

**INTEGRATED HEADQUARTERS OF MINISTRY OF DEFENCE (NAVY)**  
**DIRECTORATE OF AIR PROJECTS AND PLANS (DAPP)**

**INVITATION FOR EXPRESSION OF INTEREST (EoI)**

**INDIGENOUS DESIGN, DEVELOPMENT AND**  
**MANUFACTURE OF THREE PHASE STATIC INVERTER**

File No. AP/1611/MAKE-II/SI

21 Feb 19

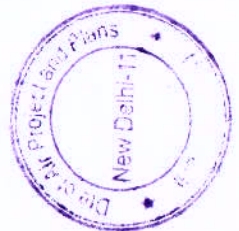
**Reference** : Defence Procurement Procedure - Chap III - A of DPP 2016

**Appendices & Annexure:**

- Appendix A** : Indigenous Content Aspect
- Appendix B** : IPR of Government
- Appendix C** : Association of Persons Agreement
- Appendix D** : Evaluation of Technical Capability Criteria
- Appendix E** : Information Performa/ Additional Information
- Appendix F** : Certificate.
- Appendix G** : PSQRs of Three Phase Static Inverter

**Introduction**

1. Indian Navy has been focusing on developing indigenous platforms, equipment and systems towards achieving enhanced self-reliance. This Expression of Interest (EoI) invites responses from eligible Indian Companies for project '**Indigenous Design, Development and Manufacture of Three Phase Static Inverter**' of ELTA radar EL/M-2022A (V) 3 MPR (Maritime Patrol Radar) System here and after referred to as '**Project Three Phase Static Inverter**' for Indian Navy. The present proposal for development of Three Phase Static Inverter under 'Make II' sub category of the 'Make' category. The project is envisaged to engage in-house industries to participate in Make in India Initiative and thereby decreasing the dependence of Indian Navy on foreign firms for important subsystems which will go a long way in enhancing self-reliance capabilities of the Navy. The Ministry of Defence (MoD), Govt of India, shall own Project Three Phase Static Inverter. The information regarding the project will be shared strictly on 'Need to Know' basis. The prototype (**Qty 01**) development of three phase static inverter has been approved as 'Make II' category project. Subsequent procurement will be under the '**Buy (Indian-IDDMM)**' category. **This project is reserved for MSMEs as stipulated in Para 7 of Chapter III-A of DPP 2016.** In case no MSME responds, then the proposal of other firms will be considered for evaluation.



## Objective

2. The objective of this EoI is to seek responses from eligible Indian industries and to shortlist potential companies. Responses to EoI will be evaluated as per the assessment criteria given in the EoI. Project shall be progressed even if only one EoI respondent is found meeting eligibility criteria.

## Layout

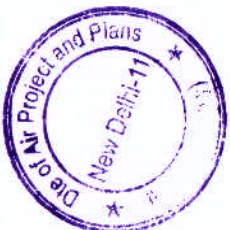
3. The EoI has been covered under the following parts:-

- (a) Part I - General Information
- (b) Part II - Technical Requirements
- (c) Part III - Critical Technology Areas
- (d) Part IV - Guidelines for formation of Association of Persons (AoP) i.e. consortium
- (e) Part V - Eligibility Criteria
- (f) Part VI - Assessment Parameters
- (g) Part VII - Evaluation Criteria of Assessment Parameters
- (h) Part VIII - Documents to be submitted by EOI Respondents
- (j) Part IX - Queries and Clarifications
- (k) Part X - Miscellaneous

## PART I: GENERAL INFORMATION

4. The project on indigenous design, development and manufacture of **three phase static inverter** has been approved under the 'Make II' category for prototype development of (Qty 01) and for subsequent procurement under the 'Buy (Indian-IDDM)' category as per DPP 2016. Details of the stages involved in the development process are enumerated in Chapter III-A of DPP 2016. The progress of the project will be monitored by the Project Facilitation Team (PFT) of Indian Navy / MoD constituted for the purpose. PFT will act as interface between Indian Navy and Industry during the design and development stage of the project. **No reimbursement of development cost is permissible under Make II scheme.**

5. **Eligibility to Respond to an EoI as Individual Entity or as Consortium.**  
The EoI can be responded to, at the option of an EoI recipient, by any of the following entities:-



(a) Individual Eol Recipient; or

(b) **Association of Persons (AoP)** i.e. Consortium of Indian Companies consisting of two or more than two Eol recipients undertaking joint and several liability and an Eol Recipient designated as the lead member through a '**Association of Persons (AoP) Agreement**'. All EOI recipients as the members of the AoP will sign the contract with MoD. This Agreement will be applicable for the entire project including but not limited to Production Phase and Lifecycle/Technology Refresh Contract placed by MoD, if any.

6. **Indigenous Content.** In accordance with Para 6 of Chapter 1 of DPP 2016 products indigenously designed, developed and manufactured (**IDDM**) should have minimum of 40% Indigenous Content (IC) on cost basis of the total contract value. Apart from overall IC as detailed above, the same percentage of IC will also be required in (a) Basic Cost of Equipment; (b) Cost of Manufacturers Recommended List of Spares (MRLS) and (c) Cost of Special Maintenance Tools (SMT) and Special Test Equipment (STE), taken together at all stages, including FET stage. For IC on cost basis, vendor should ensure compliance as detailed in **Appendix A**.

7. **Intellectual Property Rights (IPRs).** Intellectual Property Rights of Government in "Make" projects is placed at **Appendix B**. Development Agency/ Agencies (DA/ DAs) shall retain title or ownership and all other rights in intellectual property generated during the development of project. However, the Government shall have March-in rights under which the Government can require the contractor to grant, or may itself grant license for, inter alia, the following reasons:-

(a) Where health and safety requirements so require the Government to act in public interest.

(b) For National Security Reasons.

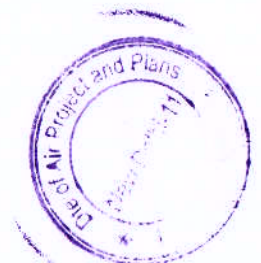
(c) To meet requirements for public use not reasonably satisfied by the contractor.

(d) For failure of the contractor to substantially manufacture the products embodying the subject invention in India

or

(e) For failure of the contractor to comply with any of the requirements laid down under these guidelines.

8. **Foreign Collaboration.** If the DA(s) collaborate(s) with a foreign firm as a technology provider in a certain technology area for the project, the nature of such collaboration and the technology areas being transferred must be clearly stated in the response. The contribution of the Indian industry in acquiring, developing and indigenising critical technologies shall be one of the key criteria in assessment of various proposals.



9. No component or any sub system of static inverter shall be subjected to any type of inspection or audit by any Foreign Govt or Agency without prior approval of MoD, Govt of India.

10. A trusted supply chain that will include the engineering support requirements would be established for all components of static inverter. All documents related to the three phase static inverter project are liable to be audited by Indian Govt or its nominated agency.

11. Detailed information about blacklisting of the company/ consortium partners and foreign technology partner by any Govt Agency in India/ any other country would be provided as part of the response. Companies currently blacklisted by any Indian Govt Agency are ineligible for participation. Any such information not disclosed but revealed at a later stage would render the Company/ Consortium ineligible for further participation.

12. **Time frames and critical activities.** The important time frames and critical activities for the project is as follows:-

Ser	Activity	Time in weeks from submission of Eol (T <sub>0</sub> )
(a)	Eol Response submission	T <sub>0</sub>
(b)	Eol Response Evaluation	05
(c)	Issue of Project Sanction Order	02
(d)	Design & Development of prototype	12-30
(e)	Conversion of PSQRs to SQRs/ Solicitation of Commercial offer	04
(f)	User trails & Staff evaluation	08 - 26

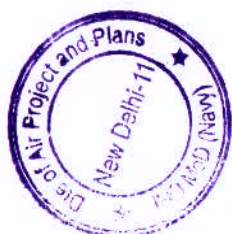
13. **Milestones of the Project**

(a) **Evaluation of Eol Responses.** Eol responses will be evaluated in accordance with assessment parameters and evaluation criteria as given in Part VI & VII of this Eol. All the shortlisted companies will be called Development Agencies (DAs). Project shall be progressed ahead even if only one Eol respondent is found meeting the eligibility criteria.

(b) **Project Sanction Order.** PFT will issue Project Sanction Order for the development of prototype with **NIL** financial implication for Indian Navy/ MoD. In case of only single vendor having offered the prototype within timelines stipulated in the Project Sanction Order, not more than two time extensions will be accorded and thereafter the case is to be progressed as resultant Single Vendor Case (SVC).

(c) **Design and Development of Prototype.** PFT will act as the primary interface between the Indian Navy and the industry during the design and development stage under Make-II subcategory projects and facilitate the following:-

- (i) Finalization of trial methodology.



- (ii) Provision of requisite professional inputs/ documentation to industry.
- (iii) Providing clarifications related to functional or operational aspects of the equipment under development, as may be sought by the DAs from time to time, during the design and development of prototype.

