



Technology DRDO 0236: Acoustic Life Detector

The technology is used to detect and save human beings trapped under the debris of collapsed buildings due to earth quake or land slide. This equipment is based on highly air sensitive acoustic sensor and audio signal processing to clearly listen to the victim's low frequency sound from below the debris. The sensors and related equipment are hermetically sealed and hence it can be used in wet or raining environment after a calamity.

The Acoustic life detector has three sub systems, namely probe assembly, electronics control unit and a head phone set. The probe assembly consists of a low frequency acoustic sensor that is highly sensitive, to pickup even very low human voices or any other sound made by the persons trapped under the debris. The sensor uses a highly sensitive piezoelectric material for converting the sound signal to electrical voltages. The probe head is rigidly coupled with a rigid Aluminum telescopic tube, which can be extended up to 2 m, which will help to the probe head through the gap of debris, if required. The electronics unit is designed using ICs. An amplifier in the assembly gives sufficient output to hear through head phones. It consists of a volume control switch and tone selector switch, sensor and headphone sockets. The electronics module is powered by four 1.5V AA type battery cells. It is very small and compact and is provided with a nylon waist belt for the operator to wrap around his waist. The headphone is is a standard stereo type headphone with extended microphone facility for two way communication between the operator and victim

- The systems is designed to have high reliability and for continuous field use in any environment (-10 deg to +45 deg).
- No external power is required for operation and it is battery (1.5Vx4) operated, which can work for 10 hours of continuous operation before recharging or changing new batteries.
- The overall weight of the system (all sub assemblies) is less than 1.5 kg and can be easily packed within the bag and plastic casing provided.
- The acoustic sensor is designed for higher sensitivity (up to -170 dB) to detect low frequency acoustic signals like hitting, tapping, scratching or moaning sounds made by the victims.
- The sensor can detect victim's sound who are trapped about probe distance of 6 to 8 m below the debris.
- It is fixed inside a compact metallic housing which can pass through 50mm dia gap into the debris without causing any damages to the sensor.
- The sensor housing can be extended for searching of victims up to 2m into the gap of debris.

Development Status

- The device has been developed and is in use in India.

IP Status

- An Indian patent is pending.

Partner Opportunities

- Manufacturing licensing agreements.

Contact

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