Request for Proposal (RFP)

For

Production Partnership for Supply, Marketing and After-Sales Support for HANSA-3 (NG) Aircraft

CSIR-NAL

National Aerospace Laboratories
Council of Scientific & Industrial Research
HAL Airport Road, Kodihalli
Bangalore-560017

IMPORTANT INSTRUCTION

Prospective Firms who download the RFP document from Website and wish to participate in RFP process need to notify CSIR-NAL herein with their Contact Details (Name, Designation, Company details with address, Contact Number and Official Email ID) to ktmd.head@nal.res.in and rvenkatesh@nal.res.in, immediately after downloading the offer document.

Details to be shared in below format –

1. Firm Name –

2. Designation –

3. Company Details with Address –

4. Contact Number –

5. Official Email ID –

6. Interested in Contact by Mail - Yes / No

7. Interested in Contact by Telephone - Yes / No

Council of Scientific and Industrial Research
NATIONAL AEROSPACE LABORATORIES
P.B. No. 1779, HAL Airport Road, Kodihalli, Bengaluru – 560 017
Phone: +91-80-25086147/6207/6130 Fax: +91-80-25086009
E-mail: ktmd.head@nal.res.in

ISO: 9001:2008 Certified

10th November 2022

Request for Proposal

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 and other disciplines.

A RFP is invited in **Two-Stage Bid (Technical & Commercial)** by CSIR-National Aerospace Laboratories (CSIR-NAL) from established aircraft and allied engineering companies for the following: -

RFP Document Number	Description
KTMD/BDG/Hansa-3(NG)/RFP/2022-23/1	**Production Partnership for Supply, Marketing and After-Sales Support for CSIR-NAL's HANSA-3 (NG) Aircraft**

1. The address for submission of document for obtaining further information:

   Dr. M. Manjuprasad
   Head, KTMD
   CSIR-National Aerospace Laboratories
   Old Airport Road, Kodihalli
   Bengaluru-560017
   Tel-080-25086147/25086130
   Email: ktmd.head@nal.res.in, rvenkatesh@nal.res.in

2. The RFP document for submitting the offers can be downloaded free of cost from e-publishing Central Public Procurement Portal (CPPP) of Government of India, https://www.eprocure.gov.in/epublish/app A copy of the RFP Document is also available on CSIR-NAL Website, www.nal.res.in/en/tender The prospective firms willing to submit their offer shall adhere to due dates in the RFP details

3. The schedule for submission of Technical Offers and opening of the offers is as follows

Particulars	Due Date & Time
Pre-bid conference at CSIR-NAL and visit to facility & Hansa-3 (NG) aircraft for understanding the proposal and queries clarification	16th December 2022 at 11AM
Submission of Technical Offer at CSIR-NAL (Hard Copies)	16th January 2023 till 4PM
Opening of Technical Offer at CSIR-NAL	17th January 2023 at 11AM

Note:

I. Firms desires to attend the Pre-bid conference may please send their request by email to : rinku@nal.res.in, ktmd.head@nal.res.in and rvenkatesh@nal.res.in. Duration of Pre-bid conference shall be extended depending on the requirements of the extents.

II. Firms are required not to submit any commercial offer while submitting Technical Offer in first stage.

4. **Date and Time for receipt of hard copy of proposals**: The proposals in hard copy should reach the tender box on or before the date and time mentioned at Sr. No.3 for submission of proposals. Late/delayed proposals will not be considered. Postal/Courier delays will not be accepted as an excuse. In case the last date and time is declared a holiday at a later date, then the due date and time for receipt, opening will be shifted to the next working date and time automatically. No corrigendum will be issued in this regard.

5. A brief description of the qualification criteria is provided in the RFP. The Participants are requested to submit documentary evidence to prove technical capabilities, client list, experience, credentials etc., as requested in the RFP.

6. The Technical Evaluation Committee (TEC) shall scrutinize and finalize the firms meeting the qualification criteria after knowing/obtaining details of technical capabilities and site visit as per the requirement of the RFP.

7. For evaluating the responses, CSIR-NAL, if required, may call the firms for presentation of their case. Presentation can be considered via WebEx/Skype/Video Conferencing also.

8. The Director, CSIR-National Aerospace Laboratories (NAL), Bengaluru, India reserves the right to accept or reject any or all RFP notification/tenders/offers or withdraw the Notice at any stage of processing without assigning any reasons whatsoever, such an event would not cause obligation of any kind to CSIR-NAL.

Sd/-

Head, KTMD
For and behalf of CSIR

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RFP No. KTMD/BDG/Hansa-3(NG)/RFP/2022-23/1 **Date: 10th November 2022**

Due Date: 16th January 2023 **Time: 16.00 Hrs (IST)**

Please indicate above RFP number & due date on the Envelopes while responding

Request for Proposal (RFP) for Production Partnership for Supply, Marketing and After-Sales Support for CSIR-NAL's HANSA-3 (NG) Aircraft

Two - Stage Evaluation / Bidding

1. ORGANIZATION BACKGROUND

1.0 National Aerospace Laboratories (NAL), a constituent of the Council of Scientific and Industrial Research (CSIR), India, established in the year 1959, is the only government aerospace R&D laboratory in the country's civilian sector. CSIR-NAL is a high-technology-oriented institution focusing on advanced disciplines in aerospace. CSIR-NAL has several advanced test facilities, many of them are recognized as National Facilities. CSIR-NAL has provided significant value-added inputs to all the Indian national aerospace programmes. Over the last five decades, its contributions have enabled it to create a niche for itself in advanced aerospace research and technology development. CSIR-NAL has also developed many critical technologies for the strategic sector and continues to support the mission-mode programmes of the country. CSIR-NAL's mandate is to develop aerospace technologies with strong science content, design and build small, medium-sized civil aircraft, and support all national aerospace programmes.

1.1 HANSA-3 is India's first all-composite light two seat airplane designed and developed indigenously by CSIR- National Aerospace Laboratories ideally suited for ab-initio flying training, sport and hobby flying. Certified by Directorate General of Civil Aviation under JAR-VLA in the year 2000, HANSA aircraft is lightning protected, and is cleared for VFR and Night Flight Operations and has excellent flying qualities. HANSA-3 fleet has accumulated a total of more than 4000 hours.

1.2 In the year 2018, CSIR-NAL has initiated a program to improve the HANSA-3 aircraft to current standards & to meet India's immediate requirement of trainer aircraft for flying training. The improved HANSA-3 aircraft features full glass cockpit, powered by advanced fuel efficient Rotax 912 iSc Sports engine & electrically operated flaps to meet the user's requirements. Improved HANSA-3 aircraft with commercial name as HANSA-3 (NG) has better performance with higher range and endurance as compared to HANSA-3 and an advanced manufacturing process with better production rate.

Key Features of HANSA-NG Aircraft

- Glass Cockpit
- Advanced Fuel Efficient Engine along with Improved Cowl Design
- Increased Endurance & Range
- Improved Cockpit Ingress/Egress
- Steerable Nose Wheel (optional)
- Electrically Operated Flaps
- Better Cockpit Aesthetics & Ergonomics
- Improved Manufacturing Process - Better Production Rate

For further details, refer to enclosed HANSA-3 (NG) Aircraft brochure

2. OBJECTIVE OF RFP

2.1 The objective of this RFP is to select a suitable aerospace/aircraft industry partner preferably Indian partner having proven capacities, expertise and experience with a view to support the Indian industries under the Atmanirbhar Bharat to "productionise, supply, marketing & after sales support for CSIR-NAL's indigenous Hansa-3 (NG) aircraft " for pilot training & other applications.