(d) **Finalisation of SQRs.** PFT will facilitate the finalisation of SQRs based on inputs from the DAs during the development stage, prior to commencement of user trials. The SQRs of the equipment would thereafter be a part of the trial directives, and only the essential parameters as detailed in the SQRs will be tested.

(e) **Solicitation of Commercial Offers.** A commercial Request for Proposal (RFP) for 'Buy (Indian-IDDM)' phase, will be issued to all Development Agencies for submission of their commercial offer prior to commencement of User trials.

(f) **User Trials.** User trials would be carried out by the Indian Navy to validate the performance of the system, against the parameters/ specifications approved, after the development of prototype. Indian Navy will formulate the trial directives and constitute the Trial Team including DRDO and DQAQA Reps. The 'trial directive' will specify the fundamental points that need to be addressed for validating the 'essential' parameters. The validation of the support system and maintainability trials, integral to and complimenting the trial programme of the defence equipment/ upgrades/ product/ system will be held simultaneously, wherever feasible. The user can recommend modification to the system for ease of handling and its maintainability.

(g) **Staff Evaluation.** Based on the User Trials, the Indian Navy would carry out a Staff Evaluation, which gives the compliance of the demonstrated performance of the equipment vis-a-vis the SQRs. On acceptance of Staff evaluation report, the SQRs shall form the basis for the 'Buy (Indian-IDDM)' category of acquisition. If the prototype of only a single firm/individual clears the trials will be progressed as resultant single vendor.

(h) **Award of Contract.** Commercial Offers of only those vendors will be opened whose equipment has been short-listed consequent to Staff Evaluation and the L1 bidder would be determined based on the provisions of the Commercial RFP and awarded the contract for manufacture.

14. Once the prototype is successfully validated, **twenty five (25)** such systems shall be procured by MoD, Govt of India under Buy (IDDM) category. Delivery of static inverter shall be in a phased manner at the rate of **05 three phase static inverters per year.**

15. Other successful development agencies that have developed the prototype successfully but have not qualified as L1, would be issued a certificate by DDP indicating that product/ system has been successfully trial evaluated.

16. **Multiple Technological Solutions.** Not Applicable.



## PART II: TECHNICAL REQUIREMENTS

17. **Scope of the Project.** The scope of project Three Phase Static Inverter includes the following:-

(a) Project entails indigenous design, development and manufacture of 01 prototype three phase static inverter used in ELTA EL/M-2022A (V) 3 MPR (Maritime Patrol Radar) System under MAKE II scheme. The inverter provides a dual output viz **270 V DC and 115V, 3ph, 400 Hz** which are used by Radar sub-systems and 03 cooling fans. Detailed Technical requirements of the project are brought out in PSQR at **Appendix G.**

(b) Indian Navy requires a total of 25 in number (at the rate of minimum 05 per year) of such units post successful validation and acceptance of the prototype.

(c) Details of static inverter as follows:-

(i)	Dimensions	:	L X B X H (30 cm, 35 cm, 24 cm)
(ii)	Input	:	28 V DC, 250 Amp
(iii)	Output	:	AC : 115 V AC, 400 Hz, 3 Ph DC 270 V DC, 10 Amp
(iv)	Weight	:	26 Kg (Max)
(v)	Use	:	For Radar sub systems and 03 cooling fans of Maritime patrol Radar

18. **Essential Parameters**

(a) **Regulations/Standards.** The permanent nature items of the three phase static inverter must be compliant with MIL-STD-810F and the same should be tested for Environmental Stress Screening (ESS). The static inverter needs to be duly certified by CEMILAC for airworthiness and utilisation on aircraft ELTA Radar.

(b) **Functionality.** The unit must match in form fit and function with dimensions and weight not exceeding that of the existing unit and must be capable to provide the requisite output utilising the 28 V DC input from aircraft.

(c) **Built in Protections.** Should have in-built protection mechanism, against output over voltage, output short circuit, output overload, output over frequency, output under frequency, input over voltage, thermal overheat, input reverse polarity.

(d) **Environmental and Quality Control Parameters.** The design of three phase static inverter is to be governed by MIL-STD-810D, and MIL-STD-461E or equivalent standards.

(e) **Maintenance and Operational Philosophy.** The static inverter should be modular in design to facilitate speedy repairs in field through repairs by



replacement using standard tools and test equipment. The equipment should use latest technology available to facilitate high MTBF and low MTTR. The maintenance and repairs of the equipment are planned to be undertaken at In-line facilities at air stations (for O - level and I - level) and Naval Aircraft Repair Yards / OEM (for D - level). The maintenance schedule for O - level, I - level and D - Level shall be proposed by the DAs alongwith recommended spares and tools required to carry out the maintenance schedule.

(f) **Quality Assurance / Acceptance and Testing.** The equipment are to be inspected and tested at maker's work place/ on-site. In case the DAs do not own a test facility, the plan for progressing such testing at approved test facilities like NABL accredited labs is to be indicated in the EoI response. The manufacturer is to forward a draft Qualification Test Procedure (QTP) of all tests for approval. The test is to ensure validation of essential parameters of SQRs. The DAs would be required to provide Quality Assurance Plans (QAP) i.e. tests being undertaken to assure quality & reliability and provide the Standard Acceptance Test Procedure (ATP) duly approved by CEMILAC with concurrence of DGAQA for development stage of prototype and by DGAQA for production stage. DGAQA reserves the right to modify the ATP if necessary. The DAs would be required to provide all test facilities at OEM premises for acceptance/inspection of the prototype item and production items.

(g) **Bulk Production Clearance (BPC).** DGAQA shall give Bulk Production Clearance of the item (25 in Number) post successful flight trials undertaken after issue of Provisional Clearance by CEMILAC / RCMA and satisfactory first article inspection report and ensuring adequate approval of ATP for production.

(h) **Production Qualification Test (PQT).** During the series production of 25 in number production items a sample for PQT would be picked up to ensure that process of production and consumable material has not been deviated.

(j) **Documentation.** The details of documents/ publications that should be provided at the time of user trials/ maintenance evaluation must include and not be restricted to the following:-

- (i) Qualification Test Procedure QTP to CEMILAC / RCMA in concurrence with DGAQA.
- (ii) Acceptance Test Procedure (ATP) for approval during development phase.
- (iii) User Handbook.
- (iv) Service Log
- (v) Maintenance Manual for O - Level, I - level and D - level maintenance schedules alongwith recommended spares and tools required to carry out the maintenance schedule
- (vi) Technical Manual with manufacturing drawings/ specifications and interchangeability data, test procedures and parameters, Mounting Details, Interconnection Cable Diagram/Electrical Drawings, Installation Drawings, Detailed weight and CG calculation etc.



- (vii) Parts catalog with list of parts grouped each assembly/ sub-assembly/ sub-sub-assembly wise, manufacturer's details and manufacturer's part number.
- (viii) Recommended list of spares for five years of maintenance.

(k) **Life Cycle Management.** The DAs should be in a position to provide product support in terms of maintenance materials and spares for a minimum period of 15 years. Even after the said mandatory period, the DA would be bound to give at least two years notice prior to closing the production line so as to enable a Life Time Buy of all spares before closure of the said production line. Further, all upgrades and modification required to be carried out on the equipment during its life cycle must be intimated.

### **PART III: CRITICAL TECHNOLOGY AREAS**

19. The capability assessment of the Development Agencies DAs will largely depend on their ability to design and develop and implement critical technologies in areas like Power Electronics, Control System for defence, aerospace, Research and Industrial applications. It is imperative that the project attains a higher technological threshold and minimises the dependence on foreign technology partners. **The contribution of the Indian industry in acquiring and developing technologies in critical areas shall be a key criterion in assessment of the proposal.**

20. The assessment of critical technologies for the Project offered by the DA(s)/Consortium must be supported with all Rights and Licenses (IPR) as mentioned at **Appendix B.**

### **PART IV: GUIDELINES FOR FORMATION OF ASSOCIATION OF PERSONS (AoP) OR CONSORTIUM**

21. Where an AoP/Group of Eol recipients ("Consortium") comes together to implement the project in accordance with the mechanisms outlined under Para 18 above, there must exist, at the time of responding to Eol, a '**Association of Persons (AoP) Agreement**' to form an AoP i.e. Consortium to execute and implement the complete "Make" project. This agreement will be applicable for the entire project including but not limited to Production Phase and Lifecycle/Technology Refresh Contract placed by MoD, if any.

22. Where the Eol Respondent is an AoP/Consortium, it shall, while responding to the Eol, comply with the following additional requirements:-

- (a) Number of members in a consortium shall not exceed 05 (five).
- (b) The Eol Response should contain requisite information for each member of the AoP/Consortium.





(c) Members of the AoP/Consortium shall nominate one member as the Lead Member (the "Lead Member").

(d) The EoI Response should include a description of the roles and responsibilities of individual members, particularly with reference to production arrangements in India and R&D activities for which IPRs will vest with MoD as per **Appendix B**.

(e) An individual EoI respondent cannot at the same time be member of an AoP/Consortium responding to the EoI. Further, a member of a particular responding AoP/Consortium cannot be member of any other Consortium responding to the EoI.

