



PERFORMANCE IMPROVEMENT OF INDIAN RAILWAY SIGNALING

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ABSTRACT

The present way of signaling in Indian railway is through traditional land post light signals controlled from the station and the train operation is regulated by the light signals. Sometimes because of poor vision due to climatic conditions [mist and heavy rain], sharp blind bends, up and downs and dazzling sunlight, it is difficult to run the train in a constant speed and needs to apply brakes which will lead to discomfort journey and loss of energy and time too. To enhance the performance of the train operation without any interruption due to the above cause we can provide cab signals instantly to the loco pilot. Here, I introduce a method to provide cab light signal by electromagnetic waves (EMW) with the help of traditional land post light signal power.

Keywords: EMW, railway, poor vision, cab light.

I. INTRODUCTION

Our Indian railway operates under two types of signaling such as semaphore and block signalling [3, 2]. The semaphore signals are used in remote traffic regions in single line for the station purpose and level crossing. The semaphore signals are quite comfort enough for such remote traffic operation since the number of trains in this line is less. Whereas, block signaling is used for remaining regions to increase the number of trains in which absolute block signaling system for the single line and automatic block signaling system for the multiple line [1]. The present automatic block signals controlled from the station warns the loco pilot to regulate the movements of his/her train according to the location of the forward train movements in the same line by various different signals such as green, yellow and red. So all signals are conveyed to the loco pilot through lights which are received only through vision.

Sometimes because of poor vision due to climatic conditions [mist and heavy rain], sharp blind bends, up and downs and dazzling sunlight, it is difficult to run the train in a constant speed until and unless the loco pilot conforms the signal properly and needs to apply the brakes which will lead to discomfort journey and loss of energy and time too. There is another way to solve the above said problem [poor vision] is the cab signaling.

At present situation, we cannot change the entire Signalling system of our Indian railway to the cab signalling method because our railway traffic is a mixed traffic. To implement the cab signaling we require homogeneous traffic operation. Whereas, we are not in position to develop the homogeneous traffic all of a sudden to segregate various type of trains such as goods,

slow passenger and high speed trains to find their own path way and to maintain their speed constantly without any interruption by other trains. The possibility of implementing the communication based cab signal is difficult in mixed traffic operation as well as it is not suitable for high speed moving trains due to transmission loss and packet delay [4]. Therefore, it is better to get the light signals inside the cab by electromagnetic signals supported by the existing traditional land post signal power which will help the loco pilot to enhance the performance of the train operation without any interruption due to the poor vision and also to avoid the practical difficulties of the loco pilot such as the confusion due to congested track signals at the junctions.

2. PROPOSED SYSTEM

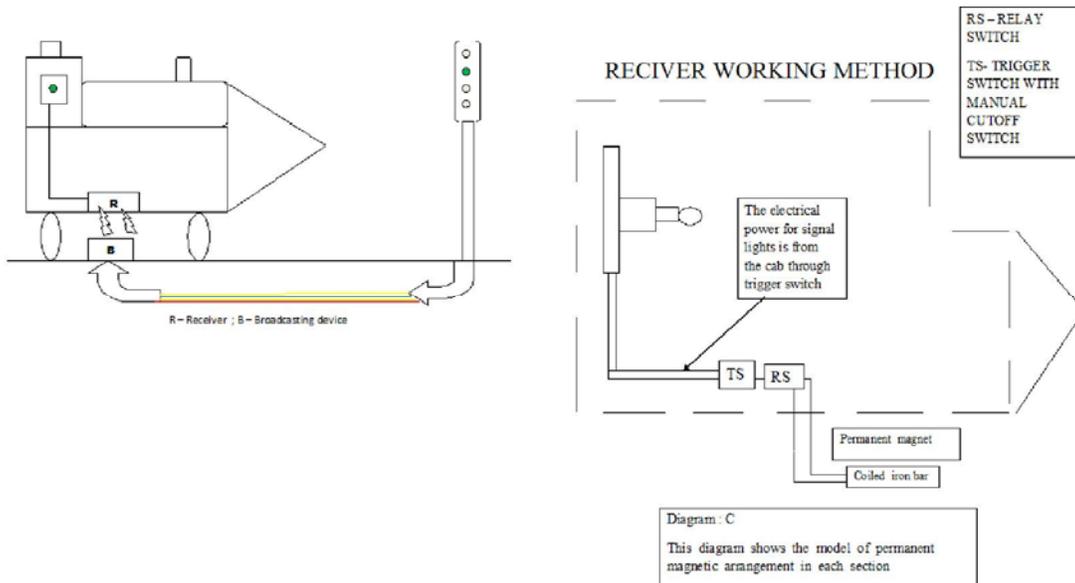
Here, I introduce a new method of getting possibility of cab signal by using an electromagnetic broadcasting device on the track side working with the power of existing land post power in enough advances to precede the train than present way of train operation.

