EOI No.:NAL/PUR/CSMST/029/21-Z Dated: 25-June-2021

EXPRESSION OF INTEREST [COMMITAL]

FOR

PRODUCTION OF HANSA-3(NG) AIRFRAME IN GOCO MODEL

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH
NATIONAL AEROSPACE LABORATORIES
P.B. NO.1779, HAL AIRPORT ROAD, KODIHALLI,
BENGALURU-560017

Council of Scientific and Industrial Research
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ISO:9001:2015 Certified

INVITIATION / NOTICE INVITING FOR EXPRESSION OF INTEREST (EOI)

CSIR- National Aerospace Laboratories (NAL), Bengaluru, India is one of the premier laboratories under Council of Scientific and Industrial Research, an autonomous body under Department of Scientific and Industrial Research (Government of India), New Delhi. CSIR-NAL is a Science and Knowledge based Research, Development and Consulting Organization. It is internationally known for its excellence in Scientific Research in Aerospace Engineering.

The Director, CSIR-NAL invites an Expression of Interest (EOI) is being sought from reputed and competent Bidders for the "**Production of HANSA-3(NG) Airframe** (**Fabrication, assembly & integration of Airframe components OF HANSA-3(NG) All Composite Aircraft) in Government Owned Company Operated (GOCO) model)".** Bidders are requested to submit all the required documents for Bidder evaluation as per Pre-qualification criteria.

PREAMBLE

CSIR- National Aerospace Laboratories (NAL), Bengaluru, India is one of the premier laboratories under Council of Scientific and Industrial Research, an autonomous body under Department of Scientific and Industrial Research (Government of India), New Delhi. CSIR-NAL is a Science and Knowledge based Research, Development and Consulting Organization. It is internationally known for its excellence in Scientific Research in Aerospace Engineering.

An executive, business level meeting on EOI is proposed to be held at CSIR-National Aerospace Laboratories (CSIR-NAL) with the prospective manufacturers, for manufacturing of HANSA–3(NG) (2-seater, all composite trainer aircraft) components, mechanical assemblies & integration using the current and existing infrastructure, utilities, machines and technology at CSIR-NAL.

Sr. No.	File No.	Item Description
1	NAL/PUR/ CSMST/029/21-Z	**PRODUCTION OF HANSA-3(NG) AIRFRAME IN GOCO MODEL** Consisting of the following **major tasks**: a) Airframe component fabrication & assembly b) Integration of Airframe components c) Fabrication of mechanical system parts & assemblies d) Support during equipping & integration of Aircraft

1. Bids are invited through the electronic tendering process and the EOI / Tender Document can be downloaded from the e-Tender Central Public Procurement Portal (CPPP) of Government of India, https://www.eprocure.gov.in/epublish/app. A copy of the EOI / Tender Document is also available on CSIR-NAL Website, www.nal.res.in.

2. The address for obtaining further information:
The Senior Controller of Stores & Purchase
Purchase Section
CSIR- National Aerospace Laboratories
PB No.1779, HAL Airport Road, Kodihalli, Bengaluru – 560017
Karnataka-India
Tel # : 080 25086040/6041/6044
Fax # : 080 25269611
Email : purchasek@nal.res.in, mkala@nal.res.in

3. The prospective bidders should adhere to due dates specified in Tender Details corresponding to this Tender on E-Tender portal https://www.eprocure.gov.in/epublish/app.

4. The Schedule for Submission of EOI / Bids and Opening of Bids is as follows: -

Date & Time of Submission of EOI / Bid		Date and Time of Opening of Bid	
Date	Time (IST)	Date	Time (IST)
12-July-2021	10:00 Hrs	13-July-2021	11:00 Hrs

5. A brief description of the procurement methodology is appended herewith. The Participants are requested to submit documentary evidence to prove technical capabilities, client list, experience and credentials as per Annexures enclosed. Details submitted should be relevant to the composite fabrication, metallic component fabrication as well as aircraft assembly and integration.

6. The bidders proposing to supply finished products directly/indirectly from Bidders of Countries sharing the land border with India should submit copy of registration done with the Ministry of Home Affairs and Ministry of External Affairs.

7. If the products supplied are not from Bidders of Countries sharing Land border with India, the Bidders should enclose a declaration. The bids of those bidders failing to comply with the above clauses will be summarily rejected.

8. The Director, CSIR-National Aerospace Laboratories (NAL), Bengaluru, India reserves the right to accept or reject any bids or accept all EOI / Tenders either in part or in full or to split the order, or to annul the bidding process without assigning any reasons there for.

Stores & Purchase Officer
For and on behalf of CSIR

1. Brief Description

The objective of this EOI is to select the suitable Company / Contractor for the following major tasks related to Hansa-3(NG) aircraft using existing facilities and infrastructure at CSIR-NAL

a. Airframe component fabrication & assembly
b. Integration of Airframe components
c. Fabrication of mechanical system parts & assemblies
d. Technical Support during equipping & integration of Aircraft

The selected Contractor / bidder shall be an established Company with relevant experience which would be engaged for the tasks mentioned above and is expected to produce a minimum of **6 (six) nos.** of ship–sets per year. The decision of production of additional quantities / ship-sets, beyond 6 nos. of aircraft components would be at the sole discretion of Director, CSIR-NAL.

1.1 HANSA-3 (NG) AIRCRAFT OVERVIEW:

HANSA-3 (NG) is a two seat, all composite, low wing monoplane (single-piece wing), single engine light aircraft designed for ab-initio flying training with maximum All-Up Weight of 750 kg under JAR-VLA category.

1.2 Details of Aircraft Structure & Components

HANSA-3 (NG) airframe is of sandwich construction with PVC foam core and bi-directional 4MIL glass layer face sheets along with the use of unidirectional carbon layer at high stress areas such as wing spar caps, fuselage longerons, etc. Current technology of Just-in time Prepreg manufacturing process with controlled resin & hardener application is used for composite fabrication. It is equipped with a fixed one-piece spring steel main landing gear strut and a free caster / steerable type nose landing gear (NLG). There are two separate side-by-side seats for the pilot and the occupant with a full bubble canopy opening towards the front and a rear window on either side. The aircraft is powered by an advanced, fuel-efficient, 4-cylinder, 4-stroke liquid/air cooled engine along with a propeller. A single non-metallic tank is provided at the aft of pilot seats in the fuselage with 95 litres of usable fuel capacity. The primary control surfaces, viz, elevator, aileron and rudder are manually operated whereas, the flaps and elevator trim-tabs are electrically controlled.

All the mechanical systems (viz., flight controls, electrical system, fuel & power plant system installations) components are made out of typical aircraft materials like Aluminium 2024 alloy & CM steel and are formed/machined/welded.