(f) Members of the AoP/Consortium shall enter into a legally binding Agreement, substantially in the form specified at **Appendix C** for the purpose of responding to the EoI. The Agreement to be submitted along with the EoI Response, shall, *inter alia*:-

(a) Form the basis for the AoP members to enter into a contract and perform all the obligations of the Development Agency in terms of the contract, in case a development contract to undertake the "Make" Project is awarded to the Consortium;

(b) Clearly outline the proposed roles and responsibilities, if any, of each member;

(c) Include a statement to the effect that members of the AoP/Consortium shall be liable jointly and severally for all obligations of the development agency in relation to the "Make" Project as required under these Guidelines.

### **Change in Membership of a Consortium**

23. Change in the composition of an AoP/Consortium will not be permitted after the submission of EoI responses until the award of a Development Contract for Prototype Development.

24. Where the EoI Respondent is an AoP/Consortium, change in the composition of a Consortium AoP may be permitted by the Authority after the award of a development contract only where:-

(a) The Lead Member continues to be the Lead Member of the AoP/Consortium and shall not be changed under any circumstances;

(b) The non-lead substitute member(s) shall continue to meet eligibility criteria for membership of an AoP/ Consortium;

(c) The new Member(s) expressly adopt(s) the EoI Response and the Development Contract already made on behalf of the AoP/Consortium as if it/they were a party to it originally and is/are not a Member of any other



Consortium short-listed for the "Make" Project, while undertake the joint and several or joint liabilities (as applicable) of the member it/they are replacing.

25. Any change in the composition of an AoP/Consortium shall require prior approval of MoD/ DDP.

26. The approval to such changes shall be at the sole discretion of MoD/ DDP and must be approved by them in writing for the approval to take effect.

27. The modified AoP/Consortium/Partners shall submit a revised 'Association of Persons Agreement'.

### **Miscellaneous Provisions**

28. Any violation of any of the guidelines by any company shall render it liable to initiation of proceedings for suspension and/or banning of business dealings as per the Guidelines for Putting on Hold, Suspension, Debarment and any other penal action on the Entities dealing with the Ministry of Defence, as promulgated by Government from time to time, will be applicable on procurement process and bidders.

### **PART V: ELIGIBILITY CRITERIA**

29. The project Three Phase Static Inverter is earmarked for MSMEs. In case no MSME expresses interest, MoD may open the project for other participants in accordance with Para 7 of chapter III-A of DPP 2016.

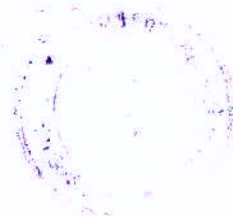
30. Indian entity satisfying all of the following criteria shall be considered as eligible 'Indian Vendor' for issue of EoI by the PFT:-

(a) Public limited company, private limited company, partnership firms, limited liability partnership, one Person Company, sole proprietorship registered as per applicable Indian laws. In addition, such entity shall also possess or be in the process of acquiring a license as per DIPP's licensing policy.

(b) The entity has to be owned and controlled by resident Indian citizens; entity with excess of 49% foreign investment will not be eligible to take part in Make category of acquisition.

(c) Start-ups recognised by the Department of Industrial Policy & Promotion (DIPP) and registered on start-up India portal under Aeronautics / Aerospace and Defence domains of Engineering or Manufacturing category.

31. This EoI is being published on MoD/ DDP website inviting Company(ies) to participate in the "Make-II" Project. The EoI is also issued to the DA(s) who have indicated willingness to participate in the development of static inverter since hosting of the requirements on 'www.makeinindiadefence.com' and/ or firms which participated in Feasibility Study.



32. **Vendors are required to be compliant to Chapter III-A of DPP 2016.**

### **PART VI: ASSESSMENT PARAMETERS**

33. The company shall possess a license or be in the process of acquiring a license as per DIPP's licensing policy under Ministry of Commerce and Industry. The EoI respondents would submit their responses and furnish necessary authenticated and verifiable documents in support of the claims. **In case EoI respondents are a Consortium, they are required to execute the AoP Agreement as per Appendix C. Failure to do so will result in treating the offer as non-responsive and will be summarily rejected. Further, in their offer letter, Consortium are required to mention details of Consortium members, their respective share-holding in the AoP and it must be signed by authorised signatories of all members.**

34. The assessment of the EoI responses would be based on the Technical Capability Criteria, details of which are elaborated in the succeeding paragraphs.

35. **Technical Capability Criteria.** The project requires sound knowledge of design, development and manufacture of electronic systems, its integration and quality control. The DA(s) should have a good understanding of project management, required for this project. The contribution of the DA in acquiring and developing technologies in critical areas shall be an important criterion in assessment of the proposal. The respondents to this EoI are required to furnish information about their technical capabilities as per **Appendix D.**

### **PART VII: EVALUATION CRITERIA OF ASSESSMENT PARAMETERS**

36. **Evaluation Criteria.** The response to this EoI will be evaluated based on the assessment parameters given at **Appendix D** to identify Companies/ Consortia with proven Technical strengths and capabilities as enumerated in succeeding paragraphs under Technical Capability Criteria.

37. **Technical Capability Criteria For All Entities.** The company should demonstrate domain expertise in executing similar work in the fields of electrical and power electronics with ability to design, develop and implement critical technologies for defence, aerospace, Research and Industrial applications by submitting supporting supply orders / work orders executed by the company. Similar work here implies design, development, manufacture / repair of major electrical / electronic component for use on Indian Military aircraft including its certification and clearance by CEMILAC /RCMA, or use in defence, aerospace, Research and Industrial applications. The company should possess the following:-

- (a) Design Approval from CEMILAC to undertake design and development of Airborne electrical / electronic units.
- (b) Qualified team, working in the areas of electrical and power electronics



system / subsystems.

(c) Past experience & deliveries pertaining to electrical and power electronics system / subsystems.

(d) In house R&D in the areas of electrical and power electronics system / subsystems.

(e) Adequate supply/repair of electrical and power electronics system / subsystems / LRUs / SRUs in the past three years.

(f) Infrastructure with availability of Test Instruments to support repair of electrical and power electronics system / subsystems.

(g) Availability/Access to Clean room facilities.

(h) Preferable Design & Manufacturing facilities including in-house Re-work, ESS, EMI/EMC facilities and qualified in-house labs to undertake repair for the Power Supply modules.

38. MoD, Govt of India reserves the right to disqualify a respondent/ consortium if they fail to comply with Evaluation criteria or Specific criteria at any stage of the evaluation process by the PFT. **No amendment/ change in response to EoI will be accepted under any circumstances once the EoI response is submitted.**

**Note 1.** Details regarding proposed expenditure/ establishment of facilities/ lab etc. are liable to be included in the contract in case the Company/ Consortium get shortlisted for development of Three Phase Static Inverter.

**Note 2.** Company/ Consortium giving False/ Misleading information will be barred from participation in the project Three Phase Static Inverter.

### **PART VIII: DOCUMENTS TO BE SUBMITTED BY EOI RESPONDENTS**

39. Following documents are required to be submitted by EOI respondents:-

- (a) Annexure I of Appendix A
- (b) Appendix C, if applicable
- (c) Appendix D
- (d) Information Performa as per Appendix E
- (e) Certificate as per Appendix F
- (f) Documents in proof of Evaluation Criteria for Technical capability

The EOI respondents shall submit three (03) copies of response to EOI, clearly marking one copy as 'Original Copy' and the remaining two as 'Copy No 2 & 3'. The respondents are also required to submit a soft copy of the response to EoI in a CD/ DVD. In the event of any discrepancy between the content in copies of documents submitted, the contents in the 'original copy' shall govern/ prevail. Each page of the response will bear the signatures of the authorized signatory of the Company / Lead Member in a Consortium.



40. **Guidelines for Submitting Eol Responses.**

(a) The responses should be submitted strictly as per the formats given in respective appendices. Should a Vendor/ Consortium need to mention any other information, a separate column may be added as the last column only.

(b) All response appendices should be submitted in a single file/ folder. Supporting documents/ additional reference should be submitted in a separate folder with proper reference mentioned against each parameter/ sub parameter in respective appendices.

(c) Any supporting document/ evidence without any reference to specific parameter of criteria will not form part of the assessment.

41. The envelopes shall be addresses as under:-

The Chairman, PFT  
Project Three Phase Static Inverter  
Directorate of Air Project and Plans (DAPP)  
IHQ MoD (Navy), Room # 28A  
'A' Block Hutments, Dara Sukoh Road  
New Delhi – 110 011

Tele No : 011-23011247  
Fax No : 011-23793011  
Email: dapp @navy.gov.in

42. The response to this Eol must be submitted by **1500 hrs** on **04 Apr 19** at the address mentioned above.

43. A Company/ Consortium can submit only one response to this Eol. If a company submits more than one response, then all responses of the Company will be rejected and the Company/ Consortium, to which the Company belongs, would not be assessed further.