2.2 CSIR-NAL being the OEM for indigenous Hansa - 3(NG) is lawfully entitled to enter into any form of agreements with selected manufacturer, for the grant of rights to interested manufacturer, qualifies and selected under this RFP, for production, marketing and after-sale service of aircraft. Selected partner is entitled to use the granted rights for the above purpose subject to fulfilling of the terms and payment of agreed Royalty to CSIR-NAL and un-interrupted after sales support to end customers.

2.3 The grant of rights shall be valid for a period of five (5) years from the date of signing of agreement (EFFECTIVE DATE), subject to covenants and conditions herein contained and shall remain in force (the "Term") with an **non-negotiable obligation to** (i) obtaining CAR-21 (Sub-part G) production organisation approval, CAR-145 for MRO, CAR -147 for training organisation etc. as required by DGCA, **within 1 year from the date of signing the agreement**, and (ii) paying Royalty to CSIR-NAL as per agreed terms. After 5 years, the royalty rate shall be reviewed and decided on mutual consent of parties in light of business experience and further requirement of aircraft. CSIR-NAL reserve the rights to terminate the agreement by giving 3 months' notice period if the performance of the industry partner is not satisfactory as per the terms of the agreement.

2.4 Depending on the performance of the firm, the agreement tenure may be extended beyond 5 years on mutual agreeable terms & conditions for a further period of 5 years**.**

3. MARKET INFORMATION

3.1 Ministry of Civil Aviation has recently accorded approval for 38 Flight Training Organisations across the country to promote training of young pilots to meet the exponential demand both in India & abroad. It is expected that more than 200 new 2-seater aircraft for commercial pilot training is required by these new FTO's in the next 6 -7 years. CSIR-NAL developed indigenous Hansa-3 (NG) is anticipated to fill the requirement considering its advantages vis-à-vis imported 2-seater trainer aircraft. It is anticipated that Hansa-3 (NG) will be under production for at least next 10-15 years.

3.2 At present, CSIR-NAL has received about 80 Letter of Intent (LOI) for Hansa-3(NG) from various FTOs. The requirement of Hansa-3 (NG) is expected to increase with the addition of more number of FTOs, replacement of old trainer aircraft and booming civil aviation market in the country. A tentative immediate requirement of about 15 aircraft for Hansa-3 (NG) is envisaged in the next 2 years.

3.3 Other applications of Hansa-3 (NG) to be explored include hobby flying, Border Security Forces (BSF) or Coast Guards for aerial survey works etc.,

4. BROAD SCOPE OF HANSA-3 (NG) AIRCRAFT PRODUCTION

4.1 Procurement of all raw material, LRUs, standard parts, etc., required for manufacturing and assembly of the aircraft as per the approved SOP / BOM from vendors meeting Aerospace standards along with valid certificates / documents.

4.2 Fabrication of aircraft components as per approved drawings and Standard of Preparation (SOP) supplied by CSIR-NAL, Integration of Airframe components, Equipping & integration of Aircraft, Production flight testing, etc., with required production organization approvals from DGCA.

4.3 After-sales support, Aircraft maintenance / overhaul, Spares, etc., with required DGCA approvals.

4.4 Providing training to the maintenance and flight crew with required DGCA approvals.

4.5 Any other additional requirements for production, flight testing, marketing and after-sales support for HANSA-3(NG) aircraft

Note: A brief description of constructional features of HANSA-3 (NG) aircraft is provided in **Annexure-1**

5. REQUIREMENTS FOR PRODUCTION OF AIRCRAFT

5.1 Manufacturing facilities for fabrication of Composite & Metallic components

5.2 Requisite Hangar Space for integration & equipping, production flight testing

5.3 JIPREG Machine, Stores, Tool crib, Centralized vacuum facility, compressed air facility, Surface tables for fabrication, Jigs & Fixtures, Tools, Ovens, etc.,

5.4 Required Manpower for production with competence in Composites / metallic manufacturing, Quality Control, Methods, Stores, Aircraft assembly, flight testing, etc.,

5.5 Statutory approvals required for the firms: CAR-21 (Sub-part G) Production Organization Approval, CAR-145 for Maintenance Organization, CAR-147 for Training Organization, etc.,

Note: A brief description of Facilities & Infrastructure required for Production of HANSA-3 (NG) aircraft is provided in **Annexure-2**

6. WORK SHARE & RESPOSNSIBIITIES

6.1 The work share and major responsibilities of the Industry Partner as well as CSIR-NAL for this RFP are given as under:

6.1.1 CSIR-NAL's Workshare & Responsibilities

a) Handholding in establishing the facility for production, equipping & integration for Hansa-3(NG) at the identified premises of industry partner.

b) Handholding the successful bidder in obtain statutory approvals required for the firms: CAR-21 (Sub-part G) Production Organization Approval, CAR-145 for Maintenance Organization, CAR-147 for Training Organization, etc.,

c) Grant of production version of drawings/documents, quality control & maintenance documents, SOPs etc., under NDA/undertaking/Indemnity to enable the production partner to take-on the responsibility of production of the aircraft.

d) Demonstration of the product and training for production, equipping & integration and flight testing for 1 number of Hansa-3 (NG) aircraft to be manufactured by NAL at its facility and 1 number of Hansa-3(NG) aircraft to be manufactured by the production partner from their orders at their facility.

e) Beyond handholding for production of 2 aircraft, the expenditure towards training, equipping, integration and flight testing will be charged extra as per CSIR guidelines.

6.1.2 **Production Partner Workshare & Responsibilities**

a) The successful bidder/firm shall:

(i) shall interact and forging partnership with interested Flight Training Organizations (FTO's) in India and Abroad (once aircraft gets international certificate) for securing Purchase Orders directly for the Hansa-3(NG) aircraft. Also workout different business model to aircraft ownership based on the market needs.
(ii) procurement of all raw material, LRUs, standard parts, etc., required for manufacturing and assembly of the aircraft as per the approved SOP/BOM of CSIR-NAL,
(iii) engaging & deploying skilled manpower, qualified aircraft engineers, support staff etc., for fabrication of aircraft components, integration of airframe components, equipping & integration of aircraft, production flight testing, etc.,
(iv) obtain all statutory approvals required for the firms: CAR-21 (Sub-part G) Production Organization Approval, CAR-145 for Maintenance Organization, CAR-147 for Training Organization, etc.,
(v) paying all taxes & custom duty etc., coordinating & obtaining all necessary certificates, insurance and registration for the produced aircraft with DGCA and other authorities,
(vi) delivering the aircraft to the customer/s in airworthy condition with complete after sales product support, warranty, training etc.,

b) **Delivery/Production Capabilities:** successful bidder, shall have the facility and manpower having capability to deliver 10 aircraft in 2 years' time from the date of receiving the purchase order/s from FTO's and/or signing of the agreement with NAL whichever is earlier.

7. SUBMISSION & EVALUATION OF OFFERS/RFP:

7.1 Submission of Offer: The proposal/offer is to be submitted in **Two (2) Stage Bidding System** as given below:

a) **Technical Capabilities** and
b) **Commercial Offer** (terms & conditions for production/after sales support, royalty payment terms etc.,)

<u>Note:</u> Request for Commercial Quotes will be sent by invitation to only those shortlisted firms found to be eligible as per the Technical Evaluation.

7.2 The offer should be submitted in separate sealed envelopes/covers. The envelope should be marked as '**Technical Capabilities for Production, Supply, Marketing and After-Sales Support for CSIR-NAL's HANSA-3 (NG) Aircraft**' with RFP No., offer due date, firm's name and address.

7.3 TECHNICAL CAPABILITIES EVALUATION CRITERIA

The minimum qualification criteria for the production partner have been provided in the table below:

Following will be the minimum pre-qualification criteria. All eligible Firms/Organizations must satisfy the criteria listed below. Responses not meeting the minimum pre-qualification criteria will be rejected and will not be evaluated.