The three-view diagram of HANSA-3 (NG) aircraft is shown in **Figure - 1**. The constructional features of the aircraft are summarised in **Figure - 2.**

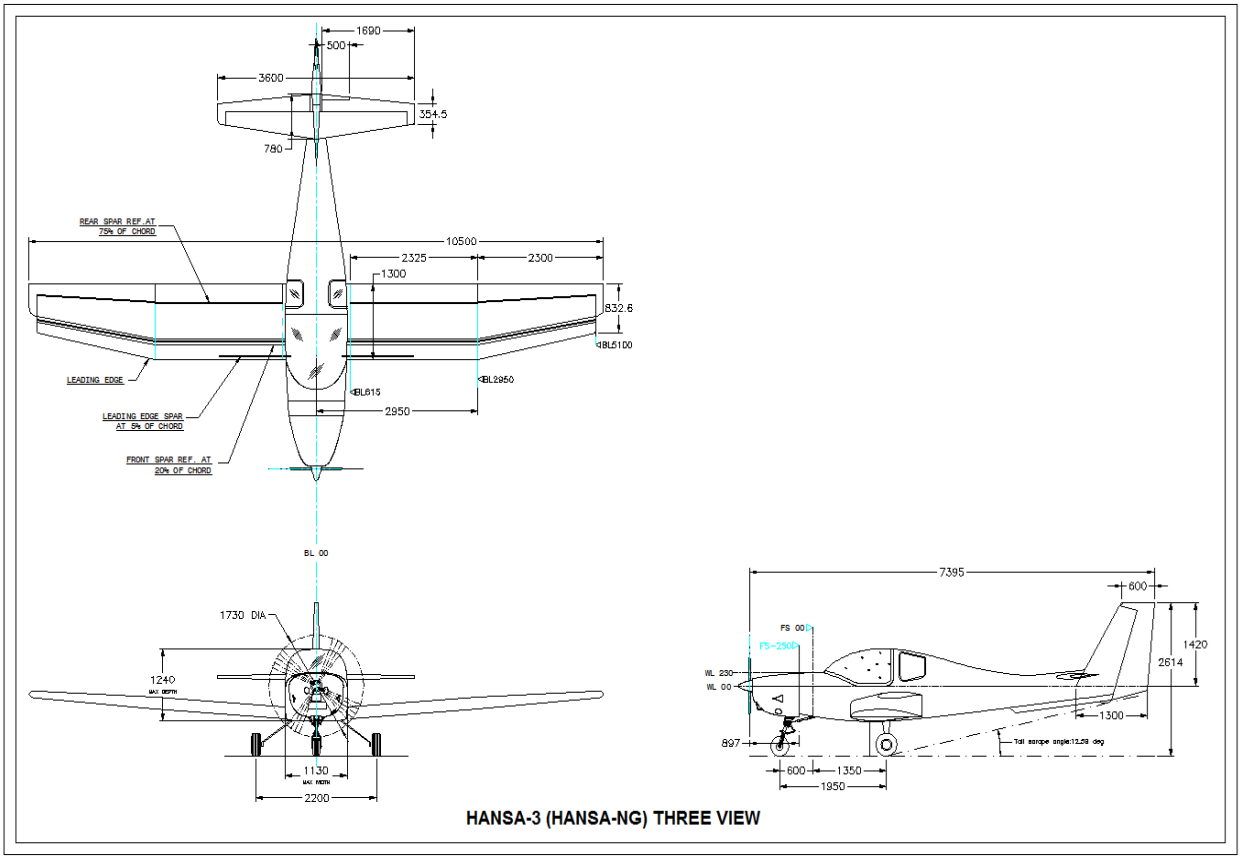


Figure - 1: HANSA-3 (NG) three view drawing

WINGS
- SINGLE PIECE
- THREE SPAR STRUCTURE
- SANDWICH SPAR SHEAR WEBS
- SANDWICH SKINS

MAIN SPAR
- I-SECTION
- CARBON SPAR CAPS

REAR SPAR:
- FOAM SANDWICH SHEAR WEB
- ATTACHMENT: ONE BOLT TO FUSELAGE BULKHEAD

LEADING EDGE SPAR
- FOAM SANDWICH SHEAR WEB
- ATTACHMENT: ONE BOLT TO FUSELAGE BULKHEAD

FLAPS
- GLASS - EPOXY SKIN
- SINGLE SPAR
- HINGED, SLOTTED FLAP

AILERONS
- PIANO-HINGED
- GLASS-EPOXY SANDWICH SKIN
- SINGLE SPAR
- SANDWICH SHEAR WEB & RIBS

FUSELAGE
- COMPOSITE SANDWICH SHELL + BULKHEADS & FRAMES

COWLING
- GLASS-EPOXY PANEL

FAIRINGS
- GLASS-EPOXY PANEL

LANDING GEAR
- NON-RETRACTABLE TRICYCLE

MAIN GEAR
- SINGLE STEEL SPRING MOUNTED ON WING WITH HYDRAULIC BRAKES.

NOSE GEAR
- **FREE CASTER TYPE NOSE GEAR MOUNTED ON FIREWALL**

RUDDER AND ELEVATOR
- GLASS-EPOXY SKIN
- SINGLE SPAR
- SANDWICH SHEAR WEB & RIBS

FIN AND STABILIZER
- TWO SPARS
- SANDWICH SPAR WEBS, SKIN & RIBS.

NOTE: SANDWICH HAS PVC FOAM CORE

Figure - 2: Constructional features of HANSA-3(NG) Aircraft

The main features of airframe components like Fuselage, Wing and Empennage are highlighted below:

1.2.1 Fuselage Structure

The HANSA-3(NG) fuselage is of sandwich construction with PVC foam core and bi-directional 4MIL glass layer face sheets with a total length of ~ 5.7 meters. It consists of 12 Bulkheads distributed across the length as shown in **Figure - 3**. Wing is attached to the centre fuselage while, HT and VT are attached at the rear fuselage. The engine and nose landing gear (NLG) are attached at the front fuselage. The fuselage also supports the fuel tank. The canopy opens to the front. Four longerons (Two per side), made of carbon composite, are located along the length of the fuselage.

