# TECHNICAL SPECIFICATION FOR FIRE FIGHTING MIST BIKE

General Note:

The Fire Fighting Mist Bikes (2 x 12 Ltrs water capacity) shall be designed and fabricated as per the following specifications. This standard lays down the requirement regarding Design, Material, Construction, workmanship, finish, accessories and acceptance test of Fire Fighting Mist Bikes (2 x 12 Ltrs water capacity) including CMAC.

Note:

1. Wherever makes of any equipment is given it shall always be read in continuation word "or equivalent"
2. Wherever the numerical is used indicating dimensions of any equipment or material, tolerance of +/- 10% shall be accepted.
3. Wherever the items / equipment is mentioned having NFPA or EN requirement, for all those equipment, proper certificate regarding the same shall be supplied by the OEM / Fabricator.

## PRE QUALIFICATION CRITERIA

1. The bidder shall have manufactured or supplied same emergency Bikes equivalent to minimum 60 % of the bid quantity in a single order to any Government / Semi Government organizations in India during the last three years. Bidder shall submit work order and performance certificate of the same issued by an end user.

## (I) BIKE SPECIFICATIONS

### 1. Chassis:

a. The Fire Fighting Motorcycle will be fabricated on bike having engine volume between 340cc to 450 cc.
b. The designing of vehicle will be compact to facilitate its quick movement innarrow streets.

2. **Bike Details**- Royal Enfield Classic 350 or Similar
3. Engine & Transmission-
   a. Engine type - 4 Stroke, Air-Oil Cooled Engine, Spark Ignition, Single Cylinder.
   b. Displacement- 349.34 cc
   c. Max Torque - 27 Nm @ 4000 rpm
   d. No. of cylinders 1
   e. Valves per cyl. 2
   f. Starting Self or Kick
   g. Fuel supply Electronic Fuel Injection
   h. Clutch Wet multi plate
   i. Ignition Electronic Fuel Injection
   j. Gear box Five speed
   k. Bore 72 mm
   l. Stroke 85.8 mm
   m. Compression ratio 9:5:1

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n. Emission type Bs6
o. Chassis & Suspensions-
a) Body type Cruiser type comfortable for sitting

**4. Dimensions & Capacity –**

a. Width 785 mm
b. Length 2145 mm
c. Height 1090 mm
d. Fuel capacity 13L
e. Saddle height 805 m
f. Ground Clearance 170 mm
g. Kerb weight 195 kg (without fabrication)
h. Total weight 375 kg (without fabrication)

**5. Electricals –**

a) Headlight Halogen
b) Tail light LED
c) Turn Signal lamp LED
d) Low fuel Indicator Yes LED

**6. Tyres & Brakes –**

a. Front Brake dia 300 mm
b. Rear brake dia 270 mm

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**7. Motor & Battery –**

| | | |
|---|---|---|
| a) | Peak Power | 20.21 PS @ 6100 rpm |
| b) | Drive type | Chain Drive |
| c) | Battery Cap | 12 V/8Ah |
| d) | Suspension F | Telescopic - 41mm telescopic forks |
| e) | Suspension R | Twin shock absorbers with 6-step preload adjustment |
| f) | Brake front | Disc |
| g) | Brake Rear | Disc |
| h) | Wheel type | Alloy Wheels |
| i) | Tyre type | Tubeless |

## (II) Fabrication

### 1. WATER TANK

a. There will be minimum two 12 Liter tank mounted on each side of motorcycle, constructed out of SS316 having a thickness of minimum 1.5 mm.
b. The designing of the tank shall be such to avoid jerks to as much extend as possible.
c. Max 3" diameter connection shall be provided as a filling inlet and drain outlet at the side of vessel.
d. All the piping & fittings of the tank and other accessories shall be of SS316 Grade.

