



The fire department from Olomouc has developed special trolleys. The intervention will be easier with electric car fire

There's a car on fire in an underground garage. Smoke and toxic fumes are rapidly filling the area, fire threatens the surrounded people and adjacent cars. This is a situation, that firemen meet routinely. And they can deal with that situation through well-established and proven procedures. But, what if there is on fire an electric or hybrid car? According to experience in the world and the Czech Republic, the encapsulated batteries inside the car, present a complication in hazing. This is particularly the case as heat and fire fumes develop inside the hidden and unavailable battery. So how effectively do we handle this situation? Firemen from Olomouc region have now come up with a solution and has developed in collaboration with a private engineering company a special set of technical means for handling vehicles. It is essentially a set of unique trolley. A partially extinguished car is loaded on the trolley and exported from the endangered area to the open space, where it can then be safely continued to cool and firefighting intervention. Within the Czech Republic and Europe, it is a unique technical means, to speed up and make it more effective for the firemen's intervention, as a matter of principle, damage and the consequences of fires in alternatively powered vehicles will be eliminated.

The handling kit is mainly used to evacuate immobile cars and light commercial vehicles with an immediate weight of around 4000 kilograms, where there is limited access to heavy equipment and towing services in heights or otherwise. These are mainly underground garages, multi-storey parking facilities, parking houses or rooftop parking with platform car lifts. The undisputed advantage is that we can also move locked cars, damaged and immobile cars. Thanks to these technical means at the same time, there is no secondary damage. „As new technologies evolve and become operational, we need to react to this situation. Czech firemen are known for their flexibility and ability to react operationally to any situation. We need to be able to use existing equipment properly for interventions, but I am very pleased that we also have colleagues in our fire department, who are involved in this development and testing of new means to help other firemen carry out their mission and perhaps contribute to their safety,“ describes Petr Ošlejšek, deputy director for Integrated Rescue System and operational management of the Fire Rescue Services of the Olomouc Region.

The technical means were developed by the firemen in cooperation with a private company, whom they had to solved several problems when they were constructing the tow trolley. In fact, they found out in a market research, that trolleys already exist, but they are only used for a specific type of transport, for example: car workshops or showrooms. This type was not suitable for firefighting purposes for many reasons (weight limits, barriers, deceleration thresholds, ramps, height differences, etc.). Therefore, there has been developed a new one, whose construction is very strong and it also resist even less gentle treatment, which is often impossible to avoid in intervention. A big advantage is the transport of the car by the firemen themselves, but also by towing or braking cars. After production of the prototype, we proceeded to tests of the handling kit and several improvements. After the production of the prototype, we started testing the handling set and several improvements. Expect for 4 steel trolleys, is the set equipped with binding elements for attaching wheels and individual trolleys to each other.

It also includes elements for towing, braking and stabilizing the vehicle and pneumatic jacks.

„We have been working on the development since 2019. The first prototypes of the trolleys were in the world in January 2020. During last year, we carried out about 13 practical tests, thanks to them, we tuned the trolleys and the entire set. Especially appreciate the cooperation between firemen and designers from a private company. After such a long journey full of tests, we can finally say: yes, we



can do it...," says Pavel Thin, platoon commander of Olomouc fire station, who led the team explains the process of developing new technical means.

Thanks to cooperation with private entities, we were able to perform tests of the handling set in various types of objects. We performed the tests, for example, in the underground garages of the Šantovka Gallery in Olomouc, in the Namiro multifunctional building or in the multi-storey parking garages, car showrooms in Olomouc. We didn't choose the test sites randomly. We've chosen the sites, whose disposition can be trouble not only for drivers in everyday life, but also for firemen during an intervention. We also tested the trolleys on cross thresholds, on sloping ramps, in car lifts or in underground garages with complicated entry and exit. We manipulated both, ordinary vehicles and also hybrid or alternative-powered cars. For example, we moved cars like: Tesla, Audi, Mercedes-Benz, out of inaccessible spaces.

We will transport the handle kit to the place of intervention on a trailer, so that it could be used operationally. It will now be located at the central station in Olomouc, but it will be possible to use it anywhere in the Olomouc Region. In view of the growing number of underground garages, parking houses and the expansion of electric vehicles, we anticipate its deployment especially in the big cities in the region. There are dozens of such objects in Olomouc. The number is rising year on year, which is related to the construction of new apartment buildings, which generally include underground garages.

The car handling kit was partly financed by a donation from the general partner of the Galerie Šantovka Olomouc project and partly by the Fire Rescue Services of the Olomouc Region. The company Přidal s.r.o., which also manufactured the handling trolleys, was structurally involved in its development. We've consulted with the General Directorate of the Fire Service of the Czech Republic on the tactics of deployment and wider use of technical means, and we verified the technical parameters in cooperation with the Technical Institute of Fire Protection of the Fire and Rescue Service of the Czech Republic. We were able to carry out testing in real operation thanks to cooperation with Lukáš Hataš, the Czech Association of firefighters, executive director of the Association for Electromobility for Czech Republic, the City of Olomouc and the Olomouc Motor Show Samohýl Motor, Centrum-Moravia Olomouc and CarTec Olomouc. We would like to thank all the above-mentioned companies and institutions.

Our work is not over now. The other way around. We are currently working together with the team of the Fire and Rescue Service of the Moravian-Silesian Region, we are working on tactics for extinguishing electric cars, which will complement the entire procedure in the event of a fire in electric or hybrid cars.

Basic parameters of the vehicle handling kit

Content: 4x trolleys, 4x pads for vehicles with damaged wheels, binding elements, pneumatic jacks

Load capacity: 1000kg/trolley

Trolley weight: 38kg

Maximum transport speed: 5 km/h