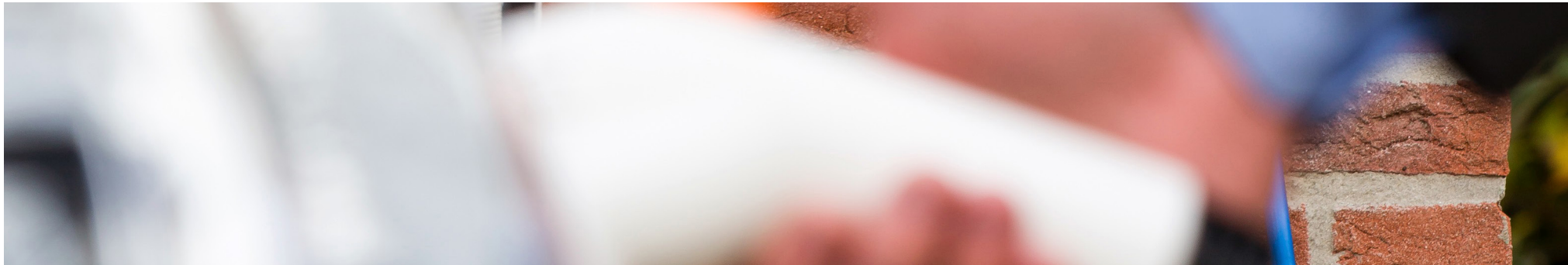
charging at
home & the office

find the best charging solution for your daily routine



We're surpassing the mark of 2 million electric vehicles on the road worldwide.

Electric cars are cheaper to maintain than their petrol-powered counterparts. They can in fact save up to 75% on the conventional fuel- consumption per year, and can qualify for a wide range of local incentives and tax credits across the world.

Most importantly, electric vehicles produce no harmful tailpipe emissions and provide a reduced carbon footprint in comparison. In many European countries, electric vehicles are even powered by green energy, generated from solar and wind.

The automotive market today, offers a wide range of electric models. With a greater variety of available models, EVs are becoming more powerful and more affordable, the EV market is bound to experience maturation in the coming year(s).

The more people go electric, the higher demand for a charging infrastructure. That's why it's crucial for you, as a (prospective) electric driver, to look into possibilities to charge your car, wherever you go. For business owners, now is the right time to start providing charging facilities at the workplace.

Read on and learn how to get access to a charging solution that best suits your needs. Once ready, you - and any other EV driver for that matter - will be able to drive and charge comfortably, any place, any time.

Get started

You just bought an electric car or you're thinking about getting one. While you browse for information, there are a few terms and topics that you'll inevitably encounter. We will cover these one by one in the next few pages:

- The car
- The available and needed power
- The parking and charging time
- The location

In Europe, all charging stations are equipped with a standard connector, meaning that every car can access every type of charging station!

The car

A charging station might be an investment. So it's always good to take your near-future car buying plans into account.

If you're considering another car in the next few years, you may need to reconsider the type of station you'll purchase, as some car socket types may not be compatible with the station. There are two socket types on the car side in Europe:

TYPE 1
Common for Japanese & American cars (excl. Tesla)

TYPE 2
Common for European cars (incl. Tesla)

So if you switch from a Nissan Leaf (Type 1) to a Tesla Model 3 in a few years from now, you will then need a different charging cable.

Luckily, there are certain standards for socket types on charging stations. The European standard is Type 2. This means that the station plug on your charging cable will always fit every charging station in Europe.

For those who'd like to operate chargers at the office, the compatibility also needs to be considered. Not only would you have to take into account which cars may be charging at your stations, but also any possible fleet expansions you may undertake. Read more about this on pages 5 and 6.

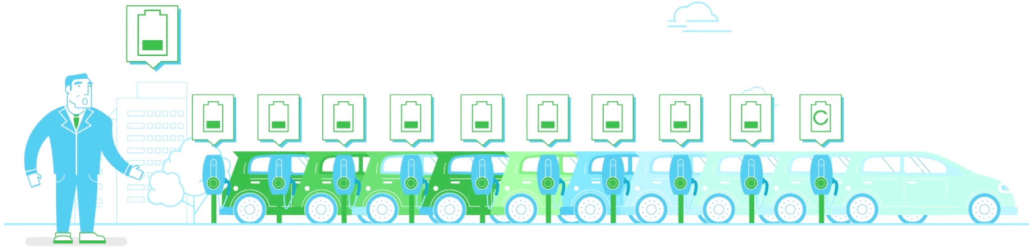
The available & needed power

Installing multiple charging stations may just be the right solution for you. But how will this affect your power consumption?

You don't want to exceed the available power at your home or office. So before you install any charging station, you need to check the power capacity on-site. You might consider a larger service panel, but this is a pricey procedure that isn't really necessary. There are other smart solutions around, that can solve this problem more cost-effectively.

You can lower the input power to your charging station at peak hours for instance, so you won't exceed the maximum power capacity. If you'd like to install multiple charging stations at a parking lot, so-called Smart Charging solutions may come in handy.

