

M-Type Dispenser Cathode Technology

Dispenser Cathodes are the source of electron beam for various vacuum electron devices such as Travelling Wave Tubes, Klystrons, Magnetrons and Backward Wave Oscillators etc. The basic requirements of a conventional dispenser cathodes are uniform emission over the surface, low Barium evaporation rate, higher zero field emission density and long life. The size shape and the zero field emission density requirement varies depending on the application. These cathodes are heated indirectly hence optimized heater design and heater potting is critical. Vacuum grade refractory materials like Molybdenum, porous Tungsten, Tungsten-Rhenium alloy material for heater wire and Moly-Rhenium foils are some of the materials used for developing the cathode. Dimensional tolerances, cleanliness during the development also plays major role in the performance of the cathode. MTRDC has successfully established the "M-type Dispenser Cathode" technology and developed cathodes of various sizes ranging from 0.8mm diameter to 30mm diameter. More than 15A per sq.cm current density was achieved at operating temperature of 1050°C. Several of these cathodes were incorporated in various microwave tubes and successfully proved their performance. The technology is available for defence/industrial application.

Interested industries are requested to forward their Expression of Interest (EoI) (with attachments of supporting documents) to Centre Head, MTRDC with a copy to Director DIITM, DRDO HQ (without attachment) on following address:-

The Centre Head
Microwave Tube Research & Development Centre (MTRDC)
Near BEL, North Gate, Jalahalli, Bangalore - 560013
Phone No – 08028381831
Fax No – 08028381750
[Email - director.mtrdc@gov.in](mailto:director.mtrdc@gov.in)

Copy to

The Director
Directorate of Industry Interface & Technology Management (DIITM)
Room No 447, DRDO Bhawan, DRDO HQrs, Rajaji Marg, New Delhi – 110011
Phone: 011-23013209/ 23015291
Fax: 011-23793008
Email: [diitm\[dot\]hqr\[at\]gov\[dot\]in](mailto:diitm[hqr[at]gov[dot]in)

All Industries interested in seeking ToT are requested to furnish details in the format given in Part-1 & Part-2 below. The list of documents to be attached is provided in Annexure – I. Kindly provide the reference of page no. of supporting document in the relevant field of form.

PART-1

General Information

(Please enclose documents in support of information provided)

1	Name of the Technology requested for Technology Transfer (Technology name and concerned Lab, Category)	
2	Name of the industry/ organization	
3	Complete Address and other details	
	Registered Office State Phone No Fax Email Website	
	Factory State Phone No Fax Email Website	
4	Point of Contact Name Designation Address Mobile No Ph No Email ID	
5	NAME OF CMD/ MD /PARTNERS/ PROPRIETOR/ etc Name Designation Address Mobile No Ph No Email ID	
6	Date of Incorporation of company	
7	Foreign Direct Investment in company (if any in %)	
8	Shareholding pattern	
9	Turn over as per Audited Balance Sheet for the preceding three years. Year _____ Year _____ Year _____	
10	Annual budget for R&D during last three years (if any) Year _____ Year _____ Year _____	
11	Income Tax returns for the preceding three years period	

	Year _____ Year _____ Year _____	
12	Nature of company DPSU, Private Limited, Public Limited, Partnership, Proprietary, Ex- Serviceman Unit	
13	Category of industry Large Scale, Medium Scale, Small Scale, Micro, Startup	
14	MSME Registration No	
15	Certificates of registration as a manufacturing unit, if any.	
16	If Startup, DPIIT Registration No	
17	UDYOG AADHAR No	
18	PAN Number	
19	Details of Industrial license for defence manufacturing issued by DPIIT (if any)	
20	Details of PESO license (if any)	
21	GST Number	
22	Nature of business Manufacturing/ Sole Selling or Authorized Agent/ Assembler/ Traders/ Dealer/ Processor/ Repacker/ Others	
23	Details of current products and services Products and services Supplied (please specify Govt/ Domestic market/ Export)	
24	Record of past performance (e.g., Supply orders executed against of Ministry of Defence orders, Public Sectors and Paramilitary Forces, if any).	
25	Details of registration with NSIC / SSI, DGS&D, other Defence Department, other Govt. Dept, membership of FICCI/ASSOCHAM/CII or other Industrial Association (Attach relevant copies of registration letters)	
26	Have you already taken any technology from DRDO (If yes, give details attaching separate sheet) Name of the Technology, Lab, Year, License number & Status	
27	ISO/ ISI certification or any other certification (If yes, give details)	
28	Relevant clearances form the authorities/ ministries (if any)	
29	Capacity and capability to undertake developmental work and to accept attendant financial and commercial risks.	
30	Capacity/capability to market the product through the marketing network, sales and service network, reliability to maintain confidentiality.	

