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pv magazine webinars

The potential of renewables and EV charger integration for residential homes: what difference can it make?

18 July 2022

3:00 pm – 4:00 pm | CEST, Berlin
2:00 pm – 3:00 pm | BST, London
5:00 pm – 6:00 pm | EEST, Athens

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Editor
pv magazine

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Senior product manager hybrid and ESS distribution
Sungrow

Welcome!

pv magazine webinars

Do you have any questions? ? 🙋

Send them in via the Q&A tab. 👉 We aim to answer as many as we can today!

You can also let us know of any tech problems there.

We are recording this webinar today. 📹

We‘ll let you know by email where to find it and the slide deck, so you can re-watch it at your convenience. 👀 💡

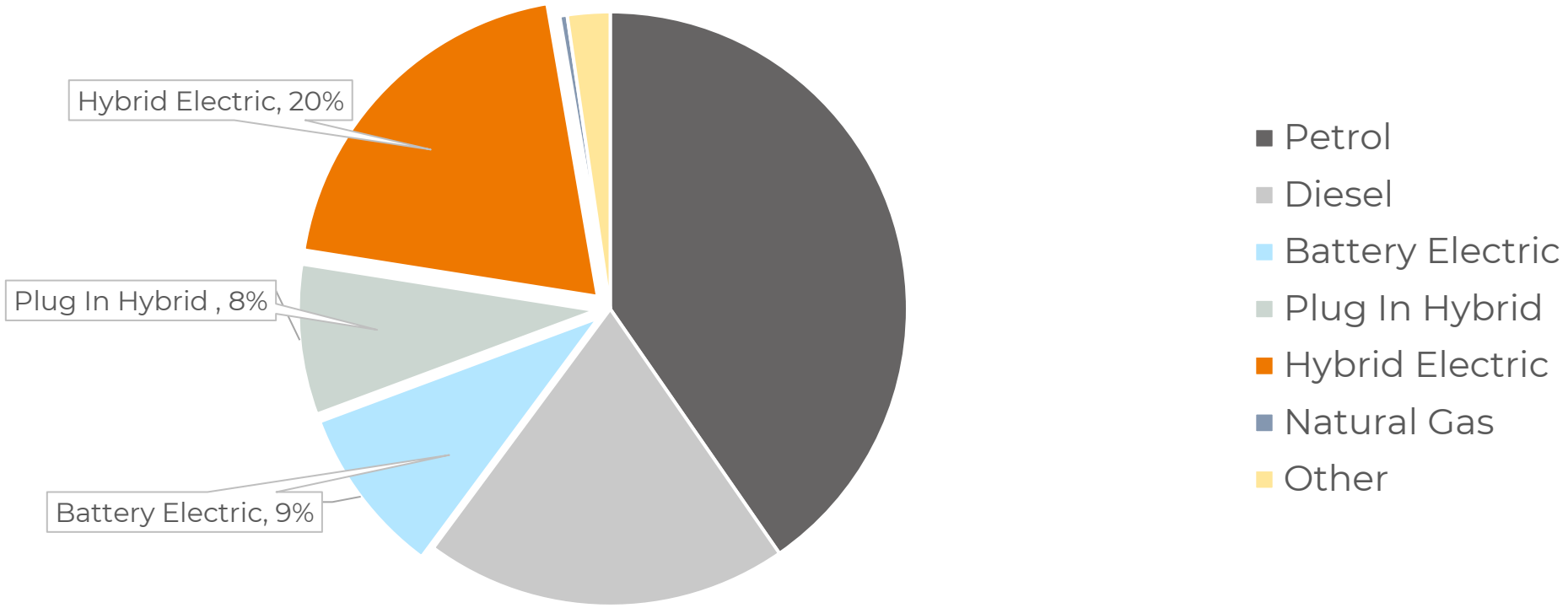
SUNGROW

Clean power for all

The potential of renewables + EV charger integration for residential homes: What difference can it make?

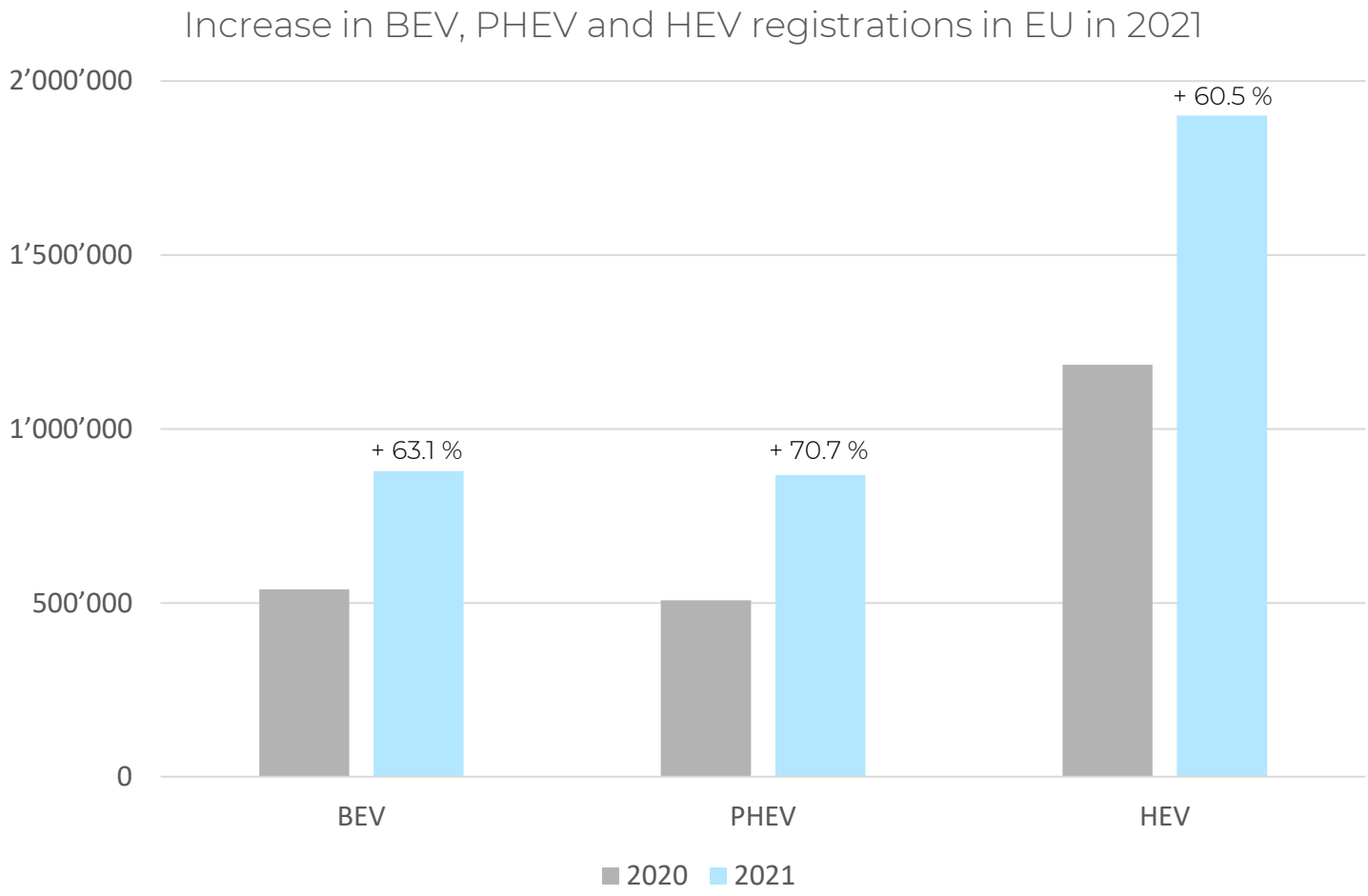
THE RISE OF EV IN EU

New car registrations by fuel type 2021



Source: The European Automobile Manufacturers' Association, Press Release Fuel types of new cars, market share full year 2021
https://www.acea.auto/fuel-pc/fuel-types-of-new-cars-battery-electric-9-1-hybrid-19-6-and-petrol-40-0-market-share-full-year-2021/