Providing an electromagnetic broadcasting device advance in each automatic block signaling section at the track side and an appropriate [receiver] convertor device in the cab, makes it possible to get signals in advance at each and every automatic block signalling section.

I have shown the diagrammatical representation of the proposed signaling system.

Diagram: A

Proposed cab signal arrangement



EMW BROADCASTOR SECTION:

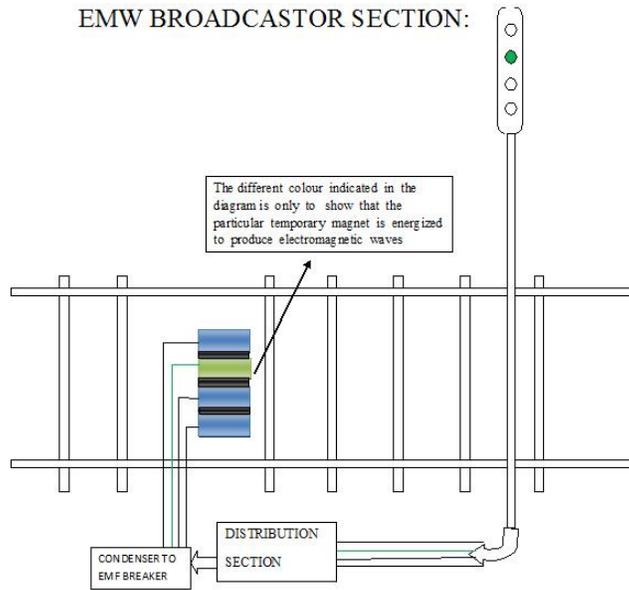


Diagram : B
 This diagram shows how electromagnetic wave broadcasting device works

3. CONCLUSIONS

The proposed system is the preliminary implementation of cab signaling which is related and combined with the existing automatic block signaling system to improve the performance of the Indian railway signaling system.

The benefit of getting the signals advance in each automatic block signaling section, can be sure enough time interval to proceed speed or to slow down gradually to ensure the saving of energy, time and comfort and safety riding.

4. FUTURE WORK

The remote technology that is wireless based communication is not that much reliable for fast trains due to transmission loss and packet delay.

But here is a possibility of using this remote technology by sending signals to the broadcaster which is a stationary device and not affected due to transmission loss and packet delay.

Already as per proposed signaling system the broadcasting device runs with the power of land post signal power.



Where as in the future work we need not depend on land post power to provide signals, since the

broadcasting device can work with the power of solar.

5. COPYRIGHT FORMS

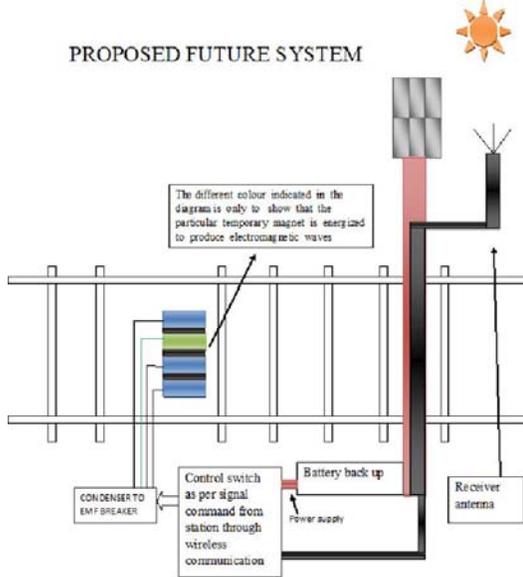
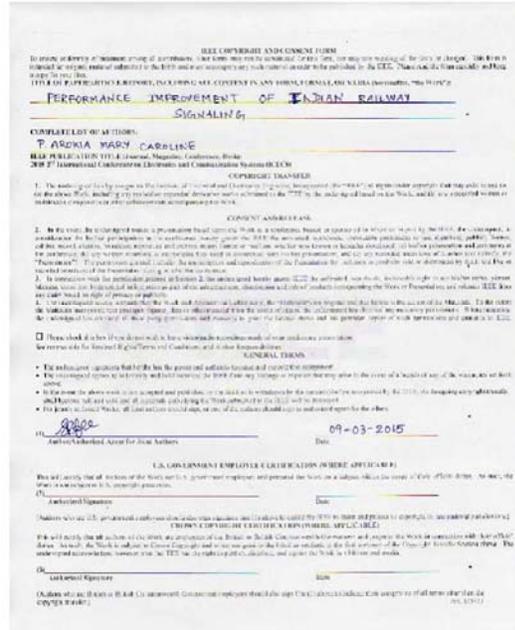


Diagram : D This diagram shows the future signalling method of self powered broadcasting device with wireless signal command from station



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