



Government of India
Bhabha Atomic Research Centre
Nuclear Recycle Group
Process Development Division

Ref: PSDD/MF/TM/2022/ 37498

Date: 12/04/22

Sub: Design, fabrication and supply of customized movable impulse PVC sealing machine (1 no.) with aluminium electrode assemblies as per the attached technical specification without any free issue material.

Dear,

You are requested to submit your quotation in sealed envelope for the above mentioned job. The material should confirm to our specifications. The reference no. given above should be clearly mentioned on the sealed envelope.

Due consideration shall be given to the following aspects while submitting your offer:

1. Quotation shall be printed on letter head in quotation format which should consist of GSTN, PAN Number of the firm etc.
2. Quotation shall be completed in all respects with regard to specifications, validity of offer etc.
3. Cost breakup may be provided as:

Sr. no.	Item	Qty.	Rate	Price
1	Impulse PVC Sealing Machine	1 no.		
Other charges				
Total Cost				

4. NIT will be issued to eligible tenderers from 19/04/2022 to 29/04/2022.
5. Sealed quotation shall reach the following address on or before 04/05/2022 by 14:00 hr.

Trushit Makwana
SO/E, PSDD,
Room no. 204, CDCFT, WIP Complex,
BARC, Trombay, Mumbai-400 085
Tel: 022-25591392

6. Taxes, duties and other charges applicable, if any, shall be indicated separately.
7. Quotation shall be sent by speed post.

8. The work shall be completed within four calendar months from issue of work order.
9. The offer shall be valid for a period of thirty days and in case of placement of the work order, shall remain firm till the completion of the work.
10. The contractor may visit the site to fully understand the scope of the work.


12/04/22
Trushit Makwana
SO/E



Technical Specification

A. Scope of work:

Design, fabrication and supply of customized movable impulse PVC sealing machine (1 no.) with aluminium electrode assemblies without any free issue material.

B. Brief description:

The impulse heating sealing machine with flexible aluminium electrode assembly is to be used for sealing of PVC bags, sheets etc. in radiochemical laboratories. The control module consists of impulse generator of approximately 1kW power coupled to aluminium electrode assembly where the PVC material to be sealed will be held under mechanical pressure. Control module shall have 8m of power cable. The sealing in PVC material will be achieved by impulse based heating through two or more layers of PVC material (0.2 – 0.8 mm). Machine should have rectifier protection. Aluminium electrode assembly shall be handy, light in weight and will be connected to control module through flexible cable (4m) having high temperature and electrical insulation properties. Both sealing electrodes shall have flat mirror surface and should perfectly overlap with each other with uniform pressure. The effective seal size should be minimum 400 mm (L) x 12mm (W). Both the electrodes shall be firmly covered with a suitable heat & electrical insulation sheet. Sealing operation shall be free from spark and arc on the electrode assembly and also should not affect normal operation of other surrounding electronic equipment. For various jobs two electrodes are to be provided. One of 'I' shape to carry linear sealing and other of 'T' shape for traverse sealing.

C. General:

1. The control module shall work on 230VAC, 50Hz single phase power supply. It should have step-up / step down type high voltage iron core transformer, high voltage rectifier or solid state power supply to generate electric impulse. This signal shall be coupled to aluminium electrode assembly having electrode seal surface. All the items of control module and electrode assembly shall have smooth surface finish and there shall not be any sharp edges & corners. Maximum output voltage shall be mentioned suitably.
2. **Operation:** PVC material to be sealed is held between the two electrodes. On pressing push button on electrode assembly, the control module generates impulse signal for the time period as long as the push button is pressed or till seal timer is reset. Indicator shall be given for safe unlock of tongs after set cooling period.

- 3. Safety interlocks:** The impulse generator shall trip and stop working on following abnormal conditions.
- If earth is open
 - If sealing current exceeds set limit
 - Over voltage
 - Impulse will not be generated, when press push button sensor is giving press on signal

4. Indicators and Control on Front panel of impulse generator

- ISI graded MCB for Mains power On/Off and its indication by LED based panel lamp (Green)
- ISI graded MCB for High Voltage On/Off
- LED based panel lamp (red) for indication of Earth Fault (open earth)
- LED based panel lamp (red) for indication of Sealing On
- Three way rotary selector switch on front panel for selecting sealing voltages
- Analogue ammeter (0- 60 A DC) on front panel for indication of seal current.
- Timer to set heating and cooling time (selectable)
- Electro-mechanical counter (0-999999) to count number of sealing cycles
- Digital AC voltmeter for indication of input mains (line) voltage
- Power control for continuous adjustment of sealing power
- Over load control for continuous adjustment of seal current from 0 to 5 A. Machine shall trip on crossing the set limit
- Fuse holders for Mains and High Voltage
- Circuitry of control module shall be assembled on a single electronic card size approximately 200mm x 150mm with detachable edge connectors for ease of maintenance.