44. MoD, Govt of India at its discretion can extend this deadline for the submission of responses to Eol and the same shall be notified in writing.

**PART IX: QUERIES AND CLARIFICATIONS**

45. Following aspects will govern the procedure for queries and clarifications:-

(a) **Companies/ Consortium may submit written queries/ clarification/ amplifications on specific issues by 22 Mar 19.** Consolidation and examination of the queries received will be carried out by the PFT and clarification will be given to all the industries during the pre-response meeting.

(b) **Pre-Response Meeting.** A pre-response meeting is scheduled on **28 Mar 19** at **1500 hrs** at Directorate of Air Projects & Plans (DAPP), IHQ MoD (Navy), A Block Hutments, New Delhi – 110 011 to clarify the issue/



queries raised to facilitate submission of response.


(c) If deemed necessary, a written reply may be given to all respondents after the meeting.

### **PART X: MISCELLANEOUS**

46. This EoI is being invited with no financial commitment on part of the Govt. of India/ MoD. Govt of India reserves the right to withdraw or change or vary any part thereof at any stage. MoD, Govt of India also reserves the right to disqualify any company should it be so necessary at any stage on grounds of national security.

47. Respondent/ consortium would be disqualified if they make false, incorrect, or misleading claims in their response to this EoI. A certificate as per the format at **Appendix F** would be furnished as part of the response, including respective consortium partners, where applicable.

**Note.** The above guidelines are to be read in conjunction with the guidelines under Chapter III-A of DPP 2016.

 21 Feb 19  
(N Balakrishnan)  
Commodore  
Chairman, PFT  
Project Three Phase Static Inverter

**Enclosure:-** Appendix 'A' to 'G'

**Distribution:-** Shortlisted vendors & hosted in MoD/DDP website



## **INDIGENOUS CONTENT ASPECTS**

### **Definitions**

1. "Indigenous Content"(IC) for an equipment or an item shall be arrived at by excluding from the total cost of that equipment/item the following elements at all stages (tiers) of manufacturing/production/assembly:

(a) Direct costs (including freight/transportation and insurance) of all materials, components, sub-assemblies, assemblies and products imported into India.

(b) Direct and Indirect costs of all services obtained from non-Indian entities/citizens.

(c) All license fees, royalties, technical fees and other fees/payments of this nature paid out of India, by whatever term/phrase referred to in contracts/agreements made by vendors/sub-vendors.

(d) Taxes, duties, cesses, octroi and any other statutory levies in India of this nature.

2. Further, "on cost" basis for 'Buy (Indian IDDM)' cases, shall imply the IC is required as specified under Para 5 of Chapter III-A of DPP 2016 read with additional specific requirements in this regard, if any, mentioned in the EOI/ RFP.

### **Reporting Requirements**

3. IC as defined in Para 1 and 2 above shall be mandatorily reported by all stages (tiers) of manufacturing/ production/ assembly to their higher stages (tiers). All stages (tiers) are required to aggregate indigenous content based on certifications and inputs from lower tiers, as well as on the basis of their own procurement actions and manufacturing activities undertaken. The final aggregation of IC shall be undertaken by the prime (main) contractor with whom an acquisition contract is signed by the Ministry/SHQ.

4. All contracts, sub-contracts, agreements and MoUs made by prime (main) contractors (and their lower tier suppliers/vendors) with their business partners/suppliers, insofar as these contracts, agreements or MoUs relate to the main acquisition contract, shall mandatorily incorporate the definition and reporting requirements for IC in terms of Para 3. Similarly, these business partners/suppliers shall sequentially incorporate these definitions and reporting requirements with their next levels of business partners/suppliers and so on, till the lowest tier in the manufacturing/production/assembly chain.



## Audit

5. The Ministry of Defence can exercise its right to conduct an audit of all certifications and costs relevant to IC at all or any stages (tiers) of manufacturing/production/assembly, starting from the prime (main) contractor downwards. The audit(s) could be conducted by the Ministry itself and/or by an agency/institution/officer(s) nominated by the Ministry, as may be decided by the Ministry.

6. All contracts, sub-contracts, agreements and MoUs made by prime (main) contractors (and their lower tier suppliers/vendors) with their business partners/suppliers, insofar as these contracts, agreements or MoUs relate to the main acquisition contract, shall mandatorily incorporate the right of Ministry of Defence to conduct an audit in terms of Para 5. Similarly, these business partners/suppliers shall sequentially incorporate these definitions and reporting requirements with their next levels of business partners/suppliers and so on, till the lowest tier in the manufacturing/production/assembly chain.

## Certification

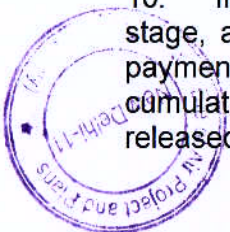
7. All relevant deliveries made under contract shall be accompanied by a certificate of IC issued by the Chief Financial Officer (CFO). All final deliveries under contract shall be accompanied, in addition to the certificate issued by the CFO of the prime (main) contractor as aforesaid, by its Company Auditor's certificate. An Indigenisation Plan for Buy (Indian-IDDMM) will be required to be submitted by the vendor to meet the requirement of IC as specified in Para 5 of Chapter III-A of DPP 2016. Further, the equipment offered for trial shall be accompanied with a certificate of IC issued by the CFO of the prime (main) bidder. The format for certification of IC by the CFO/Company Auditor shall be as per **Annexure to this Appendix**.

8. Final payments shall be released only after the submission of a certificate of IC furnished by the CFO of the prime (main) contractor and a certificate from its Company Auditor, in addition to any other requirements specified elsewhere in the DPP or in the contract.

9. Deliveries at each stage of contract must conform to IC requirements and categorization relevant to that particular stage. The Performance-cum-Warranty Bank Guarantee shall not be released before completing an audit of the IC in all relevant deliveries by the Ministry or its nominated agency/institution/officer(s), if such an audit is ordered.

## Withholding of Payments and Imposition of Penalties

10. In case a particular delivery is deficient in achieving mandatory IC for that stage, an amount of 5% of the cost of that stage delivery shall be withheld from payment for that stage. However, if the vendor achieves the mandatory IC on a cumulative basis by the next stage of delivery, the amount so withheld shall be released to the vendor without interest. All such payments withheld above shall be



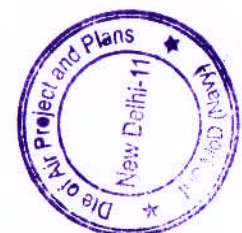


forfeited upon failure to achieve required IC by the stage of last delivery of the relevant product. In addition, the Performance-cum-Warranty Bank Guarantee shall also be forfeited upon failure to discharge IC obligations as per contract.

11. In case mandatory IC is not achieved by a vendor and/or if a false certificate is furnished by a vendor/sub-vendor, the Ministry can initiate proceedings for banning or suspension of business dealings with the erring Indian vendor/sub-vendor and its allied firms for all future contracts for a period upto 5 years. This right can be exercised by the Ministry at any point of time; and initiation of banning or suspension proceedings, if ordered, shall be in addition to any other action that may be taken/ordered by the Ministry against the erring vendor/sub-vendor under any law(s) in force.

### **Miscellaneous**

12. In the event of non-incorporation of the definitions and/or audit requirements laid down under Para 1 to 6 in contracts or agreements vendors with next tier at any stage (tier) of manufacturing/production/assembly, it shall be presumed that items/services provided by that stage/tier to the next (tier) have no IC for the purposes of the DPP. Similarly, in the event of non-certification of IC at any stage (tier) as required herein, it shall be presumed that items/services provided by that stage/tier to the next stage (tier) have no IC for the purposes of the DPP. In such cases, the Ministry of Defence can take any of the steps under Para 7 to 11 above against erring vendors/sub-vendors.



**Annexure to Appendix A**

**FORMAT FOR CERTIFICATION OF INDIGENOUS CONTENT**

This is to certify that we, \_\_\_\_\_ (Name of Prime/Main Vendor) have achieved/are offering the following IC in the accompanying delivery under contract/equipment being offered for trials/prototype, as defined under the Defence Procurement Procedure and as required under the RFP/Contract (tick whichever is applicable) No. \_\_\_\_\_ dated \_\_\_\_\_.