THE RISE OF EV IN EU



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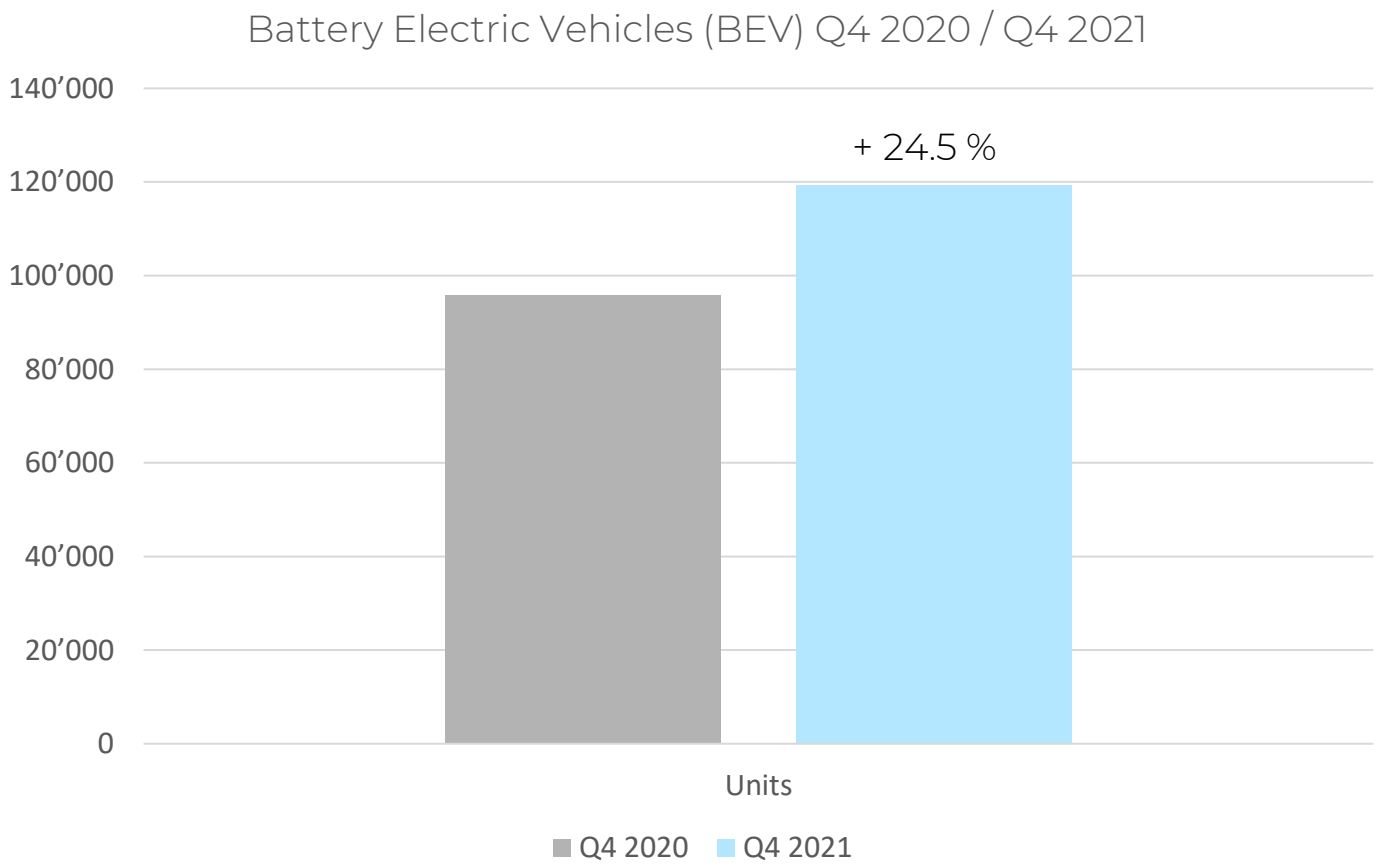
THE RISE OF EV IN GERMANY



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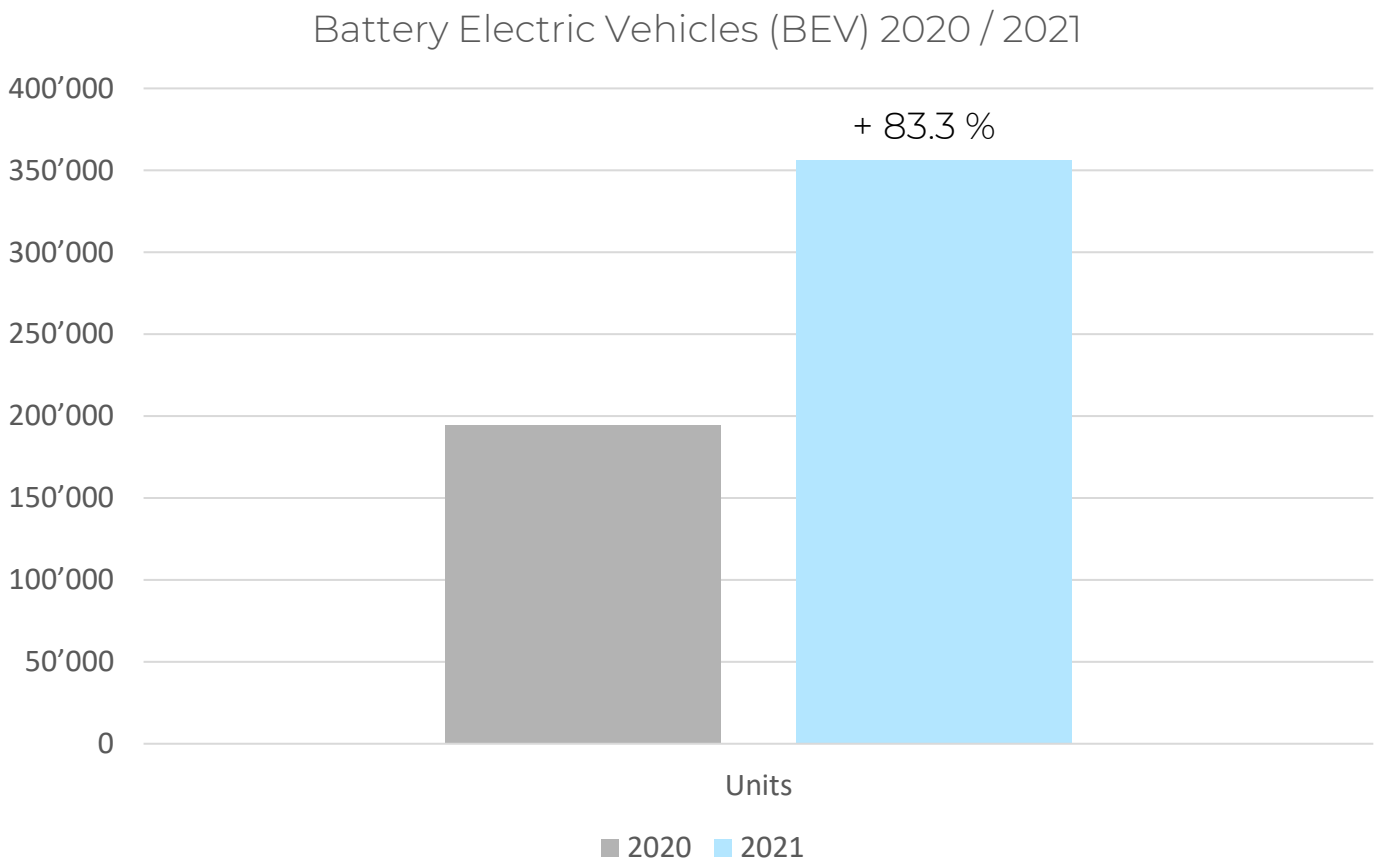
THE RISE OF EV IN GERMANY



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EV + SOLAR INCENTIVES

"Delivering the European Green Deal"

ENHANCING THE USE OF RENEWABLES AND ENERGY EFFICIENCY IN OUR BUILDINGS

THE REVISED **RENEWABLE ENERGY DIRECTIVE**:

- Make it easier to **integrate renewables** into the grid (e.g. developing new technologies, integrating storage facilities and improving cross-border cooperation)
- Provide **stronger incentives for electrification** (e.g. heat pumps and electric vehicles) and the incorporation of new fuels such as renewable hydrogen
- Encourage **energy efficiency** and **circularity** (e.g. facilitating the use of waste heat)

Source: European Commission: "Making our homes and buildings fit for a greener future", 15 December 2021.

<u>Regional grants example Germany</u>

- progres.nrw – Emissionsarme Mobilität (NRW): **1500€** per private wallbox <50kW + new PV
- BW-e-Solar-Gutschein (BW): 1000€ per BEV and **500€** per private wallbox + PV

THE 3-PHASE SOLUTION

THE 3-PHASE SOLUTION

NOW WITH
EV CHARGER

FOUR CHARGING MODES

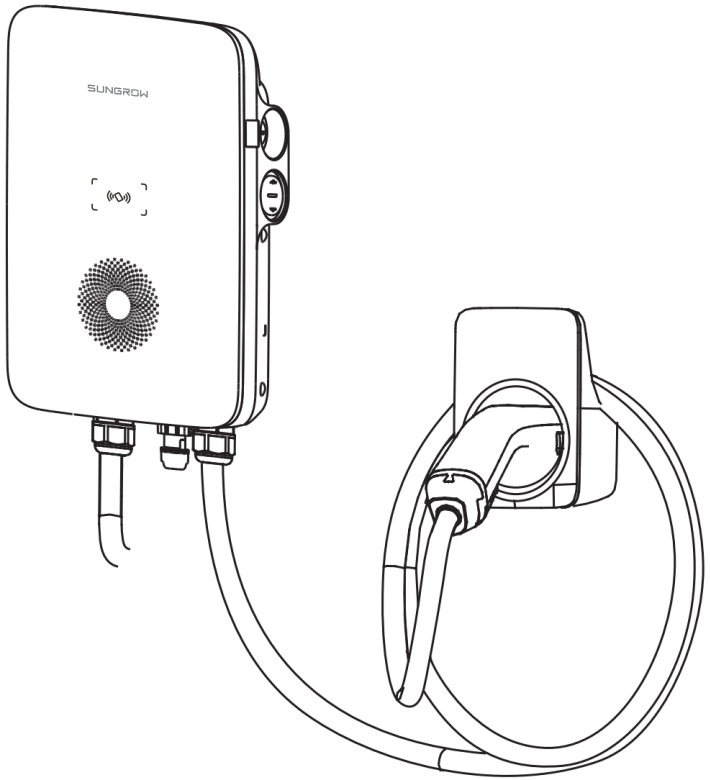
GREEN POWER CHARGING
The most economical charging, with PV excess power

