

LETTER OF INTENT FOR ESTABLISHMENT OF FLEXIBLE HOSE MANUFACTURING FACILITY FOR AIRCRAFT/ENGINE AND GROUND TEST EQUIPMENT

1. Pursuant to the Chairman, PACB Kamra directives, a turnkey facility for the manufacturing of flexible hoses for aircraft/engine and ground test equipment is required to be established at aircraft group, MRF PAC Kamra.

2. In this context, technical and budgetary quotations are required for FHMF (Flexible Hose Manufacturing Facility) which includes the equipment required for the manufacturing of inner tubes (Teflon and oil resistant rubber), reinforcement (steel and textile braiding) and outer cover (Polyurethane and braiding), continuation training on hose manufacturing processes, a complete digitized test equipment for proof testing of the hoses. Infrastructure requirement would include hose manufacturing hanger, end fittings manufacturing facility, crimping facility and a proof testing lab. Detailed specifications/ requirements of subject FHMF are as follows:-

- (a) **Turn Key Solution:** FHMF is required on a turnkey basis for the manufacturing of variety of flexible hoses and end fittings being used on different weapon systems. The required solution should be completely digitized and factory new.
- (b) **Correlation:** Calibration and correlation certificate would be required.
- (c) **Flexible Hose And End Fitting Manufacturing Facility:** The flexible hose and end fitting manufacturing facility would include-
 - (i) Completely digitized machinery for the manufacturing of Aviation standard Teflon and oil resistant rubber inner tubes, textile and steel braiding facility for reinforcement of the hoses and polyurethane or braided outer covers having abrasion, Ozone and hydrocarbon resistant properties.
 - (ii) Completely digitized machinery for the designing and manufacturing of variety of end fitting which include ferrules, BSP inserts, BNAe and ARSAERO etc. depending upon the utility on the aircraft.
 - (iii) Aviation and ASTM standard End fitting crimping facility.
 - (iv) Hose design and Proof testing centre is to be established at the premises of the FHMF, which would determine the proof pressure tests of the products. The machinery for the proof testing of flexible hoses must be completely digital and factory new having the provision of calculating the burst pressure and proof pressure of hoses up to a diameter of 80 to 100mm. The maximum proof testing pressure of the machine should exceed 10,000 Psi.
 - (v) The entire facility should have an integrated backup system.

- (vi) FHMF should have the ability for remote troubleshooting, diagnosis and maintenance by OEM.
 - (vii) FHMF should provide safety alarms for out of limits parameters.
 - (viii) The installed hardware should be commercial off the shelf (COTS) allowing local sourcing and self-maintenance, as required.
- (d) **Raw Material:** The provisioning of aviation and ASTM standard raw material for the manufacture of flexible hoses as well as end fittings along with requisite tooling.
- (e) **Documentation:** Complete illustrated parts breakdown (IPBs), technical drawings, technical and maintenance manuals, inspection/calibration schedule and procedures with troubleshooting guide for the entire machinery must be provided.
- (f) **Training:** Training on operations, calibration, trouble shooting and replacement of components procedures would be requires for 07 personnel of MRF at OEM facilities.
- (g) **Spare Support Package:** A spare support package based on high consumption/ MTBF, inclusive of sensors, transducers and cards would be required to avoid down time and to ensure smooth operation.
- (h) **CCTV System:** Moveable high quality complete CCTV system inclusive of cameras (minimum Qty 06), large LED Tv (minimum Qty 04)and cabling support with on-site installation by OEM would be required.
- (j) **Long Term Spares and Customer Support:** The long term spares and customer support includes:-
- (i) 03 years warranty of all parts and workmanship defects. (Cost of transportation of equipment and personnel will be the responsibility of vendor during warranty period).
 - (ii) Long term spare support of at least 10 years after commissioning.
 - (iii) Establishing of local technical team by the vendor for rapid support.
- (k) **Support Facilities:** All support facilities on turnkey basis are required which includes fire suppression system, electrical backup system, pneumatic system and entire infrastructure etc.