



## DYNAMIC CHARGECONTROL

Highly efficient **charging**  
of **electric vehicles**



LRM 16 Star Power



LRM17 Open Park  
LRM17 Easy Park



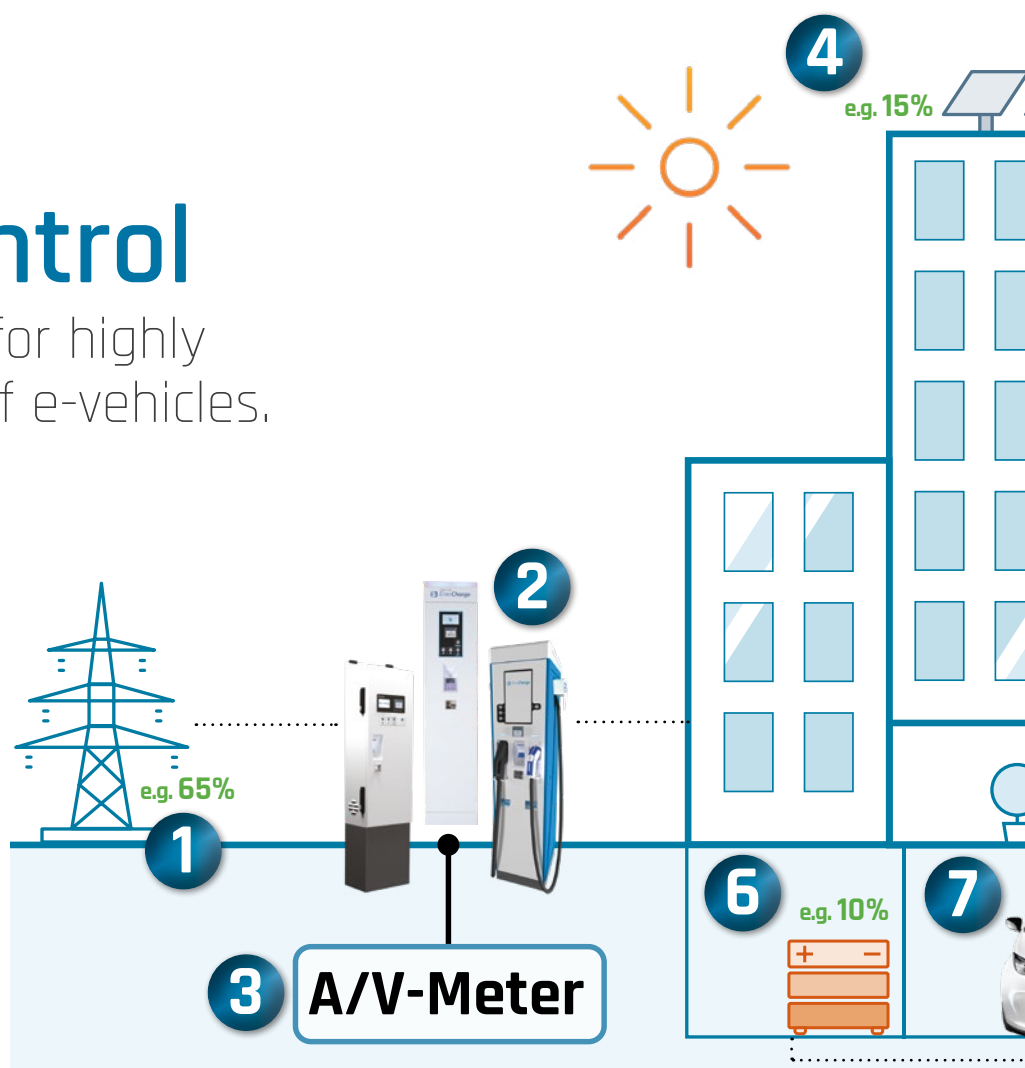
DC Fast Charger  
DC Ultra Fast Charger

# Dynamic Chargecontrol

Smart energy use for highly efficient charging of e-vehicles.

