




**ENSTO**



How to provide a better  
charging performance  
while saving costs with  
Ensto Advanced Load  
Management

**Better life.**  
With electricity.

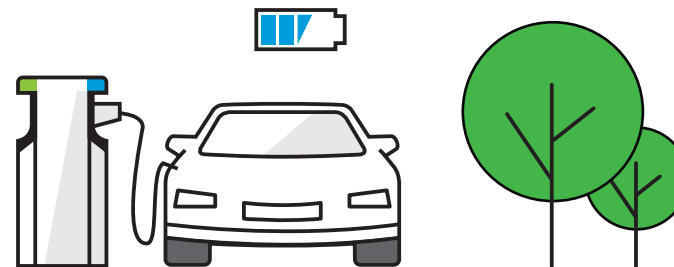
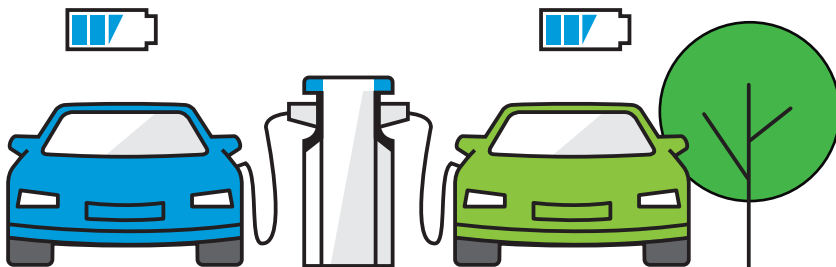
## WHAT IS ADVANCED LOAD MANAGEMENT

and why is it important for your  
EV charging infrastructure?

In order to provide your customers with an optimal charging performance without adding unnecessary costs to your service, careful considerations should be given to how available power is distributed. A traditional power grid solution will either lead to a slower charging experience for everyone at all times, or significantly higher costs.

Ensto's Advanced Load Management is a system designed to ensure that the available grid capacity reserved for any given EV charging network, will be shared optimally between every connected car. It takes into consideration both the actual needs of different vehicles being charged, and the overall consumption in the building that hosts the charging points

The result is low, or no peak demand taxes for your network, and a faster than average charging experience for your customers.



# WHY ADVANCED LOAD MANAGEMENT?

In most populated areas, it is possible to get the amount of power you want from the local utility. However, since the utility needs to dimension their whole grid according to your peak power usage, any extra power capacity above the local norm will come with an extra fee that can be quite substantial.

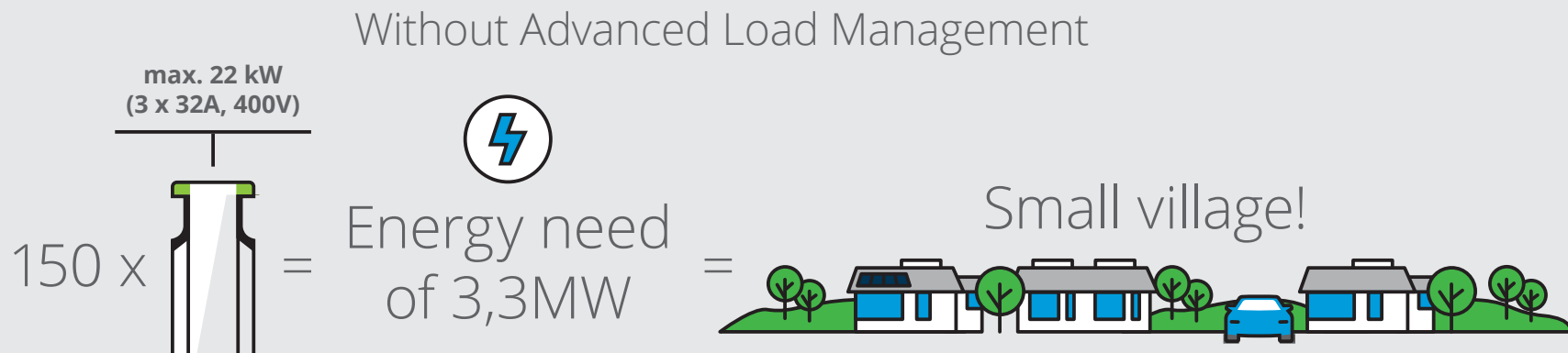
EV chargers can draw significant amount of power, depending upon the region you live in and the car you drive, one charger can equal the entire power capacity of a single house. So if you were to simply dimension your grid capacity for the max power possible for each charger at all times, you quickly run into unsustainable utility costs.

