



**REQUEST FOR INFORMATION (RFI)**  
**FOR**  
**DESIGN, MANUFACTURE, ASSEMBLY AND CERTIFICATION OF**  
**FRONT FUSELAGE ASSEMBLY JIG ALONG WITH SUB-MODULES BY ADOPTING THE METHODOLOGY**  
**OF JIG-LESS CONCEPT FOR FIXED WING FIGHTER AIRCRAFT**

Organization Name	Aircraft Research and Design Centre
	Defence Public Sector Undertaking
Tender Ref.No.	RFI/Tooling/FF Jig/ 52 / 005 /19
Tender Title	Request For Information (RFI) for Design, Manufacture, Assembly, Installation and Certification of Front Fuselage main Assembly Jig in connection with sub-modules by adopting the methodology of jig-less concepts for Fixed Wing Fighter Aircraft
Project Category	Tooling
Sub Category	Main Front Fuselage Assembly Jig with sub-module jigs in connection with main assembly jig by jig-less methodology
Location	Bangalore, India
Publication Date on Portal	18 <sup>th</sup> January, 2019
Last Date for submission	02 <sup>nd</sup> March, 2019 Up to: 14:00 HRS IST
Opening Date	03 <sup>rd</sup> March 2019
Sector	Defence Public Sector Undertaking
State	Karnataka, India
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City	Bangalore, Karnataka, India



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1 Aircraft Research and Design Centre, Hindustan Aeronautics Limited Bangalore India, intends to Design, Develop, Manufacture, Install & certification Qty.01 (one) number Main Front Fuselage Assembly Jig & Qty: 06 sub-module jigs (Approximate) in connection with main assembly jig by means of jig-less approach for Fixed Wing Fighter Aircraft, along with associated tooling like Drill Bars, Inter Changeability (ICY) Media, Working platforms, Lifting / Hoisting beam, Storage stands, Trestle stands, Equipping trolley etc., from Global Vendor.

2 The Request for Information (RFI) consists of two parts as indicated below:

a) **Part-I:** Incorporates the technical characteristics and features that should be met by the main assembly jig along with sub-modular jigs by jig-less methodology

b) **Part-II:** Methodology of seeking response of Vendor.

**3 Part-I: Important Technical Parameters and Additional Inputs:**

**3.1 The Intended purpose of the Main & sub- modular assembly jig:**

The main Front Fuselage assembly jig along with sub-assembly jigs by adopting jig-less approach is intended to be used to build the Front Fuselage component assembly of the Fixed Wing Fighter Aircraft and able to deliver 24 sets of assemblies/year as per production standard.

**3.2 Front Fuselage component Assembly details:**

The Front Fuselage component assembly is mainly made up of various modules viz., Radome, Floor assembly, canopy, wind screen, air-intake LH&RH, Canard, Stub-wing LH & RH. The front fuselage assembly consists of approximately 1300 parts, out of which 40% are sheet metal, 30% are machined parts and remaining 30% are made of Carbon Fibre Composites (CFC). (The breakup is indicative). The length of the front fuselage assembly is 6100 mm with a maximum width of 1100 mm approximately. The front fuselage assembly consists of 23 stations and the entire assembly of front fuselage assembly weighs 500 kg approximately (Structure weight).The Front Fuselage needs to be coupled with Centre fuselage and hence the



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Inter changeability (ICY) medias are critical. The front fuselage component assembly consists of the following attachment points:

- 1) Bulkheads
- 2) Nose landing Gear pivot
- 3) Nose landing Gear jack point
- 4) Nose landing Gear up-lock
- 5) Wind screen
- 6) Canopy
- 7) Stub wing (LH & RH)
- 8) Air intake (LH & RH)
- 9) Radome
- 10) Air to Air Refueling probe
- 11) Longerons
- 12) Inertia Navigation system (INS) / Global positioning system (GPS) mounting structure
- 13) Cockpit Floor
- 14) Shear walls
- 15) Inclined bulkhead
- 16) Doors / hatches
- 17) Canard
- 18) Mooring points
- 19) Hauling points
- 20) Ejection seat Brackets
- 21) Symmetry check points
- 22) System installation brackets
- 23) Air Data Probes: Nose Air Data Probe (NADP) / Side Air Data Probe (SADP) / Angle Of Attack ((AOA)/ Angle of Side Slip (AOSS) locating points
- 24) Equipment bay: Environmental Control System (ECS), Digital Flight Control computer (DFCC), Avionics system, On Board Oxygen Generation System (OBOGS)

