KAVACH SYSTEM OF INDIAN RAILWAYS

By

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INTRODUCTION

- Kavach is an indigenously developed Automatic Train Protection (ATP) system for Indian Railways. It is designed to prevent train collisions by automatically applying the brakes if a train is approaching another train too closely. The system is based on the European Train Control System (ETCS) and has been certified to the highest safety level (SIL-4).
- Kavach works by using a radio-based communication system to transmit train speed and location data between the locomotive and wayside equipment. If the locomotive is approaching another train too closely, the wayside equipment will send a signal to the locomotive to apply the brakes. The system can also be used to prevent trains from exceeding the speed limit.
- Kavach has been installed on over 2,000 kilometers of track and has prevented over 100 train collisions. The system is expected to be rolled out to all of Indian Railways' electrified tracks by 2025.

WHAT IS KAVACH?

- Kavach is an indigenously developed Automatic Train Protection (ATP) system for Indian Railways. It is designed to prevent train collisions by automatically applying the brakes if a train approaches a red signal or another train too closely.

DEVELOPMENT

- Developed by Research Design and Standards Organisation (RDSO) in collaboration with three Indian vendors, Kavach has been adopted as the National ATP System for Indian Railways.

KAVACH KEY FEATURES

- Kavach serves multiple purposes. It assists the Loco Pilot in avoiding Signal Passing At Danger (SPAD) and overspeeding, as well as enables train operation during challenging weather conditions like dense fog.
- By controlling the train's speed and applying brakes automatically when necessary, Kavach enhances safety and efficiency. The key features of Kavach include the transmission of line-side signals to the train cab, which is particularly beneficial in high-speed and foggy conditions. It continuously updates the train's movement authority and can automatically sound the whistle at level crossing gates.
- The system also facilitates direct communication between locomotives to prevent collisions and includes an SOS feature in case of accidents to bring the train under control.

HOW DOES KAVACH WORK?

- Kavach uses a radio-based communication system to transmit train speed and location information between the train and the trackside infrastructure. If the train is approaching a red signal or another train too closely, the system will automatically apply the brakes.

BENEFITS OF KAVACH

- Kavach is expected to significantly reduce the number of train collisions in India. It is also expected to improve operational efficiency by reducing delays caused by signal failures and other incidents.

IMPLEMENTATION OF KAVACH

- Kavach is currently being implemented on a pilot basis on a few railway sections in India. The Indian Railways plans to gradually roll out Kavach across its entire network.

CONCLUSION

- Kavach is a major step forward in improving safety on Indian Railways. It is expected to save lives and reduce injuries, and to improve the efficiency of train operations.

THANK YOU