

Development of Confined Space Rescue Robot

Scope of Work

The scope of work involves the design and engineering, manufacturing, prototyping, deployment and trial run of an advanced confined space rescue robot with basic features including:

- Retractable lifting robotic arm;
- Amphibious functionality;
- Multidimensional propeller system for water operations; and
- Multi-terrain tracks for movement over both water and land.

Use Cases of the Confined Space Rescue Robot

The proposed robot is intended for use in the following areas:

1. Rescue operations in canals, narrow tunnels, stormwater drains, etc.;
2. Emergency response in flood-affected urban areas;
3. Search and rescue in confined and hazardous environments;
4. Victim location and situational assessment in inaccessible areas;
5. Operations in environments with poor visibility and unstable conditions;
6. Inspection and monitoring of areas containing toxic or hazardous gases;
7. Underwater and amphibious rescue operations in waterlogged locations;
8. Remote inspection of culverts, drainage systems, chambers and other confined spaces;
9. Object detection and navigation in hazardous environments using sonar and camera systems; and
10. Support for disaster response during floods and other emergency situations for the Kerala Fire and Rescue Services.