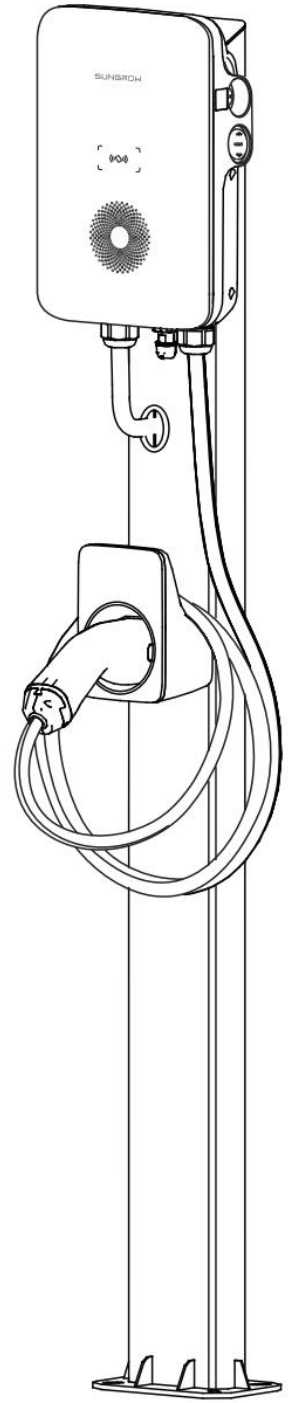
PRESET CHARGING MODE
Get the car ready at user-convenient time