**Description of Supplies and Indigenous Content Therein:**

Sl.No.	Description of Supplies	IC achieved/ being offered	IC required to be achieved/ offered as per RFP/Contract
1			
2			

Signed by:

1. CFO

----- (Name of Prime/Main Vendor)

2. Statutory Auditor (if required under Appendix A)

----- (Name of Prime/Main Vendor)



**INTELLECTUAL PROPERTY RIGHTS OF GOVERNMENT**  
**IN "MAKE" PROJECTS**

**Guiding Principles**

1. The Government shall retain only a license in the Intellectual Property being generated under contract; and the contractor retains title or ownership and all other rights in intellectual property that are not granted to the Government, subject to conditions prescribed herein.
2. During the development of prototype, if any technology/product is developed, which the Government considers to be sensitive or classified and needs to be restricted for use in other purposes or for export, the Government through IPMT or any other expert or body may identify such technology/product and shall retain the full ownership of IPRs in respect of such technology/product.
3. All technology licensing is divided up between two mutually exclusive categories of deliverables: (a) Technical Data (TD)<sup>1</sup> and (b) Computer Software (CS)<sup>2</sup>. The Government shall also have certain rights to subject inventions and patents generated under the "Make" contract.
4. The EoI shall contain details of (a) the delivery requirements, storage formats and storage medium; and (b) the associated data rights, in all technologies required to be developed or delivered under the "Make" contract. Officials connected with award of "Make" projects shall ensure that all such delivery requirements are clearly stated in the EoI and the "Make" contract signed, if any, including delivery and form in which source code is required as a contract deliverable.
5. The Government's standard license rights in (a) subject inventions and associated data; and (b) all other data generated under the "Make" contract, including technical data and computer software whether associated with such subject inventions or otherwise, shall be 'Government-Purpose Rights' (GPR). In

<sup>1</sup>"Technical data" means recoded information, regardless of the form or method of the recording, of a scientific or technical nature (including computer software documentation). The term does not include computer software or data incidental to contract administration, such as financial and/or management information.

<sup>2</sup>(a) "Computer software" means computer programs, source code, source code listings, object code listings, design details algorithms, processes, flow charts, formulae and related material that would enable the software to be reproduced, recreated or recompiled. Computer software does not include computer data bases or computer software documentation. (b) "Computer program" means a set of instructions, rules, or routines recorded in a form that is capable of causing a computer to perform a specific operation or series of operations. (c) "Computer software documentation" means owner's manuals, user's manuals, installation instructions, operating instructions, and other similar items, regardless of storage medium, that explain the capabilities of the computer software or provide instructions for using the software. (d) "Computer data base" means a collection of data recorded in a form capable of being processed by a computer. The term does not include computer software.



respect of subject inventions, the Government shall hold a non-exclusive, non-transferable, irrevocable, paid up (royalty-free) license to practice, or have practiced for on its behalf, the subject invention throughout the world.

6. These guiding principles shall apply at both the prime and subcontract levels; i.e., the prime DA(s) shall incorporate the rights of the Government as prescribed in this Annexure in all their subsequent sub-contracts and agreements insofar as technology development under "Make" projects is concerned.

### **Government Rights**

7. The Government shall have "Government-Purpose Rights" and "Unlimited Rights" as explained below:-

8. For all subject inventions<sup>3</sup> under the "Make" Contract, including technical data and computer software associated with such subject inventions, the Government shall hold "Government-Purpose" Rights (GPRs), in that it shall hold a non-exclusive, non-transferable, irrevocable, paid up (royalty-free) license to practice, or have practiced for on its behalf, the subject invention throughout the world. These GPRs shall automatically convert to "Unlimited Rights" as defined under this section upon the expiry of ten years.

9. For the purpose of all technical data and computer software, whether related to subject inventions or otherwise, GPRs shall imply the right to use such technical data and computer software within the Government without restriction and the right to authorize any other entity for any government purpose including re-procurement. More specifically, "Government-Purpose" rights includes the rights to:-

- (a) Use, modify, reproduce, release, perform, display, or disclose technical data within the Government without restriction; and
- (b) Release or disclose technical data outside the Government and authorise persons to whom release or disclosure has been made to use, modify, reproduce, release, perform, display, or disclose that data for Government purposes.
- (c) Form, Fit and Function data: and Manuals or instructional and training materials for installation, operation, or routine maintenance and repair;
- (d) Computer software documentation required to be delivered under the "Make" contract;
- (e) Corrections or changes to computer software or computer software documentation furnished to the contractor by the Government;

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<sup>3</sup>"Subject Invention" implies any invention of the contractor conceived or first actually reduced to practice in the performance of work under a Government Contract. "Invention" implies any invention or discovery that is or may be patentable or otherwise protectable under the Patent Laws in force in India.



(f) Computer software or computer software documentation that is otherwise publicly available or has been released or disclosed by the contractor or subcontractor without restrictions on further use, release or disclosure other than a release or disclosure resulting from the sale, transfer, or other assignment of interest in the software to another party or the sale or transfer of some or all of a business entity or its assets to another party;

10. For the purposes of these guidelines, "Government Purpose" means an activity in which the Government of India is a party, including cooperative agreements with international or multinational Defence organizations, or sales or transfers by the Government of India to foreign Government or international organizations. Government purposes include competitive procurement, but do not include the rights to use, modify, reproduce, release, perform, display, or disclose technical data for commercial purposes or authorize others to do so.

11. In addition to standard GPRs, Government rights in computer software to be delivered under contract shall also include the right to:-

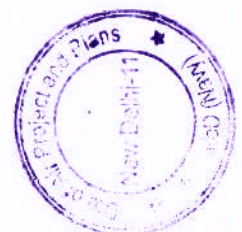
- (a) Use of a computer program with government computer(s);
- (b) Transfer to another Government computer;
- (c) Make copies of computer software for safekeeping; backup or modification purposes;
- (d) Modify computer software;
- (e) Disclose to service contractors;
- (f) Permit service contractors to use computer software to diagnose/correct deficiencies, or to modify to respond to urgent or tactical situations; and
- (g) Disclose to contractors or any other third-parties for proposes of emergency repair and overhaul.

### **March-In Rights**

12. The Government shall have "March-In" rights for all items covered under its "Government-Purpose Rights". "March-In" Rights shall include the right to work the patent either by itself, or by another entity on behalf of the Government, in case the contractor fails to work the patent on its own within a specified and reasonable period of time.

13. Under its march-in rights, the Government can require the contractor to grant, or may itself grant license for, inter alia, the following reasons:-

- (a) The contractor fails to work the patent towards practical application within a reasonable time; or



- (b) Where health and safety requirements so require the Government to act in public interest;
- (c) For National Security Reasons;
- (d) To meet requirements for public use not reasonably satisfied by the contractor;
- (e) For failure of the contractor to substantially manufacture the products embodying the subject invention in India; or
- (f) For failure of the contractor to comply with any of the requirements laid down under these guidelines.

### **Miscellaneous**

14. The contractor is required to have a timely and efficient disclosure system in place for reporting of intellectual property generation under the "Make" contract to the Ministry of Defence. Failure to disclose in timely manner, or failure on part of the contractor to invoke his/her default right of ownership, shall imply that all IPRs shall ab-initio vest in the Government of India. The contractor may elect to retain title of any invention made in the performance of work under a contract. If the contractor does not elect to retain title, the title shall ab-initio vest in the Government as stated above and the contractor shall only be entitled to a license on such terms and conditions that the Government may deem it fit. Such license to the contractor shall usually be (a) revocable, non-exclusive and royalty-free; (b) extend to its domestic subsidiaries and affiliates; and (c) include the right to sublicense; but (d) shall not be transferable without prior approval of the Government.

15. The contractor shall also be required to submit periodic reports above commercialization and manufacturing activities undertaken for products embodying the subject invention under "Make" contracts.

16. The Government's IPRs shall flow down from the prime contractor to all sub-contractors at all tiers; that is, every sub-contractor will have the same obligations vis-à-vis the Government as applicable to the prime contractor under the main procurement contract. To this end, the subcontractors shall have limited contractual privity with the Government solely for the purposes of their IPR obligations to the Government.

17. The ownership of any rights by the contractor does not include an absolute right to transfer of any software, product or documentation; and such transfer, including export thereof, shall continue to be governed by and be subject to the Export Policy, Export Guidelines and all applicable laws, rules, regulations, orders and instructions of the Government of India. All such transfers and exports shall require prior and explicit approval of the Ministry of Defence.

18. Where the DA is not a consortium, ownership rights in intellectual property being generated under the "Make" contract shall vest with the Government upon dissolution of such DA. Where the DA is a consortium, the ownership rights in the IP



generated under the "Make" contract, upon dissolution of the consortium, shall vest amongst the partners as per their agreement on the subject contained in the joint partnership agreement of the consortium, without government rights as licensee being adversely affected in any manner.



**ILLUSTRATIVE: 'ASSOCIATION OF PERSONS AGREEMENT'**

THIS ASSOCIATION OF PERSONS (AoP) AGREEMENT is entered into on this the day of 20.....

**AMONGST**

1. { ..... Limited, a company incorporated under the Companies Act} and having its registered office at ..... (hereinafter referred to as the "First Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)

**AND**

2. { ..... Limited, a company incorporated under the Companies Act} and having its registered office at ..... (hereinafter referred to as the "Second Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)

**AND**

3. { ..... Limited, a company incorporated under the Companies Act and having its registered office at ..... (hereinafter referred to as the "Third Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)}

**AND**

4. { ..... Limited, a company incorporated under the Companies Act and having its registered office at ..... (hereinafter referred to as the "Fourth Part" which expression shall, unless repugnant to the context include its successors and permitted assigns)} The above mentioned parties of the FIRST, SECOND, {THIRD and FOURTH} PART are collectively referred to as the "Parties" and each is individually referred to as a "Party".