Luckily however, even though an EV can draw a lot of power at once, it doesn't mean it actually needs to do so. On average, people only drive 50 KM a day, and that's just 10 kWh of energy.

Because of this, the only thing you need to make sure of, is that every charging point has an individual opportunity to charge really fast for the few times it is actually needed. Simply put, by putting in thick enough cabling.

The Advanced Load Management system will then make sure that every user gets the amount of energy they need; whether it's just a few kWh for the daily driving, or a larger and faster fillup when the user is returning from a longer trip.

As for costs: A car park with 150 charging points capable of 22 kW each, can cost several hundred thousand euros a year in peak demand charges, since it is effectively a grid connection equivalent of a small village. With the Ensto Advanced Load Management, you can put those costs to zero. In many cases you will also save substantial costs in construction since no grid upgrades are needed.



# Benefits of **ADVANCED LOAD MANAGEMENT**

## **LOWER EV CHARGING COSTS**

By avoiding peak demand costs from the local utility, you can also offer a more affordable service to the end users

## **LOWER CAPITAL EXPENDITURE**

By avoiding an upgrade of the local grid connection or transformer, the investments needed to establish a large scale charging facility is kept at a sustainable level

## **INCREASED FLEXIBILITY**

You can have your cake, and eat it too! We will make sure you get both the scale and speed needed to offer the end users the charging performance they need in everyday life, as well as the occasional fast charge after returning from a long trip

# A powerful combination of **FOUR TECHNOLOGIES**

All the latest generation Ensto EV chargers are prepared for four charging technologies: Dynamic Load Management, Phase Aware Load Management, Round Robin Sharing Logic and Active Load Management.

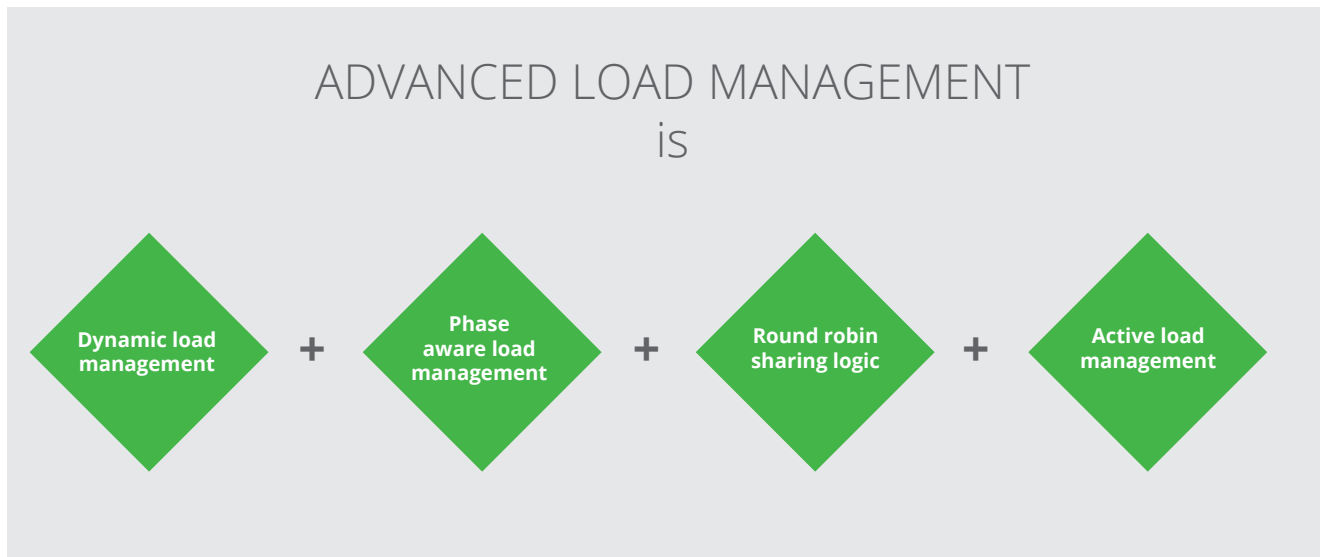
Utilizing all four technologies enables an unrivalled level of grid-connection exploitation, saving significant costs for the customer by not having to upgrade the local grid supply and by avoiding peak demand tariffs.