CUSTOM MODE
Select current limit and what time is allowed for charging

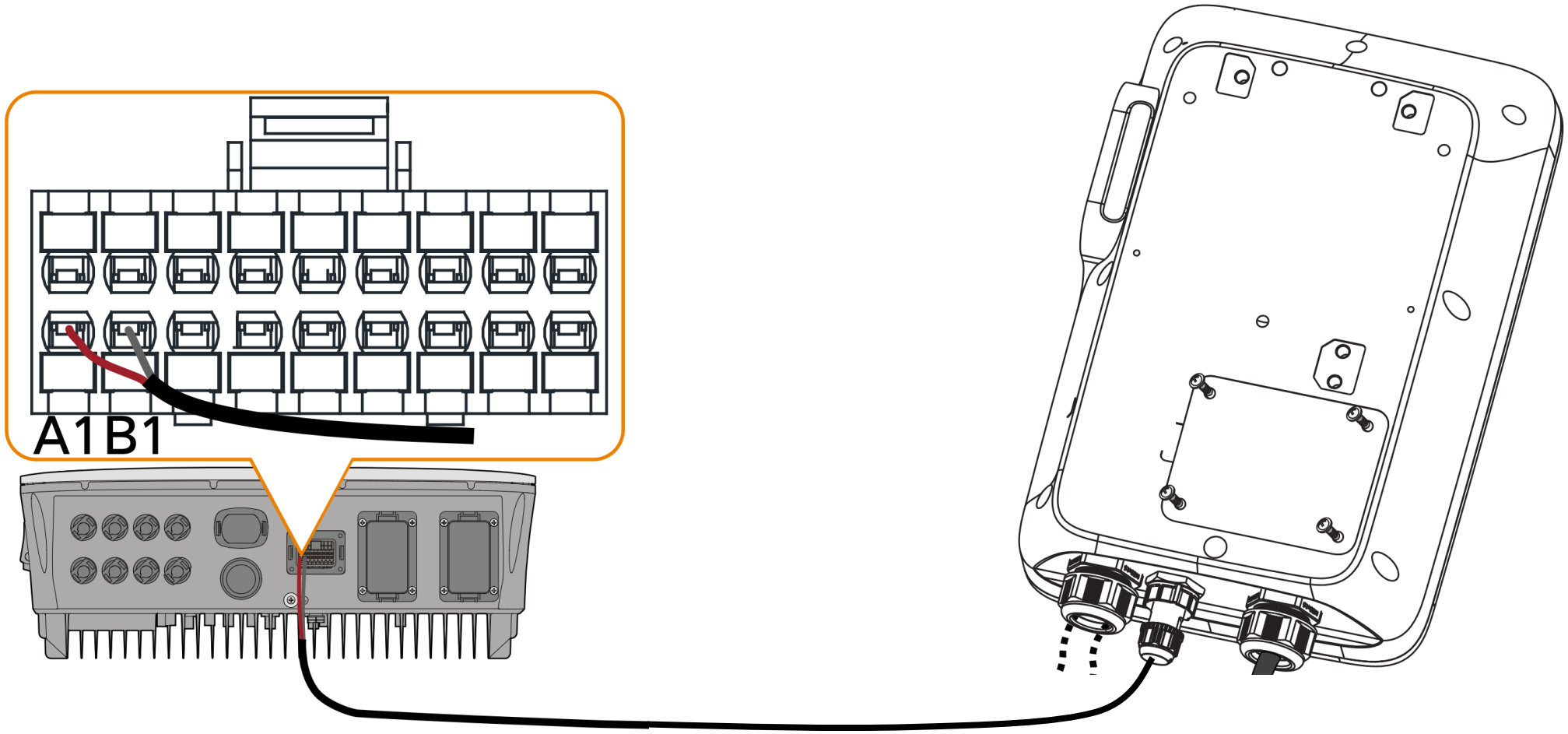
FAST CHARGE MODE
Charge with 11kW AC

MOUNTING FLEXIBILITY



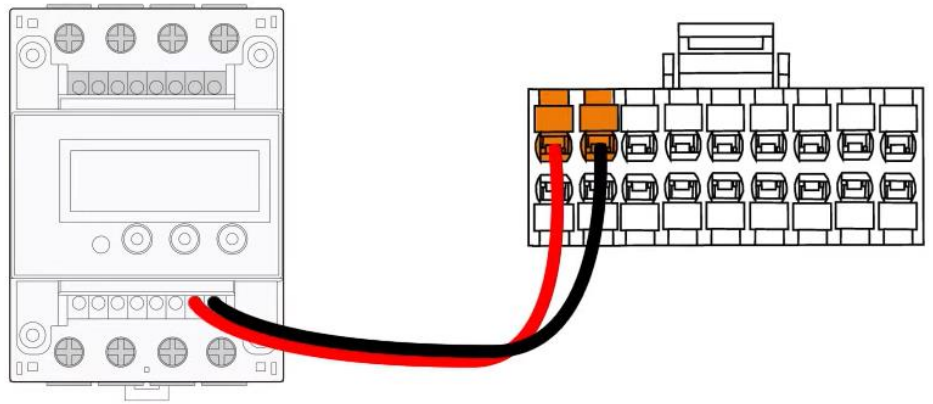


COMMUNICATION WIRING



COMMUNICATION WIRING

COMMUNICATION SMART METER



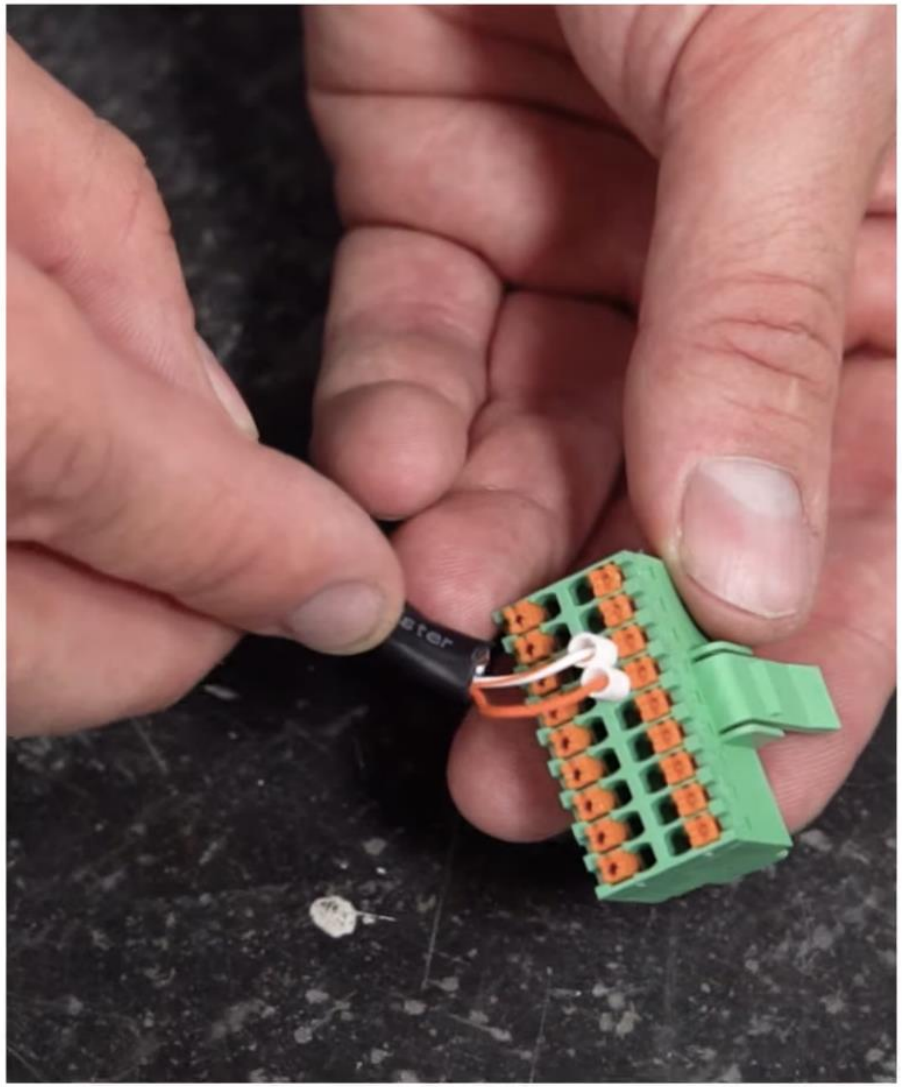
Smart Meter

Inverter

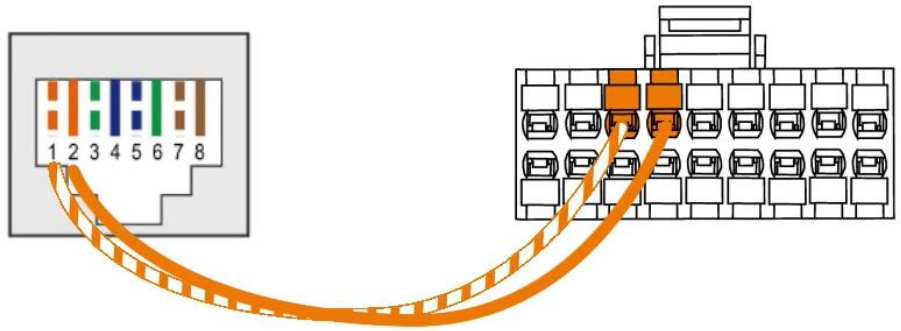
Connect to pins 24 and 25

SUNGROW

COMMUNICATION WIRING



COMMUNICATION
SUNGROW BATTERY

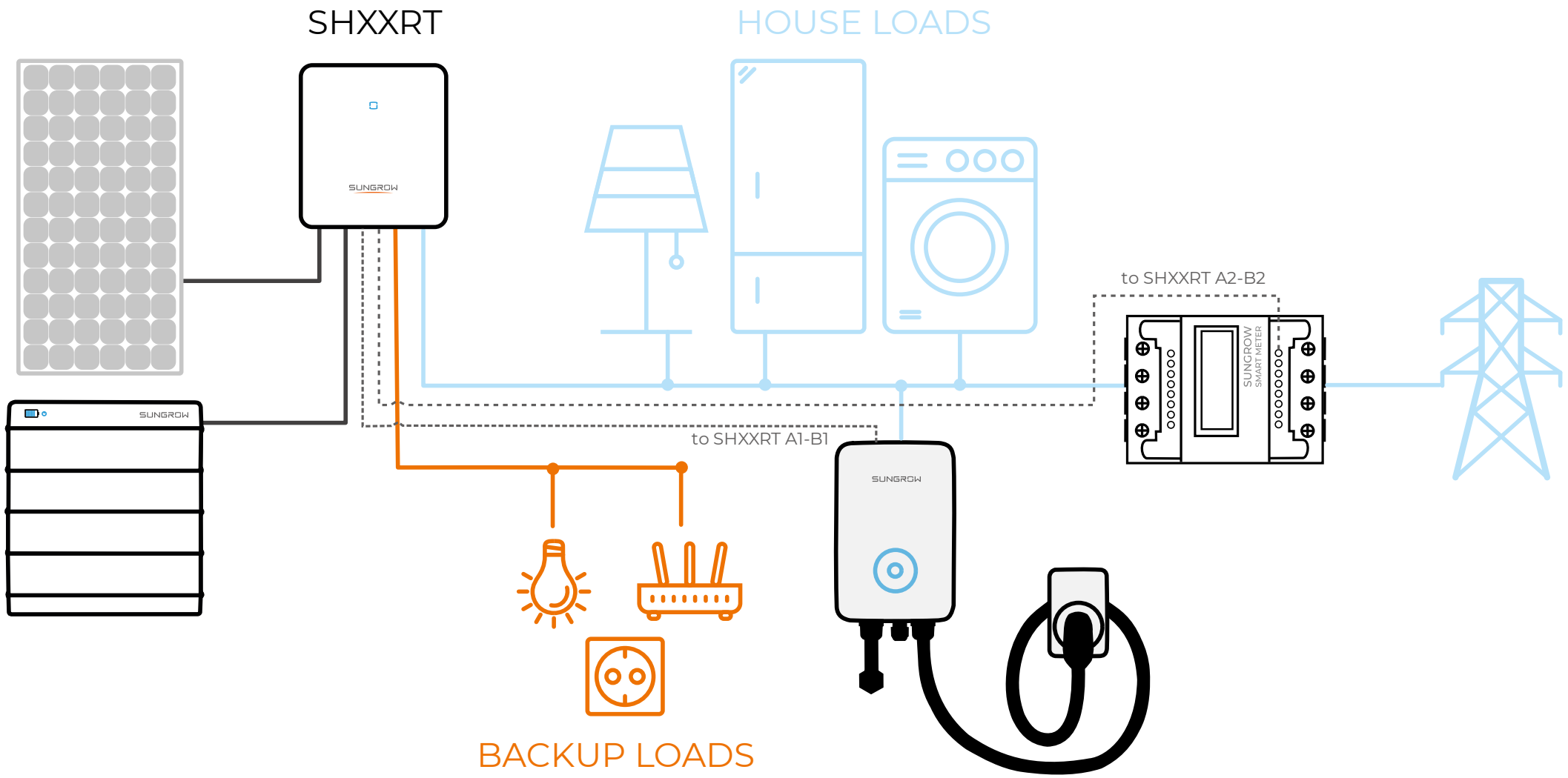


Battery

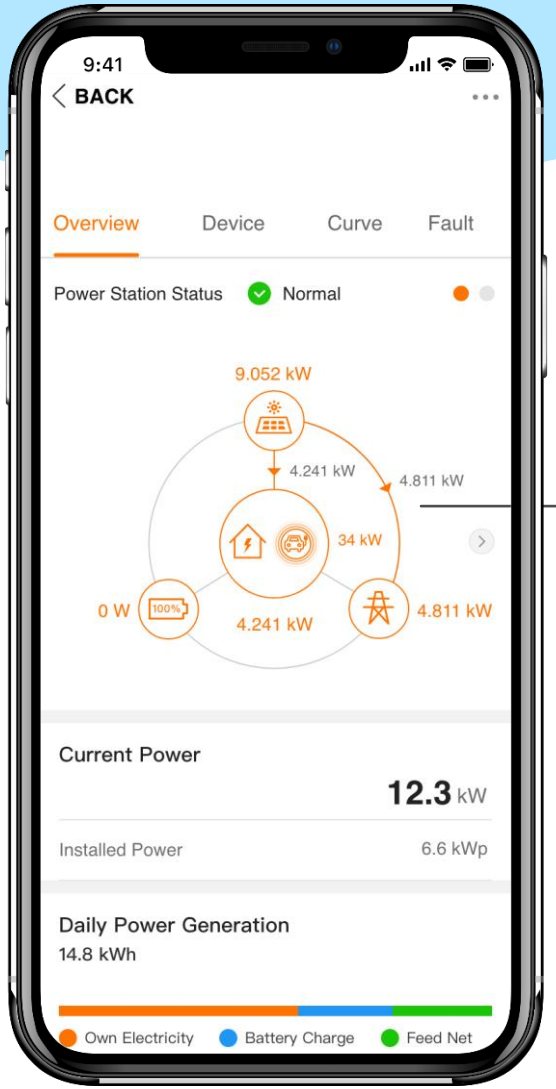
Inverter

Connect to
Pin 5 and Pin 7

HOME RENEWABLES + EV



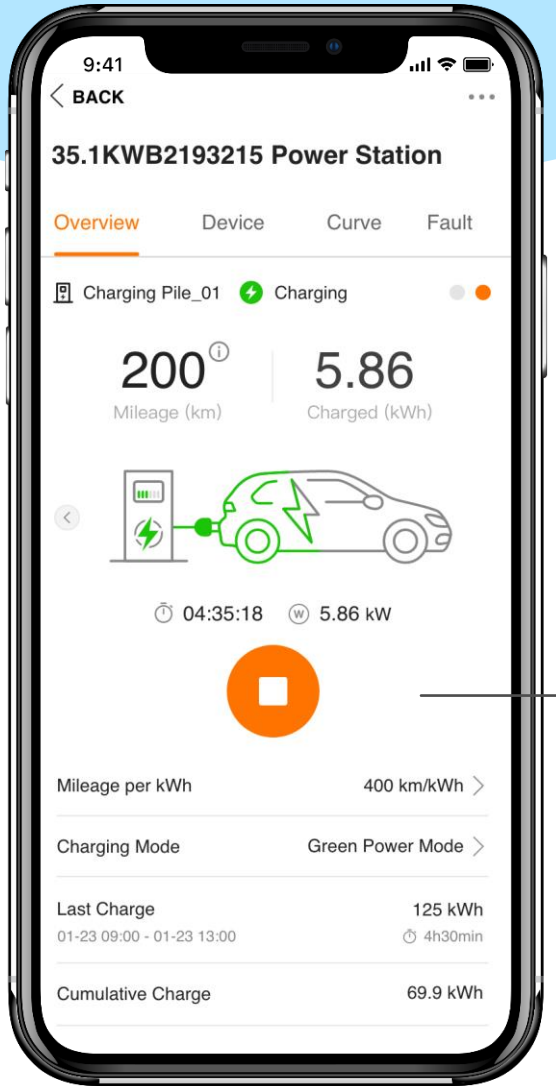
FULLY INTEGRATED iSolarCloud



All devices, one overview

SUNGROW

FULLY INTEGRATED iSolarCloud



EV charging overview

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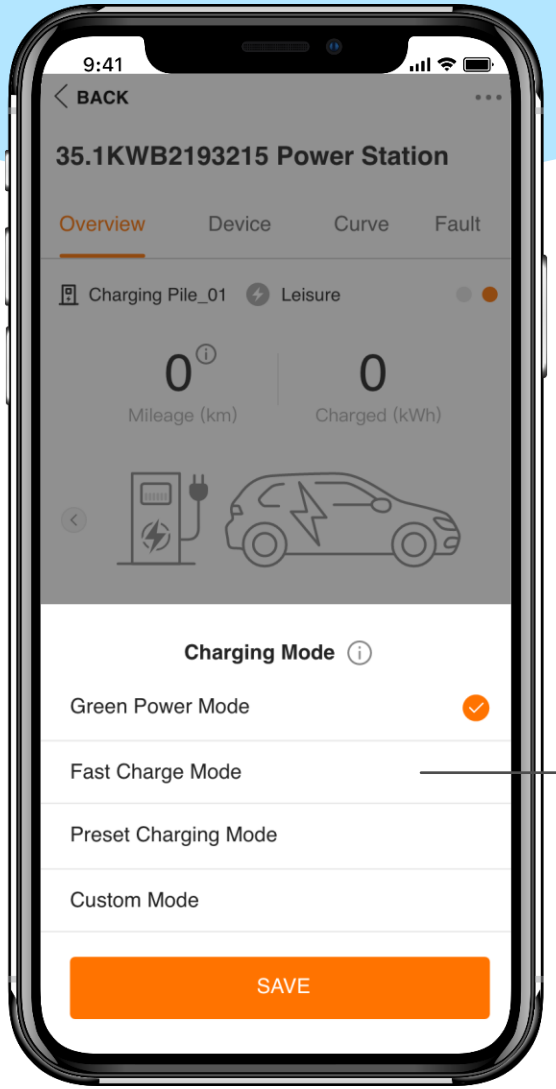
FULLY INTEGRATED iSolarCloud



Different charging modes