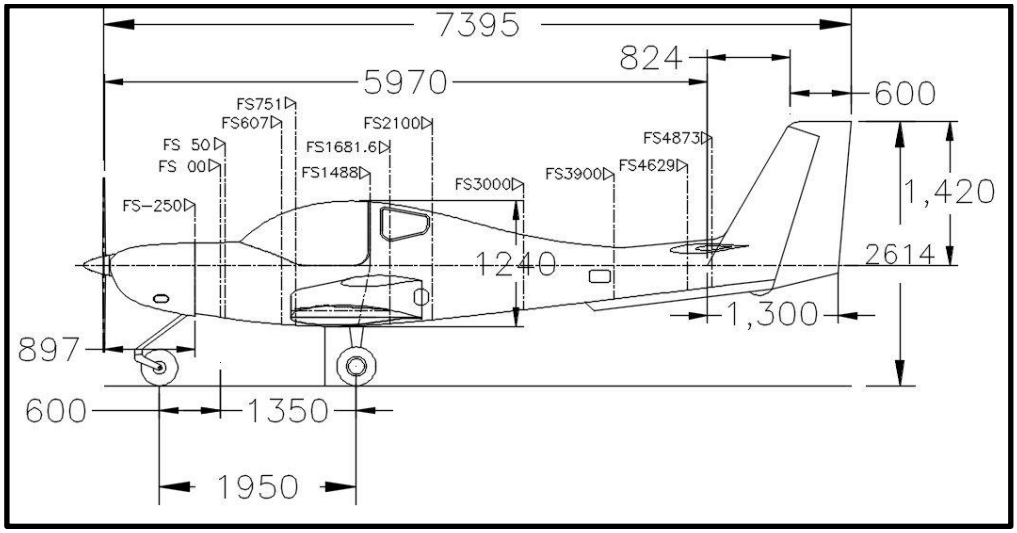


Figure - 0: HANSA – NG Fuselage structure

1.2.2 Wing, Aileron & Flap Structures

HANSA-3(NG) aircraft wing is a multi-spar, multi-rib structure with completely bonded construction. The total length of the wing is ~ 10.5 meters. Constructional features of the wing are shown in Error! Reference source not found.

Wing structure is basically a composite sandwich structure. PVC foam is used as core material with glass-epoxy composite as face sheet to form the sandwich construction. Spar caps are made of carbon-epoxy composite material with monolithic construction.

Wing structure consists of top shell and bottom shell held together with spar and rib sub-structure. Totally two main spars, three auxiliary spars and 9 ribs are on each wing.
Flaps and Ailerons are attached on the trailing edge of the wing. Flap and aileron structure also consists of top shell and bottom shell held together with spar and rib sub-structure similar to main wing. Main landing gear (MLG) is attached near the wing root.

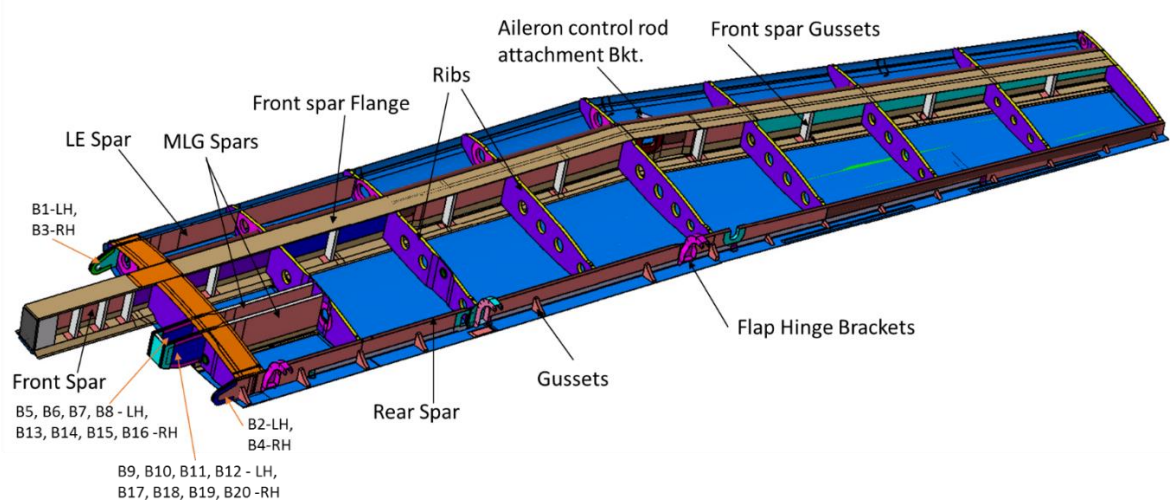


Figure - 4: Wing constructional details

1.2.3 Empennage Structure

The empennage of HANSA-3(NG) aircraft consists of Horizontal Tail (HT) and Vertical Tail (VT). HT contains Horizontal Stabilizer (HS) and Elevator whereas VT contains Fin and Rudder. These are multi-spar, multi-rib structures, wherein PVC foam is used as core material with glass epoxy composite as face sheets. The total length of HT is ~ 3.6 meters. The total height of VT is ~ 1.6 meters. The constructional features of HS and fin are shown in Error! Reference source not found.

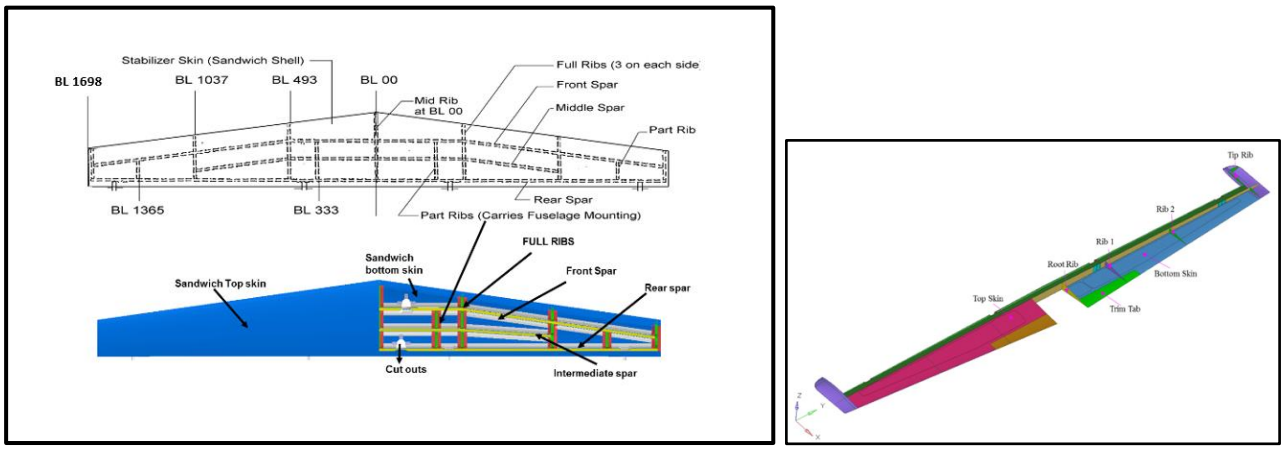
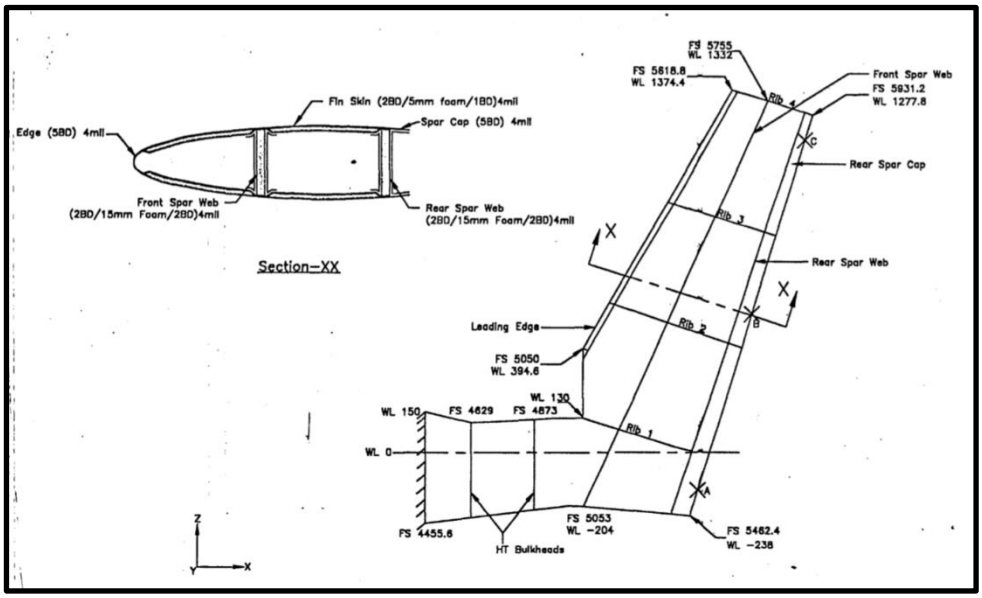