This fact sheet explains how each of these four technologies function to create the most powerful combination of intelligent EV charging.

Advanced Load Management takes into account the combined charging needs of all the cars connected to a single facility, keeps track of what phases the cars are connected to, and by taking turns, utilises optimally any given power capacity available.

With Advanced Load Management, it is possible to utilise any spare energy capacity existing in the building during the low-consumption hours, for example during the nighttime.

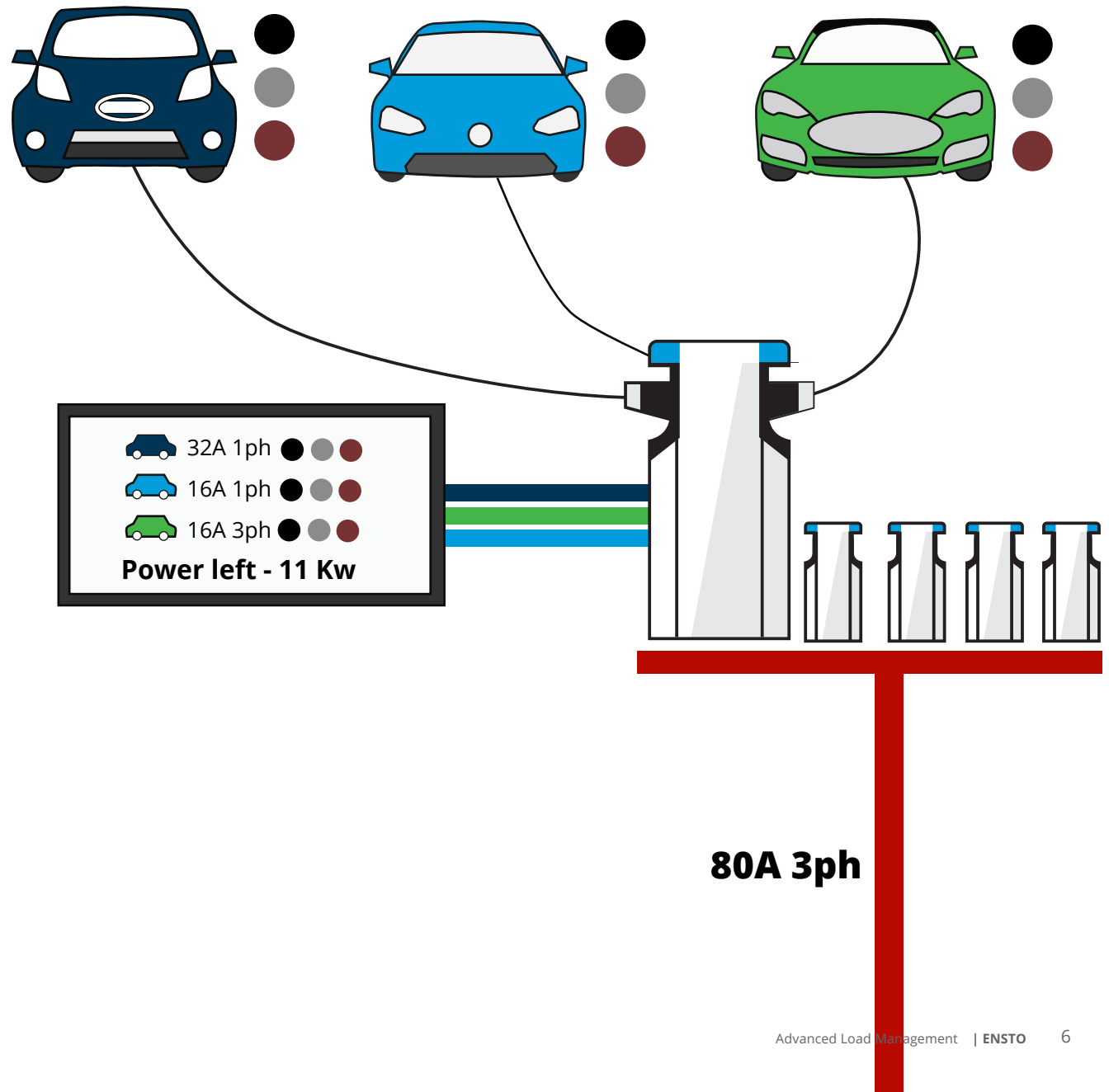
Finally, connect the system to Ensto EV Cloud to get all the advantages of Advanced Load Management - a low cost, high performance charging facility.