### 2. HIGH PRESSURE PUMP

a. The pump shall be CE certified, High pressure piston pump driven through petrol engine independent of bike engine. The pump shall be reciprocating (Axial Piston)type, having output capacity of at least 5-10 LPM at 100 bar.
b. The pump shall comply following performance parameters.
   a) Flow Rate: At least 8 LPM
   b) Maximum Pressure: 100 bar
   c) Normal output: At Least 5 - 8 LPM at 100 bar
   d) Maximum Power: 5 HP;
   e) Maximum Weight: 6Kg
   f) Lubrication: Synthetic Oil
c. The pump shall be guaranteed for a min. life of 5000 hours or 5 years of operationwhichever is earlier.
d. The pump shall be manufactured from FORGED BRASS having high mechanicalresistance and corrosion proof, Crankcase should be made of die-cast aluminum alloy anodized for surface protection. Crankcase should be with fins to dissipate the heat. It should have high quality double sealing system and high-quality ball bearings that guarantee reliability in time and optimum response at high rpm.
e. It should have easy start system to allow the engine to start in any condition.
f. It should have Ceramic Coated or Special Stainless-Steel pistons for

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\corrosion resistance and abrasion. It should have highly efficient Stainless-Steel Inlet and delivery valves.

g. The pump will have double seal on each plunger with low pressure intermediate chamber to keep the water seal cool lubricated. This system will also permit therecirculation of any leakage from high pressure back to the pump inlet.
h. The pump will have synthesized pistons of super-hard ceramic.
i. The connecting rods shall be of special alloys with LOW attrition, high wear &High anti-seize properties.
j. *The hydraulic structure shall be designed to simplify scheduled* maintenanceProcedures like gasket & valve replacement.
k. The pump suction line will have inline mesh litters.
l. The pump will deliver' water to the hose reels & cooling system.
m. The main components shall be produced by the pump manufacturer only (OEMonly).

## 3. WATER MIST PUMP ENGINE

I. The prime mover for pump shall be air cooled 4-stroke petrol driven engine (not connected with bike engine anyway) and shall have compatible electrical and lubrication system. The engine should work on 12 V battery for which adequate charger shall also be provided.

A. Power: minimum 3.5 BHP @ 3600 RPM
B. Lubrication: Synthetic Oil
C.Operation System: Rope start or Battery operated

## 4. HOSE REEL & HOSE DRUM:

a. There shall be one hose reel of 15m length. This shall be provided at the rear of theappliance,
b. The hose used for the hose reels would of R2 type & rated for a min. of 250+42bar

## 5. WORKING PRESSURE:

a. The hose shall be of min. 10mm ID to allow sufficient flow to the high-pressureguns & reduce frictional resistance.
b. Hose reel drum is fabricated from SS 316 and is made light weight for winding andunwinding.

## 6. DRUM:

a. Hose reel drum it should be provided at suitable location with ease of operation.
b. The reels shall he capable of being wound without undue strain on the operator.
c. At the discharge end of hose reel will terminate in a high-pressure jet / fog gun, capable of discharging 8 LPM @100 bar in jet or fog patterns.
d. The jet range will not be less than 8 meters & fog shall be of 50 microns

water droplets at 45° angle. The fog gun shall be able to aerate foam also in fog or jet pattern.

## 7. EXTINGUISHING GUN & NOZZLE:

a. It should be compact, lightweight with pistol grip.
**b. It should be made of brass / Stainless Steel or Aluminium.**
c. Front handle of gun should be able to vary the spray pattern of water.
d. It should have hand shield and trigger lock to prevent accidental opening of thegun.
e. It should have maximum discharge capacity of 30 LPM and maximum operatingpressure of 250 bar.
f. The gun should be able to work as Jet as well as Fog Grin with a Jet Throw of notless than 1.5 meter and Mist throw of not less than 8 meters.
g. Extinguishing gun design should be of such that water mist particle size shouldprovide cooling effect in order to extinguish the fire.

## 8. ELECTRICAL SYSTEM

a. Two tone Siren & PA system (1 2V 30 Amp audible at a distance of 200m) withintegrated PA system,
b. 2 no's blinking lights (12V / 20W) each red light with flasher).

