.</b>	Do you have customer support in India? (Yes/No)	