Sl.no	Pre-qualification Criteria	Supporting Compliance Document	Reference
1	The firm shall be a Company registered under the Indian Company Act, 1956	Copy of certificate of Incorporation	
2	The firm has to be profitable in its field of business and should not have incurred loss in the last three financial years and have not incurred any loss in more than 2 years during last 5 financial years subject to force majeure situation.	Profit & Loss Statement and Balance Sheet	
3	The firm should have a minimum average annual turnover of **INR 200 CRORE** in the last three (3) financial years.	Profit & Loss Statement and Balance Sheet certified by CA	
4	The firm shall have past experience (more than 5 years), during the last three years in executing similar type of related assignments in Central Government / State Government / PSUs/Autonomous Bodies/Private Sector in India or Abroad	Copy of work order from the Department /Organization is to be enclosed	
5	Certification of the firm by the statutory authorities (like CAR 21, CAR 145, CAR 147 AS9100D etc.,) will be an added advantage/given preference	Copy of Certificate(s)	
6	The firm should not be black listed by any Central Government / State Government / PSU /Government Bodies / Autonomous Bodies / Private Sector	Self-declaration signed by the Authorized signatory	
7	The firm should have skilled workers/professionals / experts in relevant areas of RFP for production, marketing and after sales support of small aircraft at the time of application. This is essential of the	Copy of Certificate by Statutory Auditor or Company Secretary of the firm and subject to audit by CSIR-NAL team	

8.	pre-qualification criteria as hiring entirely new manpower and training/upgrading their skills is not only time consuming but makes the proposal un-viable. (Plz. refer **Annexure-1** page 34 for manpower requirement) The firm should have minimum basic facilities like composite manufacturing facility, assembly, integration & equipping facility as per **Annexure -2**. This is essential of the pre-qualification criteria as setting-up new facility and getting certification like CAR 21, CAR 145, CAR 147, AS9100D etc., not only cost & time consuming but makes the proposal un-viable.	to verify the HR skills available for the RFP deliverables. Proof of existing facilities subject to inspection by CSIR-NAL team	

Note: Please supply documents which directly indicate above parameters, do not attach documents from where information needs to be interpreted /inferred. Formats for providing the relevant information with supporting documents are provided below.

7.3.1 Details of Past Similar Experience

Please provide details of assignment during the last 5 years only relate to working with aerospace/defence sectors in manufacturing, assembly, testing, evaluation and production of similar products like composites, assembly & integration etc.,								
Sl.no	Category	Title and Brief details of work executed	Name of Client	Project/Assignment value	Nature of work with specific areas addressed	Year of Award	Execution Time Frame	Litigation/ Arbitration, if any with details
1 2 3	Government Public Sector Private sector							

Note: Decision of the Technical Evaluation Committee in ascertaining “Similar Nature” and “Similar Assignment” and the site will be final.

7.3.2 Infrastructure & Facility Available

Sl.no	Infrastructure	Qty/Size/Area	Yes/No, If yes provide details separately enclosed layout
1	**Composite Manufacturing Facility**		
	JIPREG Machine	1	
	Centralised Vacuum System	1	
	Centralised Compressed Air System	1	
	Curing Oven	1	
	Thermoforming Oven	1	
	Assembly Jig	1	
	Composite Tooling's	2 sets	
	Surface Tables	8	
	Working Tables	10	
	General Tools		
2	**Metallic Manufacturing**		
	Type of parts: NC / SM / CM / Any other		
	Type of NDT facilities		
	Details of special process like electroplating, painting facility etc.,		
	Details of Heat treatment facility		
3	**Civil Infrastructure**		
	Production Shops with Stores		
	Equip & Assembly Hangar		
	Airstrip		
	MRO Hangar		
4	**Any other facilities**		

7.3.3 List of Skilled Workers/Experts in the Area

List of Skilled Workers/Professional/Experts				
Sl.no	**Name**	**Qualification & Designation**	**Date of Joining the Post**	**Date of joining the organization**
1				
2				
3				
4				

7.3.4 Experience of Key Personnel

Overview of the qualification and past experience of key personnel					
Sl.no	**Particulars**	**Title of assignment**	**Order Value**	**Project Value**	**Execution time frame**
1.	Experience of assignments of "Similar Nature"				
1.1	Experience in carrying out assignments in Government	(i) (ii) (ii)			
1.2	Experience in carrying out assignments in Public Sector	(i) (ii) (ii)			
1.3	Experience in carrying out assignments in Private Sector	(i) (ii) (ii)			
Note: 1. Decision of the Technical Evaluation Committee in ascertaining "Similar Nature" and "Similar Assignment" and the site will be final.					

7.3.5 Guidelines for Preparing Capability Statement

Firms are requested to address the following areas in their Capability Statement. The Capability. Please note that CSIR-NAL will also take into account the financial standing and other aspects during the RFP assessing process.

a) Give a brief description of the core areas of operation of your organization as they relate to the subject RFP domain and or similar aerospace products including physical presence and geographical strength.

b) Understanding and proposed Approach to this kind of collaboration/partnership/business.

c) Illustrate your skills and experience of doing business in this kind of business model.

d) Experience in the country and region on similar business.

7.3.5 Pre-Application Conference

a) A Pre-Application conference of the interested parties shall be convened at the designated date, time and place. A maximum of three representatives of each Applicant shall be allowed to participate on production of authority letter from the Applicant.

b) During the course of Pre-Application conference, the Applicants will be free to seek clarifications and make suggestions for consideration of CSIR-NAL. The Authority shall endeavor to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive Bidding Process.

7.3.6 Overall Process followed for Two Stage RFP

Following process shall be followed for the procurement of consultancy services:

A	**Stage 1- Technical Capabilities Evaluation**	
	i.	Publication of RFP by CSIR-NAL
	ii.	Pre-Bid/Application Conference to understand the CSIR-NAL's RFP / Terms of Reference and revise the Scope / Terms of Reference for purpose of improving the clarity if required
	iii.	Replies to queries raised by the firms (if any) by CSIR-NAL
	iv.	Submission of Technical Capabilities by bidders/firms
	v.	Evaluation of RFP as per Technical Evaluation Matrix of this document by the Technical Evaluation Committee as appointed by Director, CSIR-NAL
	vi.	Intimation to shortlisted firms: Director NAL reserve the right to inform to only those qualified in technical capabilities invited to submit a commercial offer in the next stage may be informed
B	**Stage 2- Commercial offer Evaluation**	
	10.7	Request for Commercial Offers will be sent by Invitation to only those shortlisted firms found to be eligible in the Technical Capabilities as per the evaluation
	10.8	Receipt of Commercial Offers from the selected Firms
	10.9	Opening of Commercial Offers
	10.10	Negotiation with the most competitive commercial offer (plz. refer indicative commercial bid evaluation criteria 7.4)
	10.11	Execution of production partnership agreement with the successful vendor and monitoring of the progress by Project Monitoring Committee (PMC) constituted by Director, CSIR-NAL

7.3.7 Criteria of Proposal Evaluation and Selection Procedure

Evaluation of the proposal is as per CSIR guidelines for Technology Transfer & Utilization of Knowledge Base - 2017.

7.3.8 Technical Evaluation Methodology

As per sl.no. 7.3.7 above and the matrix for evaluation is given below.

