

**Government of India
Bhabha Atomic Research Centre
Post Irradiation Examination Division, Radiological Laboratories
Trombay, Mumbai 400 085**

Tel: 25594047, Fax: 2550 5151

Ref: PIED/AB/2022/ 256

06.07.2022

To,

Sub: Annual Maintenance Contract of Master Slave Manipulators

Dear Sir,

Please send us your lowest quotation for the Annual Maintenance Contract of Master Slave Manipulators as per the technical specification and terms and condition given below:

Scope of work:

1. Annual Maintenance Contract of 36Nos.Master Slave Manipulators. The period of contract shall be **twelve months** from the release of work order.
2. Master-Slave Manipulators (MSMs) are the remote handling tools in hotcell. An MSM consist of two arms: the master arm and the slave arm. The slave arm is placed in the hotcell and the master arm in operating area. The arms, which are placed on either side of a thick concrete wall, are connected at the top through a through-tube. From the operating area, when the operator moves the handgrip of the master arm, the motion gets reproduced on the tong of the slave arm in the remote area. Each MSM assembly has six independently controlled joints for arbitrary positioning and orienting an object. Power is transmitted from the master arm to the slave arm through a set of stainless steel wire ropes, tapes and a parallelogram mechanism. To reduce the operator's effort, the manipulator joints are mechanically balanced. The first three axes of the manipulator are provided with electrical indexing motions. Indexing increases slave arm range, improves operator ergonomics, improves viewing and helps in keeping the slave arm horizontal, before inserting it into the hotcell or withdrawing it from the hotcell.
3. MSM assembly need following types of preventive maintenance
 - Electrical actuators and motor maintenance
 - Through Tube bearing maintenance
 - Hand Grip Maintenance
 - Guide Tube maintenance
 - Providing tension in tapes and ropes
 - Control Panel Maintenance

Following types of breakdown maintenance

- Breaking of tapes and ropes
 - Azimuth wire comes out
 - Actuators breakdown
 - Removal of MSM assembly
 - Installation of MSM assembly
 - Control Panel faults
 - Limit switches malfunctioning
 - Motion locks malfunctioning
4. Contractor shall arrange adequate man power (minimum one machine fitter ,One electrician and Two Helper per day) and one supervisor on daily basis. Man power requirement will vary as per work load.
 5. Contractor shall arrange all Personal Protective Equipments (PPE) like Boiler suit, Half Mask Respirator with HEPA filters, Cotton gloves, Surgical Gloves, Postmortem Gloves, PVC shoe cover, duster, cotton head cap etc. for all working personnel. Department will not provide any PPE for this work.

Important Note:

1. We will accept quotations from the contractors those who have previous experience of work in radioactive areas other quotation will be rejected. Documentary proof of previous experience of work in radioactive areas shall be attached with quotation.
2. Since the work is in radioactive area, all working personnel shall strictly follow the instruction of health physicist and dept. supervisor. The contractor has to arrange medical fitness certificate for all the working personnel. TLD and Dosimeter will be issued to all working personnel.
3. Since the scope of work involves site work, you shall obtain clearance from police and CID for all staff who may be deputed for site work at PIED, RLG, BARC. This is mandatory and the responsibility of obtaining such a clearance is within your scope of work.

Please note the following :

1. The period of contract shall be twelve months from the release of work order.
2. Service Charges accepted shall be firm during the currency of the Contract.
3. Half yearly payment will be done. No advance payment will be made
4. The sealed quotations shall reach the office of the Head PIED, New Hot Cells Facility, RLG, BARC, Mumbai – 85 on or before **20.07.2022 by Speed Post of Indian postal services.**
5. Please address your offer to: **Anil Bhandekar, SO/G, Post Irradiation Examination Division, RLG, BARC, Trombay, Mumbai-400 085.**
6. The quotations are to be sent in a sealed envelope with the following information marked on top of the envelope: "Quotation for Annual Maintenance Contract of Master Slave Manipulators"
7. Offers sent by telegram, telex, fax or e-mail will **not** be considered.
8. All taxes should be mentioned clearly.
9. Quotation should be in the printed letter head /quotation format which should consist of Sales Tax Registration Number, PAN Number of the firm, Service Registration Number, etc.
- 10. Quotation shall be signed by proprietor or authorized person and affix company seal.**
11. Computer generated quotation form will not be accepted.
12. Income Tax @2% surcharge on IT and other cess as applicable will be deducted at source from your bill

Yours sincerely,



ANIL BHANDEKAR
Scientific Officer
Government of India
P.I.E. Division, B.A.R.C.
Trombay, Mumbai - 400 085.

Anil Bhandekar
SO/G, PIED