1

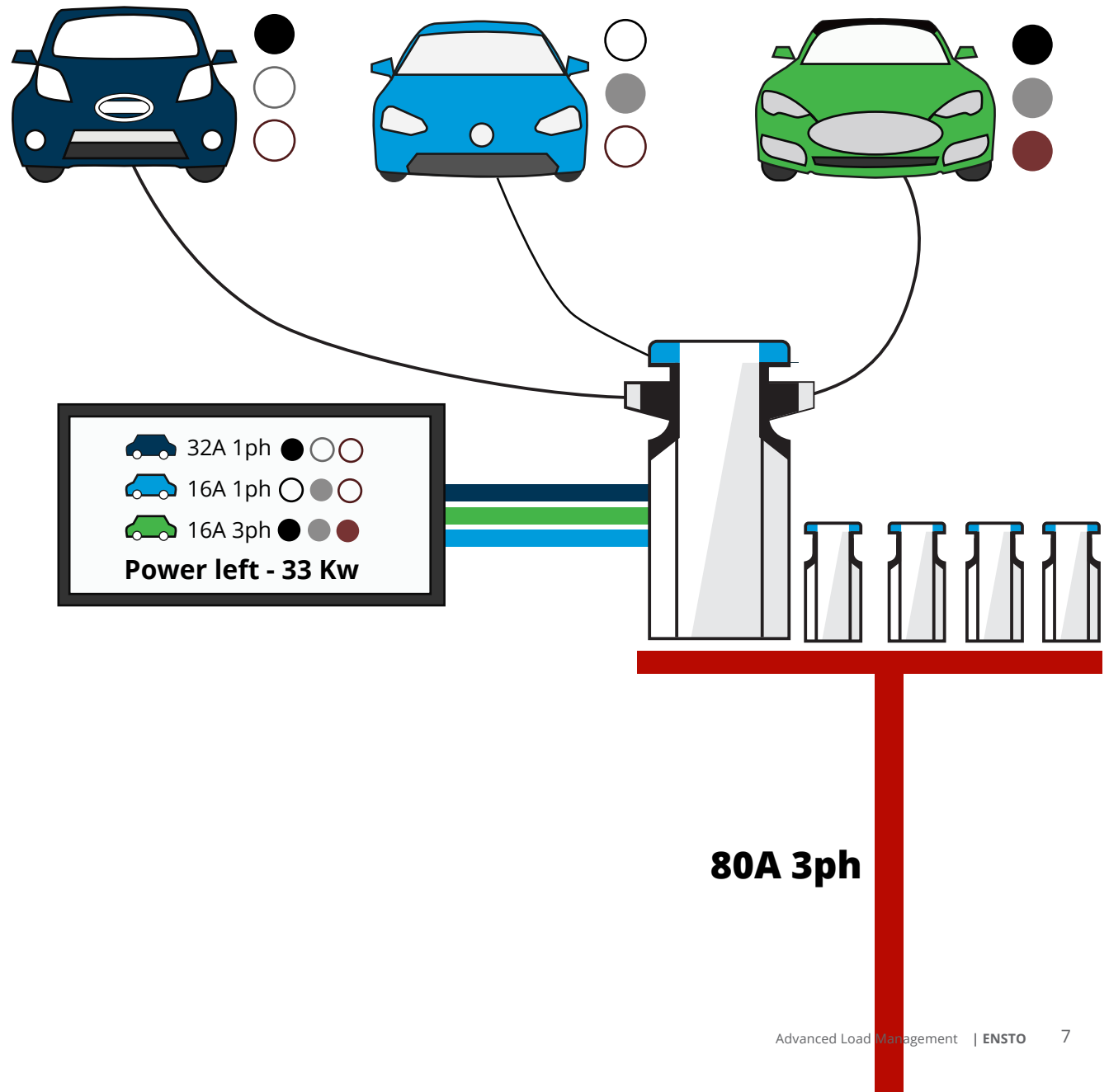
## Dynamic load management

Takes any given ampere budget and shares it equally among any group of charging points. All the way from a single charging station with two outlets, to a car park with hundreds of points.



## 2 Phase aware load management

Takes into consideration how all the different charging points have been connected to the different phases in the local panel board. By rotating how the phases are physically connected to the different points, and by taking turns on receiving energy packers based on the most exploitation of any given grid connection.