Sl. No.	Criteria	Weightage	
	Sub-criteria	**Criteria Total**	**Sub-criteria**
1	Past experience of the firm/industry partner (track record)	40%	
	Past experience in carrying out • Composite airframe manufacturing for aircraft • Metallic parts manufacturing • Assembly, equipping, & integration of aircraft components, production flights • Training, MRO • After sales support		25% 15% 20% 15% 25%
2	Existing infrastructure & facilities (as per 7.3.2) • Composite manufacturing facility • Metallic manufacturing facility • Civil Infra : Assembly, integration & equipping facility	30%	40% 20% 40%
3	General profile of qualification, experience and number of key staff (not individual CVs)	20%	
	• Qualifications		40%
	• Relevant experience		60%
4	Overall financial strength of the firm in terms of turnover, profitability and cash flow (liquid assets) situation	10%	
	Turnover figure for last three years.		50%
	Net profit figure for last three years		50%
	Total	100%	

a) The CSIR-NAL shall shortlist all the firms who secure a minimum of 80% marks
b) Decision of Technical Evaluating Committee in ascertaining 'Similar Nature" and "Similar Assignment" and the site will be final.
c) Weightage will be calculated on relative basis i.e the maximum value for a criterion is given in brackets and will be treated as scoring 100% in respect of the criterion. Others will be weighed proportionately.
d) Please also provide as an Annexure to this form a Capability Statement of no more than 5 pages in font size Arial Narrow 12, which provides the necessary details as per guidelines given in section 7.3.4.

7.4 INDICATIVE COMMERCIAL BID EVALUATION CRITERIA

The indicative commercial bid parameters/criteria for the firms qualifies the **successful Technical Capabilities** have been provided in the table below:

Sl. No.	Criteria	CSIR- NAL Terms	BIDDER	Remarks
1.	Price of the aircraft Offered to be manufactured at Prod Partner facility	Expect the industry partner to supply the aircraft to Indian FTO's at lowest competitive price considering the market dynamics & competition.	Bidder's Price Rs. …….. Cr (including custom Duty, freight etc.,) + GST as applicable per a/c to be maintained for at least first 10 a/c	
2	Royalty payment to CSIR-NAL	Min. expected 2% on ex-factory sales	Bidder offer ……% of Ex-factory sale	
3	Delivery/Production capabilities of aircraft	10 aircraft in first 2 years	Acceptance to CSIR-NAL terms	
4	Readiness of production Facility at Bidders premises.	Within **6 months** from the date of signing partnership agreement	Acceptance to CSIR-NAL terms	
5	Obtaining CAR 21, CAR 145 & CAR 147 certification from DGCA	Within **1 year** from the date of signing partnership agreement	Acceptance to CSIR-NAL terms	

6	Readiness in engaging & deployment of manpower as per Annexure-1 page 35 @ Bidder facility	Immediately after signing the Agreement	Acceptance to CSIR-NAL terms	
7	Warranty & After sales support	CSIR-NAL standard terms to customers – will be provided to all successful technical bids	Acceptance to CSIR-NAL terms	
8	Readiness in accepting PO from prospective FTOs	Immediately	Acceptance to CSIR-NAL terms	
9	Acknowledgement for The product: Hansa-3(NG)	The name Hansa-3(NG) shall be displayed on each of manufactured aircraft with "Technology of CSIR-NAL"	Acceptance to CSIR-NAL terms	

Note:

(i) The short listed firm/s from the technical capabilities offer shall be invited to NAL to evaluate the facilities, manufacturing process, drawings, BOM, SOPs, vendor list etc., for submitting the commercial offer under submission of NDA/Undertaking/Indemnity

(ii) The Commercial Offer format will be prepared by CSIR-NAL team and sent only to the Firms who qualify in the Technical Capabilities Offer

8. TERMS & CONDITIONS

8.1 Bidder shall prepare and timely submit its response to this RFP. All costs associated with the preparation & submission including cost of presentation for the purposes of clarification of the response shall be borne by the bidder. CSIR-NAL will in no case be responsible or liable for such costs, regardless of the conduct or outcome of the RFP process.

8.2 Bidder's confirmation on each of the clauses as complied / agreed to, is required to be furnished along with the proposal.

8.3 NAL reserves the right to accept/ reject any and /or all responses received to this RFP without assigning any reasons thereof.

8.4 The production tools/jigs available at CSIR-NAL will be provided to selected partner at a concessional rate.

8.5 CSIR-NAL shall have absolute ownership over the intellectual property rights generated for HANSA-NG Aircraft.

8.4 Earnest Money Deposit (EMD)

8.4.1 Every Vendor, while submitting the Technical Offer shall deposit an amount of INR 4,00,000/- (Indian Rupees Four Lakh only) as Earnest Money Deposit, with the CSIR-NAL through any of the following instruments in the form of DD/Banker's Cheque/Pay Order of Scheduled Bank with a validity of 6 months.

8.4.2 Those offers not accompanied with requisite amount of EMD as indicated above in shall be summarily rejected. The EMD does not carry any interest to be payable to firms and will be returned to non-qualifying firms in the Technical Capabilities Offer.

8.5 Performance Bank Guarantee (Along with Production Partnership Agreement)

8.5.1 Successful firm in the commercial offer shall furnish a Performance Bank Guarantee as per NAL's format for the value Rs. 2 Crore from a scheduled bank in India valid till the expiry of supply of 10 aircraft to the prospective customers.

8.5.3 The Performance Bank Guarantee will be invoked by CSIR-NAL in case the condition regarding adherence to technical specifications, delivery schedule, warranties, settlement of claim or if any other provisions of the agreement are not fulfilled by the vendor for the supply of 10 aircraft.

9. DISCLAIMER

a. CSIR-NAL may, at its discretion or as a result of a query, suggestion, comment of the offerer, modify the RFP documents by issuing an amendment or a corrigendum at any time before opening the RFP. Any such amendment or corrigendum will be uploaded on CSIR-NAL's website www.nal.res.in and the same will be binding on all the proponents, as the case may be.

b. CSIR-NAL, at its discretion, may extend the due date of submission of RFP, and the decision of CSIR-NAL in this respect would be final and binding on the respondents. In the event of changes in the schedule, CSIR-NAL shall notify the same only through its website www.nal.res.in. Interested respondents are advised to check the above website regularly for corrigendum/addendum, if any, which will be published only in on the website.

c. If at any time during the examination, evaluation, and comparison of RFP, CSIR-NAL, at its discretion, can ask the bidder for the clarification of its RFP. The request for clarification and the response shall be in writing.

d. All cost and expenses associated with the preparation and submission of RFP response shall be borne by the proponents. CSIR-NAL shall not be responsible for any late receipt of applications for any reasons whatsoever.

e. CSIR-NAL engages no agent/agents or third party/parties in this process. It is advised to deal directly with the CSIR-NAL representative who is a signatory to this document.

f. Conditional offers will be summarily rejected. RFP which is found to be incomplete in content and/or attachments and/or authentication etc. is liable to be rejected. CSIR-NAL reserves the right to reject all applications without assigning any reasons thereof.

g. CSIR-NAL may relax or waive any of the conditions stipulated in this document as deemed necessary in the best interest of the CSIR-NAL without assigning any reasons thereof.

h. The draft Agreement for grant of rights for Production, Marketing and After-sales Support for HANSA-3 (NG) Aircraft will be issued only to the successful firms in the technical bid.

10. Purchase of RFP Document

10.1 The RFP document shall be downloaded from Central Public Procurement Portal (CPPP) of Government of India website http://eprocure.gov.in/epublish/app and CSIR-NAL Website www.nal.res.in/en/tender at free of cost.