A Smart Charging service such as Load Balancing for instance, makes sure that you never surpass the available power through distributing the available electricity proportionally across all active charging stations. This way, you'll still be able to place the number of charging stations you've aimed for.



The parking & charging time

Electric driving is a game changer for every car owner. Instead of having to stop by a gas station, you can top off your car wherever you are.

If you're charging from home, it's best to charge your car at night. As it gives enough time - 6 to 7 hours - for any electric car to be topped off. Most importantly, charging at night and / or off-peak hours may be cheaper for some households. Not to mention you'll be able to start every day, fully charged.

For business operators, the time to park and charge may vary. A retail store for instance, can expect that its visitor to park between 30 and 90 minutes per visit. An office building on the other hand, can expect its employees to park for about 7 to 9 hours.

How to calculate your charging time

You can easily calculate the time it takes to fully charge your car regardless the type of charging station. All you need is the next formula:

$$\frac{\text{Car battery power (kWh)}}{\text{Max. kW your car can charge}} = \text{\# hours to fully charge your car}$$

Charging at home

Charging at home

As you may have noticed by now, the question whether a charging station is the right fit for you, is quite dependent on the location. Let's start off with your home.

Charging at home is the easiest method. After all, you don't need to take any other cars or users into account if you're charging at a private parking spot. Yet there are a few things that would be smart to ask yourself, before deciding the best charging solution for you:

- **What car do I drive?**
- **How much power does my car need?**
- **What's the capacity my home can handle?**
- **Will I (or anyone else in my household) change cars in the near future?**
- **Who will be paying for my charging costs?**

You're probably well-informed about the first three questions. The latter two, however, require a bit more thought. Read on and see why.

Attached cable yes or no?

This is something you need to think about, whether if you or anyone else in your household may be changing cars in the near-future. Most brands offer a charging station with just a socket or with an attached cable.

An attached cable comes in handy if the station serves one type of car, and saves you from any hassle of carrying around your own cable at home. A socket (i.e. a station without an attached cable) comes in handy when there's more than one type of car (= potentially more than one type of cable) that needs to charge at your charging station.

TIP

Before you settle on a specific length of cable, make sure to ask yourself the following:

- **Where's the charging station placed?**
- **How will I park my car?**
- **Where's the socket located on my car?**

Online vs. Offline

In your search for a charging station, you will encounter two types of charging stations: an offline and an online model.

Online models are pricier than offline ones for a good reason. Offline ("Autostart") models are simply made for one purpose; to charge your car. Since they don't require any registration, these stations won't offer any security to your station, nor insights into the charging sessions, remote diagnostics and upgrades.

Online charging stations on the other hand, can track your charging sessions and can even automatically send invoices of your charging costs to you or an external party. If your employer would be the one covering your charging costs, then an online station is a must-have.

With the station and session insights provided by an online station, you will be able to track your sessions real-time and even control the power consumption of your charging station(s).

Finally, an online station provides remote technical support, maintenance and upgrades. In the rare case of an error, these services save you from paying additional costs for a technician to come over, and will ensure your charging station is back up within minutes, ready to charge!

swipe & charge → **track & manage** → **get invoiced & reimbursed**

Charging at work

Charging at work

Installing charging stations at your office(s) is a great way for your business to promote an efficient and innovative work place, and to contribute to a more sustainable and greener future.

Providing charging solutions to an office can be a bit more complex than at home. This is why we'll dive deeper into the next topics:

- **Managing the power consumption and costs**
- **The limitations of offline charging**
- **Charging capacities**

TIP

Different users = different cars. For workplaces, installing charging stations with an attached cable would limit the access to your charging facility; after all, either only Type 1 or Type 2 cars will be able to charge at your station.

Managing the power consumption

If you're the property owner of your office, you're probably the one paying for the power consumption. For shared office buildings though, allocating costs will take a bit more management. Rest assured, there are plenty of easy solutions for situations like these.

Usually, the meter board is located near the exit/parking lot. This is either a shared meter board, or is managed by the property owner. If you own a charging station with an internal kWh-meter, you can track the consumed kWh online, or you can place an extra kWh-meter in the meter board to track it manually.

With a smart charging station, the property owner can also manually manage the consumed kWh. By setting a tariff on each kWh, the property owner can eventually cover its power consumption costs, or even create a revenue stream from it.

TIP

Adding charging stations to your office will enhance your innovative brand identity.
You can highlight this by adding custom branding to your stations, as well as adding traffic signs and paint in the dedicated parking spots.

Offline charging

Although an offline charging station qualifies for lower investments, it's not a good idea to operate them at private nor public office parking lots. An offline station doesn't guarantee any security, meaning that any (unwanted) user can access the charging station, and will be able to use it free of charge.
Also, offline stations may require more maintenance costs and don't allow any management functionalities. This means that you won't be able to control the power consumption and the invoicing of any charging session on your stations, making them less scalable for any future expansions.

Charging capacities

Many workplaces don't know which cars will be charging at the office. A common misconception is to opt for 22kW charging stations in this scenario, as these will offer you the fastest charging speed for every type of car. However, operating multiple 22kW charging stations can heavily impact the available power at this given location.