Figure - 5: Schematic of Horizontal Stabilizer & Elevator



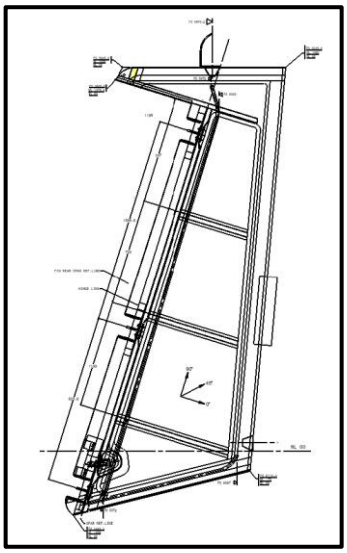


Figure - 6: Schematic of Fin & Rudder

1.3 MECHANICAL SYSTEMS

1.3.1 Landing Gear & Brake System

HANSA-3(NG) aircraft is equipped with a fixed tricycle type landing gear. Main landing gear (MLG) is of leaf spring strut type formed out of spring steel, which functions as a shock absorber. The main wheels attached to leaf spring strut are fitted with hydraulic powered, manual toe-operated external calliper-type disc brakes. Free caster type / steerable Nose landing gear (NLG) is made out of CM steel.

1.3.2 Flight Control Systems

The primary flight controls are of dual control type, all-mechanical, maintenance-friendly and manually operated. The displacement of pilot controls in the cockpit is transmitted to the respective control surface through a combination of torque tube, bell crank levers and push-pull rod system. Single slotted flaps provided at the inboard end of the wings are electrically operated. Flight control system parts are made out of CM steel/ Aluminium alloys.

1.3.3 Power Plant & Fuel System Installations

Engine mount assembly which supports the engine, is a welded tubular structure made up of standard CM steel. A single non-metallic tank is provided at the aft of pilot seats in the fuselage with 95 litres of usable fuel capacity. The components like, fittings, installation brackets, pipe lines etc of the power plant and fuel system are made out of Aluminium alloy/CM steel. The air-intake, coolant ducts and cowling are of monolithic composite construction using bi-directional 4MIL glass layers and vinyl ester resin system.

1.3.4 Electrical & Avionics System Installations

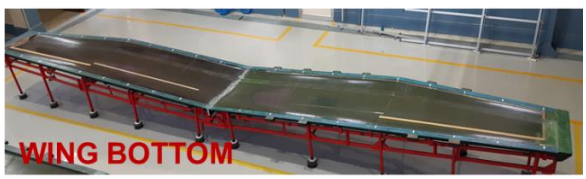
The main instrument panel which houses the glass cockpit instruments (PFDs, EMU, NAV/COM/GPS, AMU, Transponder, Compass, Switches, CBs, etc) is made out of Aluminium alloy sheet reinforced with stiffening angles on aft side. Brackets and fittings for other installations viz., battery, lights, ELT, relay panel, etc are formed sections and are made out of Aluminium alloy.

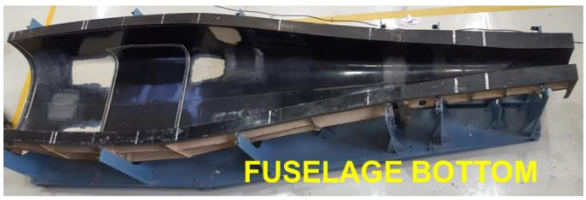
1.4 Facilities & Infrastructure to be provided by CSIR-NAL

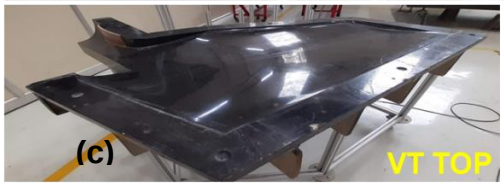
1.4.1 Composite Manufacturing Facility:

CSIR - National Aerospace Laboratories has established a facility called, **SMART AEROSPACE COMPOSITES MANUFACTURING FACILITY (SACMAF),** at Centre for Societal Missions & Special Technologies (CSMST) for the development and manufacturing of composite airframes for aerospace applications. The facility has obtained Production Organisation Approval (POA) from the Directorate General of Civil Aviation (DGCA) for manufacture of HANSA-3(NG) Airframe. The centre is well equipped with all the utilities that are required to carry out full-fledged fabrication of the various composite components related to HANSA-3(NG) aircraft. The major facilities are shown in **Figure - 7**:

(b)







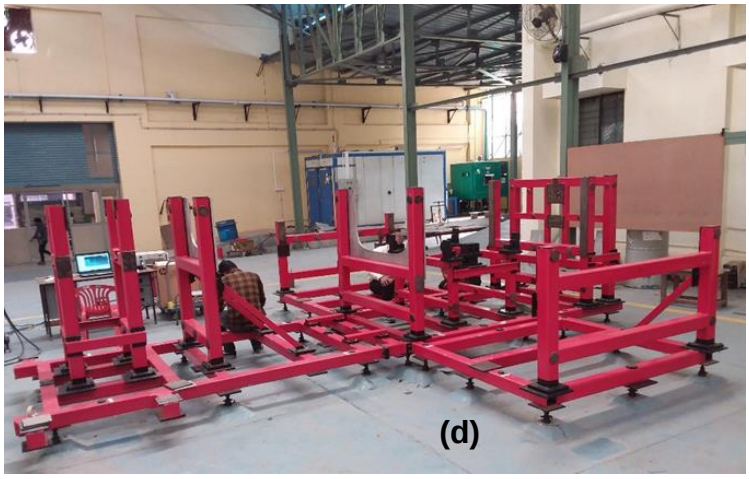


Figure - 7: Major Facilities for HANSA NG Airframe Fabrication at SACMAF

(a) JIPREG facility, (b) Air-circulating oven for Post-curing, (c) Composite moulds, (d) Assembly jig