## 9. ACCESSORIES

a. First Aid Box (cotton absorbent 100g. band Aid 10 pcs, Burnol 2 pcs, Tincture Iodine100
b. On the front leg guard and rear mud guard, windshield at front, necessary tool kit with the spark proof tools. Operation/maintenance manual and warranty certificateof the system.
c. Carrier for 01 Nos. **2 Kg** ABC type Fire extinguishers (MAP 50) at each side of the bike, so that sitting area for driving person don't get hindered.
d. 1 Nos of the revolving beacon with having 24 **V** LED light head of Red, Blue andwhite color.

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e. Beacon shall be pole mounted at the rear of the motor bike.2 nos Dual Red-White and 2 nos Dual Blue-White Scene-Lighting LED blinkers with inbuilt flasher shallbe installed on the periphery of motor bike i.e., on the front leg guard and rear mudguard. The blinkers shall have option of minimum 12-watt spot lighting alongwith blinking for low light visibility.
f. Blinkers and beacons shall have minimum 6 nos of flash patters. All LEDs used for Beacons and Blinkers shall be minimum 3 watt. Blinkers and Beacon shall have Aluminum Base with Polycarbonate Cover. Input voltage 12 volts
g. Hose Reel Hose with stoppable gun
h. One multi-purpose back-pack to contain all the accessories / devices specified in the tender
i. Door opener
j. Mini P.R.T device
k. Multi Utility tool (for breaking glass, cutting sheet, door opener and other multi utility function) weight not more than 1 kg
l. Fireman axe
m. Fuse puller
n. Lockers
o. Multi Purpose Gloves 3 types 1 pair each
   - Cust Resistant Gloves - Cut Resistant and touchscreen compatible gloves, CE market and ANSI/ISEA138 certified / tested.
   - Hot and Cold Gloves – CE 0493 marked, UKCA 0321, EN 407 & EN 511 certified.
   - Impact Resistant Gloves – EN 388 certified and CE marked with touch screen compatibility.

p. Windshield at the front with appropriate logo / marking as required by the department.

## 10. Warranty Clause:

a. Bike: Vendor shall ensure that the integration shall be done in such way that it willnot void warranty provided by the manufacturer (OEM)
b. Fabrication & Attachments: One years of warranty shall be provided on integratedfinal product (with fabrication and attachments).

## 11. Painting and Marking:

a) On either side of the vehicle **(Logo and name)** Monogram shall be made computerized & affixed (adhesive HDPE sticker type) in golden yellow colorat suitable places bilingually in Hindi & English. Font shall be approved by user.
b) The appliance shall be painted in "Fire Red".

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**12. Training, Operation manual, Safety manual & Demonstration**

a) The supplying vendor will have to provide complete operational training sessionto engaged team members on delivery & handover.
b) Training Module in pen drive should be provided along with the supply at each location.
c) On site demonstration of equipment functioning shall be provided.
d) Checklist of training module, demonstration, video and handover sheet along with other accessories should be provided with the supply of each bike.

**13. While quoting the supplier shall submit the following details:**

a) Technical datasheet of the offered product
b) Credential and performance of the OEM should be embossed on major parts ofthe system.
c) In case of an authorized dealer of OEM letter of authorization from the OEM.
d) Test Certificates of SS 316 vessel, Valves, Hose, should be provided by OEM from NABL accredited lab.
e) The Firefighting Bike Should be ARAI "AIS 167" Approved and Certificate for Compliance to the central Motor vehicles rule (G.S.R 596 (E) Dated 26.08.2021 to be submitted along with the ARAI Vehicle Evaluation Laboratory Test report as per AIS 147, Amd. 01
f) ARAI approved drawing and image of bike system.
g) OEM Authorization for the Pump and Engine of Water mist system.
h) OEM Authorization for all specified gloves.
i) CA certified certificate showing that the bidder has an average annual turnover of not less than 50% of the estimated cost of the tender value (total cost of water mist bike) during the last 3 years eg. FY 2022-23, 2023-24 and 2024-25. Bidder shall also submit audited balance sheet.
j) The Bidder shall have positive Net worth during each of last three audited financial year eg. FY 2022-23, 2023-24 and 2024-25.CA certified copy of the same is required to be submitted.