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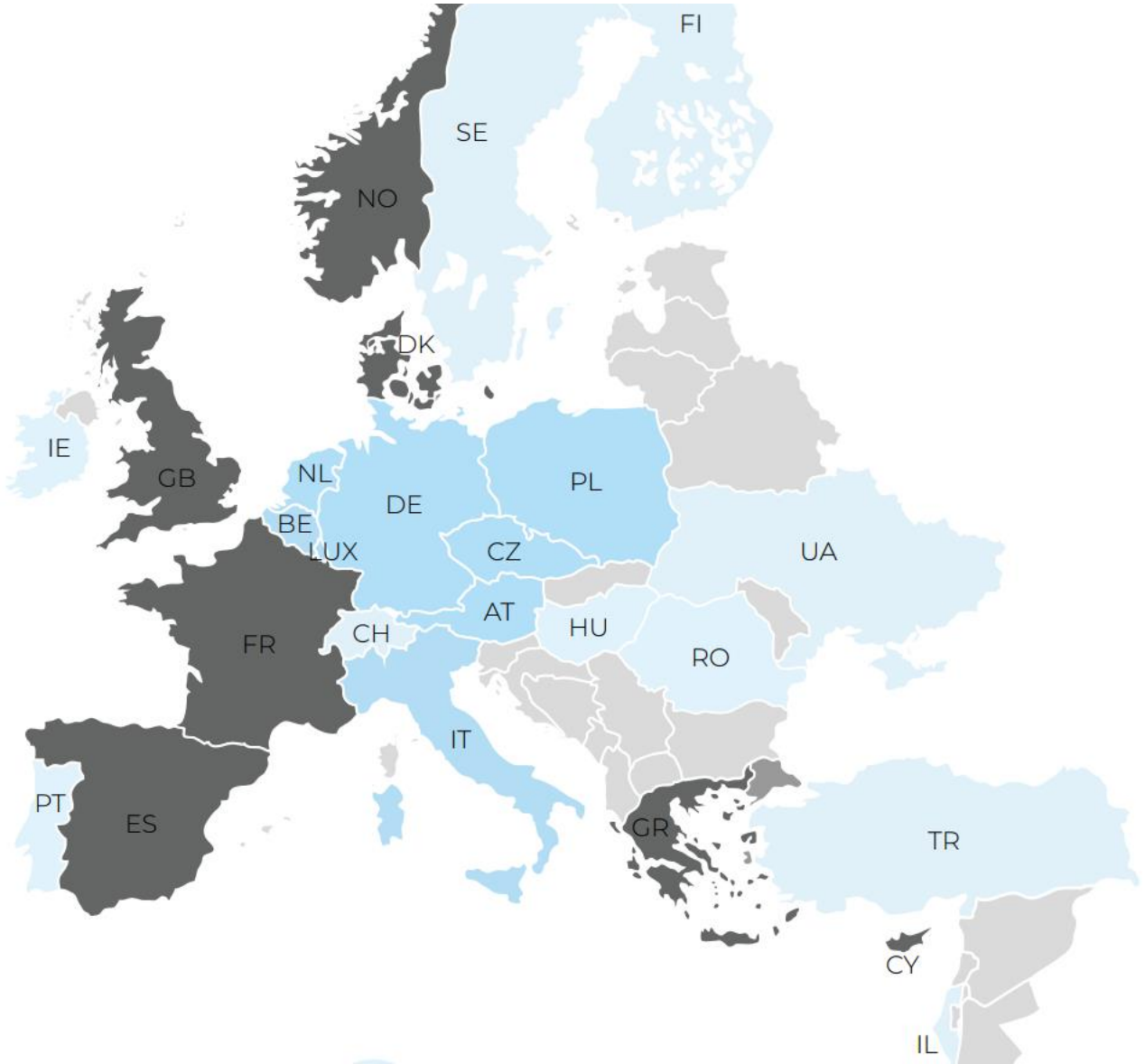
COUNTRY AVAILABILITY-COMBO



Certification and grid code available*

Available with manual settings

Under review

* IT expected certification Q2/2022

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WARRANTY TERMS

3-phase Hybrid & Battery

10 years

EV Charger

2.5 years or 5 years

SUNGROW

FAQ - CHARGE

When there's **not enough PV or Battery power** available, the EV Charger will take power from grid.

If more PV power is available, the charging power will increase up to 11 kW.

FAQ - COMPATIBILITY

Compatible only with the Sungrow SH5.0-10RT 3ph Hybrid.

One Hybrid per EV charger can be connected, in the future more combinations will be available.

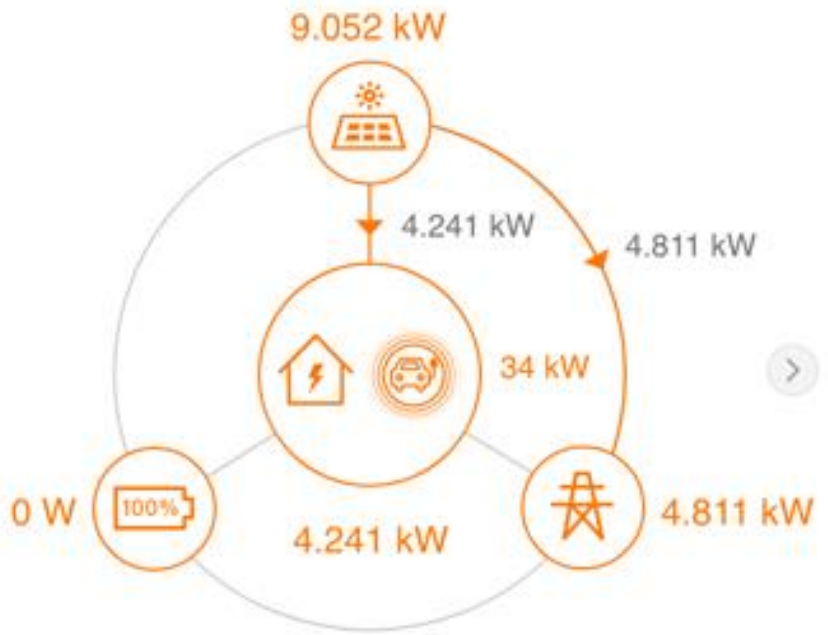
Currently can not yet support a dedicated **MID meter connection** with company billing capability. This feature may be developed in a future version.

