

## Objectives

The most common method for EV charging is the usage of a cable plug-in system used either at home, at work or at specific charging stations spread across some cities. An alternative to this charging method is the wireless inductive charging. With this charging method it is possible to just position your car on a charging point and start the contactless charging process without any additional effort.

The FP7 **UNPLUGGED** project aims to investigate how the use of **inductive charging of Electric Vehicles in urban environments** improves the convenience and sustainability of car-based mobility.

In particular, it will be investigated how smart inductive charging infrastructure can **facilitate full EV integration in the urban road systems** while **improving customer acceptance** and perceived practicality.

**UNPLUGGED** studies several scenarios:

**Static charging**, meaning the vehicle is not moving for a medium/long period of time (>5 minutes)

**Stationary charging**, when the vehicle is not moving for a short amount of time (<5 minutes)

**Dynamic charging**, when the vehicle is moving: Highway, strategically chosen roads, etc



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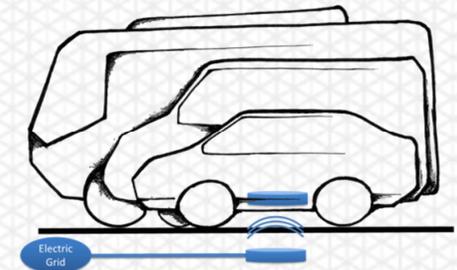
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## Inductive charging for electric vehicles



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[www.unplugged-project.eu](http://www.unplugged-project.eu)

## Background

Today electric vehicles (EV) are having a hard time being accepted by the customer and diffusing in the market. Even though many aspects of EVs seem making them very appealing (e.g. very low energy cost and zero tail pipe emissions) there are several concerns that people have on this technology:

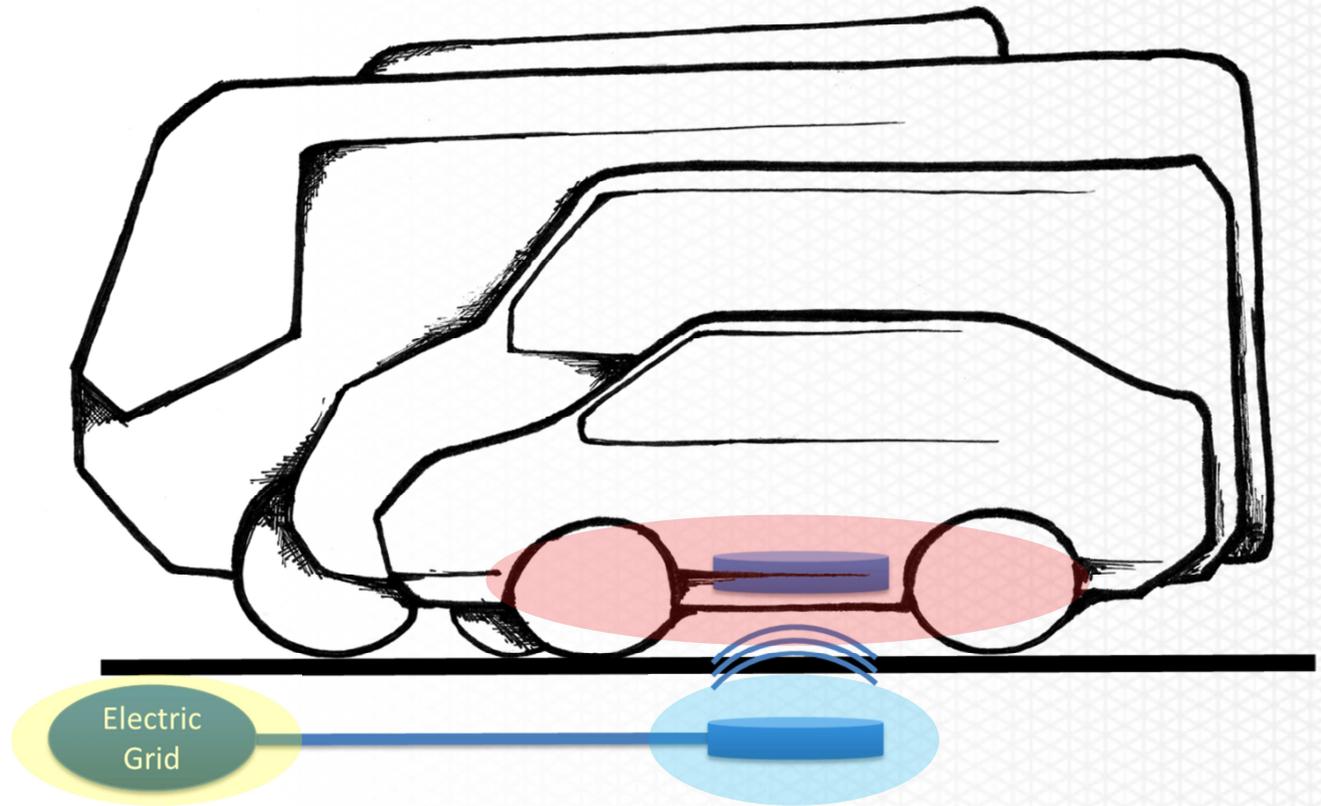
*Range anxiety: Because of the limited range of EVs caused by the current relatively low capacity of batteries, the freedom of the driver, one of the major reasons to own a vehicle, is limited*

*EVs require a significantly higher initial investment cost than vehicles with common combustion engines due to the high cost of the energy storage (battery)*

*The EV batteries need to recharge frequently and hence the driver has to find a suitable recharging stations and has to plan the routes accordingly*

The charging process itself is very time consuming and hence user-unfriendly

Given the current challenges in mobility (mainly due to fossil fuels) and also the open issues that EV rises in relation to economic and social feasibility, the **inductive charging technology** could become a centrepiece if all of the different inductive charging solutions (static, stationary, dynamic) are combined and used for their best specific purpose.



## Interoperability

One of the key issues to facilitate the deployment of inductive charging technologies for EVs is *Interoperability*, which covers several aspects:

- Among different vehicle OEM and models, for instance in features as positioning
- Among different power suppliers in the same country but also in other countries, which may affect payment solutions, concerning identification
- Among different classes of vehicles (cars, light duty, buses,...), which may affect the power of the station
- Among different types of recharging process, slow and fast