5. Control module:

Enclosure shall be fabricated out of MS angle of size 45mm x 45mm x 5mm with side panels of 16 SWG MS sheet. Bottom panel of the module should be provided with perforation for ventilation inlet. It can be of holes of approximately 5mm with 5mm pitch between adjacent holes on MS sheet of 16 SWG. Front panel should be removable hinged type made out of MS sheet of 16SWG with cut-outs to be provided for mounting of controls and indicators. All side panels except front panel shall be made of aluminium sheet of 15 SWG and all panels should be powder coated with blue colour. Top panel of the enclosure should detachable and to be fabricated out of SS304 sheet of 20 SWG. The control module should be provided with Push Pull handle and 04 nos. of heavy duty, ball bearing, PVC shoe type caster wheels (dia.4 inch). Proper ferruling, lugging and no loose connection shall be ensured for internal electrical wiring. Suitable insulation shall be provided on HV circuit.

6. Aluminium electrode assembly:

This shall be spring loaded 'I' shape / 'T' shape assembly with adjustable pressure for sealing operation. The tong assembly shall consist of the following parts:

- a. Top Channel with electrode: The channel shall be fabricated with extruded & double powder coated (blue colour, glossy finish) aluminium channel. The electrode shall be fabricated with solid aluminium block and shall be fitted in the top channel containing heating element using SS roller washer. The top channel shall be fitted with suitable push button (push to On).
- b. Bottom Channel with electrode: The channel shall be fabricated with extruded & double powder coated (blue colour, glossy finish) aluminium channel. The electrode shall be fabricated with solid aluminium block and shall be fitted at the bottom channel with heating element.
- c. Type of heating element shall be mentioned.
- d. Both the electrodes shall be covered with cotton tape and teflon glass fibre adhesive sheet. Teflon housing shall be provided for electrical isolation. The electrode surface shall have flat mirror surface finishing and perfectly overlap the electrodes.
- e. Cable supporting spring assembly: The spring shall be of expansion type & shall be fabricated out of spring steel of diameter suitable to cables. The cable supporting block shall be fabricated out of aluminium. Necessary mounting nut bolts of brass shall be used for mounting this assembly on bottom channel.
- f. Tension adjusting spring assembly: The spring shall be of compression type & shall be fabricated out of spring steel of suitable diameter.
- g. The unit should be provided with necessary tool kit for smooth operation and minor maintenance.
- h. The entire electrode assembly shall be as light as possible for easy handling.
- i. The assembly shall be easily cleanable and detachable from the machine and should have minimum two meter of flexible Teflon insulated Teflon sheathed coaxial cable with minimum 90% Tin coated copper double shielding.

D. Pre-delivery inspection

Pre-delivery inspection of all items shall be carried out at the supplier's place. Necessary tools and equipment required to carry out the same shall be arranged by the contractor.

E. Acceptance criteria:

Satisfactory performance during functional testing at user's site.

F. Drawings and Documents to be provided:

- a. Wiring diagram with all details of components used
- b. Fabrication drawing with detailed dimensions
- c. Test certificate
- d. Instruction manual

G. Packaging & Delivery:

- a. The finished product shall be thoroughly cleaned and dried before packaging for shipment. It shall be packed in wooden crate with weather proof packaging and shall be properly secured inside the packaging by soft material like foam or thermocol to prevent transit damages. Necessary indicators such as "Fragile", "This side up" etc. shall be marked in bold fonts on the package. The package shall have provisions for handling by fork lift and also it should have hooks provision. Any additional method/component required for the safe transport of the product may be provided.
- b. A nameplate shall be affixed on the machine at a suitable location containing relevant information of the machine as provided by Purchaser.
- c. The machine shall be dispatched to ASO, WMZ Stores, BARC, Trombay after obtaining a Shipping clearance from the Purchaser. The fabricator shall be fully responsible for the safe delivery at their destination and fabricator shall satisfy the Purchaser that adequate measures have been taken for the same.

H. Guarantee / Warranty:

The finished product shall be guaranteed for material and workmanship for a duration of 1 (one) year from the date of acceptance by BARC.

Trushit
11/04/22
Trushit Makwana
SO/E, PSDD