**WHEREAS,**

(a) The Ministry of Defence, Government of India (hereinafter referred to as the "Buyer" which expression shall, unless repugnant to the context or meaning there of include its administrators, successors and assigns) has invited responses (the "responses") to its Expression of Interest No..... dated..... (the "EoI") for short-listing of bidders for development of- ..... Project (the "Project").

(b) The Parties are interested in jointly bidding for the Project as an Association of Persons ("AoP") in accordance with the terms and conditions of the EoI document and other documents in respect of the Project and





(c) It is a necessary condition under the EoI document that the members of the AoP shall enter into an Association of Persons Agreement and furnish a copy thereof with the Response.

**NOW IT IS HEREBY AGREED as follows:-**

1. **Definitions and Interpretations.** In this Agreement, the capitalized terms shall, unless the context otherwise requires, have the meaning ascribed thereto under the EoI.

2. **Association of Persons/Consortium.**

(a) The Parties do hereby irrevocably constitute an Association of Persons/consortium (the "Consortium") for the purposes of jointly participating in the bidding process for the Make Project and executing and implementing the complete "Make" project upto the completion of the Production Phase or any subsequent Lifecycle Support or technology Refresh/Upgrade Contract that MoD places on the Lead Member of AoP before completion of the Warranty Period, whichever is later.

(b) The Parties hereby undertake to participate in the "Make" Project only through this AoP Agreement and not individually and/or through any other AoP/consortium constituted for this Project, either directly or indirectly or through any of their Associates.

3. **Covenants.** The Parties hereby undertake that in the event the AoP is declared the selected Development Agency and awarded the project, the parties shall enter into a Contract with the Buyer for performing all its obligations as the Development Agency in terms of the contract for the Project.

4. **Role of the Parties.** The Parties hereby undertake to perform the roles and responsibilities as described below: -

(a) Party of the First Part shall be the Lead member of the Consortium for and on behalf of the Consortium during the bidding process and until the Appointed Date under the Contract.

(b) Party of the Second Part shall be responsible for .....

(c) Party of the Third Part shall be responsible for .....

(d) Party of the Fourth Part shall be responsible for .....

5. **Joint and Several Liabilities.** The Parties do hereby undertake to be jointly and severally responsible for all obligations and liabilities relating to the Project and in accordance with the terms of the EoI and subsequently in accordance with the development contract, if and when awarded.

6. **Lead Member.** Without prejudice to the joint and several liabilities of the parties, each party agrees that it shall communicate with the MoD in matters of the



Eol and the Development and Production Contract, as applicable through the Lead Member and the Buyer shall be entitled to communicate with such Lead Member as the representative of all the members. Each party agrees and acknowledges that:-

(a) The Lead Member shall take prior written consent by all participating AOP members before sending any communication regarding a decision (including without limitation, any waiver or consent), action or omission, before communicating the same to MoD. The AoP Members shall send their responses to the Lead Member and ensure that stipulated timelines of MoD are met with by the Lead Member;  
and;

(b) Any decision (including without limitation, any waiver or consent), action omission communicated by the Lead Member on any matters related to the Contract shall be deemed to have been on its behalf and shall be binding on it. The Buyer shall be entitled to rely upon any such action, decision or communication from the Lead Member;  
and;

(c) Any notice, communication, information or documents to be provided to the Development Agency shall be delivered to the authorised representative of the Development Agency (as designated pursuant to the Contract) and any such notice communication, information or documents shall be delivered to all the Parties by the Lead Member.

7. **AoP Bank Account/ Payments.** The Parties will open a separate single bank account ("**AoP Account**") for payments to be received from the Buyer in the name of the AoP which account shall be operated jointly by all the AoP members. Each of the Parties shall raise separate invoices on Buyer, which will be presented to the Buyer by the Lead Member under a Covering Letter. The Buyer shall make the payment(s) into the designated AoP account and the Buyer shall not in any manner be responsible or liable for the inter se allocation of payments, works etc. among the Parties. Disbursal of the amount lying in the AoP account to each of the Parties shall be made directly to such Party, from the AoP Account. Each Party shall be responsible for ensuring the Invoice and the accompanying documentation is complete and accurate.

## 8. **Representation of the Parties**

8.1 Each Party represents to the other Parties as of the date of this Agreement that:-

(a) Such Party is duly organized, validly existing and in good standing under the laws of its incorporation in India and has all requisite power and authority to enter into this Agreement;

(b) The execution, delivery and performance by such Party of this Agreement has been authorized by all necessary and appropriate corporate or governmental action and a copy of the extract of the charter documents and board resolution/power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this



Agreement on behalf of the Consortium Member is annexed to this Agreement and will not, to the best of its knowledge:-

- (i) Require any consent or approval not already obtained;
- (ii) Violate any Applicable Law presently in effect and having applicability to it;
- (iii) Violate the memorandum and articles of association, by-laws or other applicable organizational documents thereof;
- (iv) Violate any clearance, permit, concession, grant, license or other governmental authorization, approval, judgment, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party; or
- (v) Create or impose any liens, mortgages, pledges, claims, security interests, charges or Encumbrances or obligations to create a lien, charge pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as in all matters before the Buyer, signing and execution of all contracts and undertakings consequent to acceptance of the Consortium's proposal and generally dealing with the Buyer in all matters in connection with or relating or arising out of the Project.

9. **Termination.** This Agreement shall be effective from the date hereof and shall continue in full force and effect until completion of the Make project and in accordance with the contract, in case the Project is awarded to the Consortium. However, in case the Consortium is either not prequalified for the Project or does not get selected for the award of the Project, the Agreement will stand terminated or upon return of the Bid Security, if any, by the Buyer to the Bidder, as the case may be. Upon completion of the Development Contract, this Agreement may be terminated by the Parties upon written mutual consent, if the AOP fails to win Contract from Mod, during the implementation of the 'Buy (Indian-IDDM)' Project.

10. **Miscellaneous.**

- (a) This Agreement shall be governed by the laws of India.
- (b) In the event of a dispute, the Parties shall attempt to amicably resolve the same, failing which the dispute shall be referred to arbitration which shall be resolved in accordance with the Arbitration & Conciliation Act, 1996. The venue for dispute resolution shall be New Delhi, India. The arbitration proceedings shall be conducted in English language. The arbitration award shall be final and binding upon the Parties.
- (c) The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of the Buyer.



IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

SIGNED, SEALED AND DELIVERED For and on behalf of Lead Member  
by:

(Signature)  
(Name)  
(Designation)  
(Address)

SIGNED, SEALED AND DELIVERED For and on behalf of SECOND PART

(Signature)  
(Name)  
(Designation)  
(Address)

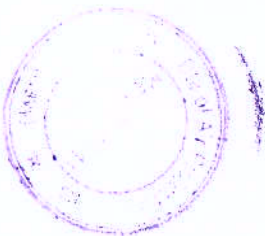
SIGNED, SEALED AND DELIVERED For and on behalf of THIRD PART

(Signature)  
(Name)  
(Designation)  
(Address)

SIGNED, SEALED AND DELIVERED For and on behalf of FOURTH PART

(Signature)  
(Name)  
(Designation)  
(Address)

In the presence of:           1.  
  2.



**Appendix D**  
(Refers to Para 35, 36 & 39(c))

**TECHNICAL CAPABILITY ASSESSMENT CRITERIA**

Name of the vendor:

Sl. No	Criteria and Sub- Criteria	Vendor Submissions			Remarks, if any
		Lead Bidder	Partner 1	Partner 2	
(a)	The company should demonstrate domain expertise in executing similar work in the fields of electrical and power electronics with ability to design, develop and implement critical technologies for defence, aerospace, Research and Industrial applications by submitting supporting supply orders / work orders executed by the company. Similar work here implies design, development, manufacture / repair of major electrical / electronic component for use on Indian Military aircraft including its certification and clearance by CEMILAC /RCMA, or use in defence, aerospace, Research and Industrial applications.				
(b)	Design Approval from CEMILAC to undertake design and development of Airborne electrical / electronic units.				
(c)	Qualified team, working in the areas of electrical and power electronics system / subsystems.				
(d)	Past experience & deliveries pertaining to electrical and power electronics system / subsystems.				





(e)	In house R&D in the areas of electrical and power electronics system / subsystems.					
(f)	Adequate supply/repair of electrical and power electronics system / subsystems / LRUs/ SRUs in the past three years.					
(g)	Infrastructure with availability of Test Instruments to support repair of electrical and power electronics system / subsystems.					
(h)	Availability/Access to Clean room facilities.					
(i)	Preferable Design & Manufacturing facilities including in-house Re-work, ESS, EMI/EMC facilities and qualified in-house labs to undertake repair for the Power Supply modules.					