# 3

## Round robin sharing logic

Round Robin is a programmers term describing the act of taking turns.

By combining the phase aware load management with taking turns based on the capabilities of the different cars connected, you achieve a higher average output for all the end users to enjoy, and a near perfect phase balance for the charging facility that will make you grid company happy.





4

## Active load management

Active load management enables a group of EV chargers to change their allocated power budget based on the live consumption of the building that hosts the charging points. This will unlock a large amount of power to be used for charging during of peak hours, and no costly grid updates

If the total consumption of available power reaches maximum capacity during peak hours, the group of chargers will automatically receive a smaller amount of power to be divided among each other. In turn, the received power will increase during night time, when general power consumption is at a lower level.

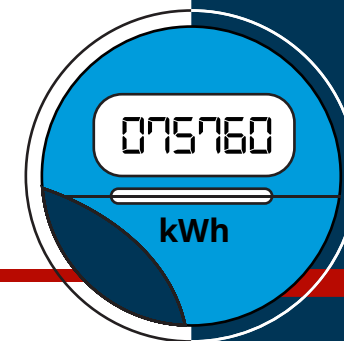
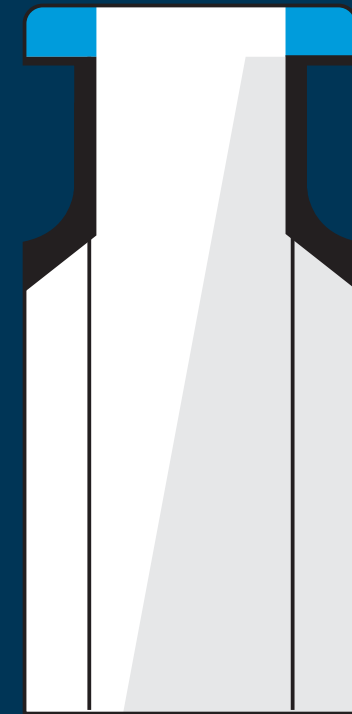
The usage of this technology is particularly useful when you want to expand the charging facility without having to pay for a costly upgrade of the local utility infrastructure.



16:00-19:00



23:00-6:00



Ensto's Advanced Load Management is an intelligent EV charging solution designed specifically to leap over the pitfalls of charging capacity limitations by automatically altering the charging parameters of each available charging point. Advanced Load Management minimizes charging cost significantly and helps cut down your operational expenditure.

## How to plan EV charging points with Advanced Load management features?

### THINGS TO CONSIDER:

- Average parking/charging time
- Number of charging points
- Utilization rate
- Planned service level i.e. how many kilowatts per hour
- Average charging power and phases used i.e what type of cars. For a Taxi fleet using Teslas the case is different than for a company with mostly PHEVs
- Battery size/Free capacity

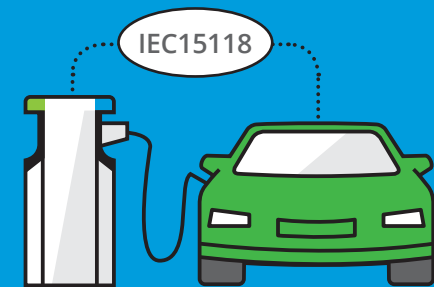
## Good to know

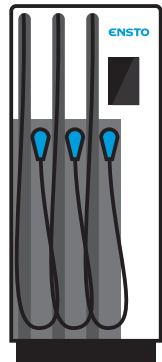
Every Ensto EV charger can be equipped with IEC15118, which is the new standard from communications between an EV and a charging point. This has some important benefits.

Firstly user i.e. vehicle identification can be done via the charging cable. There is no more need to use RFID or mobile app to identify.

Secondly, this makes it possible to know the actual battery status over every EV in the facility and enable prioritized charging based on the actual requirement instead of the assumed need. As an example: it makes more sense to prioritize a 18kwh battery that is 10% full, rather than a 100kw battery that is 95% full. This also makes load management easier.

The new standard will also make it possible to provide Vehicle-2-Grid and/ or functionality. Both of these features will make it even easier for you to avoid costly grid upgrades in the future when most cars will be electric.





# ENSTO

[ensto.com](http://ensto.com)

Ensto is a leading solution provider of smart EV charging infrastructure and services. Our thousands of chargers in operation prove their reliability while contributing to a profitable charging business and a cleaner environment.