10.2 Clarifications on the RFP Document

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

Dr.M Manjuprasad
Head, KTMD
CSIR- National Aerospace Laboratories
PB No.1779, HAL Airport Road, Kodihalli,
Bengaluru – 560017, Karnataka-India
Tel # : 080 25086147
Fax #: 080 25086009
Email: ktmd.head@nal.res.in, rinku@nal.res.in, rvenkatesh@nal.res.in

Format-1

Authorization Letter

(To be submitted on Agency's Letter Head)

Director,
CSIR-NAL, HAL Airport Road,
Kodihalli, Bangalore- 560017.

Subject: Letter for Authorized Signatory

Ref. No. Ref: RFP No. ……dated 2022

Sir,

This has reference to your above mentioned Request for Proposal (RFP) for .....

Mr./Miss/Mrs/Dr _____

is hereby authorized to submit the RFP documents and participate in the processing on behalf of M/s_(Agency Name).

The specimen signature is attested below:

Name: _____

(Specimen Signature of Representative)

_____

Yours faithfully,

(Signature of the Authorized signatory)

Name:

Designation:

Seal:

Date:

Place:

Format- 2

Undertaking with regard to blacklisting

(To be submitted on Agency's Letter Head)

To,

Director,

CSIR-NAL, HAL Airport Road,

Kodihalli, Bangalore- 560017.

Subject: Undertaking regarding Blacklisting / Non-Debarment

Ref. No. Ref: R F P No. ……..dated……. 2022

Sir,

It is hereby confirmed and declared that M/s

_____

is

Not blacklisted/debarred by any Government Department/Public Sector Undertaking/Private Sector/or any other agency for which works/assignments/services have been executed/undertaken.

Yours faithfully,

(Signature of the Authorized signatory)

Name:

Designation:

Seal:

Date:

Place:

Note: Any discrepancy found in the undertaking shall be liable for cancellation of agreement and forfeiting Performance Bank Guarantee.

Format - 3

Undertaking with regard to Non-Litigation

(To be submitted on Agency's Letter Head)

To,

Director,

CSIR-NAL, HAL Airport Road,

Kodihalli, Bangalore- 560017.

Subject: Undertaking regarding Litigation

Ref. No. Ref: R F P No. …….dated……2022

Sir,

It is hereby confirmed and declared that M/s ----------, does not have any litigation/arbitration history with any Government department/ Public Sector Undertaking/ / or any other public authority with which any MoU was/ has been executed/undertaken.

Yours faithfully,

(Signature of the Authorized signatory)

Name:

Designation:

Seal:

Date:

Place

Note: Any discrepancy found in the undertaking shall be liable for cancellation of agreement and forfeiting Performance Bank Guarantee.

Format 4

NON-DISCLOSURE UNDERTAKING

(To be provided on E-stamp Paper or Company Letter Head with signature on each Page)

THIS Non-Disclosure Undertaking is made and entered into on this ……..**day of ……. 2022 by** ……(Hereinafter called **"Receiving Party")** in favor of **The Council of Scientific and Industrial Research**, a Society registered under the Societies Registration Act XXI of 1860, having its registered office at Anusandhan Bhavan, 2 Rafi Marg, New Delhi 110 001, represented by **National Aerospace Laboratories**, located at P.B.No.1779, HAL Airport Road, Kodihalli, Bangalore-560 017 (Hereinafter called "**CSIR-NAL/Disclosing Party**"),

1. PREAMBLE

1.1. Whereas, **CSIR-NAL** is involved in development of HANSA-3 (NG) Aircraft and has issued the RFP for the grant of rights for production, marketing and after sale support for the said aircraft.

1.2. Whereas for accomplishing the said purpose, CSIR-NAL has to share significant amount of proprietary/confidential information of HANSA-3 (NG), which is a valuable asset and needs to be protected from unauthorized use by anyone other than the First Party herein, including the Second Party herein and any third Parties.

1.3. WHEREAS, …….. agrees to abide by the confidential obligations as mentioned herein and understand that misuse or unauthorized or accidental disclosure to any third Party will substantially impair the value of the Proprietary Information.

THEREFORE**,** the **…….**, intending to be legally bound in consideration of the mutual covenants and agreements set forth herein, hereby agree as follows:

2. SCOPE OF THE UNDERTAKING

2.1. Definitions:

a. ***"*Confidential Information**" shall mean all information provided by the **Disclosing Party** with respect to the purpose regardless of whether it is written, oral, audio tapes, video tapes, computer discs, machines, prototypes, designs, specifications, articles of manufacture, **drawings, models, test data, certification data,** human or machine readable documents, **etc. Confidential Information** disclosed in other than written form shall be considered **Confidential Information** only to the extent that prior to any disclosure thereof the **Disclosing Party** puts the **Receiving Party** on notice that such information is **Confidential Information** and thereafter summarizes the same in written form

within **30 (Thirty)** days of disclosure which clearly identifies such information as **Confidential Information**. Any **Confidential Information** exchanged by the **Parties** and entitled to protection hereunder shall be identified as such by an appropriate stamp or marking on each document exchanged designating that the Information is "**Confidential Information**"**.**

3. USE OF CONFIDENTIAL INFORMATION

3.1. The **Receiving Party** undertakes and agrees:

a. to keep strictly confidential all the information that is brought to its knowledge in the framework of the contracted activity and its presence in CSIR-NAL premises for executing the subject of the work specification, and
b. to receive and maintain the **Confidential Information** in confidence; and,
c. to examine the **Confidential Information** at its own expense; and,
d. not to reproduce or reverse engineer the **Confidential Information** or any part thereof without the express written consent of the **Disclosing Party**; and,
e. not to directly or indirectly, make known, divulge, publish or communicate the **Confidential Information** to any person, firm or corporation without the express written consent of the **Disclosing Party**; and,
f. to limit the internal dissemination of the **Confidential Information** and the internal disclosure of the **Confidential Information** received from the **Disclosing Party** to those officers, employees and its Affiliates, if any, of the **Receiving Party** who have a need to know and have an obligation to protect it as per compliance of this agreement and trade sanction policy of Govt. of India, and,
g. not to use or utilize the **Confidential Information** for any commercial use without the express written consent of the **Disclosing Party** except for the purpose for which it is disclosed; and,
h. not to use the **Confidential Information** or any part thereof as a basis for the design or creation of any method, system, apparatus or device similar to any method, system, apparatus or device embodied in the **Confidential Information** unless expressly authorized in writing by **Disclosing Party**; and,
i. to utilize the best efforts possible to protect and safeguard the **Confidential Information** from loss, theft, destruction, or the like; and,
j. not to publish or to claim in their name in part or full, any information exchanged under the contract.

3.2. Notwithstanding the foregoing, the **Receiving Party** may disclose the **Disclosing Party's Confidential Information** to the extent required by a valid order of a court or other governmental body or pursuant to an applicable law or regulation; provided, however, that the **Receiving Party** will notify the **Disclosing Party** of the obligation prior to making such disclosure so that the **Disclosing Party** will have a reasonable opportunity to object to such disclosure.

4. OWNERSHIP OF CONFIDENTIAL INFORMATION AND INTELLECTUAL PROPERTY

All information provided by the **Disclosing Party** shall remain the property of the **Disclosing Party.** This Agreement must not be construed as granting or confirming, either expressly or by implication, any rights, licenses or conveyance of any rights under any discoveries, inventions, patents, trade secrets, copyrights, or other form of intellectual property is expressly granted or implied by the disclosure or exchange of Confidential Information to the Receiving Party. The **Receiving Party** agrees to return all **Confidential Information** to the **Disclosing Party**, without retaining or reproducing or reverse engineering any samples or copies upon a written demand of the **Disclosing Party**.

All Proprietary Information of any kind, including any license, patents, trademarks, trade secrets or other intellectual property rights, in whatever form including the modifications/improvements which is submitted, will remain the property of the Disclosing Party, except as otherwise established in writing between the Parties.

5. NON-ASSIGNABLE

This **Undertaking** shall be non-assignable by the **Receiving Party** unless prior written consent of the **Disclosing Party** is received. If assigned or otherwise transferred, it shall be binding on all successors and assigns.

6. PROTECTION TERM AND PARTIES' OBLIGATION

……shall abide by the confidential obligations mentioned herein for a period of 15 years from the date of signing of Production Agreement.

7. GOVERNING LAW

This **Undertaking** and all questions relating to its validity, interpretation, performance and enforcement (including, without limitation, provisions concerning limitations of actions), shall be governed by and construed in accordance with the laws of India.

8. NO LICENSE

The **Disclosing Party**, by virtue of disclosure of the **Confidential Information**, doesn't grant, either expressly or by implication, estoppel or otherwise, any right or license to any patent, trade secret, invention, trademark, copyright, or other intellectual property right.

9. BINDING NATURE OF UNDERTAKING

This **Undertaking** shall be binding upon and in use to the benefit of the **Parties** hereto and their respective heirs, personal and legal representatives, successors and assigns.

10. ARBITRATION

Any Dispute or claim arising out of or relating to this Agreement shall be first tried to solve through mutual discussions by authorized representatives of both the Parties. If no conclusion is arrived at through such mutual discussions within a period of thirty (30) days, then the dispute should be settled by arbitration in accordance with Delhi International Arbitration Center (DIAC), at New Delhi.

Any arbitration award shall be final and binding, and judgment upon the award rendered pursuant to such arbitration may be entered in any court of proper jurisdiction.

IN WITNESS WHEREOF, the Parties have entered into this Undertaking executed through their authorized representatives as of the date first written above.

For and on Behalf of Receiving Party
Signature: **Name, Title and Seal:**
Witnesses (Name & Signature) **1.** **2.**

Annexure -1

Tech Profile of Production Technology of Hansa-3 (NG)

1.	Title of Technology (Product/Process/Design/Equipment)	HANSA-3 (NG) All composite Aircraft **Refer to enclosed HANSA-3 (NG) Aircraft brochure**
2.	Brief Description	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.
3.	Year of Development	2022
4.	Application/Uses in various sectors	Ab-initio pilot training, Hobby flying, Reconnaisance survey, disaster management, etc.,
5.	Unique Technical Features	a) Glass Cockpit b) Advanced Fuel Efficient Engine along with Improved Cowl Design c) Increased Endurance & Range d) Improved Cockpit Ingress/Egress e) Steerable Nose Wheel (optional) f) Electrically Operated Flaps g) Better Cockpit Aesthetics & Ergonomics **h)** Improved Manufacturing Process - Better Production Rate
6.	TRL	8
7.	Major Plant Equipment and Machinery Required	a) Manufacturing facilities for fabrication of Composite & Metallic components b) Requisite Hangar Space for integration & equippin production flight testing c) JIPREG Machine, Stores, Tool crib, Centralized va facility, compressed air facility, Surface tables for fabrication, Jigs & Fixtures, Tools, Ovens, etc., d) Required Manpower for production with competen Composites / metallic manufacturing, Quality Cont Methods, Stores, Aircraft assembly, flight testing, e e) Statutory approvals required for the firms: CAR-21 part G) Production Organization Approval, CAR-14 Maintenance Organization, CAR-147 for Training Organization, etc.,

8.	Market size / volume	200 aircraft in India plus overseas market to be explored
9.	Major Raw Materials to be Utilized	Polymeric epoxy resin system, PVC foam, Glass fabric, Carbon fabric, aircraft plywood, Aluminium 2024 T3, etc.,
10.	Commercialization and Type of License (exclusive or non-exclusive)	Non-exclusive License for sale of product in India as per Govt. of India guidelines.
11.	Existing Product/Process (Available in Market)	Diamond DA20, AQUILLA A211,Tecnam P2002-JF, TECNAM P-Mentor, Sonaca S-200
12.	Techno-Economics (Benefits) in comparison to existing product/process.	a) Marks its presence in the Small aircraft market in India which is currently dominated by foreign players b) Caters to the ever-increasing demand for pilot training c) Excellent replacement for old aircraft currently in use at various FTOs in India. The availability Hansa-3(NG) This indigenous aircraft can also be used for Defence cadet training and coastal surveillance, d) Catalyzes the development of wide variety of small and medium scale private entrepreneurs for producing airworthy components apart from creating job opportunities in various disciplines of aircraft building and AME training. e) Cost-effective and affordable trainer aircraft.

HANSA-3 (NG) Aircraft Developed at CSIR-NAL


VT-HNG

Brief description of constructional features of HANSA-3 (NG) aircraft

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. A state-of-the-art technology of Just-in-time Prepreg (JIPREG) manufacturing process with controlled resin & hardener application is used for composite fabrication. The aircraft 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 Aluminum 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 summarized in **Figure-2.**

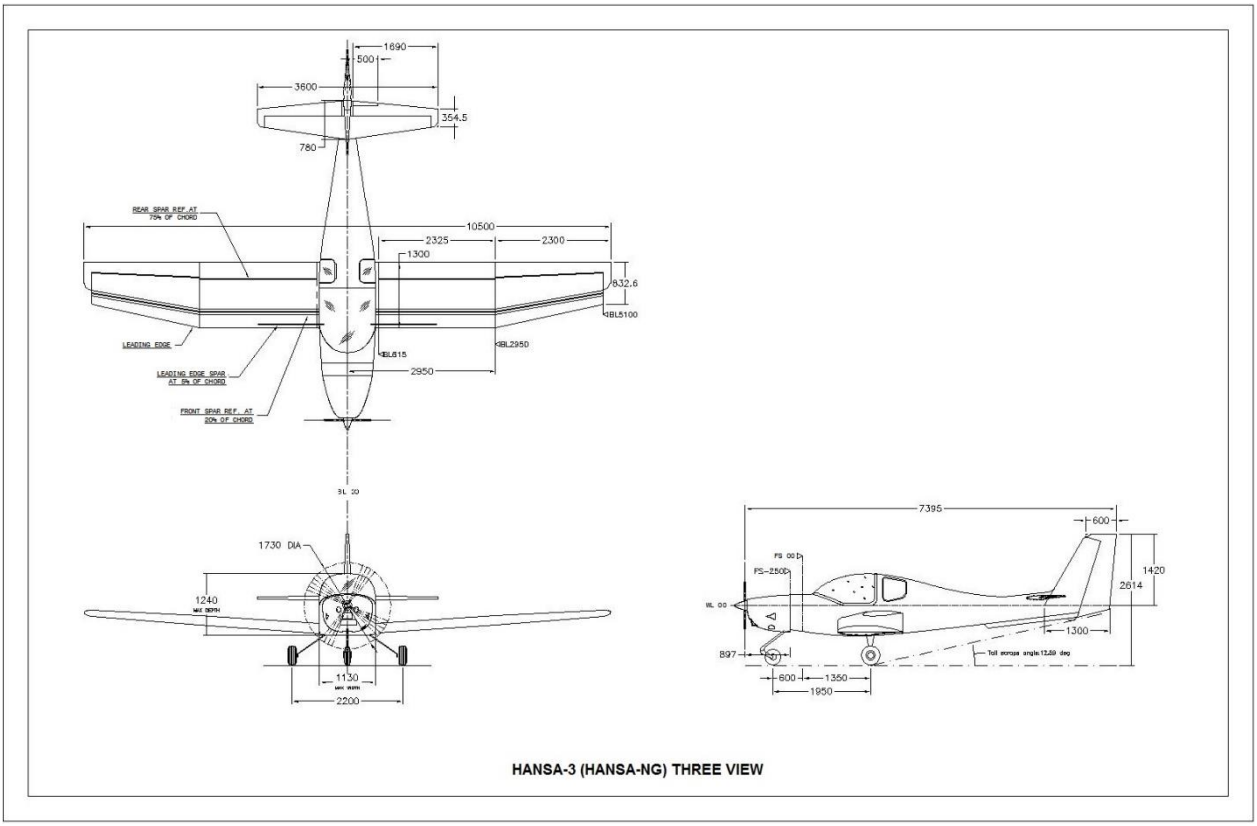

Figure-1: HANSA-3 (NG) three view drawing

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.

