PREDICTIVE MAINTENANCE OF EMERGENCY VEHICLES

INTRO

Emergency services are the backbone of a functional society. In the event of a fire, response time is key. For firefighters to be able to react in time, equipment must be ready at all times. As most fire emergency vehicles are expected to be in service for decades, their maintenance is crucial. Fortunately, Teltonika Telematics has a solution that allows maintaining fleets while saving costs.

CHALLENGE

The average life expectancy of a fire truck can be up to 20 years. In some cases, it can reach 25 years as a reserve vehicle before retirement. There is plenty of time for things to go wrong, especially for vehicles in the second half of their service life. Repair costs are always greater than maintenance costs. It is especially relevant for emergency services since they are funded by a state budget.

Differences in vehicle types make it difficult to keep track of **maintenance schedules** manually. This is due to units might spending more time idling at the emergency scene than on the road and vice versa. Water pumps and hydraulic ladders also have to be maintained regularly, alongside other equipment. There are dozens of different fire emergency vehicles for different needs: urban, airport, rural, wildfire, water tenders, rescue boats and so forth. Large cities with tall buildings require tall ladders, while small towns and rural areas need more powerful pumpers with better offroad capability, to cope with wildfires.

Another major challenge is **accidents** involving emergency response vehicles. According to a recent study, deadly crash risk potential increases, when emergency vehicles operate with lights and sirens. There are various reasons behind these accidents, associated with human factors such as siren syndrome when an emergency vehicle driver is deluded into a false sense of invincibility with warning lights and sirens. To reduce the risk of these hazards,

accurate data is needed to assess the causes of these accidents. Teltonika Telematics may offer a solution to all of these challenges.

SOLUTION

First of all, it's important to ensure that emergency vehicles and their components are in operational readiness. Regular service and maintenance, especially for older vehicles are crucial. To solve this obstacle, we choose the robust IP67-certified ADVANCED category Teltonika vehicle GPS tracker FMC225. With CAN bus data support, the model can read most vehicle parameters and notify maintenance engineers and fleet managers if any warning signs appear.

It also allows managers in charge to receive **automatic maintenance notifications** for various parts vehicles to keep them timely serviced. This saves hours of manual work, reduces costs and eliminates human error. With automatic maintenance and servicing notifications, the vehicles in the emergency fleet will always be up to the task. The fact is that vehicles that are regularly maintained last longer.

Teltonika ALL-CAN300 adapter scans vehicle parameters and the FMC225 tracker sends data via the 4G LTE Cat 1 network. The data includes the GNSS position and more than 80 parameters if required. FMC225 can be fitted to a variety of vehicles, gathering and transmitting data of interest. It serves well since there are different types of firefighting vehicles. With Teltonika Telematics GPS devices and accessories, they can all be successfully combined into one integrated system and adapted to any telematics project.

