

Emergency train stop

Branch: Transportation

Customer: www.szdc.cz

Country: Czech Republic

Project Target: Improvement of safety on railways

Solution: Dispatching solution IP
Touch Call - KONOS

Result: The dispatcher can, in case of emergency, immediately stop the operation of train sets in the selected section. By pressing a single button on the operating terminal, all trains connected to the GSM-R radio system can be stopped. Other trains in given area including those not furnished with the GSM-R STOP functionality receive the information on the emergency situation in their vicinity in the form of an automatic notification.

CUSTOMER: RIA

RIA is a state organization, which is in charge of the operation and safety on railways in the Czech Republic. As the actual owner of railway infrastructure, the company ensures availability, modernization and development of the railway infrastructure in the Czech Republic. RIA aims at providing the carrier companies with a railway infrastructure of high level of quality and safety.



PROBLEM DESCRIPTION

In the last few years, Czech railway infrastructure underwent modernization of the communication technology to the GSM-R digital standard. The analogue system used before did not allow further development. At first, the new digital standard - GSM-R - was mostly used for voice communication between the dispatcher and engine driver. The RIA management required that the GSM-R digital network offered additional features. These include the capability of stopping the train remotely directly from the control panel of the dispatcher terminal to improve the operational safety and addressing of emergency situations. In the railway terminology, this feature is called GSM-R STOP.

SOLUTION

For communication with engine drives, RIA dispatchers use special control terminals by TTC MARCONI with type designation IP Touch Call - KONOS. The main objective of the project consisted in the integration of the GSM-R STOP function in the dispatching terminal. Within the integration project, the aim was to transfer the command initiated by the dispatcher by pressing the GSM-R STOP button, within a few milliseconds, through several other information and radio systems directly to the target location, which is the main brake valve of the specified train set. At the engine side, a special device is installed, which immediately discharges the brake valve after evaluating the dispatcher's command. This results in emergency stop of the train. At the same time, the engine driver is notified of the emergency situation by an acoustic signal directly in the cabin. After picking up the telephone receiver, the driver is directly connected with the dispatching station, which initiated the emergency situation.

Using GSM-R STOP, the dispatcher can stop a specific engine on the track or all engines in the range of 5 kilometers, for example. Other engines in the surrounding area are automatically notified that something is happening on the track by so-called automatic emergency call.

The GSM-R STOP feature significantly improves operational safety. Moreover, it reduces the time necessary for response to emergency situations on the track (e.g. an object on the track, tree falling on the track etc.). This function also allows reacting to the situation even at the moment when the technical means for stopping the train are no longer available, thus preventing collision or another accident. By pressing a single button, the dispatcher can physically stop all trains connected to the GSM-R radio system in the selected section and notify all other trains in the area of the emergency situation in their vicinity.

"In a very short time, we managed to integrate a number of incongruous technologies along the path between the dispatching terminal and train brakes. I am glad that we have improved the railway safety a bit further. I am confident that this new feature will help prevent future tragedies."

Richard Hartmann, CEO TTC MARCONI.

"On our way to the successful result, we needed to resolve a number of technical as well as legislative pitfalls. Now the General STOP feature is among the basic features of the GSM-R system. If European authorities agree and the mentioned feature is included in the EIRENE standards, it will be able to be used in a large part of Europe."

Pavel Surý, RIA Managing Director.

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