FAQ - FUNCTIONALITY

EV charger also has **its own standalone APP** and can be setup to work as a standalone EV charger.

Future integration with Sungrow hybrid inverter is possible by switching to iSolarCloud.

The **user manual and the certifications** for the EV-Charger will be available on the Sungrow Website soon.



THE 3-PHASE SOLUTION

BEYOND THE EXPECTED

FOR ALL WHO WANT MORE

OPTIMIZED SELF-CONSUMPTION
maximum discharge current of 30 A

BACKUP MODE
seamless transition with 20 ms switching time

SUNGROW

FOR ALL WHO WANT MORE

PARALLEL OPERATION
connect up to 5 inverters in parallel

RETROFIT ABLE
maximum of flexibility for the future

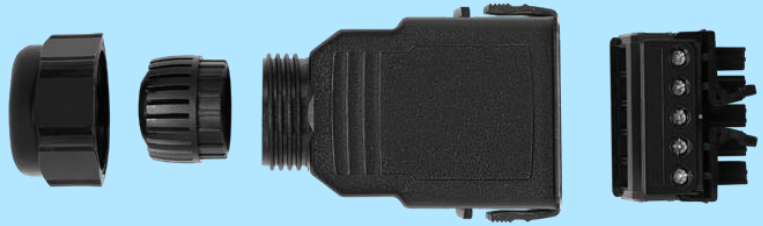
SUNGROW

UNIQUE IN ITS FAST INSTALLATION

SPACIOUS CONNECTION PANEL
no need to open the inverter

LIGHT-WEIGHT & COMPACT
single-person handling

COMMISSIONING VIA APP
easy step-by-step guide



INCLUDED THE WINET-S

10 SEC. REFRESH RATE
precise self-consumption monitoring

WIFI & ETHERNET
One port, two options. Part of the delivery scope

MODBUS TCP
connect to external EMS

INCLUDED ENERGY METER

DIRECT CONNECT
no-latency measurement

MODBUS RTU
up to 100m away from inverter

V, A, Hz, W, Wh
all logged in detail in iSolarCloud

THE BATTERY

SBR096 SBR128 SBR160 SBR192 SBR224 SBR256

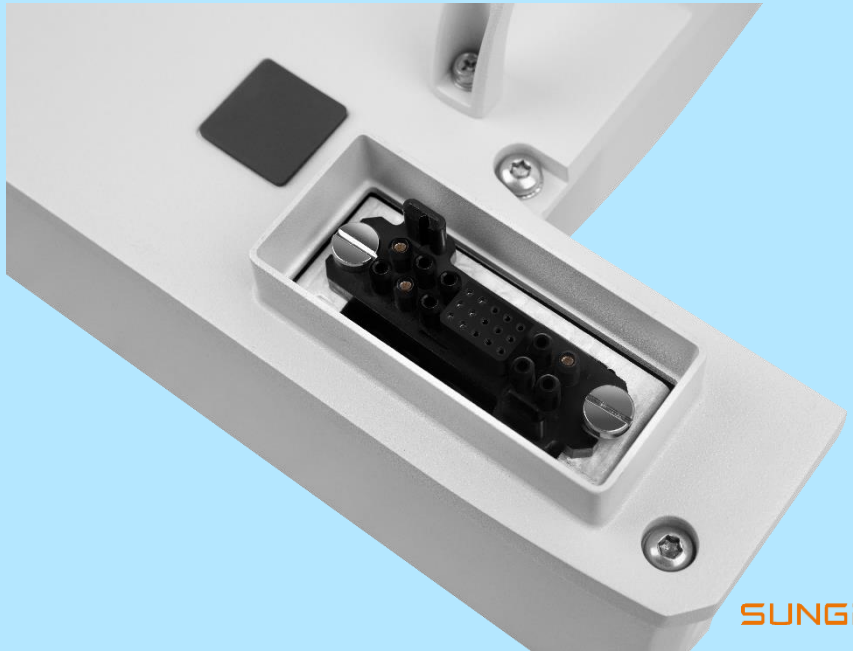
SUNGROW

MODULAR SYSTEM

9.6kWh UP TO 25.6kWh
with 5x SHRT in parallel totally 125kWh

1-PERSON INSTALLATION
33kg module, comfortable handles

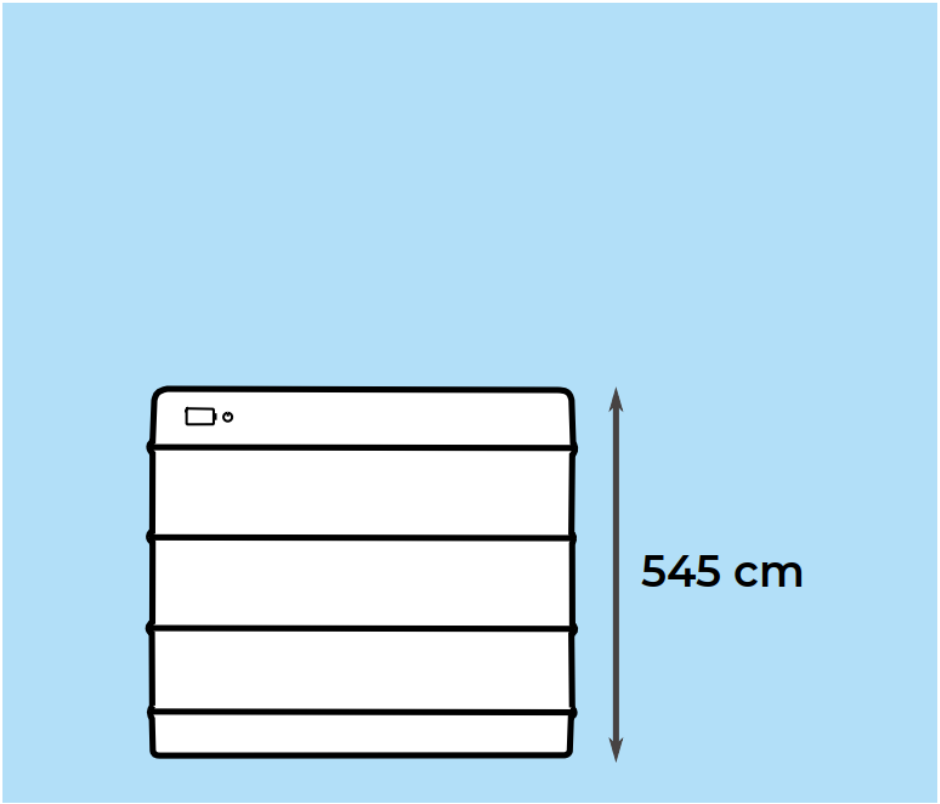
PLUG AND PLAY
no cables required between modules