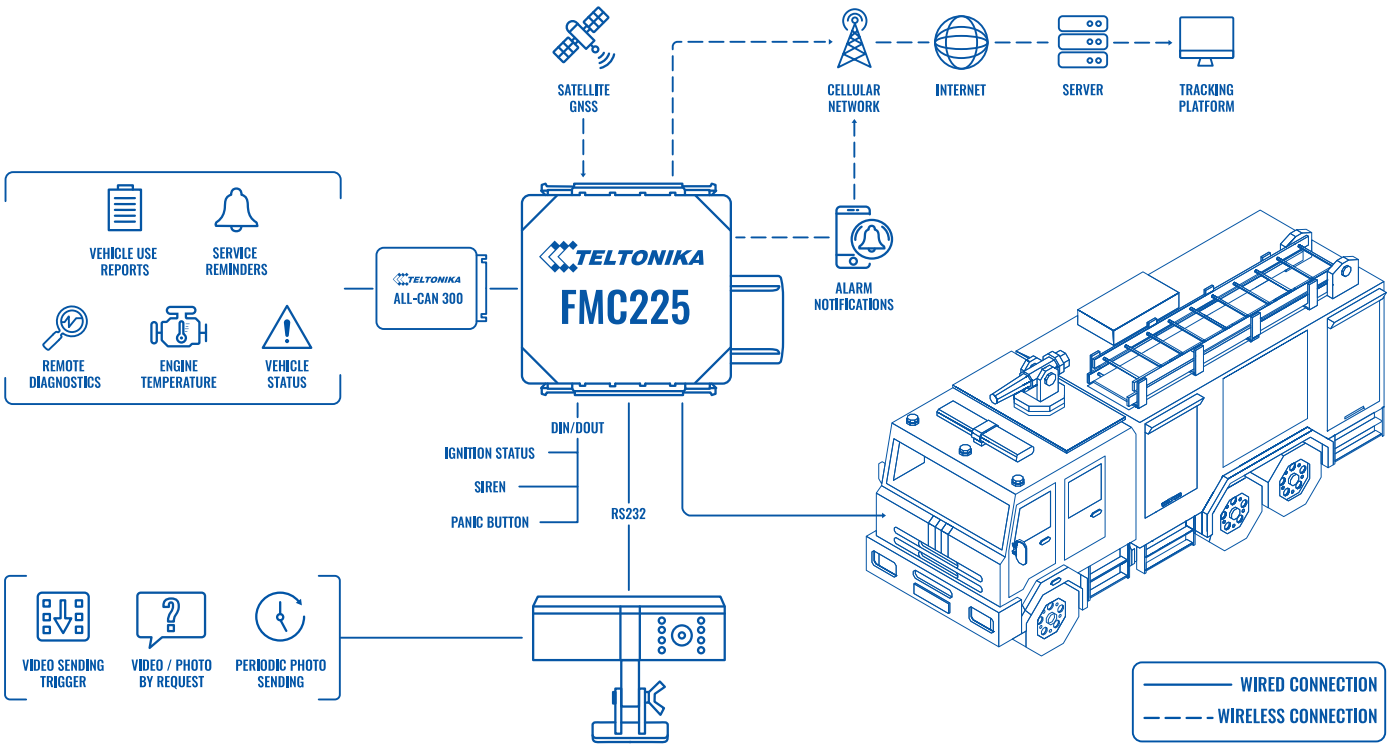
The FMC225 has several handy features to help solve another pressing problem – a straight-off response to accidents of emergency vehicles. One of them is the Crash Detection Feature. A triple-axis accelerometer fitted within a device accurately senses G-forces affecting the vehicle. For instance, in the event of a collision or crash, the force threshold is exceeded and the tracker automatically records the accelerometer parameters 15 seconds before and 15 seconds after the event. This helps to determine exactly what happened and get it sorted out faster.

Even more, the FMC225 vehicle tracker is fitted with an RS-232 serial port which allows connecting external devices, to either assist vehicle drivers or monitor behaviour. One possible option is Teltonika DualCam solution. It monitors both the inside of the vehicle and the road ahead simultaneously.

As accidents involving emergency vehicles are more likely to occur on busy urban streets, driver monitoring can have an impact on the siren syndrome and **reduce the probability of accidents**. A forward-facing camera helps to deal with insurance claims, which can save money for the budget organisation, such as fire stations and departments.

For rural areas and wildfire emergencies, traffic is not an issue, thus RS-232 port can be used to connect the Garmin navigation system with remote management, so the driver can concentrate on the road in tricky areas reducing response time and improving efficiency, safety, and crew discipline, to say at least.

TOPOLOGY



BENEFITS

- **Predictive maintenance procedure** - making sure that vehicles are well maintained and ready to be deployed when necessary, saving operational costs and a city budget.
- **Efficient management of fleet** – tracking vehicle maintenance becomes an automated process with irregularities reduced to a minimum.
- **Increased fleet efficiency** - CAN bus helps to track and gather relevant vehicle parameters, reducing fleet maintenance time and costs.
- **Unnecessary costs are avoided** by reporting vehicle breakdowns, providing timely assistance, reducing downtime and unplanned repairs and saving running costs and budget.
- **Improved driving behaviour** – 3-axis accelerometer tracks driver behaviour reducing the risk of the siren syndrome and allowing to reconstruct accidents in digital format.
- **Visual data for evidence and analysis** – short videos or photos of the events on demand. They can be sent to a server for further evaluation, evidence, driver training, and archive.

WHY TELTONIKA?

Our expertise covers all modes of transport, including all types of emergency vehicles. Teltonika tracking devices are already installed and successfully unitised in police, ambulance and fire trucks around the world. To cope with the most demanding usage scenarios and cases, the FMC225 is equipped with an IP67-rated casing. The tracker can read and transmit all the necessary parameters of emergency vehicles, ensuring timely maintenance and crew safety.

FEATURED PRODUCT

FMC225

RECOMMENDED PRODUCTS

FMC125, FMC640, FMB640-FMB641, FMB125, FMB225

RECOMMENDED ACCESSORIES

ALL-CAN300, LV-CAN200, TELTONIKA DUALCAM