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Design and Development of Mobile Based System for Doorway Monitor - TeleDM

Abstract

Radio Activity may spread in public places either intentionally or un-intentionally by any means out of any Nuclear Installation which may be catastrophic for the masses in general. There is a requirement of a system for detection and alarm annunciation of radioactive nuclides while there is any movement of Man/ Machine out of nuclear site. Also the alarm has to be communicated to concerned authority via SMS/MMS or any other communication means. Looking to the need of the hour, an indigenous, low cost, compact and portable, Mobile based Doorway Monitor system has been designed and developed. Mobile infrastructure is backbone for distant communication to be used by masses. Smart mobiles are compact devices yet powerful gadgets for designing new applications based on Mobile infrastructure. It has high processing power, good quality display, huge storage, user friendly interface with touch screen input and virtual key board. It has been used as a convenient way of interfacing to stand alone Instruments forming Compact Systems. Doorway monitor system is such a system and has been designed to monitor the presence of radioactive materials with persons who are coming out of Nuclear Power Plants, Radiation Labs and Radiological Installations. The system comprises of specifically designed doorway with a number of different detectors, the data of which is collected periodically by a Micro controller based Data acquisition Unit (MDU) via Blue-tooth connectivity. MDU will be responsible for sending the Count Rate information periodically to the local Smart Mobile based App. The application software running on the mobile phone (Android based) provides secure interface to the Doorway Monitor as well as saving of count rate data either on local storage or transmission of data to remote server/ cloud storage. Same data can also be displayed via 'RemoteDesk'application on any mobile connected with this local Mobile unit via internet. For different alarm annunciations, one Speaker with Amplifier may be attached to the local Smart Mobile unit. On detection of activity above set limit by the Mobile App, the system generates an alarm (vibration or sound, as per settings) in the mobile phone. The activities of various radio nuclides are displayed online on mobile Screen. Simultaneously, the mobile phone sends information about the activity detected and source identification automatically along with the location of the instrument (longitude and latitude), to a remote server and to multiple designated control room numbers. Based on this, necessary action can be initiated by the security personnel at central control room.

This paper details motivation for designing this system, new approach of designing Mobile based Doorway Monitoring System.

Key words: Doorway Monitor System, Data Acquisition unit, Bluetooth Communication

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Gender

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