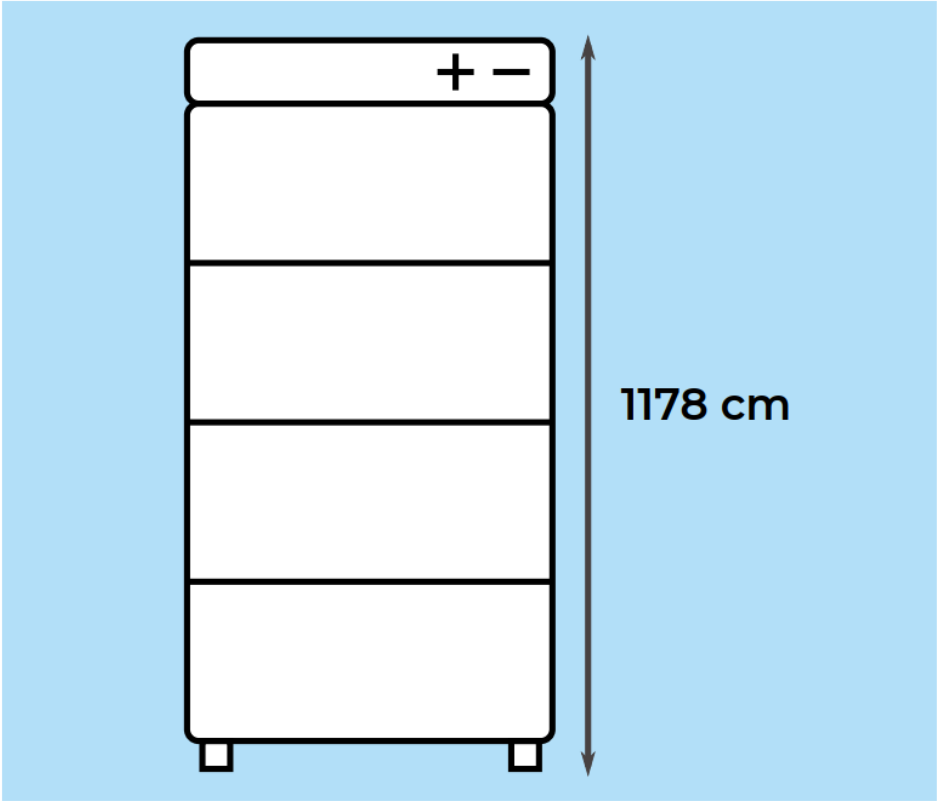
SUNGROW

BECAUSE SIZE MATTERS

Sungrow



Other brand



MORE RELIABILITY

10 YEARS WARRANTY
for the inverter and battery

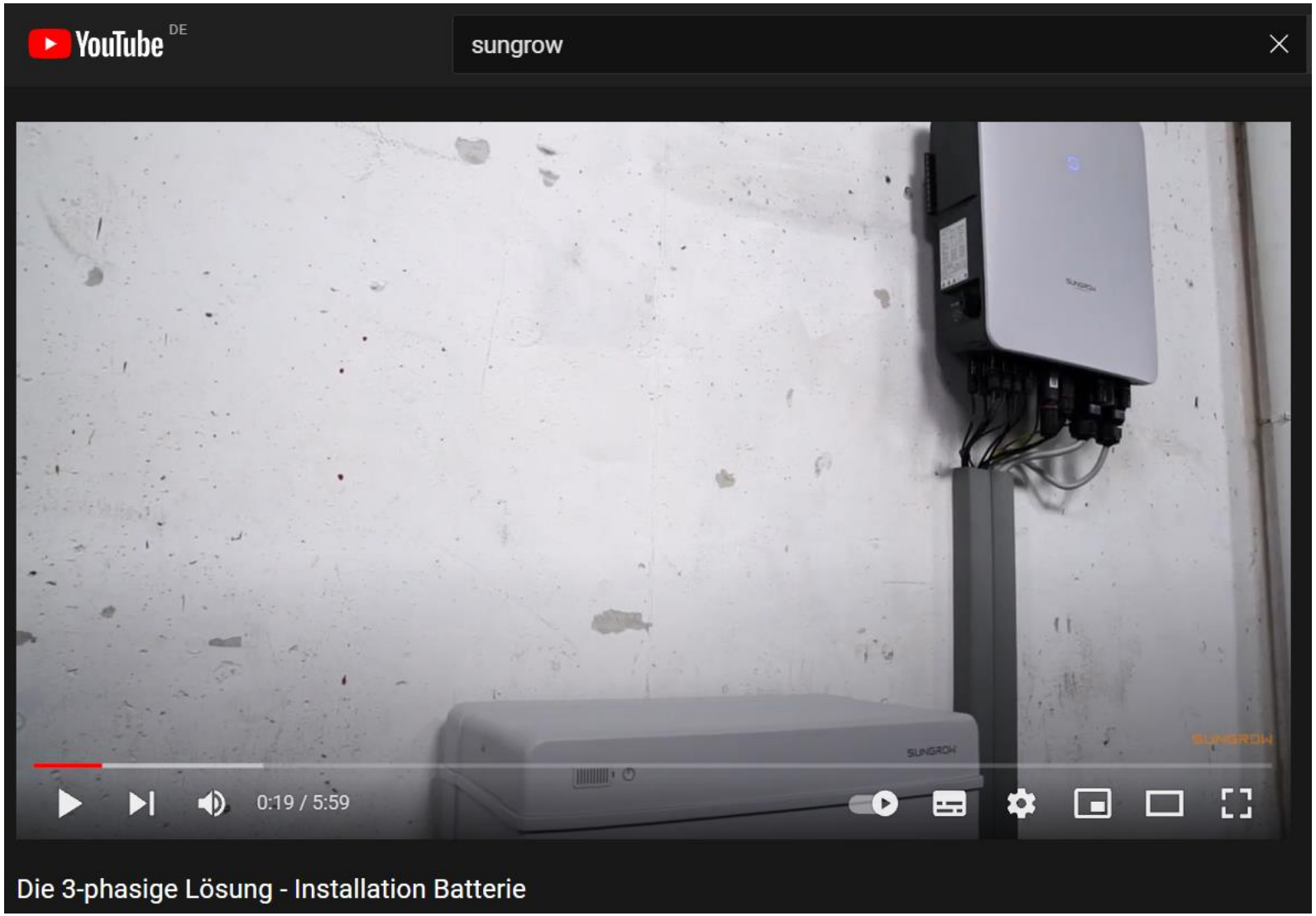
BEST IN CLASS
throughput energy guaranteed

