



Technology DRDO 017: Apparatus for Simultaneous Generation and Detection of the Optical Diffraction Pattern for Vibration Monitoring

This technology elucidates an innovative method and apparatus for the simultaneous generation and detection of optical diffraction pattern on a photo detector. The novel method is applied to monitor the vibrations generated elsewhere or on a test object. An inter comparison of the records of the vibrations generated and the records of the vibrations monitored using this method, demonstrated the efficacy of this method as a vibration monitoring device.

The device consists of a laser diode source, a photodetector, an optically reflective tape which can be pasted on to the vibrating surface which needs to be monitored and a data acquisition system or a simple speaker. The laser beam from the laser diode will be made to fall on the reflective tape pasted on to the vibrating surface and the photodetector will be positioned in such a way that it receives the reflected light from the reflective tape. The photodetector is connected to a data acquisition system or a speaker based on the functional requirement of the application. The system is suitable for remotely monitoring vibrations without any constraints.

Following are the applications of the apparatus:

- detection of hydrodynamic disturbances in the ocean
- gravitational wave detection in the atmosphere
- optical fencing
- survivor detection from inaccessible rubbles caused by natural calamities.

Unlike existing solutions, the apparatus does not require precise alignments or high quality optics, such as high quality mirrors, beam splitters and lenses, or high power lasers. The scalability in terms technology demonstration is 100%. The scalability in terms prototype manufacturing is 75%.

Development Status

The product has been demonstrated on a laboratory level. The creation of a prototype will require one to three months.

IP Status

- Indian patent and PCT filed.

Partner Opportunities

- Manufacturing licensing agreements.

Contact

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