**Station:**  
**Date:**

**Signature**

**Company Seal**

**INFORMATION PROFORMA: AN ILLUSTRATIVE LIST OF ELEMENTS**

1. Name of the Company
2. Name of CEO with Designation
3. Address of the Registered Office
4. Address of the Factory/Factories
5. Company Website(s)
6. Date of Incorporation
7. Brief History of the Company
8. Category of Industry (Large Scale/Medium Scale/Small Scale)
9. Nature of Company (Public Limited/Private Limited)
10. Nature of Business (Please give broad product range against each)
  - (a) Manufacturer
  - (b) Trader
  - (c) Sole Selling or Authorised Agent
  - (d) Dealer
  - (e) Assembler
  - (f) Processor
  - (g) Re packer
  - (h) Service Provider
11. Details of Current Products
  - (a) Type/Description
  - (b) Licensed/Installed Capacity
  - (c) Annual Production for Preceding 3 Years
12. Details of Bought Out Items
  - (a) Main Equipment
  - (b) Component/Assembly/Sub Assembly/Processes
  - (c) Name and Address of the Sub-Contractor
13. Sources of Raw Materials
  - (a) Imported/Indigenous
  - (b) Brief Description
  - (c) Estimated CIF Value
  - (d) Percentage FE Content in Final Product
14. Details of Foreign Collaborations
  - (a) Product
  - (b) Name and Address of Collaborator
  - (c) Year of Collaboration
  - (d) Current Status of the Collaboration (whether expired or current)
15. Technology Received from Abroad and Assimilated
16. Technology Transfer MoUs Signed/Under Negotiation
17. Products Already Supplied
  - (a) To Indian Army/Air Force/Navy
  - (b) PSUs



- (c) DRDO and its Laboratories
  - (d) Ordnance Factories
  - (e) Any other Defence Organisation
  - (f) To other Principal Customers
18. Details of Registration Certification held (along with product details)
- (a) DGQA
  - (b) DGAQA / DGNAI
  - (c) CEMILAC
  - (d) DGS&D
  - (e) Other Defence Departments
  - (f) Other Government Department
19. Details of ISO Certification(Attach certificate, if any)
20. Details of Pollution Control Certificate(Attach certificate, if any)
21. Latest Certificate of Incorporation by the Registrar of Companies (RoC), if any
22. Details of Credit Rating Certificate (Attach certificate, if any)
23. Details of Patent/IPR certificates (Attach certificate, if any)
24. Details of Permanent Man Power (with the details of qualifications)
- (a) Technical
  - (b) Administrative
25. Total Area of Factory
- (a) Covered (sq. mtrs)
  - (b) Uncovered (sq. mtrs)
  - (c) Bonded Space Available (sq. mtrs)
26. Electric Power
- (a) Sanctioned
  - (b) Installed
  - (c) Standby
27. Details of Important Facilities
- (a) Production (including Heat Treatment, Dies, jigs and Fixtures)
  - (b) CAD, CAM, ROBOTS and Other Advanced Technology Tools
  - (c) Environmental Test Facilities.
  - (d) Tool Room, Metrology and Test Equipment and Facilities
  - (e) Type of Instrument
  - (f) Make and Model
  - (g) Date of Purchase
  - (h) Frequency of Calibration
28. Details of Developmental Facilities
- (a) R&D Facilities Available
  - (b) Number of Technical Manpower
  - (c) Inspection and Quality Control of Raw Material, Components and Finished Products.
  - (d) Assistance from Central Agency/Agencies for Testing/Calibration
  - (e) Laboratory and Drawing Office Facility
  - (g) Percentage of Total Turn-Over Spent on R&D during the Last Three Years
29. Area of Interest for Future Expansion/Diversification (please provide adequate details)

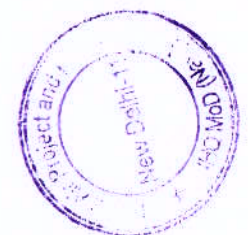




30. Future Plan (if any) in respect of Expansion Program, Installation of Additional Machines/Test Facilities
31. Turn-Over during the last three Financial Years. (Attach relevant documents, if any)
32. Present Net Worth of the Company (Attach relevant documents, if any)
33. Any other Relevant Information
34. Contact Details of the Executive Nominated to co-ordinate with the Assessment Team (please provide telephone, mobile and e-mail address).

### **ADDITIONAL INFORMATION**

1. Outline features of the proposal.
2. Recommended stages/ phases of development with priorities and time schedules.
3. Milestones that can be clearly demonstrated to facilitate project monitoring.
4. Estimated capital expenditure for prototype development.
5. Roles Responsibilities and expertise details of consortium members, if any.
6. Role of foreign technology provider, if any, including the agreement intended to be entered into on being shortlisted.
7. Requirement of specialized testing assistance where facilities are available only with DRDO/ DGQA/ DGAQA/ DGNAI.
8. Indicate the minimum order quantity for execution after the successful completion of the project (prototype development).
9. Undertaking to furnish the cost of the final product during evaluation stage itself, once the final configuration of the end product under development is frozen.
10. Details of the proposed facilities being created for the project.
11. Any existing facility proposed to be used for design, development and production/ manufacture of three phase static inverter components.



**Appendix F**  
**(Refers to Para 39 (e) & 48)**

**CERTIFICATE**

It is certified that information submitted in the documents as part of the response to Expression of Interest for Project Three Phase Static Inverter is correct and complete in all respects. It is acknowledged that the company and / or all consortium members will be disqualified from further participation if any information provided is found to be incorrect.

**Signature with Company Seal**

Company No1

Company No 2

Company No3

Company No4



Appendix G

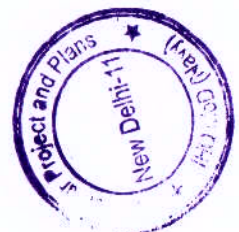
**PRELIMINARY SERVICES QUALITATIVE REQUIREMENTS (PSQRS)**

**OF**

**STATIC INVERTER**

**FOR**

**EL/M-2022A (V) 3 MPR (MARITIME PATROL RADAR) SYSTEM**



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## Scope

1. These PSQRs have been prepared for Design & Development for **Static Inverter** of EL/M-2022A (V) 3 MPR (Maritime Patrol Radar) System. This document lists the functional characteristics of the unit together with environmental and EMI/EMC specification. The indigenously developed prototype item must have Safety of Flight Clearance by Centre For Military Airworthiness and Certification (CEMILAC) prior to its fitment on aircraft for trials.

## Introduction

2. The Static Inverter is a dual output device viz. 270 V DC and 115V, 3ph, 400 Hz AC utilised for EL/M-2022A (V) 3 MPR (Maritime Patrol Radar) System. It receives a DC supply of 28 V DC as input from the Aircraft DC bus to provide the dual output. It provides built-in protections against output over voltage, output short circuit, output overload, output over frequency, output under frequency, input over Voltage, thermal overheat, input reverse polarity.

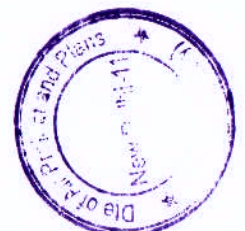
**Applicable Documents:** MIL-PRF-7032H, MIL-STD-704F, MIL-STD-461E, MIL-STD-810F

## PART - A

### 3. Functional Specifications

(a)	<b>INPUT</b>	
(i)	Input voltage (Nominal)	28 V DC
(ii)	Normal operating range	22 V to 29 V DC
(iii)	Abnormal operating range	Inverter should not trip between 20 - 22 V DC and 29 - 31.5 VDC
(iv)	Efficiency	>75%
(v)	Duty Cycle	> 05 Hours
(b)	<b>AC OUTPUT</b>	<b>At all loads and PF</b>
(i)	At 28 V DC input	112.5 - 117.5 V AC
(ii)	At 22 to 29 V DC input	112.5 - 117.5 V AC
(iii)	At 20-22 and 29-31.5 V DC input	108 - 117.5 V AC
(iv)	Total Power output	1000 VA
(v)	Output Frequency	400±1% Hz from N/L - FL at 20 to 31.5 V DC input & 0.8 lag to 0.9 lead PF
(vi)	Configuration	3 Ph Sine Wave
(vii)	Output Power Factor	0.8 lag to 0.9 lead
(viii)	Overload capacity	110% of rated load with Unity Power Factor for 02 hrs at 28 V DC I/P 150% of rated load at 28 V DC I/P with Unity Power

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		Factor 0.8 Lag & 0.9 Lead for 5 Min. O/P voltage 60 – 118 V AC
(ix)	Distortion	<= 5% over normal input voltage range
(c)	<b>DC Output</b>	
(i)	At 28 V DC	270 ± 5% V DC
(ii)	At 22 to 29 V DC	270 ± 5% V DC
(iii)	At 20 – 31.5 V DC	270 ± 5% V DC
(iv)	Total Power output	2.7 KW
(d)	<b>Protections</b>	
(i)	O/P Over voltage	Tripping threshold >126 V rms Automatic reset when inverter returns to a normal range
(ii)	O/P short circuit	Inverter shall provide 250% current for 5 sec and trip thereafter. Automatic reset when short circuit is removed
(iii)	O/P Overload	O/P voltage dips proportional to overload Fault light On indicator when voltage < 100 V AC Automatic reset when load is removed
(iv)	O/P Over Frequency	Tripping threshold > 425Hz Automatic reset when frequency returns in normal range
(v)	O/P Under Frequency	Tripping threshold < 375 Hz Automatic reset when frequency returns in normal range
(vi)	I/P Over Voltage	Tripping threshold >31.5 V DC Automatic reset when input returns to <= 31.5 VDC
(vii)	Thermal Overheat	Tripping threshold >80 °C Automatic reset when temperature returns to normal range
(viii)	Input Polarity reversal	No damage to inverter and loads
(ix)	Dielectric Strength Specs	Withstands without damage at 1500 V rms, 50 Hz for 1 min between winding (if any) and between winding and frame.
(x)	Over Voltage Surge As per MIL- STD – 704F	- 35 V for 0.15 sec - 40 V for 0.09 sec - 45 V for 0.06 sec - 50 V for 0.05 sec
<b>4.</b>	<b>Insulation</b>	