A 3,7kW charging station on the other hand, only allows 15km of charge per hour. Full-electric cars will not be able to charge at this capacity, and with the increasing range, even plug-in hybrids will not be able to charge at maximum speed.

So for most workplaces, the standard recommendation would be a 11kW charging station. With this capacity, every car will be able to charge sufficiently at your office!

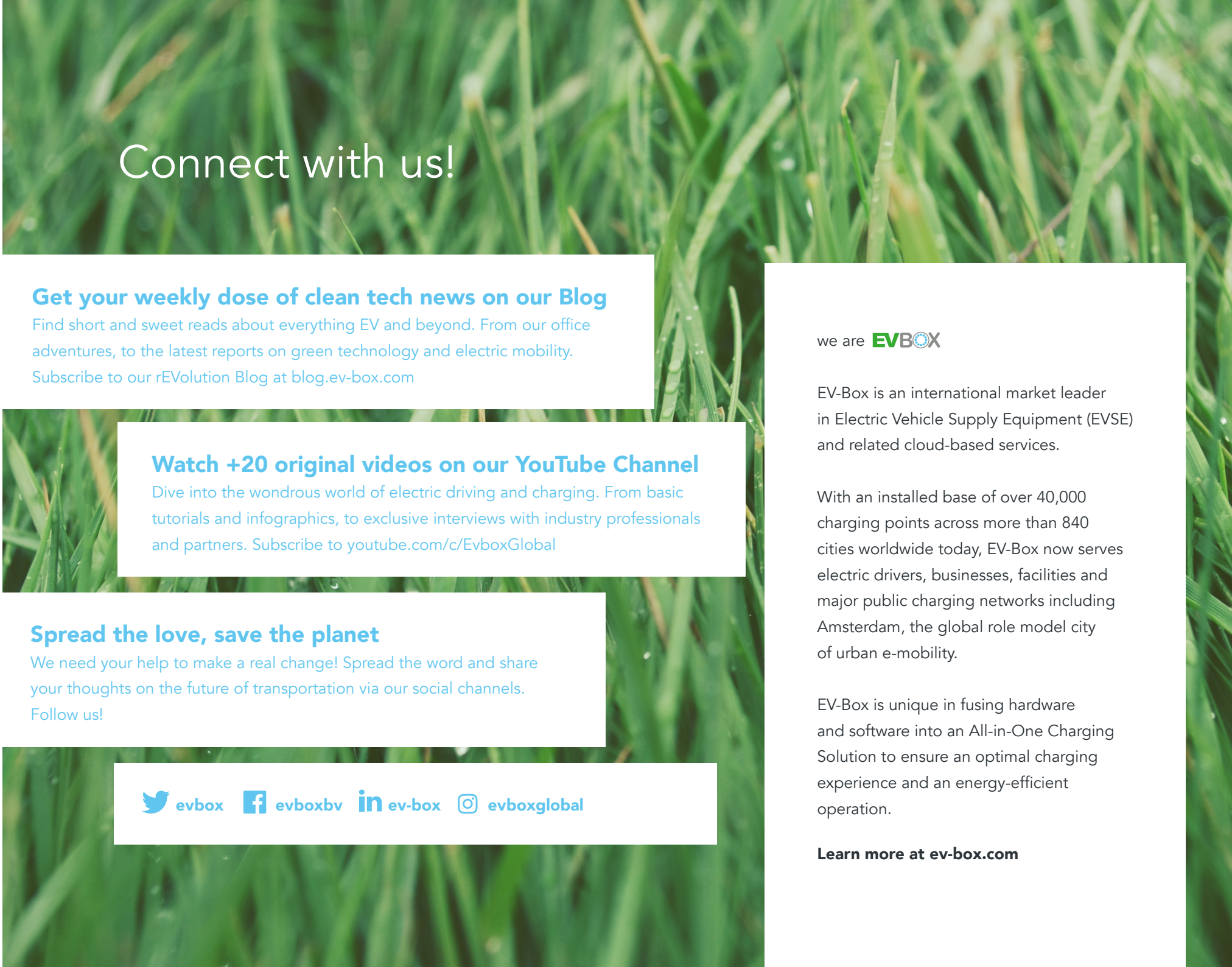
Recap

How to find the best charging solution for home

- **Check the available power at home and the needed power for your car.**
- **Evaluate the placement of your charging station and parking position to determine the length of cable you need.**
- **Define who will be paying for your charging costs. Need to reimburse your charging costs? You'll need an online charging station.**

How to find the best charging solution for the office

- **Check the available power at your property, as well as evaluate the type of parking lot(s) and the placement of your charging station(s), to determine the type of station and the charging capacity you need now and in the future.**
- **Define the number of charging stations you need and who will be managing them on-site. Multiple stations? You may need to opt for Smart Charging capabilities that ensure a time- and energy-efficient management.**
- **Think ahead. More staff going electric in the coming years? You may need to place more stations and opt for station management capabilities to be scalable and future-proof.**



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