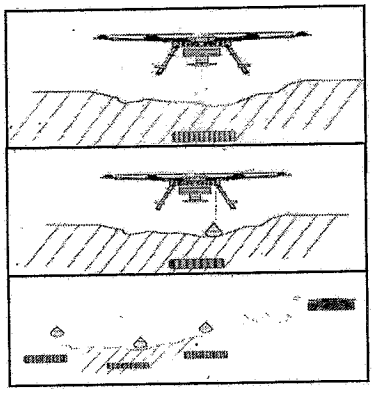
BRIEF OF PROJECT FOR AIP IN MAKE-II CATEGORY: DRONE BASED MINE DETECTION & DIFFUSION SYSTEM



1. **Name of Proposal**. Drone Based Mine Detection and Diffusion System.

2. **User Directorate in SHQ**. Directorate General of Combat Engineers (DGCE)/ CE-5(A).

3. **Brief Description**.

(a) **Solution Proposed**. The solution of 'Drone based Mine Detection & Diffusion System - Anti Mine Drone is based on a Suo Moto proposal by M/s EEL, Nagpur based on twin drones.

(b) **Key Technologies Involved**. The proposed solution consists of following sub-systems:-

(i) First drone with integrated GPR for detection of underground objects and mines.

(ii) Second drone will carry 15 to 20 diffusion explosives for placing on the mines marked by first drone and detonate remotely.

(iii) A Ground Control Terminal (GCT) to control both the drones remotely.

(iv) Diffusion explosives required for detonation of mines.

4. **Operational Justification**. The speed of manual breaching is very time consuming, besides the risk of human life due to detonation of a mine. Employment of drones fitted with mine detection and diffusion/ destruction systems is a futuristic and niche technology which will act as force multiplier for defence forces. It can be utilised by engineer task forces to carry out identify gaps for safe passage of personnel by undertaking selective breaching by means of detection followed by destruction of mines to create pads for launch of bridges or assault lanes. It can be used for demining operations of vintage minefields by remote means. It is an effective alternative to manual breaching and will save lives of personnel, as presently personnel are using manual methods with additional accessories like Boot Anti Mine (BAME) etc.

5. **Tentative Quantity**. 74 sets.

6. **Approximate Cost**. 172 Crore (approximately). Final cost will be ascertained in feasibility study.

7. **Technical Parameters**. Broad requirement would be as under:-

(a) **Platform**. Should be based on two drones as under:-

(i) Drone with GPR/ EO/ thermal sensors to detect mines up to 60 cm depth below ground level.

(ii) Follower drone to carry 15 to 20 diffusion explosives to place on the detected mines and detonate remotely.

(b) **Flight Capacity**. The system should have autonomous low altitude flight capacity (1-2m above ground) with facility for large area search & scan.

(c) **Endurance**. The system should be powered by rechargeable batteries of an endurance of 30 mins.

(d) **Operating Range**. It should cover a total distance of 2 km Line of Sight (LOS) with a swath of 2m x 0.15m.

(e) **Maximum Take Off Weight (MTOW)**. The MTOW for each drone should be 15 kg.

(f) **Detection Size**. The minimum detection size should be 4cm x 4cm.

8. **Indigenous Content (IC)**. Minimum 50%.

9. **Additional Information**. Each set of equipment will consist of two drones with GPR & 15-20 diffusion explosives and 01 x GCT (Ground Control Terminal). However, the details will be finalised after seeking inputs during feasibility study. Assistance will be provided by PFT to Development Agencies in giving access to mines at designated places/army locations for prototype development.

10. **Contact Details**.

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