Ser	Insulation Tester Terminal		Test Voltage	Insulation Resistance at Room Temp
	+VE	-VE		



(a)	Input Pins (all pins shorted)	Chassis	500 V DC	$\geq 50 \text{ M}\Omega$	$\geq 5 \text{ M}\Omega$
(b)	Chassis	Input Pins (all pins shorted)	500 V DC	$\geq 50 \text{ M}\Omega$	$\geq 5 \text{ M}\Omega$
(c)	Output Pins (all pins shorted)	Chassis	500 V DC	$\geq 50 \text{ M}\Omega$	$\geq 5 \text{ M}\Omega$
(d)	Chassis	Output Pins (all pins shorted)	500 V DC	$\geq 50 \text{ M}\Omega$	$\geq 5 \text{ M}\Omega$

### PART-B

#### 5. Physical Specification

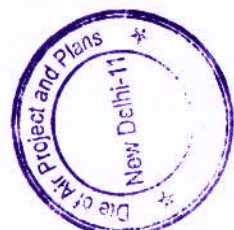
(a)	Dimension	$\leq$ Length : 30 cm $\leq$ Height : 24 cm $\leq$ Width : 35 cm
(i)	Weight	< 26 Kgs
(ii)	Cooling	Self cooled with integral fan
(iii)	Connectors	As per existing design
(b)	<b>Power Supply</b>	
(i)	Input voltage (Nominal)	28 V DC
(ii)	Normal operating range	22 V to 29 V DC
(iii)	Abnormal operating range:	Inverter should not trip between 20-22 V DC and 29 - 31.5 V DC

### PART – C

**6. Environmental Specification.** One unit will be subjected to qualification level specifications of Environmental Stress screening (ESS) and remaining units will undergo the acceptance level specification of ESS. All Electrical / electronic subsystems shall be subjected to the ESS which shall comprise of three stages:-

(a)	<b>Low Pressure (Altitude)</b>	As per MIL-STD-810F, Method 500.4, Procedure-I &II.  Storage at 20 Km altitude, duration 1 hour  Operate at 20 Km altitude duration >05 hours
(b)	<b>High Temperature</b>	As per MIL-STD-810F, Method 501.4,

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		<p>Procedure-I &amp; II</p> <p>Total number of cycles = 7.</p> <p>(a) STORAGE: +85°C</p> <p>(b) OPERATING: +71 °C</p>
(c)	<b>Low Temperature</b>	<p>As per MIL-STD-810F, Method 502.4, Procedure-I &amp; II</p> <p>(a) STORAGE: - 55°C</p> <p>(b) OPERATING: - 40 °C</p> <p>(c) Duration - 1 cycle of 24 hrs</p>
(d)	<b>Humidity Test</b>	<p>As per MIL-STD-810F, Method 507.4, Fig 507.4, 1, 5 cycles of 48 Hrs each,</p> <p>Temperature 60°C, RH 95%.</p>
(e)	<b>Fungus Test</b>	<p>As per MIL-STD-810F, Method 508.5</p> <p>Duration: 28 days, Temperature 29°C, RH 90 - 100%</p>
(f)	<b>Salt Fog Test</b>	<p>As per MIL-STD-810F, Method 509.4, salt solution 5 ± 1% concentration.</p> <p>Temperature 35 ± 2°C, 2 cycles of 24Hrs exposure and 2 cycles of 24Hrs drying, Total 96Hrs</p>
(g)	<b>Sand &amp; Dust Test</b>	<p>As per MIL-STD-810F, Method 510.4, Procedure – I &amp; II,</p> <p><b>Blowing dust:</b></p> <p>(a) Blow dust for 6 hrs at room temperature</p> <p>Blow dust for another 6 hours at 55°C</p> <p>Blowing Sand: Blow sand at a speed of 18-29 m/s at each vulnerable face from an approximate distance of 3 meters.</p> <p>Duration: 90 minute per face</p>
(h)	<b>Acceleration Test</b>	<p>As per MIL-STD-810F, Method 513.5</p> <p>(a) <b>Operational:</b> Procedure-II, Table</p>

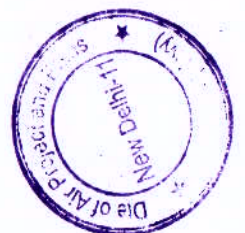


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		<p>513.5-II, Inverter ON, Fore: 2g, Aft : 6g, Up: 9g,Down: 3g, Lateral left /right: 4g</p> <p>Duration: One minute /direction</p> <p>(b) <b>Structural:</b> Procedure-I, Table 513.5-I, inverter OFF, Fore: 3g, Aft: 9g,Up: 13.5g, Down: 4.5g, Lateral left /right: 6g</p> <p>Duration: one minute/direction</p>
(j)	<b>Vibration Test</b>	<p>As per MIL STD 810F Method 514.5 as per test table 514.5C-II, Figure 514.5C-9 at fundamental frequency <math>f_0 = 101</math> Hz.</p> <p>Duration: 60 minutes/axis in all three axes, Inverter in ON condition</p> <p>Resonance search: Pre &amp; Post vibration at 0.5g, 20-2000Hz</p>
(k)	<b>Shock Test</b>	<p>As per MIL-STD-810D, Method 516.5</p> <p>(a) <b>Functional:</b> As per procedure -I, Inverter ON, 20g, 11msec, Saw Tooth; or alternatively 15g, 11 msec, half sine shock pulse. 3 shocks on each of 6 directions, total 18 shocks</p> <p>(b) <b>Crash Hazard:</b> As per procedure -V, 40g, 11msec, Saw Tooth; or alternatively 30g, 11 msec, Half Sine.</p> <p>(c) <b>Transit Drop:</b> As per Procedure – IV Inverter in packed condition Height of drop 48", total 26 drop on each face, edge and corner.</p> <p>(d) <b>Bench handling:</b> As per Procedure-VI, Four drop on each face of Inverter making 45° angle with horizontal or 4" height of the edge lifted above the horizontal whichever reached earlier.</p>

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## PART- D

### 7. EMI / EMC Specifications

(As per MIL-STD-461E Category- Army & Navy Aircraft- ASW Role)

#### Conducted Emission

- (a) **CE101:** Power Leads; Frequency range: 30 Hz - 10 KHz; Procedure: 5.4.3; Limits: Fig-CE101-4 for Army Aircraft & Navy ASW Aircraft
- (b) **CE102:** Power Leads; Frequency range: 10 KHz - 10 MHz; Procedure: 5.5.3.4; Limits: Fig-CE102-1.

#### Conducted Susceptibility

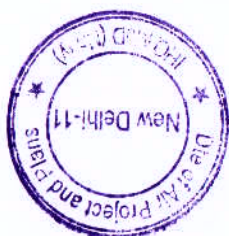
- (a) **CS101:** Power Leads; Frequency range: 30 Hz - 150 KHz; Procedure: 5.7.3; Limits: Voltage Limits: Fig-CS101-1 and Power Limits: Fig-CS101-2.
- (b) **CS114:** Bulk Cable Injection; Frequency range: 10 KHz - 200 MHz; Procedure: 5.12.3; Limits: Fig-CS114-1, Table-VI.
- (c) **CS115:** Bulk Cable Injection; Impulse Excitation; Procedure: 5.13.3; Limits: Fig-CS115-1 at a 30 Hz rate for one minute.
- (d) **CS116:** Damped Sinusoidal Transients, Cable and Power Leads; Frequency range: 10 KHz - 100 MHz;

#### Radiated Emission

- (a) **RE101:** Radiated Emissions, Magnetic Field, 30 Hz - 100 KHz
- (b) **RE102:** Electric Field; Frequency range: 10 KHz - 18 GHz; Procedure: 5.16.3; Limits: Fig-RE102.

#### Radiated Susceptibility

- (a) **RS101:** Radiated Susceptibility, Magnetic Field, 30 Hz - 100 KHz
- (b) **RS103:** Electric Field; Frequency range: 2MHz - 40GHz, 200V/m; Procedure: 5.19.3; Limits: Up to 30MHz modulation-Vertically Polarized Field; Above 30MHz-Horizontally & Vertically Polarized Field, radiated Electric Field- Table VII.



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