**(Refer Annexure-A for the tentative station diagram and other technical inputs)**

Design philosophy is envisaging modular approach to reduce jig cycle time and total assembly time in this front fuselage structure is further sub divided into 6 modules. Number of modules is indicative and will be finalized before start of detail design.



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**3.3 Tooling philosophy:**

Vendor shall indicate the Tooling philosophy followed for achieving the main Front Fuselage assembly jig in connection with sub-assembly jigs including modular design by adopting jig-less approach.

**3.4 Government Rules:**

Vendor shall confirm that they don't foresee any restriction from their respective Government for exporting the required technology to ARDC HAL and shall also indicate the time frame required for such clearance from their Government, after ARDC HAL select vendor on competitive tender and provide requisite purchase order and end user certificate.

**3.5 Acceptance Criteria:**

Vendor shall design the assembly jig considering the Modular jig requirements and jig-less approach to meet Production Standard by using the state of the art technology and Interchangeability (ICY) media to achieve the high accuracy. Also the positional tolerance, datum, external surface contour templates shall be designed to have close tolerances to meet design requirement.

**3.6 Tentative delivery schedule:**

The overall time frame of Design, Manufacture, Assembly, Erection and Certification with stage wise breakup of the entire project post conclusion of Contract is required to be submitted. It is envisaged to make the assembly jig ready for use within 240 days from signing of the contract. Life of Assembly Jig has to be minimum 25 years.



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**3.7 Achievements and experience in Assembly jigs along with sub-modules by jig-less Methodology:**

Post experience and detailed presentation on similar assembly jigs designed and supplied to the other contemporary Aircraft Industries. Vendor may present their proposed design. Vendor presentation at ARDC HAL is desirable for all RFI participants.

**3.8 Agreement**

ARDC –HAL is not binding any relationship with the vendors who are participating in the RFI, separate global Request for Quotation (RFQ) will be issued

**3.9 Cost**

It is requested RFI participated vendors to provided budgetary quote of rough order magnitude covering cost of design, material & manufacturing, installation and certification.

**3.10 Indian Vendors**

Indian vendors to provide the import content in the proposed design

**4 Part-II; Procedure for Response:**

Vendor must fill the form as given in **Annexure-B** and provide the following information.

**4.1 OEM/Authorized OEM /Other organizations**

ARDC-HAL invites responses to this RFI only from OEMs /Authorized OEM Vendor /government sponsored export houses (applicable in case of countries where domestic laws do not permit direct export by OEMs). In case of authorized vendor/distributor, a valid authorization certificate covering long term agreement with OEM if any needs to be enclosed. The end user of this front fuselage assembly jig and its modules is ARDC-HAL.



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#### **4.2 Financial commitment**

This information is being sought with no cost no commitment. ARDC-HAL reserves the right to change or vary any part thereof at any stage. Also ARDC-HAL reserves the right to withdraw at any stage. Vendor to confirm for the same

#### **4.3 Key Technologies**

Vendor shall mention key technologies and materials required for design, manufacture, installation and certification of the front fuselage assembly jig by jig-less approach

