



## IMAGINE THIS.....

An electric vehicle is involved in an accident. The driver is still able to step on the gas pedal and set the car in motion. An electrical car can, without even noticing, take off. The effects can be devastating....

**Research proves unpredictable vehicle movement is one of the main dangers when electrical and plug-in hybrids are involved in an accident.**

### What makes an accident involving E- cars more dangerous?

Unlike normal cars, an electrical or plug-in vehicle does not switch off/stall once the clutch is released. On top of this, you cannot hear the engine running. The engine of an electrical car will only shut down once the impact is strong enough and the safety systems are fully working. Emergency staff is not in the position to evaluate this, nor have the technical knowledge to check if all security systems have worked properly.



Due to advanced technology some electrical cars are equipped with a system that will start the car once the driver has taken place behind the wheel. Some E-cars and Hybrids can be started without a key or even the press of a button. Situations like these make it very difficult for the first responder to anticipate. The victim can unconsciously - or unwittingly - step on the gas pedal while the engine is still running. The car will immediately respond without any warning.

Since electrical cars are being equipped with a large torque it is impossible to block the wheels. As a matter of fact, blocking the wheels will create an even more dangerous situation as this could propel the car. This leads to dangerous situations for first responders, victim (s) and bystanders.

## SAFETY FIRST

Emergency staff are instructed to first make sure they can operate safely in order to provide help to others. But we all know it's in their nature to help the victim first. This can create a huge dilemma creating frustrations, loss of valuable time, guilt and taking too many risks. This unpredictable vehicle behavior is what concerns us most.

### Recent technologies to minimize risks

There are currently techniques such as "stopping or blocking" an electric car to prevent it from driving off. This is very difficult and often even dangerous due to the large torque of E-cars and Hybrids.

Another option to turn off the car is using the service plug to disconnect the HV battery pack. This turns out to be a difficult procedure when the car is severely damaged, risky by standing close to the vehicle and time consuming since the service plug can be located anywhere in the car. Manufacturers are free to choose the location of their service plug, there is no set/fixed spot. These recent technologies have created a false sense of security. We have developed a solution for this.

### The Emergency-Plug provides the solution

It is now possible to work safely in- and around - electric cars by immediately placing the Emergency-Plug when approaching the vehicle.

With the help of the Emergency-Plug the E-car is disarmed and first responders are protected against any unpredictable vehicle movement. Simply plugging in this universal emergency plug creates a safe environment for first responders and bystanders.

## PLUG IT SAFE

### How does the Emergency-Plug work?

Whomever arrives first at the scene of the accident will place the Emergency-plug in the charging socket of the vehicle. The Emergency-Plug will communicate with the car's software by making the car think it is being charged. As a result of this, it will not be possible to operate the car, or drive off.

Every E-car and Hybrid has a mandatory built in safety feature which will prevent the car from being operated once the car is being charged. All manufacturers have to follow this protocol and implement this feature to prevent serious damage to loading stations and high voltage grids. The Emergency-plug is equipped with two different plugs, one on each side (type 1 & type 2). With the use of the Emergency-plug all E-cars and Hybrids worldwide can be safely blocked. The Emergency-plug is user friendly and does not require any special training.

## ONE PLUG FITS ALL

### Build in extras of the Emergency-plug

- ◆ The Emergency-plug is **universal** and will fit into any type of E-car and plug-in hybrid socket using either type 1 or type 2.
- ◆ The Emergency-plug will light up in blue whenever an E-Car is **actually switched on**. This will inform the user that the car is "running" but is safe to approach and work on.
- ◆ The Emergency-plug is equipped with a **self-test function**. With the press of a button you can check if the Emergency-plug's software is working correctly before connecting. When correctly operated the luminescent edge of the Emergency-plug will light up in green and is ready to use.
- ◆ An E-car usually locks the charging plug to prevent theft. This makes it virtually impossible to disconnect while charging. The Emergency-plug has been designed to **easily disconnect** whenever needed. This feature makes it possible to use the Emergency-plug over and over again.
- ◆ The Emergency-plug is made from **luminescent** material, making it easy to locate during dark conditions.
- ◆ With the touch of one button the Emergency-plug uses Bluetooth to **open up** the flap of a Tesla **charging socket**.
- ◆ The Emergency-plug offers **software updates** to make sure all E-cars and Hybrids are compatible.
- ◆ The Emergency-plug is produced using **recycled plastic**.

### Who can benefit from the Emergency-plug?

The Emergency-plug enables a safe way of working with all E-cars and Hybrids for those involved working on the road. Another advantage is that the Emergency plug prevents unnecessary damage to the car which is positive for both the owner and the insurers.

We would like to highlight four different scenarios that indicate how the Emergency-plug can be of help.

### Fire brigade

When arriving at an accident involving an electric vehicle it is difficult to check the status of the passenger(s). Even if the car shows little damage there is no guarantee this will prevent the car from taking off. One of the first tasks would be to place the Emergency-plug before anyone gets near the E-car. After this they can continue their operation safely.



### Police

If police are the first ones to arrive, they can place the Emergency-plug. The Emergency-plug can be used whenever it is necessary to ensure a safe situation. When normal cars are being put to a stop the police usually requests the driver to turn off the engine. It is very hard to tell if this is actually executed when an E-car or Hybrid is involved. If an E-car is being put to a stop, the officer can place the Emergency-plug and remove it whenever the driver is ok to continue.

### Ambulance

When a person has become unwell in an electric vehicle it is of most importance for ambulance staff to access the car in a safe way without the risk of the car taking off once the door has been opened. Whenever ambulance staff are the first to arrives at the scene, one of them can place the Emergency-plug while the other one can continue first aid. This will save valuable time. Same applies whenever the ambulance is the first and only responder to an accident.

### Other emergency services

Other emergency services which are often involved with E-cars and Hybrids are Rijkswaterstaat (Public Works), towing services, break-down recovery services and road inspection. These services are always on the road and often the first ones to arrive at the scene of an accident. Being able to install the Emergency-plug is one of the first steps to secure the safety of the vehicle and its surroundings.

### Like to know more?

If you would like to know more about the Emergency-plug, or are interested in a demonstration, please contact:



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