PART-2

Infrastructure and other Information

1	Total area of factory	
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	Covered (m ²), Uncovered (m ²), Bonded space available (m ²)	
2	Ownership of factory Self-owned, partnership, rental	
3	Electric power Sanctioned Installed Standby (if any)	
4	Availability of adequate infrastructure (List of machines and their production capacities) and technical expertise	
5	Name of bank & A/c No Name of bank A/c type A/c no Address of the bank Phone: Email:	

6 Details of current products:

S.No	Type	Description	Licensed/installed capacity	Annual production for preceding 3 years

7 Details of foreign collaboration, if any

S.No	Product	Name and address of collaborator	Year	Remarks

8 Details of products developed for services

S.No	Nomenclature of stores	Order No. and date	Remarks

9 Please give details of important facilities & infrastructure as per following format for:

- Production
- Unconventional, special m/c
- Testing & quality control facilities

S.No	Description of m/c	Make & model	Qty	Date of purchase	Remarks

10 Furnish the following details with relevant certificates and documents

- R&D facilities available :
- Inspection quality control of raw material components :
- Assistance from central agency for testing / calibration etc. :

(d) laboratory and drawing office facility

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11 Principal customers:

S. No	Name & address	S.O No and date	Date of last supply	Products supplied	Value

12 Future plans (if any) in respect of expansion programme/ installation of additional machines/ test facilities etc.

13 Name of the technology requested for transfer

(give self-assessment of your capability to absorb the technology)

14 Details of employee as on date on firm's pay roll

PERMANENT				
Category	Post Held	Number	Qualification	Total Service
Technical	Prod. Manager Q.C. Manager Supervisor Testing Staff (QC) Skilled workers Unskilled workers, etc			
Administrative	Purchase Manager Accounts Officer Office Superintendent Clerical Others, etc			

TEMPORARY				
Category	Post Held	Number	Qualification	Total Service
Technical	Prod. Manager Q.C. Manager Supervisor Testing Staff (QC) Skilled workers Unskilled workers, etc			
Administrative	Purchase Manager Accounts Officer Office Superintendent Clerical Others, etc			

DECLARATION :

I / we confirm that the information furnished in Part 1 & 2 above is correct. In the event of any information given by me / us is found incorrect / false at any time, I / we understand our EoI for ToT will be cancelled/ rejected without notice, beside any other appropriate action against me / us.

Industry seal

Authorized signatory
Name(s) in capital
Designation and seal of
authorized signatory

Date: Place:

List of Supporting Documents to be Attached with EoI

- (a) Memorandum and Articles of Association (Should be incorporated as per Indian Companies Act, as amended time to time)
- (b) Certificates of registration as a manufacturing unit, if any.
- (c) Audited Balance Sheet for the preceding three years.
- (d) Income Tax returns for the preceding three year period
- (e) Details of shareholding/ownership pattern especially foreign partners/ shareholders, foreign employees, directors, etc. The company must adhere to the prevailing Govt of India policies and regulations on Foreign Direct Investment (FDI)/DIPP norms as applicable.
- (f) Annual budget for R&D during last three years.
- (g) Numbers and details of IPR or patents, etc., held by the company.
- (h) Number of technically or professionally qualified personnel.
- (i) Record of past performance (e.g., Supply orders executed against of Ministry of Defence orders, Public Sectors and Paramilitary Forces, if any).
- (j) Availability of adequate infrastructure (List of machines and their production capacities) and technical expertise.
- (k) List of Testing and Support equipment's
- (l) ISO/ ISI certification or any other certification
- (m) Relevant clearances form the authorities/ ministries (if any)
- (n) Capacity and capability to undertake developmental work and to accept attendant financial and commercial risks.
- (o) Capacity/capability to market the product through the marketing network, sales and service network, reliability to maintain confidentiality.
- (p) PESO and DPIIT license for explosive handling if ToT is for high energy Material, explosives, propellants, and component/ system dealing with it etc.
- (q) Under taking form company seeking ToT that none of its Directors, Independent Directors, non-executive Directors, Key management personnel are involved in any corrupt practices, unfair means and illegal activities.
- (r) Details of the industrial license for defence manufacturing be provided by the industry seeking ToTs.
- (s) Duly filled Application cum Industry Assessment Form (as per **annexure** attached)