The Company shall be allowed to use the following facilities / infrastructure available at SACMAF

(1) JIPREG facility where prepregs are produced just in time, based on the need.
(2) Fabrication facility (3 large Hangar spaces) along with all the airframe moulds related to HANSA 3(NG), where the prepregs are laid on the moulds and cured under vacuum.
(3) Large Air circulating oven to post cure the HANSA-3(NG) airframe components.
(4) Assembly jig for integration of HANSA-3(NG) Airframe components.
(5) Storage Facility viz., Bonded Stores for Raw materials and Tool-crib for requisite tools .
(6) Centralised compressed air facility to cater to JIPREG machine, pneumatic tools etc.
(7) Centralized vacuum facility for composite fabrication.
(8) Miscellaneous facilities such as measuring and monitoring equipment, Woodpecker NDT equipment, process area, utility plant, electrical substation, effluent treatment plant, firefighting system etc.

1.4.2 Assembly, Integration and Equipping Facilities

On completion of production of major airframe at SACMAF, all major assemblies will be transported to HANSA HANGAR (Prof. RB Damania Flight Hangar), CSIR-NAL, Belur Campus for Aircraft structural assembly, equipping and integration as per approved route books.
The Company will be allowed to use the following facilities / infrastructure to carry out airframe integration, sub-assembly of mechanical systems as well as to provide support to CSIR-NAL for aircraft equipping & integration.

a) Aircraft Hangar with a floor area of ~ 800 Sq. meters (can accommodate 3 HANSA aircraft assemblies at a time).
b) Jigs & Fixtures for various mechanical systems
c) Supporting Fixtures for airframe assembly
d) Tool-crib
e) Bonded Stores to store finished parts
f) Storage space for raw materials
g) Pneumatic facility for assembly

1.5. Scope of Work

The detailed scope of activities in each of the major tasks listed earlier is given in the following sections

1.5.1. Airframe component fabrication & assembly

1.5.1.1 Scope of Work of Company

1) Fabrication of composite Airframe components such as Fuselage, Wing, Aileron, Flaps, Empennage, cowling, fairings, fuel tank, canopy frame, cable tray and other associated components of HANSA-3(NG) aircraft at CSIR-NAL, as per CSIR-NAL supplied approved drawings & Standard of Preparation (SOP).

2) Procurement of raw material and standard parts from Aerospace approved vendors as per the approved SOP / BOM. All raw materials (both metallic and composite) and other standard parts required for manufacturing and assembly of airframe have to be procured from Aerospace approved vendors by the Company and shall be quality inspected and bonded as per NAL procedures.
3) Manufacturing of Metallic parts, phenolic bushes, wooden parts, etc., as per the approved SOP. The Company has the choice to fabricate these items either at its own facility or can outsource the fabrication. All these facilities need to be approved by CSIR-NAL.
4) Other special process activities on metallic parts such as Non-Destructive Testing (NDT), Electroplating, Heat Treatment (Annealing, solutionizing, etc.,), Welding, Cadmium plating, Painting etc, to be carried out as per CSIR-NAL approved processes. All these facilities need to be approved by CSIR-NAL.
5) Fabrication of complete Airframe Composite components as per approved SOP at CSIR-NAL using CSIR-NAL facilities and infrastructure as detailed in Section 1.4.1.
6) Quality control (QC) coverage during different stages of fabrication as well as tagging and storage of parts as per CSIR-NAL approved procedures.
7) Maintenance of fabrication records such as route books, production queries, shop queries, snags, etc., all of which shall be handed over to CSIR-NAL after completion of the job
8) Procurement of consumables, hand tools, safety accessories and other related items for fabrication.
9) Deploy sufficient, qualified / experienced / skilled manpower to carry out fabrication activities covering areas of composite fabrication, methods engineering, materials management, production planning, etc., including operation of equipment such as JIPREG, Ovens, compressors, vacuum systems, etc., in order to successfully complete the tasks defined in the scope of work

1.5.1.2 Scope of Work of CSIR- NAL

1) Provision of infrastructure / facilities as mentioned in Section 1.4.1.
2) Providing SOP, manufacturing drawings, CAD models, Material schedules, process sheets, route cards, etc., as applicable, for fabrication of Aircraft components, sub-assemblies and assemblies.
3) Periodic calibration and certification of moulds, jigs and fixtures.
4) Auditing and approving of metal part manufacturers /external agencies identified by the Company, in co-ordination with the regulatory authority, DGCA.
5) Auditing and approving of vendors identified by the Company to carry out various processes such as Electroplating, painting, welding, Heat treatment, NDT etc. as per NAL Approved Process (NAP) standards in co-ordination with the regulatory authority, DGCA.
6) Approving of standard parts and raw materials vendors, identified by the Company. CSIR-NAL will also suggest the sources for procurement of raw materials and standard parts.
7) Providing training to the manufacturing and QC teams of Company, till it manufactures one complete set of aircraft.
8) Approval of production and quality control (QC) teams of Company in consultation with DGCA for carrying out the manufacturing, assembly, integration and inspection.
9) Incoming inspection of raw materials, standard parts and other consumables.
10) Providing dispositions for Production Queries (PQ), Snags, Design Queries arising during fabrication of the aircraft and update the models/ drawings accordingly.
11) Safe disposal of waste generated during manufacturing and assembly, shelf-life materials and rejected components.
12) Procurement of LRUs (like engine, accessories, avionic / electrical equipment, bubble canopy, actuators etc),
13) Necessary approvals from DGCA to carry out fabrication and airframe assembly.
14) Providing Canteen facilities on chargeable basis to the Company's manpower working at CSIR-NAL.
15) Providing electricity to carryout HANSA-3(NG) manufacturing activity at CSIR-NAL.
16) Providing Laser based Calibration equipment for Symmetry checks and other locating works related to HANSA-3(NG) aircraft at CSIR-NAL

1.5.2. Integration of Airframe components

This refers to integration of Airframe components like fuselage, wing, empennage, etc., using coupling jigs at CSIR-NAL.