## The advantages at a glance:

- Cost Reduction
- Secure Operation
- Energy Efficiency
- User Comfort
- Future-proof



## Our customers say:



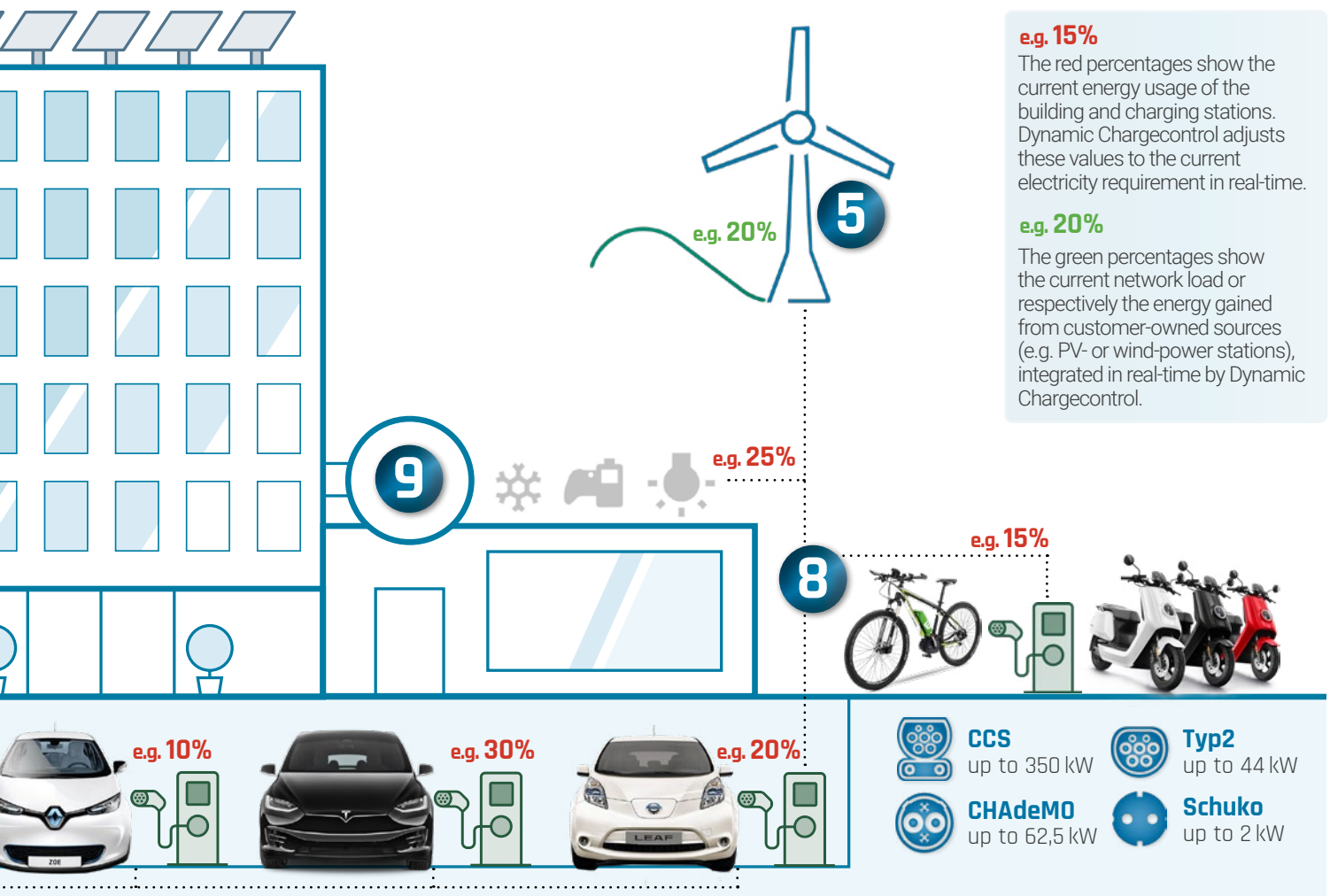
„We wanted to add more charging stations for our customers, but we had already reached the maximum connection power. With Dynamic Chargecontrol, we were able to double the number of charging stations at the same connected load.“

Franz Aschbacher, Astra.

## Using energy intelligently

Dynamic Chargecontrol measures the total energy usage of the building in realtime. The available connection power is dynamically distributed across all charging stations. Load fluctuations are thus automatically balanced. Furthermore, Dynamic Chargecontrol integrates energy generated by your own power sources, such

as photovoltaic systems or wind-power stations. That way, the costs per charge as well as the charging duration are reduced. Additionally, every chargepoint automatically adjusts to the individual energy requirement of the connected electric vehicle. This saves valuable energy and ensures highly efficient charging.