14. **Comprehensive Maintenance:**
**The three year Comprehensive Maintenance Contract (CMC) shall commence immediately after completion of the warranty period with mandatory service once a year.**

**SERVICE FRAMEWORK UNDER CMC**

**A. Scheduled Preventive inspection & maintenance of the following critical components**

**1. Bikes:**

- Inspection of Engine & Servicing
- Inspection and Servicing of Brake System
- Inspection and Servicing of Suspension and Chassis

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- Inspection and Servicing of Battery & Electrical System
- Inspection and Servicing of Drive & Transmission

2. **Water vessel inspection, servicing & Repair**
   - Check for leaks, corrosion or structural damage in the vessel
   - Inspecting and cleaning filling inlet and drain outlets of the vessel
   - Tightening or replacement of fittings, drain valves and inlet ports.
   - Ensuring proper mounting to minimise jerks and vibrations.

3. **High Pressure pump inspection, servicing & repair**
   - Complete inspection of the pump
   - Functional testing of flow rate, output pressure, and seal integrity.
   - Lubrication top-up/replacement using synthetic oil.
   - Inspection of forged brass housing, crankcase, fins, and bearings.
   - Replacement of mesh filters, valves, gaskets (as per wear & tear).
   - Recirculation system checks to avoid high-pressure leakage.

4. **Pump Engine inspection, servicing & repair**
   - Servicing of the pump engine
   - Spark plug, fuel line, and oil change
   - Battery and electrical system inspection
   - Electrical start and rope system maintenance.

5. **Hose Reel & Hose Drum inspection, servicing & repair**
   - Check for wear, tear, and pressure resistance
   - Reel smoothness and winding/unwinding operation.
   - Inspection of 15-meter hose for cracks, leaks, and pressure drop.
   - Verify nozzle and gun functionality (8 LPM @100 bar).
   - Fog/Jet nozzle spray pattern adjustment and blockage clearing.

6. **Extinguishing Gun & Nozzle inspection, servicing & repair**
   - Check for damage or leakage at the trigger, nozzle
   - Spray pattern adjustment inspection check
   - Inspection of spray/jet function and range check
   - Lubrication and cleaning of internal parts.
   - Replacement of worn-out parts if necessary.

7. **Electrical System inspection, servicing and repair**
   - Testing & verifying operation of dual-tone siren and PA system
   - Inspect of LED blinkers (Red/Blue/White) and beacon lights.
   - Repair or replace faulty flashers, blinkers, or PA system components.
   - Verify battery charging system.

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8. **Accessories & Safety Gear Inspection, servicing and repair**
   - Inspection of First Aid Box (check expiry of medical supplies).
   - ABC Fire Extinguisher (2kg) pressure check.
   - Inspection for rusting & other degradation and Functional test of fireman axe, door opener, and multi-tool.
   - Mini P.R.T device, tool kits, fuse puller, Lockers, fireman axe, and all auxiliary tools

9. **Painting and Marking**
   - Touch-up of Fire Red paint in case of scratches or weather wear.
   - Inspection of HDPE sticker and bilingual monogram condition
   - Replacement of faded or damaged stickers.

**B. Replacement of spare parts**
   - Replacement of General consumables like washers, gaskets, mesh filters are included in the CMC
   - Replacement of major components, electrical components (PA system), flashers, blinkers, hose, nozzles, Watermist gun, pump/motor components, synthetic oil, stickers and other accessories and tool shall be on chargeable basis with prior approval from the concerned authority.

**C. User's Responsibilities during CMC**
   - User shall provide access to the bike and storage location, where the Maintenance work can be carried out.
   - User shall ensure availability of water / Electricity to carry out maintenance work.
   - Inform all the operational issues and share feedback after each service for record and audit purposes.

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