1.5.2.1. Scope of Work of Company

1) Integration of Airframe components like fuselage, wing, empennage, etc., using coupling jigs at CSIR-NAL.
2) To transfer attachment holes on all major components for assembly of airframe by maintaining aircraft centre line symmetry and Water Line (WL)
3) Transfer of interface attachments for MLG, NLG, engine mount, mechanical systems, etc.,
4) To carry out symmetry checks on the airframe assembly
5) QC coverage during different stages of integration as well as tagging and storage of parts as per CSIR-NAL procedures.
6) Maintenance of fabrication records such as route books, production queries, shop queries, snags, etc.,
7) Maintenance of fabrication records such as route books, production queries, shop queries, snags, etc., all of which shall be handed over to CSIR-NAL after completion of the job
8) Procurement of consumables, hand tools, safety accessories and other related items for airframe integration activities.
9) Deploy sufficient, qualified / experienced / skilled manpower to carry out airframe assembly activity including tool design, in addition to manpower mentioned in Section 1.5.1.1 (9), so as to successfully complete the tasks defined in scope of work.

1.5.2.2 Scope of Work of CSIR- NAL

1) Provision of infrastructure / facilities as mentioned in Section 1.4.1.
2) Providing SOP, manufacturing drawings, CAD models, Material schedule, process sheets, route cards, etc., as applicable, for fabrication / integration of Aircraft components, sub-assemblies, assemblies,
3) Periodic calibration and certification of moulds, jigs and fixtures
4) Providing training to the manufacturing and QC teams of Company, till it manufactures one complete set of aircraft.
5) Approval of production and QC teams of Company in consultation with DGCA for carrying out the manufacturing, assembly, integration and inspection..
6) Providing dispositions for Production Queries (PQ), Snags, Design Queries arising during fabrication of the aircraft components and update the models/ drawings accordingly.
7) Necessary approvals from DGCA to carry out fabrication and airframe assembly.

1.5.3. Fabrication of mechanical system parts and assemblies

1.5.3.1. Scope of Work of Company

1) Fabrication of metallic and composite components of mechanical assemblies such as Flight control systems, MLG, NLG, Power plant, Fuel system, Electrical, Avionic systems, etc.,
2) Procurement of raw material and standard parts from Aerospace approved vendors as per the approved SOP / BOM. All raw materials (both metallic and composite) and other standard parts required for manufacturing and assembly of airframe have to be procured from Aerospace approved vendors by the Company and need to be quality inspected and bonded as per NAL procedures.
3) Manufacturing of Metallic parts, phenolic bushes, wooden parts, rubber items, etc., as per the approved SOP at approved facilities. The Company has the choice to fabricate these items either at its own facility or outsource the fabrication. All these facilities need to be approved by CSIR-NAL.
4) Other special process activities on metallic parts such as Non-Destructive Testing (NDT), Electroplating, Heat Treatment (Annealing, solutionizing, etc.,), Welding, Cadmium plating, Painting etc, to be carried out as per CSIR-NAL approved processes. All these facilities need to be approved by CSIR-NAL.
5) Fabrication of Composite components as per approved SOP at CSIR-NAL using CSIR-NAL's facilities and infrastructure as detailed in Section 1.4.1.
6) Sub-assembly of mechanical system at approved facility of the Company
7) Assembly of mechanical systems at CSIR-NAL using CSIR-NAL facilities as mentioned in Section 1.4.2.
8) QC coverage during different stages of fabrication as well as tagging and storage of parts as per CSIR-NAL approved procedures.
9) Maintenance of fabrication records such as route books, production queries, shop queries, snags, etc., all of which shall be handed over to CSIR-NAL after completion of the job.

10) Procurement of consumables, hand tools, safety accessories and other related items for fabrication.
11) Deploy sufficient, qualified / experienced / skilled manpower to carry out fabrication activities covering areas of composite fabrication, metallic manufacturing, sub-assembly of metallic components, methods engineering, materials management, production planning, etc., in order to successfully complete the tasks defined in scope of work

1.5.3.2 Scope of Work of CSIR- NAL

1) Provision of infrastructure / facilities as mentioned in Sections 1.4.1. and 1.4.2
2) Providing SOP, manufacturing drawings, CAD models, Material schedule, process sheets, route cards, etc., as applicable, for fabrication of Aircraft components, sub-assemblies, assemblies,
3) Periodic calibration and certification of moulds, jigs and fixtures
4) Auditing and approving of metal part manufacturers /external agencies identified by the Company, in co-ordination with the regulatory authority, DGCA.
5) Auditing and approving of vendors identified by the Company to carry out various processes such as Electroplating, painting, welding, Heat treatment, NDT etc. as per NAP standards in co-ordination with the regulatory authority, DGCA.
6) Approving of standard parts and raw materials vendors, identified by the Company. CSIR-NAL will also suggest the sources for procurement of raw materials and standard parts.
7) Providing training to the manufacturing and QC teams of Company, till it manufactures one complete set of aircraft.
8) Approval of production and QC teams of Company in consultation with DGCA for carrying out the manufacturing, assembly, integration & equipping activities.
9) Incoming inspection of raw materials, standard parts and other consumables.
10) Providing dispositions for Production Queries (PQ), Snags, Design Queries arising during fabrication of the aircraft components and update the models/ drawings accordingly.
11) Safe disposal of waste generated during manufacturing and assembly, shelf-life materials and rejected components.
12) Procurement of LRUs (like engine, accessories, avionic / electrical equipment, bubble canopy, actuators etc),
13) Necessary approvals from DGCA to carry out fabrication and assembly.

1.5.4. Support during equipping & integration of Aircraft

It is to be noted that Equipping & integration of aircraft is CSIR-NAL's responsibility. However, Company support during the equipping and integration phase is necessary.

1.5.4.1 Scope of work of Company

1) Rework on the components fabricated by the Company due to errors during manufacturing.
2) Pending activities to be carried out on the final assembly or those activities deferred to be carried out during final assembly
3) Mass balancing and installation of control surfaces and its smooth operation
4) Other applicable responsibilities as mentioned in Sections 1.5.1.1, 1.5.2.1 and 1.5.3.1 to complete the above tasks

2. Eligibility Criteria

The eligibility criteria for the Company to submit their Bids / EOI are as below:

i. The Bidder should be a Company having an average annual turnover of a minimum of **Rs 100 Crores** for each of the last three financial years

ii. The companies / industries desirous of submitting their Bids / EOI shall have a currently valid accreditation with ISO-9001:2015 or AS 9100D or NADCAP or ISO-14001 as relevant.

iii. More than 3 years of experience in manufacturing composite structures related to Aircraft industry.