**e.g. 15%**

The red percentages show the current energy usage of the building and charging stations. Dynamic Chargecontrol adjusts these values to the current electricity requirement in real-time.

**e.g. 20%**

The green percentages show the current network load or respectively the energy gained from customer-owned sources (e.g. PV- or wind-power stations), integrated in real-time by Dynamic Chargecontrol.

**1** Connect to the building's electricity network with a dedicated maximum connection power, e.g. 120kW.

**2** LRM16/17, DC FastCharger and DC UltraFastCharger measure the current electricity consumption of the building and charge points in real-time. Free capacities are allocated to the charge points. If the energy requirement inside the building increases, Dynamic Chargecontrol automatically reduces the charging power of the charge points. This prevents expensive peak loads.

**3** A/V-Meter: Via the A/V-meter, the EnerCharge charging terminals (see **2**) measure and compare the grid connection capacity and the energy requirement of the building and charging stations.

**4 5** With Dynamic Chargecontrol, energy produced by a photovoltaic system or wind-power station can be integrated. This increases the available power capacity for the building and charging stations. You profit twice: the costs per charge as well as the charging time are decreased.

**6** As an excellent addition, you can integrate a storage solution in order to increase the charging comfort while simultaneously reducing the connection power.

**7 8** Fast and comfortable charging with smart green energy for electric cars, trucks, bikes, motorcycles etc.: The available power is dynamically distributed among the charge points. Load fluctuations are automatically balanced. The result: network-friendly and energy-efficient charging.




**9** Energy consumption within the building by components such as air conditioning, lighting, IT etc.: If the energy consumption increases, Dynamic Chargecontrol automatically reduces the charging power at the charge points.

# Highly efficient charging of e-vehicles

This is how high-efficiency charging works with Dynamic Chargecontrol:

## Battery Level vs. Charging Power

Among other factors, the maximum charging power depends on the battery level of the e-vehicle. An empty battery can be charged at full charging power. But: as the battery level increases, the maximum charging capacity decreases - see illustration. Thus, Dynamic Chargecontrol adjusts the charging power to the battery level in real-time.

 LS1: Battery Level 60%	- Charging Power 38kW
 LS2: Battery Level 07%	- Charging Power 60kW
 LS3: Battery Level 91%	- Charging Power 12kW

## Real-time Adjustment

Dynamic Chargecontrol adjusts the charging power to the individual energy requirement of the e-vehicle in real-time. The reason being that as the battery level increases, the charging speed decreases. Dynamic Chargecontrol uses this to provide high-efficiency charging, as every charge point is allocated the exact charging power it needs at any given time.