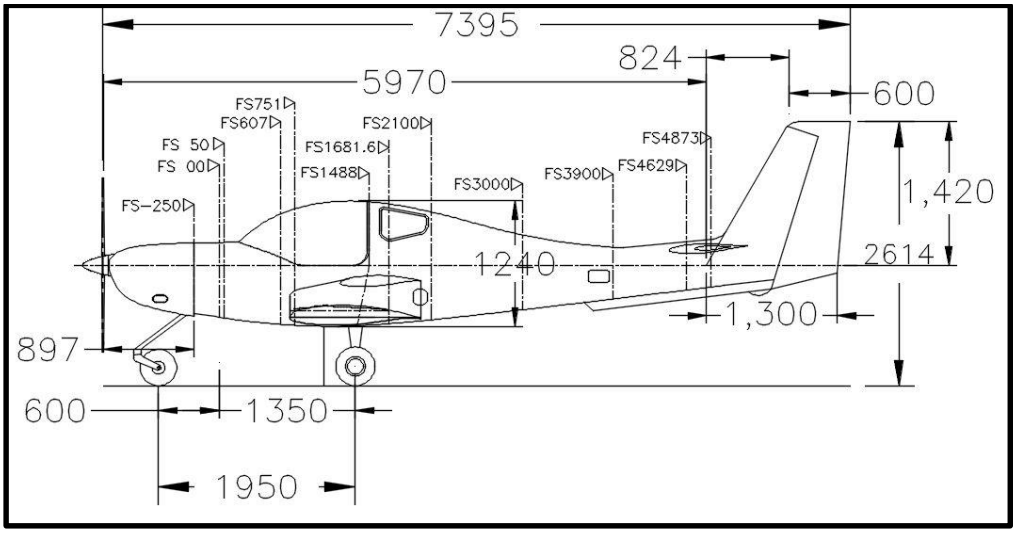

Figure-3: HANSA-3 (NG) Fuselage structure

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 **Figure-4**.**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.

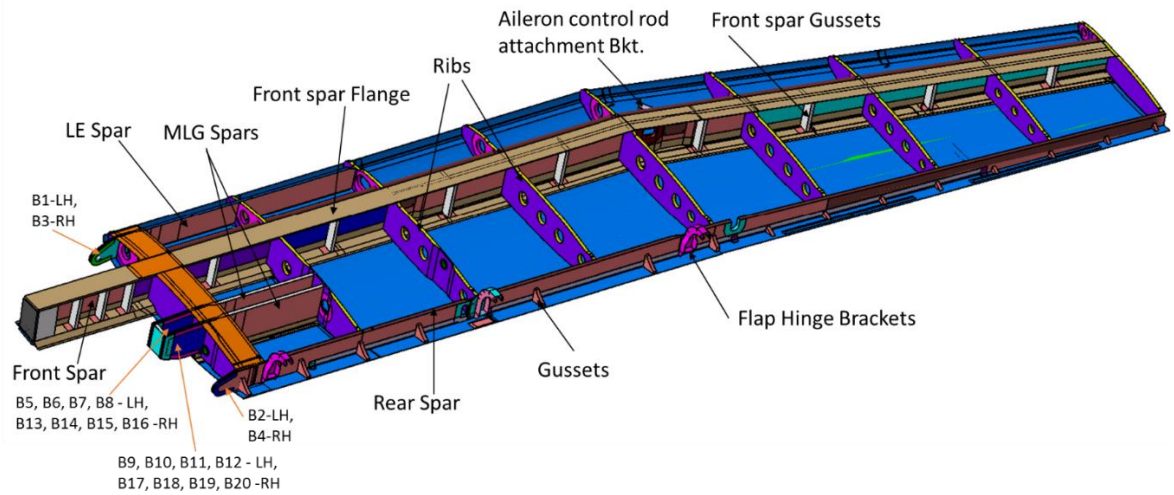

Figure-4: Wing constructional details

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 **Figure-5**.

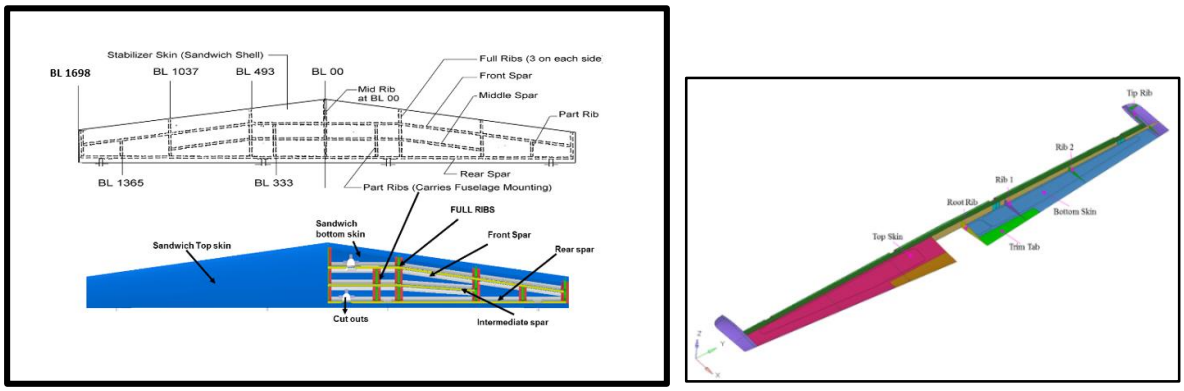

Figure-5: Schematic of Horizontal Stabilizer& Elevator

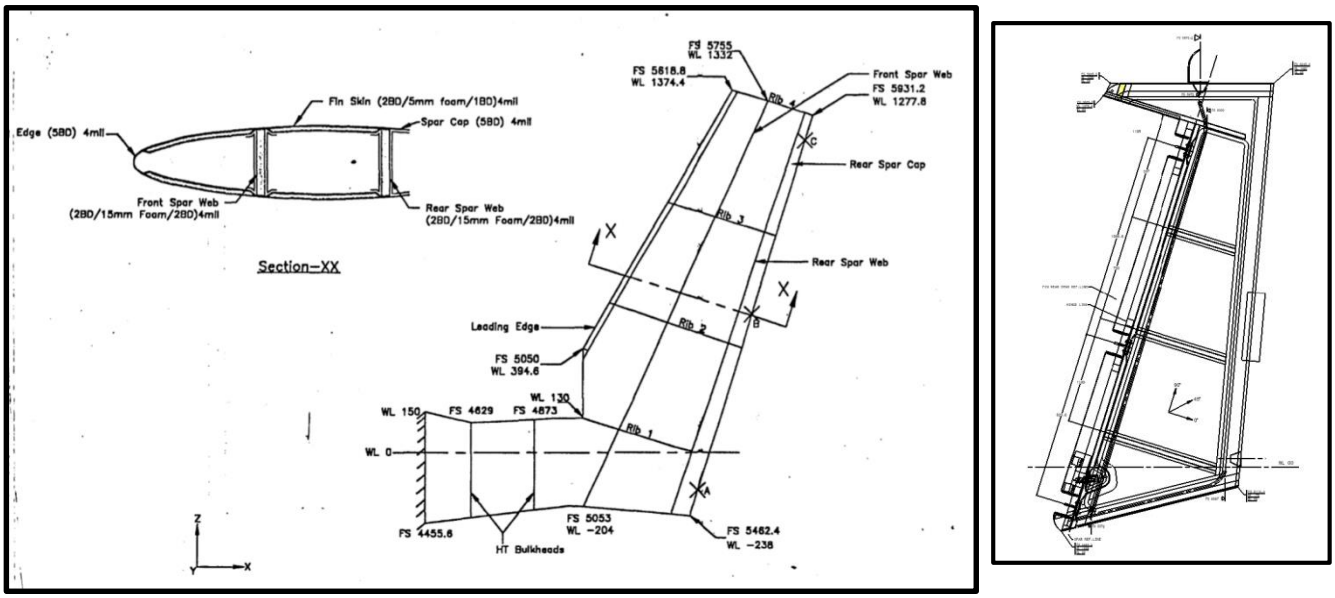

Figure-6: Schematic of Fin & Rudder

1.3 Aircraft 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 caliper-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.