iv. More than 3 years of experience in manufacturing metallic parts and assemblies for Aircraft industry, if applicable

v. For manufacture of Metallic parts, phenolic bushes, wooden parts, etc., if the Company doesn't possess the capabilities, it can outsource the work. However, the plan and extent of outsourcing shall be clearly indicated in the EOI

vi. The Company / industry shall possess Human Resource with adequate knowledge, expertise and experience in the areas of:
- Engineering skills to understand Aircraft Design drawings related to composite & mechanical systems
- At least 3 years of experience in Aerospace composites manufacturing
- Methods Engineering related to composite manufacturing, metallic fabrication, airframe assembly, mechanical assemblies etc.,
- Materials Management
- Production Management
- Airframe assembly, jig calibration & integration
- Aerospace Quality Control & Assurance

vii. The Company / industry should be conversant with good manufacturing and safety practices.

viii. The Company shall provide details of Composite structures fabricated and the process employed with major details like Glass/ carbon composites etc. inclusive of the approximate size of each component.

ix. The Company shall agree that, they will deliver minimum 6 ship sets of HANSA NG components as per the scope of work, in a year.

x. The Company / Bidder shall provide other details in support of their capabilities with respect to the EOI as per the annexures mentioned herein

Sr. No.	Details	Annexure
1	Details of composite structures fabricated as on date	I
2	Ongoing Projects	II
3	Key personnel proposed for assessment of assigned jobs	III
4	Financial Status of Applicant	IV
5	Check List	V

Note: Company shall provide their plan for manufacture of metallic parts, phenolic bushes, wooden parts, etc.,

2.3. Criteria of proposal evaluation and selection procedure

The Technical Committee shall finalize the qualified manufacturers who can take up the manufacturing at CSIR-NAL.

a) Evaluation of the EOI proposal is adapted from the "Manual for Procurement of Consultancy and Other Services – 2017", Ministry of Finance, Department of Expenditure, GoI.

b) Technical Evaluation Matrix:
The selection of successful bidder is based on the process as defined in "Manual for Procurement of Consultancy and Other Services – 2017". The matrix for evaluation is given below:

Sl. No.	Criteria	Weightage
1	**Aerospace Manufacturing experience for more than 3 years** a) Composite parts (25%) b) Metallic parts (10%)	35%
2	**Competency of Manpower (minimum 3 years' experience in the following)** a) Methods Engineering (10%) b) Materials management & Supply chain (5%) c) Manufacturing (10%) d) Assembly and integration (10%) e) Quality Control & Assurance (10%)	45%
3	**Accreditation / Regulatory Authority Approval in Composite Production and Allied Areas as mentioned in Section 2;ii**	10%
4	**Overall financial strength of the Company in terms of group turnover, profitability and cash flow (liquid assets) situation for the immediate past 3 years.**	10%

2.3.1 General Notes

1. Selected/Qualified companies will have to sign an NDA with CSIR-NAL to further participate in the tender process, when the RFQ is raised.
2. A detailed technical and commercial proposal to be submitted by the qualified companies during the tender process on the basis of actual (on-field) assessment of all the drawings and components of Aircraft, after signing of NDA with CSIR-NAL
3. The qualified Companies may visit CSIR-NAL, Bengaluru, for thorough assessment of magnitude of work involved.
4. CSIR-NAL expects that the qualified Company would implement the best industrial practices to further optimise the time and manpower requirements.
5. Any damage to CSIR-NAL property by manpower deployed by Company must be fully borne by the Company.
6. The Company is completely responsible for the safety of the deployed personnel at CSIR-NAL
7. The tool crib and bonded stores has to be entirely managed by the Company.
8. **CSIR-NAL reserves the right to split, add, remove or modify any of the Work Packages at any point of time.**

2.4 Commercial

2.4.1 The Bidder shall be a Company having an average annual turnover of a minimum of Rs 100 Crores for each of the last three financial years.

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2.4.2 Audited Balance sheets must be provided in support of the data clearly marking the relevant portion. The details to be filled as per Annexure-IV.

2.4.3 Historic financial statements submitted must be audited by a Chartered accountant. (No statements for partial periods will be accepted.)

2.4.4 Average Net Worth: The Tangible Net Worth of the bidder should be positive CA Certificate with CA's Registration number/Seal.

2.4.5 The Bidder shall enclose the following documents:
(a) Copy of Company registration certificate issued by statutory authority (duly attested by Notary Public).
(b) Copy of Memorandum and Article of Association (duly attested by Notary Public).
(c) Audited Balance Sheets of last three financial years

2.4.6 Tax Registration & clearance The Bidder should have valid PAN and GSTIN.
Copy of GSTIN & PAN to be enclosed

2.4.7 Blacklisting Declaration that the bidder has not been banned or delisted by any Govt. of India or SEBI or Quasi Govt. Agencies or PSUs. If banned / delisted, the fact must be clearly stated. Self-Declaration on Company letter head to be provided.

3 Other Terms

3.1 EOI Document

The detailed EOI document shall be downloaded from CPPP Portal https://www.eprocure.gov.in/epublish/app and CSIR-NAL website www.nal.res.in at free of cost.

3.2 Clarifications on the EOI / Tender Document

Any clarification in the EOI / Tender document may be sent in writing to the following address or through email:

The Senior Controller of Stores & Purchase
Purchase Section
CSIR- National Aerospace Laboratories
PB No.1779, HAL Airport Road, Kodihalli,
Bengaluru – 560017, Karnataka-India
Tel # : 080 25086040/6041/6044 ; Fax # : 080 25269611
Email purchasek@nal.res.in,mkala@nal.res.in

However, no extension of the time or date will be provided on the ground that CSIR-NAL has not responded to any query/clarification raised by Any Bidder.

3.3 Amendment to Terms and Conditions of EOI

3.3.1 CSIR-NAL may at its discretion or as a result of a query, suggestion or comment of any Bidder, may modify the EOI / Tender document by issuing an amendment or a corrigendum at any time before opening the EOI / Tender. Any such Addendum or Corrigendum will be uploaded on CPPP Portal https://www.eprocure.gov.in/epublish/app and CSIR-NAL's website www.nal.res.in and the same will be binding on all the Bidders, as the case may be.

3.3.2 CSIR-NAL at its discretion may extend the due date of submission of quotation and the decision of CSIR-NAL in this respect would be final and binding on the respondents. In the event of changes in the time schedule, CSIR-NAL shall notify the same on CPP Portal https://www.eprocure.gov.in/epublish/app and CSIR-NAL website www.nal.res.in. Interested Bidders are advised to check the above websites regularly for corrigendum / addendum, if any, which will be published.

3.3.3 No oral modification or interpretation of any provisions of this EOI / Tender enquiry shall be valid. Written communication shall be issued by CSIR-NAL when changes, clarifications or amendments to the document are deemed necessary by CSIR-NAL at its sole discretion.

3.4 Submission and sealing of Bids

3.4.1 Submission, Sealing and Marking of Bids

3.4.1.1 The bidders may submit their duly sealed bids generally by post or by hand.

3.4.2 Sealing of Bids in the case of bids invited on Single Bid Basis:

3.4.2.1 The Bidder shall mark the Bids as "Original" and "Copy". The Original and copy bids shall be sealed in an envelope.