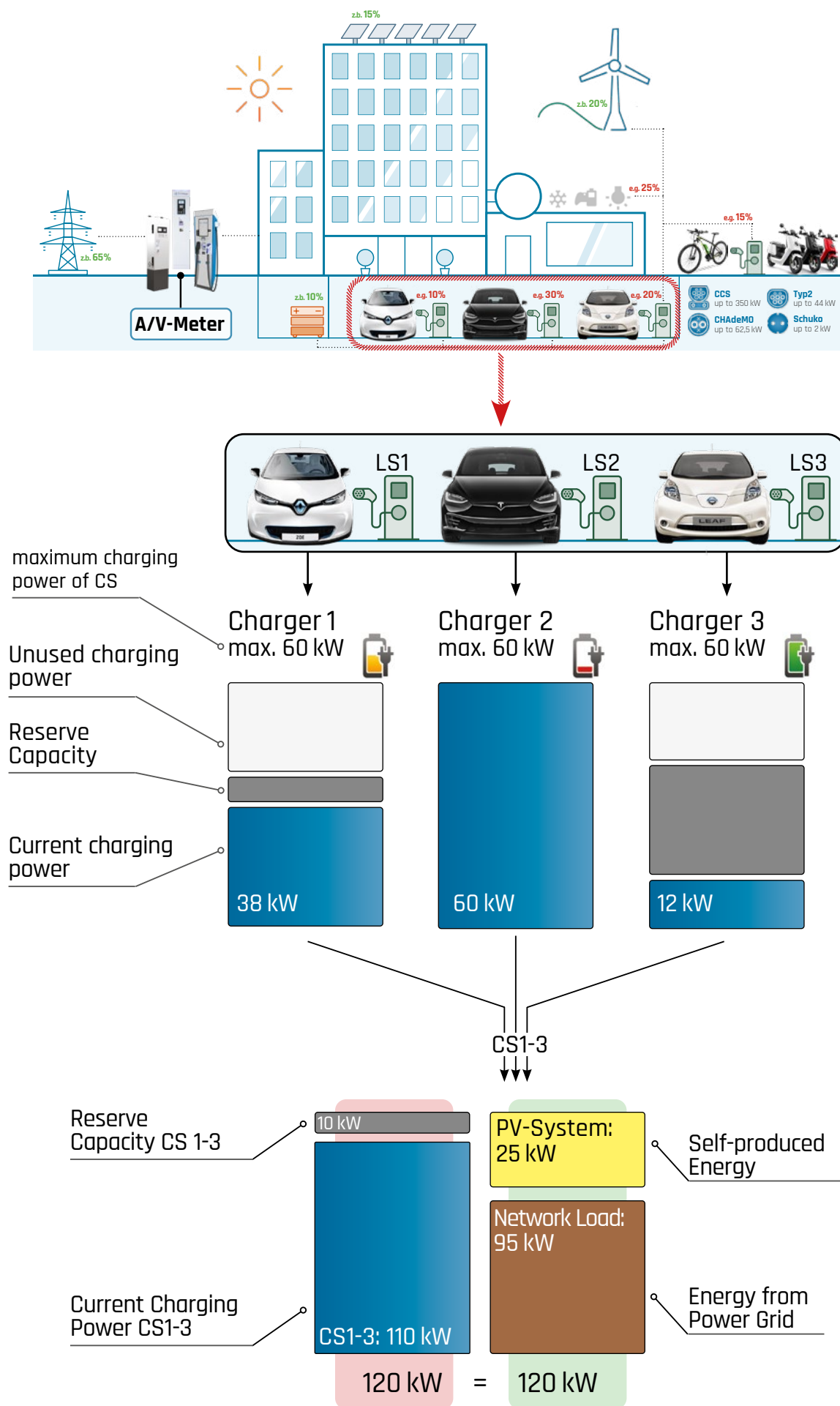
## Reserve for Reliability

Dynamic Chargecontrol reserves a „Reserve Capacity“ for every charge point. The reason: certain e-vehicles temporarily send higher charging impulses, which can lead to disruptions in the charging process. The „Reserve Capacity“ prevents such errors from occurring.

## Harness the Power of the Sun

Dynamic Chargecontrol integrates the energy produced by your own energy sources and thus reduces the network load. Thanks to the real-time adjustment, an uninterrupted operation is ensured. In short: sun = lower energy cost + shorter charging times.





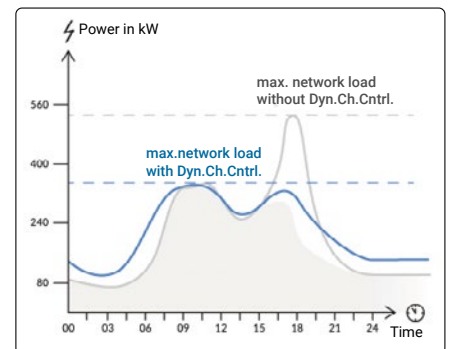
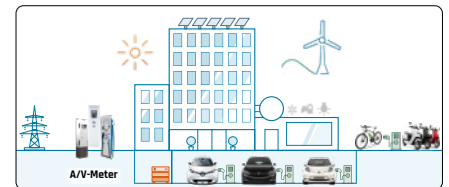
# Practical Case Examples

the advantages of  
Dynamic Chargecontrol:

## Shopping Center with Charging Stations

A Shopping Center wants to add FastChargers (3x60 kW) and multiple charge points for e-motorcycles/ e-bikes (5x2 kW). Without any load management (Dynamic Chargecontrol), the shopping center would have to extend its power connection by about 180 kW, which would cost around EUR 30.000,- according to the grid operator.

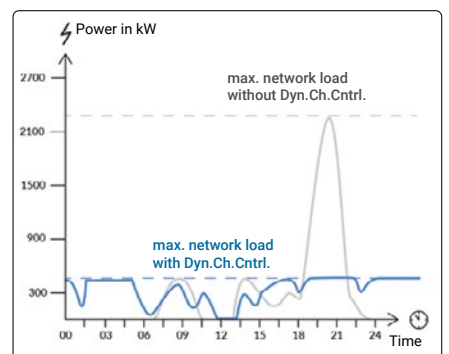
With Dynamic Chargecontrol, increasing the power connection is not necessary. Thanks to smart real-time adjustments, the available power supply is not exceeded. Thus, the owner can save additional grid-extension and operating cost. Dynamic Chargecontrol also adjusts the charging capacity of each charge point to the energy requirement of the e-vehicle in real-time. This is a unique system providing for high-efficiency charging.



## Transport Operator with Electric Bus Fleet

A bus company wants to use 24 e-buses and needs a suitable charging infrastructure. To this end, multiple Ultra-FastChargers with 150 kW charging power are built.

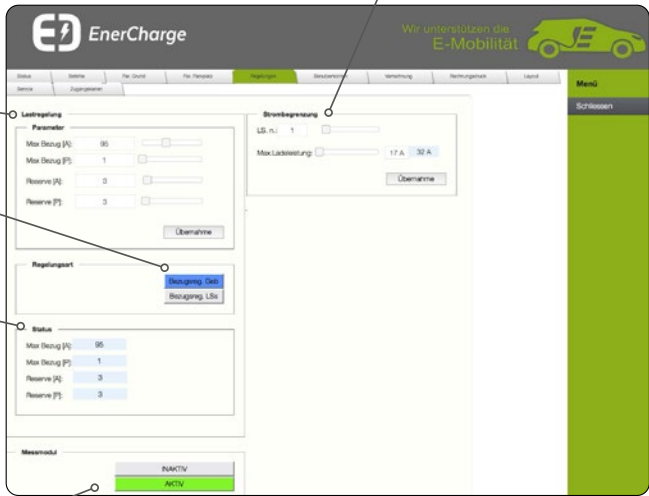
With Dynamic Chargecontrol extending the power connection to 2,3 MW is not necessary. Dynamic Chargecontrol makes it possible to charge the e-buses in conjunction with their timetables, thus ensuring that they are fully charged for their next departure time. This considerably reduces load peaks, which also results in lower operating costs for the company.



# Simply manage it yourself

With the free EnerCharge web platform, you can manage Dynamic Chargecontrol yourself:

## Adjusting the Load Management



Setting the parameters using sliders

Consumption Ctr. Building: Activate Load Management

View current settings

Ctrl. Measuring Module

Setting the max. charging power per charge point with a slider

The screenshot shows the 'EnerCharge' web interface. The 'Lastregulierung' section has sliders for 'Max. Leistung (A)' (set to 95), 'Max. Leistung (P)' (set to 1), 'Reserve (A)' (set to 3), and 'Reserve (P)' (set to 3). The 'Regelungsart' section has a dropdown menu with 'Regelung: Dab' and 'Regelung: Lba'. The 'Status' section shows the same parameter values. The 'Messmodul' section has a dropdown menu with 'Nicht aktiv' and 'Aktiv'. The 'Bremsebegrenzung' section has a slider for 'Max. Leistung' (set to 17 A) and a button 'Übernahme'.

## Settings for Charging Stations:



Configuration Charging Stations (CS)

Activation of CS

Setting the current limit (Min./Max) with sliders.

Setting the max. charging power with a slider

The screenshot shows the 'EnerCharge' web interface for 'Vorstellung Ladestationen'. The 'Konfiguration' section has a table with columns 'Konfiguration Parameter' and 'Einstellung'. The table contains rows for 'Konfiguration Parameter', 'Konfiguration Schmelzen', 'Konfiguration Steckertyp', and 'Versicherung Gruppe'. The 'Einstellung' column shows values like 'Ladestation', 'Kabel Ladestation', 'Typ2', and 'Typmodel 1 - Auto Lader'. The 'Dauerfreigabe' section has a dropdown menu with 'Anfragen', 'Dauerfreigabe', and 'Aktiv'. The 'Bremsebegrenzung' section has sliders for 'Minimum' (set to 17 A) and 'Maximum' (set to 32 A). The 'Maximale Ladestrom' section has a slider for 'Maximale Ladestrom' (set to 32 A) and a button 'Übernahme'.



# We think further ...



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