For further details, refer to enclosed HANSA-3 (NG) Aircraft

2. Manpower for Production (Indicative purpose only, firm to assess the manpower requirement)

Execution of Hansa-NG production program involves different type of functions to be performed by experienced and skilled manpower. Majority of human resources identified are to be earmarked in relevant areas and facilitate with specific training in order to build appropriate ecosystem in place. The human resources identified are mandatorily to be qualified by DGCA to perform the assigned task. Though, four key managers are identified at top level of project execution team, the associated chains of responsibilities shall be clearly established to enable the whole team to focus on their defined task. Manpower requirement envisaged for the production of Hansa-NG, **6 - 8 a/c per year** is summarised below.

<table>
<tr><th rowspan="2">Sl. No</th><th rowspan="2">Area / Domain</th><th colspan="2">Projected Manpower</th></tr>
<tr><th>Executives</th><th>Technicians</th></tr>
<tr><td colspan="4">Production:</td></tr>
<tr><td>1</td><td>MR(Production)</td><td>01</td><td>-</td></tr>
<tr><td>2</td><td>DLME</td><td>02</td><td>04</td></tr>
<tr><td>3</td><td>IMM & Sourcing</td><td>01</td><td>01</td></tr>
<tr><td>5</td><td>Fabrication - Composites</td><td>03</td><td>25</td></tr>
<tr><td>6</td><td>Fabrication - Metallic</td><td rowspan="2">02</td><td>05</td></tr>
<tr><td>7</td><td>Machining - Metallic components</td><td>03</td></tr>
<tr><td>8</td><td>Quality - Composites</td><td rowspan="2">03</td><td>-</td></tr>
<tr><td>9</td><td>Quality - Metallic</td><td>-</td></tr>
<tr><td>10</td><td>Subassemblies</td><td>01</td><td>02</td></tr>
<tr><td>11</td><td>Progress & Stores</td><td>01</td><td>01</td></tr>
<tr><td colspan="4">Equip & Integration:</td></tr>
<tr><td>14</td><td>Airframe & Controls</td><td rowspan="6">03</td><td>02</td></tr>
<tr><td>15</td><td>Powerplant</td><td>02</td></tr>
<tr><td>16</td><td>Avionics</td><td>02</td></tr>
<tr><td>17</td><td>Electrical</td><td>02</td></tr>
<tr><td>18</td><td>Landing Gear & Brake System</td><td>02</td></tr>
<tr><td>19</td><td>Inspectors</td><td>04</td></tr>
<tr><td>20</td><td>Ground Run</td><td>01</td><td>-</td></tr>
<tr><td>21</td><td>Test Pilot</td><td>01</td><td>-</td></tr>
<tr><td colspan="4">Quality & Training:</td></tr>
<tr><td>20</td><td>Quality Control - MR(QC)</td><td>01</td><td>-</td></tr>
<tr><td>21</td><td>Quality Assurance - MR(QA)</td><td>01</td><td>-</td></tr>
<tr><td colspan="2">Total</td><td>21</td><td>55</td></tr>
</table>

Personnel involved in various functions of production will be trained by NAL. A special training on chargeable basis will be provided to personnel associated for preparation of POA. This training is based on CAR-21 requirements to cover following.

- Human Factors
- Safety Management System
- Production Readiness
- Preparation of Department Manuals
- Preparation of process specifications
- Vendor assessment and approval
- Audit documents
- Certificate of Airworthiness (COA)
- Role of AME’s post award of COA

Annexure-2

Facilities & Infrastructure required for HANSA-3 (NG) Production

2.1.1 Composite Manufacturing Facility:

The minimum major facilities with Production Organization Approval (POA) from the Directorate General of Civil Aviation (DGCA) for manufacture of HANSA-3 (NG) Airframe is provided below.

The major facilities are listed below:

(1) JIPREG facility where prepregs are produced “just-in-time”, for fabrication purpose. (Fig 1)
(2) Fabrication facility/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 (Fig. 2).
(3) Large Air circulating oven to post cure the HANSA-3 (NG) airframe components (Fig.3).
(4) Assembly jig for integration of HANSA-3 (NG) Airframe components (Fig.4).
(5) Storage Facility viz., Bonded Stores for Raw materials and Tool-crib for requisite tools.
(6) Centralized 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.

Figure 1: JIPREG Facility

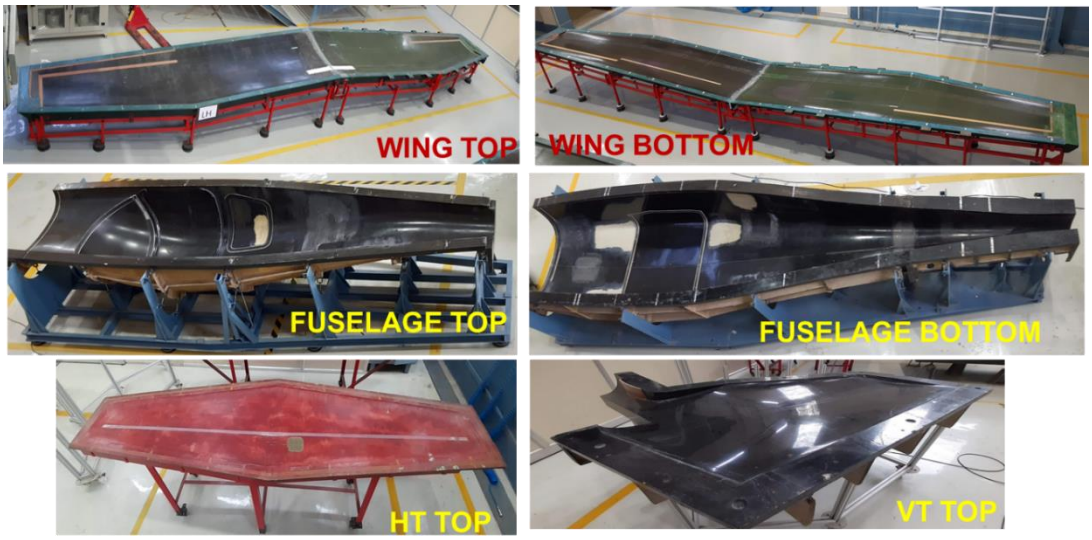

Figure 2: Moulds for Composite Part Fabrication

Figure 3: Oven for Post curing

Chamber dimensions 11.5 M x 2.5 M x 2.0 M

Figure 4: Assembly Jig

2.1.2 Assembly, Integration and Equipping Facilities

a) Aircraft Hangar with a floor area of ~ 800 Sq. meters (which 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