Marking of Envelopes:

a)	The inner and outer envelopes shall be addressed to the Purchaser indicated at Clause No.3.2
b)	The name and address of Bidder, Tender No., due date and warning "Do not open before ....." to be completed with the time and date as specified in the Invitation for bids.
c)	All envelopes should be superscribed with: • EOI/Tender Number..... • Due Date..... Time..... • Name of the Bidder..... • Addressed to: The Director CSIR-National Aerospace Laboratories PB NO.1779, Kodihalli, HAL Airport Road Bengaluru – 5600017 Karnataka-India

3.4.2.2 If the outer envelope is not sealed and marked as required above, the Purchaser will assume no responsibility for the bid's misplacement or premature opening of the submitted bid. In such cases, bids received in open condition within the due date and time will be accepted at the risk of the bidder if the same is presented to the Sr. Controller of Stores & Purchase before expiry of the due date and time of opening of the bids.

3.5 The submission of EOI should be in English language and should be free from correction, over writing, erasures etc. Duly authorized representative of the Applicant shall sign on each page of the EOI and related documents. The documents should be prepared in such a way so as to provide a straight forward, concise description of Applicant and capabilities to satisfy the requirements of this enquiry.

3.6 If at any time during the examination, evaluation and comparison of EOI / Tenders, CSIR-NAL at its discretion can ask the Bidder for the clarification of its submitted documents. The request for clarification and the response shall be in writing. However, no post submission of EOI / Tender / clarification at the initiative of the Bidder shall be entertained.

3.7 All cost and expenses associated with preparation and submission of EOI response shall be borne by the Bidder while submitting the EOI. CSIR-NAL shall have no liability, in any manner in this regard, or if it decides to terminate the process of short listing for any reason whatsoever.

3.8 No Agent/Agents or third party/parties are engaged by CSIR-NAL in this process.

3.9 CSIR-NAL is not responsible for any firm/agency expression or representing to express himself/herself/themselves to be the agent or third party representing CSIR-NAL in this process.

3.10 It is advised to deal directly with CSIR-NAL representative who is the signatory to this document.

3.11 Disregard of any instruction may result in offer being ignored.

3.12 This EOI and subsequent tender is governed by TERMS AND CONDITIONS of CSIR-NAL.

3.13 Canvassing by respondents in any form, including unsolicited letters on documents submitted or post corrections shall render their response liable for rejection summarily.

3.14 Conditional offers will be summarily rejected. EOI / Tender document, which is found to be incomplete in content and / or attachments and / or authentication etc. is liable to be rejected.

3.15 EOI / Tenders that are incomplete in any respect or those that are not consistent with the requirements as specified in this document may be considered non-responsive and may be liable for rejection and no further correspondence will be entertained with such Bidders.

3.16 Requested for proposal (RFP) will be issued only to the shortlisted firms who have responded to this EOI. This will be online through e-Tender Central Public Procurement Portal (CPPP) of Government of India, https://etenders.gov.in.

3.17 CSIR-NAL reserves the right to accept a response to EOI enquiry notification or reject any or all of them or withdraw the Notice at any stage of processing without assigning any reason whatsoever. Such an event would not cause obligation of any kind to CSIR-NAL.

3.18 Bidder evaluation criteria

3.18.1 Bidder evaluation will be made by a Committee constituted by the Director, CSIR-NAL for “Detail design and engineering of airframe for SARAS MK2”.

Annexure I

Details of Composite Structures fabricated in the last Five years

Sl. No.	Name & Location of the Project	Name & Address of Client along with their contact phone number and e-mail ID	Details of Project with Cost	Nature of work with specific areas addressed	Year of Start & Completion of the Project

Note: The applicants are required to provide Proof of award of work wherever available.

Annexure II

ONGOING PROJECTS

Name & Location of the Project	Name and address of the Agency for whom the project is being undertaken	Value of the project	Duration of the project	Expected year of completion	Exact Role	Whether by self or associated Entities

Signature of the Authorized representative(s)

Annexure III

KEY PERSONNEL IN THE AREA OF COMPOSITE MANUFACTURING AND PRODUCTION

Sr. No.	Area of Expertise	Number of proposed Personnel
1.	Methods Engineering	
2.	Materials management & Supply chain	
3.	Manufacturing	
4.	Assembly and integration	
5.	Quality Control & Assurance	

CVs OF EACH OF THE KEY STAFF MEMBERS IN THE AREAS OF EXPERTISE MENTIONED IN THE ABOVE TABLE

a) Detailed CV s of Engineers with 10+ Year Experience to be provided

b) Brief CVs of Engineers with 5+ Year Experience as per the following format to be provided

NOTE: CVs with experience in other than specified areas and duration of experience will not be considered for evaluation.

Name of the Staff		
Designation		
Years with the Applicant firm		
Position in the Proposed project (describe degree of responsibility also)		
Qualifications (Technical and General)		
Experience and Training (Relevant in the context of assignment)		
Employment Record		
Name of the Firm	Position Held	Years of Employment

Signature of the Authorized representative(s)

Annexure IV

FINANCIAL STATUS OF THE APPLICANT

SR. NO.	YEAR	2018-19	2019-20	2020-21
1	Total assets			
2	Current assets			
3	Total liabilities			
4	Profit before liabilities			
5	Profit before taxes			
6	Profit after taxes			

Signature of the Authorized representative(s)

Annexure V

CHECK LIST

The following details should be submitted along with EOI / Tender document.

Sr. No.	Documents	Compliance [Yes / No]
A	**Company Profile**	
1	Name of the Organization: Website	
2	Name of the Contact Person: a) Name: b) Address c) Telephone: d) Fax: e) E-Mail:	
3	Year of Incorporation	
4	Type of Organization a) Public Sector/ Limited/Private Limited/ Partnership/ Proprietary/ Society/ Any other b) Whether 'Foreign Equity Participation (Please give name of foreign equity participant and percentage thereof) c) Names of Directors of the Board/Proprietors d) Name and address of NRI(s), if any	
5	Category of the firm: Large/Medium/Small scale unit	
6	Address of the Registered Office:	
7	Number of Offices with addresses (Excluding Registered Office): a) India b) Abroad	
8	Certificate of registration as a manufacturing unit	
9	Permanent Account Number	
10	GST Number	
B.	**ESSENTIAL REQUIREMENTS**	
11	Status of ISO Certification	
12	The turnover is to be supported by financial statement of accounts/ Annual reports duly certified by a Chartered accountant/ Balance sheets of last 3 years/ Income tax returns for the last 3 years period.	
13	Documents as per Annexure-I, II, III & IV	
14	Black Listing declaration	
15	Documents as per 4.2.1, 4.2.3 and 4.2.4	
16	Validity of the Period	

Signature with Name & Seal:

Place:
Date: