RAILWAY ACCIDENT PROTECTION

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ABSTRACT:

The aim of this project is to determine the crack in the railway track .This project consist of Transmitter, Receiver, GSM modem ,crack detection present in the railway track. The GSM modem help us to find and sending railway geometric parameter of crack detection to nearest railway station. In the present of days we are using the measurement of track cracks by using high cost ultrasonic sensors with less accuracy, but we use the less cost transmitter and receiver for above process with high accuracy.

The importance of this project is applicable both day and night time detection purpose.

KEYWORDS: Railway Track , LCD , GSM, Arduino , Transmitter, Receiver.

I. INTRODUCTION

Transport is very important to carry the passengers and goods from one place to another. The better transport leads to more trade. Economic level is mainly depends on increasing the capacity and level of transport[1]. This paper presents an implementation of an efficient and cost effective solution suitable for railway application. In this paper we are going to use Transmitter to detect the crack in rail track, when the crack isdetected its latitude and longitude values are send as a message to nearby station by using GSM service[2].

In India most of the commercial transport is being carried out by the railway network and therefore as any problem occurred during transportation the major damage is getting occurred to the economy-non withstanding a social life. The Indian railway network today has a track length of 113,617 kilometers (70,598mi).over a route of 63,974 kilometers (39,752 mi) and7, 083 stations [3]. It is the fourth largest railway networking the world exceeded only by those of the United States, Russia and China. The rail network traverses every length and breadth of India and is known carry over 30 million passengers and 2.8 million tons of freight daily[4].

Despite boasting of such impressive statistics, the Indian rail network is still on the growth trajectory trying to fuel the economic needs of our nation. In terms of the reliability and safety parameters, we have not yet reached truly global standards[5]. Though rail transport in India growing at a rapid pace, the associated safety infrastructure facilities have not kept up with the aforementioned proliferation. Our facilities are inadequate compared to the international standards and as a result, there have been frequent derailments that have resulted in severe loss of valuable human lives and property as well[6].

In general, there exist three main categories of techniques excitingly used for damage identification and condition monitoring of Railway tracks. These include:
• Graphical inspections
•Non-destructive testing technologies such as acoustic emissions or ultrasonic methods, magnetic field methods, radio graphic, eddy Existing techniques, thermal field methods, dye penetrate, fiber optic sensors of various kinds
• Shuddering-based global methods [7].
The successful implementation of this method generally requires the regions of the suspected damage to be known as a first step, and be readily accessible for physical inspection. As a result, this method can be costly, time consuming and ineffective for large and complex structural systems such as the rail track[8]. NDT techniques have resulted in a number of tools for us to choose from. Among the inspection methods used to ensure rail integrity, the common ones are ultrasonic inspection and eddy Existing inspection[9].
Ultrasonic Inspections are common place in the rail industry in many foreign countries. By using ultrasonic Broken Rail Detector system railway operators will have the benefit of monitoring rails continuously for broken rails without human intervention[10].

But this system is costly so we use here transmitter and receiver to detect the crack[11]. The defect information can be wirelessly transferred to railway safety management centre using a GSM module for testing purposes system. This will contribute to ensure that the people do not suffer losses as a result of train derailments.

The defect information is wirelessly transmitted to the railway safety management centre through GSM Module[12] and the alert can be given to the next approaching train. The proposed scheme possesses many advantages such as fast monitoring and reporting system, low cost, low power consumption and less analysis time.

Also the easy availability of the components make an ideal project for industrial use with very little initial investment[13]. So the current location device on rail track can easily be measured from home station. By this proposed model many lives can be saved by avoiding accidents. The idea can be implemented in large scale in

the long run to facilitate better safety standards for rail tracks and provide effective testing infrastructure for achieving better results inthe future[14].

II. PROBLEM STATEMENT

This paper problem about a railway analysis is detection of cracks in the structure. If these deficiencies are not controlled at early stages they might lead to a number of derailments resulting in a heavy loss of life and property. In this paper, the proposed broken rail detection system automatically detects the faulty rail track without any human intervention.The principal problem has been the lack of cheap and efficient technology to detect problems in the rail tracks and of course, the lack of proper maintenance of rails which have resulted in the formation of cracks in the rail sand other similar problems caused by anti-social elements which jeopardize the security of operation of rail transport.

III. FUTURE SCOPE

In this paper, we have presented the Transmitter – Receiver based railway crack detection system and the crack can be detected without only error. It does not give false output. The idea can be implemented in large scale in the long run to facilitate better safety standards for rail tracks and provide effective testing infrastructure for achieving better results in the future. The broken rail detection system automatically detects the faulty rail track without any human intervention. There are many advantages with the proposed system when compared with the other systems.The advantages include less cost, low power consumption and less analysis time. By this proposed system the exact location of the faulty rail track can easily be located which will mended immediately so that many lives can be saved. The transmitter and receiver total station for railway track geometry surveying system. Railway Crack Inspection is dedicated as a measure of railway safety.

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