#### **4.4 Previous experience**

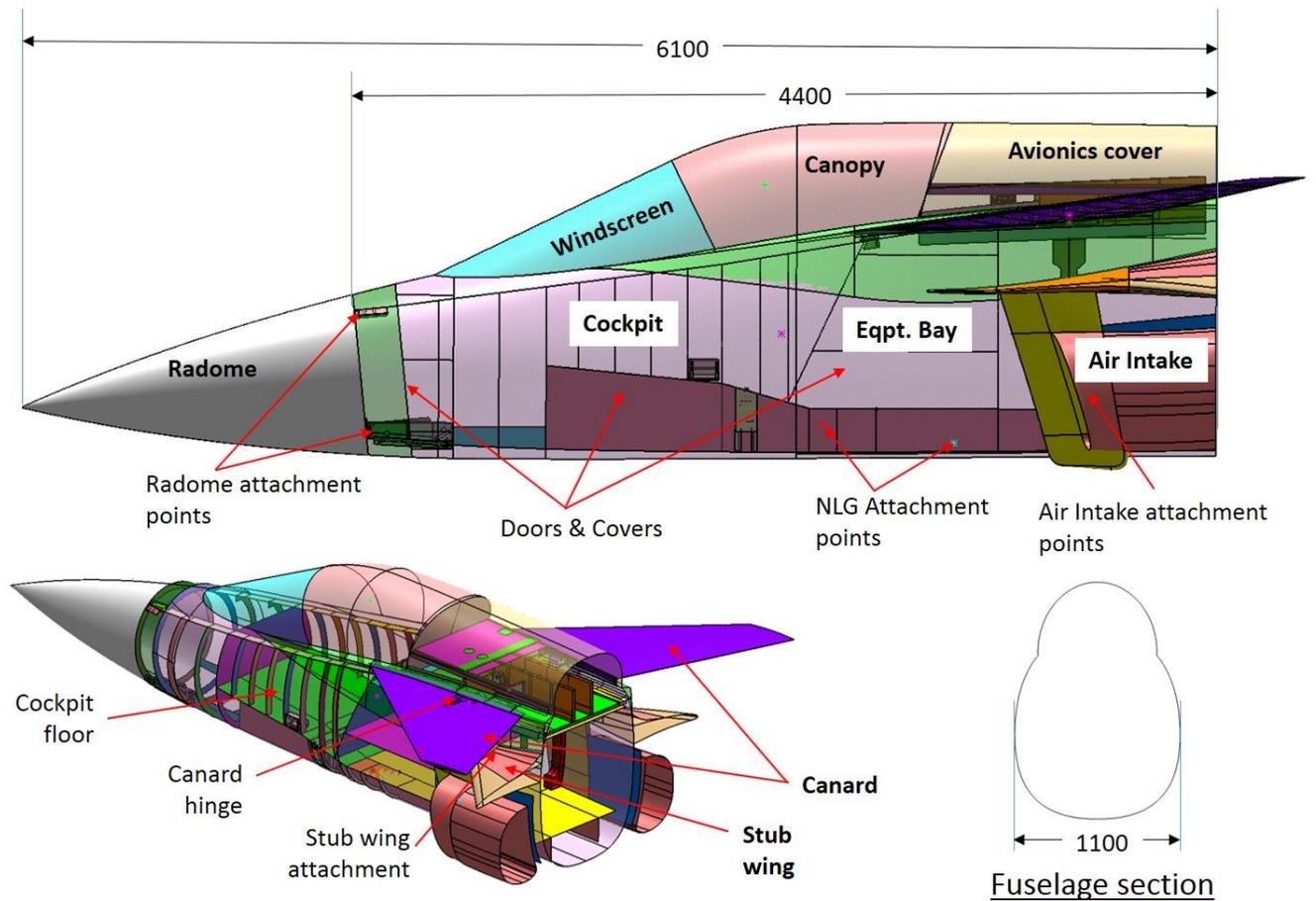
Vendor to indicate whether they have supplied similar assembly jigs to any other contemporary Aircraft Industries.

**Sd/-**  
**HAL TECHNICAL TEAM**



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**Annexure-A**



**This should not be reproduced or communicated without written authorization.**  
**All diagrams and details are indicative**



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**Annexure-B**

**Information Performa for Vendor**

1. Name, address and unique ID (if any) of the vendor:
2. Type of vendor : Original Equipment Manufacturer (OEM) / Authorized vendor of OEM / Government sponsored export house / others (specify)
3. Contact details:
4. Contact details of Local branch / liaison office / authorized representatives in India if any:
5. Brief description of the organization:
6. Previous experience & achievements:
7. Expected date of presentation at ARDC-HAL Bangalore India about their experience and achievements:
8. Any other relevant information: