

Kavach System

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Kavach System Latest News

Recently, the Union Railway Minister, in a written reply during the Winter Session of Parliament, informed the Lok Sabha that the indigenously developed Kavach system has been fully commissioned on over 2,000 km of the Indian Rail network, with the rollout progressing at a very fast pace.

About Kavach System

- **Kavach** is an **indigenously developed Automatic Train Protection (ATP) system** designed to enhance **railway operational safety**.
- It has been developed by the **Research Design and Standards Organisation (RDSO)** under **Indian Railways (IR)** in collaboration with **Medha Servo Drives Pvt Ltd, HBL Power Systems Ltd, and Kernex Microsystems**.
- Kavach is a **highly complex digital safety ecosystem** consisting of **five major integrated components**, including **continuous Optical Fibre Cable (OFC) laid along tracks** and **telecom towers** for uninterrupted communication.

- The system uses a **combination of electronic devices and Radio Frequency Identification (RFID)** installed in **locomotives, signalling systems, and railway tracks**, which **communicate using ultra-high radio frequencies**.
- Based on **pre-programmed safety logic**, Kavach can **alert loco pilots, automatically apply brakes, and prevent unsafe train movements**.
- **Field trials have been ongoing since 2016** on passenger trains before large-scale deployment.
- As of **December 2025**, Indian Railways has:
 - Laid **7,129 km of Optical Fibre Cable (OFC)**
 - Installed **860 telecom towers**
 - Connected **767 railway stations to data centres**
 - Deployed **trackside equipment along 3,413 km**
 - Equipped **4,154 locomotives** with Kavach
 - Around **40,000 technicians and operators** have been **trained**, highlighting the **technological sophistication** of the system.
 - **Consequential railway accidents have reduced by nearly 90%**, declining from **135 incidents in 2014 to about 11 currently**, indicating **tangible safety outcomes**.

Source: TH

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