100% USABLE ENERGY
what you buy is what you get

NEW INSTALLATION VIDEO

SCAN ME

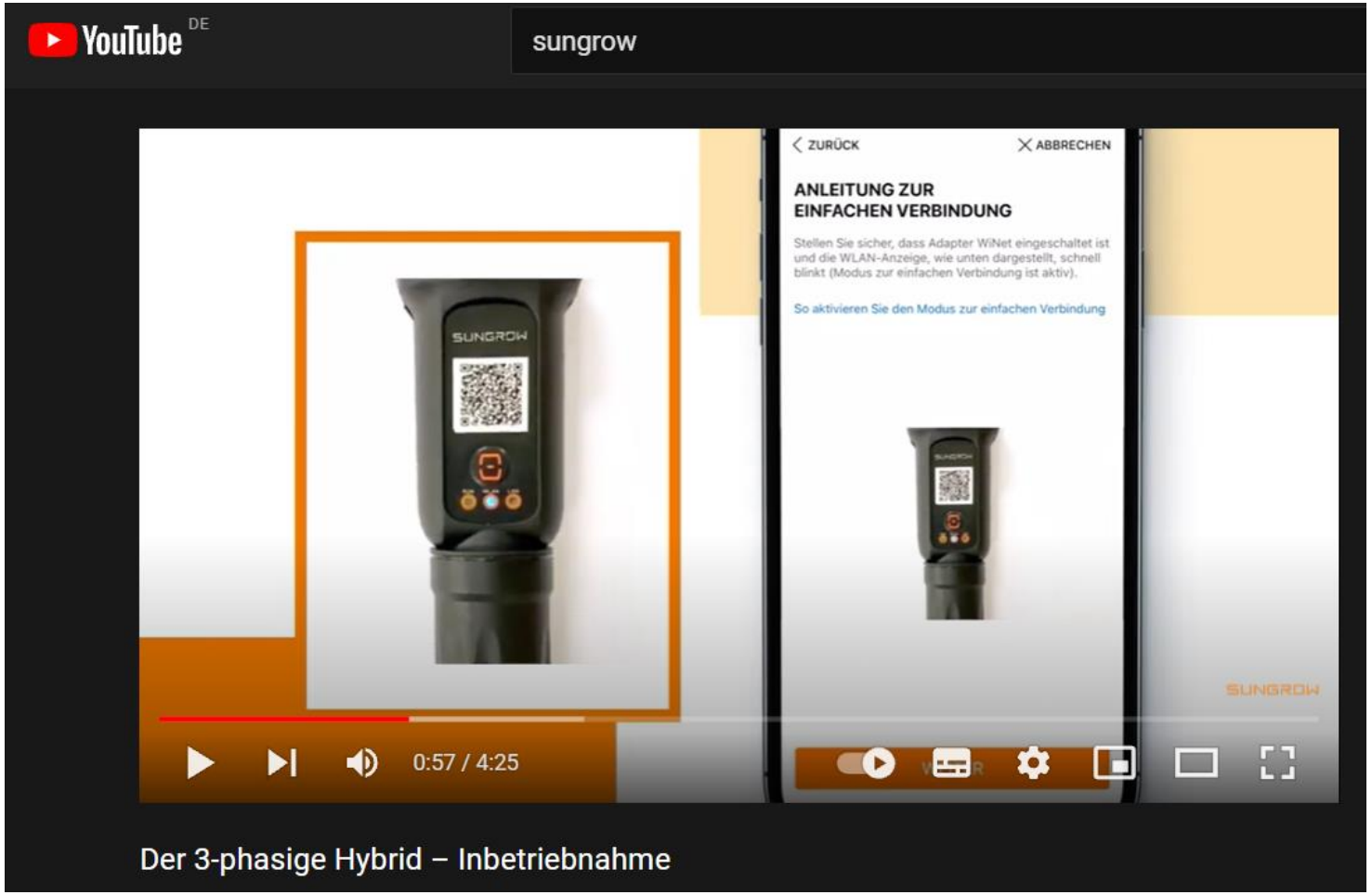
NEW INSTALLATION VIDEO



SCAN ME

SUNGROW

NEW COMMISSIONING VIDEO



SCAN ME

CASE STUDY

CASE STUDY ASSUMPTIONS

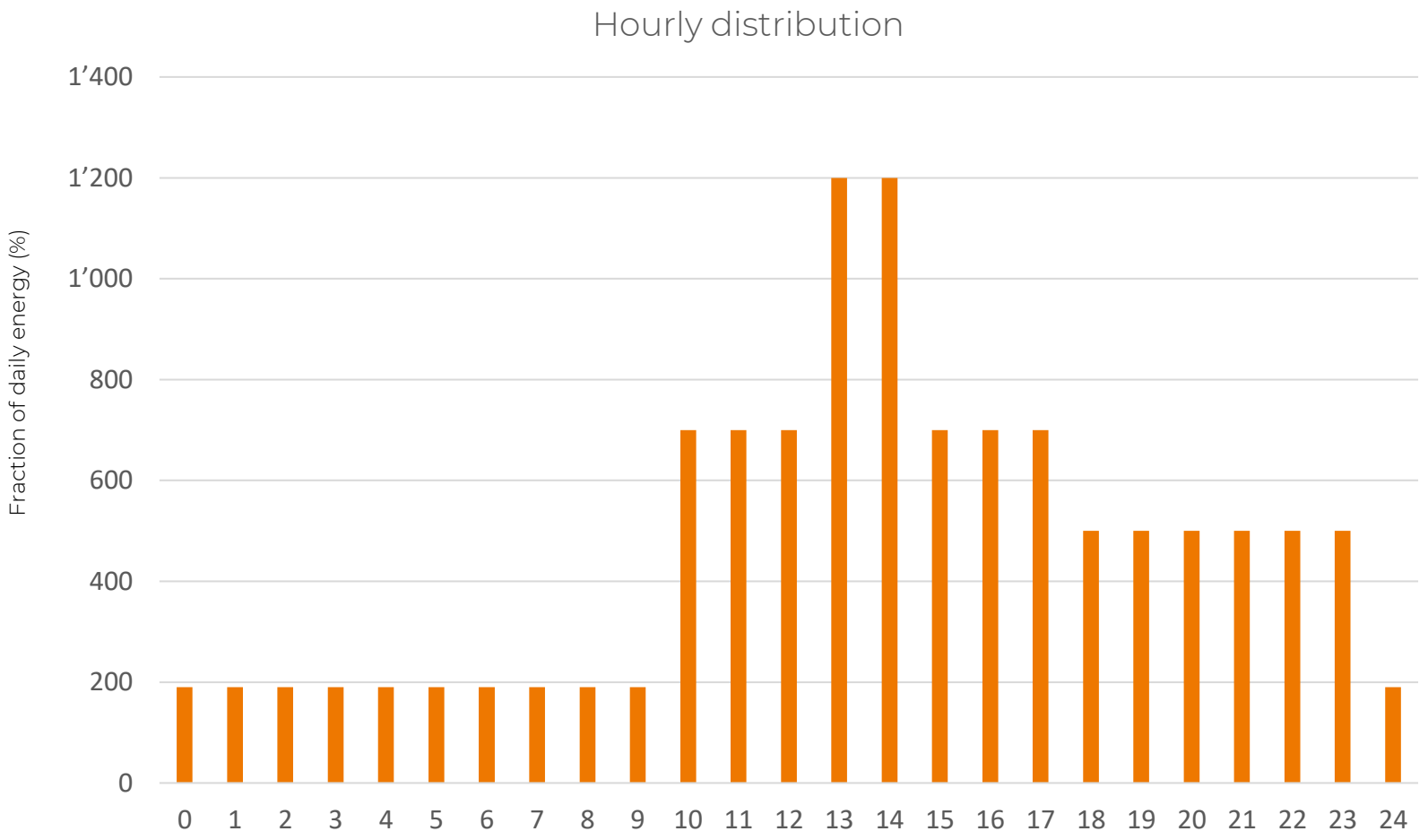
12.1kWp PV installation , 10kVA inverter, 9,6kWh Battery House Load profile with seasonal variation

PV Array Characteristics

PV module		**Inverter**	
Manufacturer	Trina Solar	Manufacturer	Sungrow
Model	TSM-DE15M-(II)-390	Model	SH10RT
(Original PVsyst database)		(Custom parameters definition)	
Unit Nom. Power	390 Wp	Unit Nom. Power	10.00 kWac
Number of PV modules	31 units	Number of inverters	1 Unit
Nominal (STC)	12.09 kWp	Total power	10.0 kWac
Array #1 - PV Array			
Number of PV modules	13 units	Number of inverters	1 * MPPT 0.33 0.3 unit
Nominal (STC)	5.07 kWp	Total power	3.3 kWac
Modules	1 String x 13 In series		
At operating cond. (50°C)		Operating voltage	200-950 V
Pmpp	4612 Wp	Pnom ratio (DC:AC)	1.52
U mpp	473 V		
I mpp	9.8 A		
Array #2 - Sub-array #2			
Number of PV modules	18 units	Number of inverters	1 * MPPT 0.67 0.7 unit
Nominal (STC)	7.02 kWp	Total power	6.7 kWac
Modules	1 String x 18 In series		
At operating cond. (50°C)		Operating voltage	200-950 V
Pmpp	6.39 kWp	Pnom ratio (DC:AC)	1.05
U mpp	654 V		
I mpp	9.8 A		
Total PV power		**Total inverter power**	
Nominal (STC)	12 kWp	Total power	10 kWac
Total	31 modules	Nb. of inverters	1 Unit
Module area	63.0 m²	Pnom ratio	1.21
Cell area	54.0 m²		

CASE STUDY ASSUMPTIONS

12.1kWp PV installation , 10kVA inverter, 9,6kWh Battery House Load profile with seasonal variation



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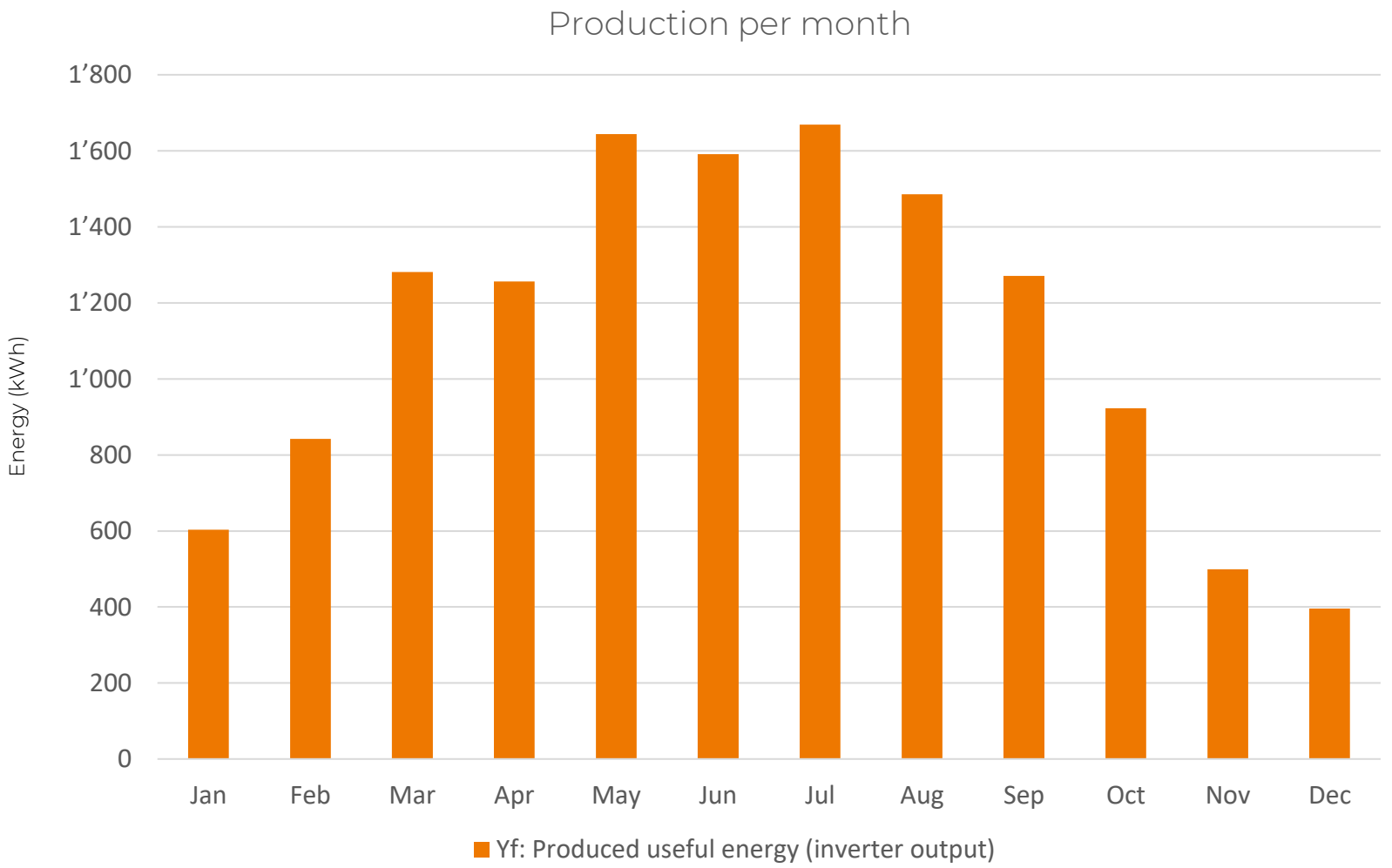

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SCENARIO 1

CASE STUDY SCENARIO 1

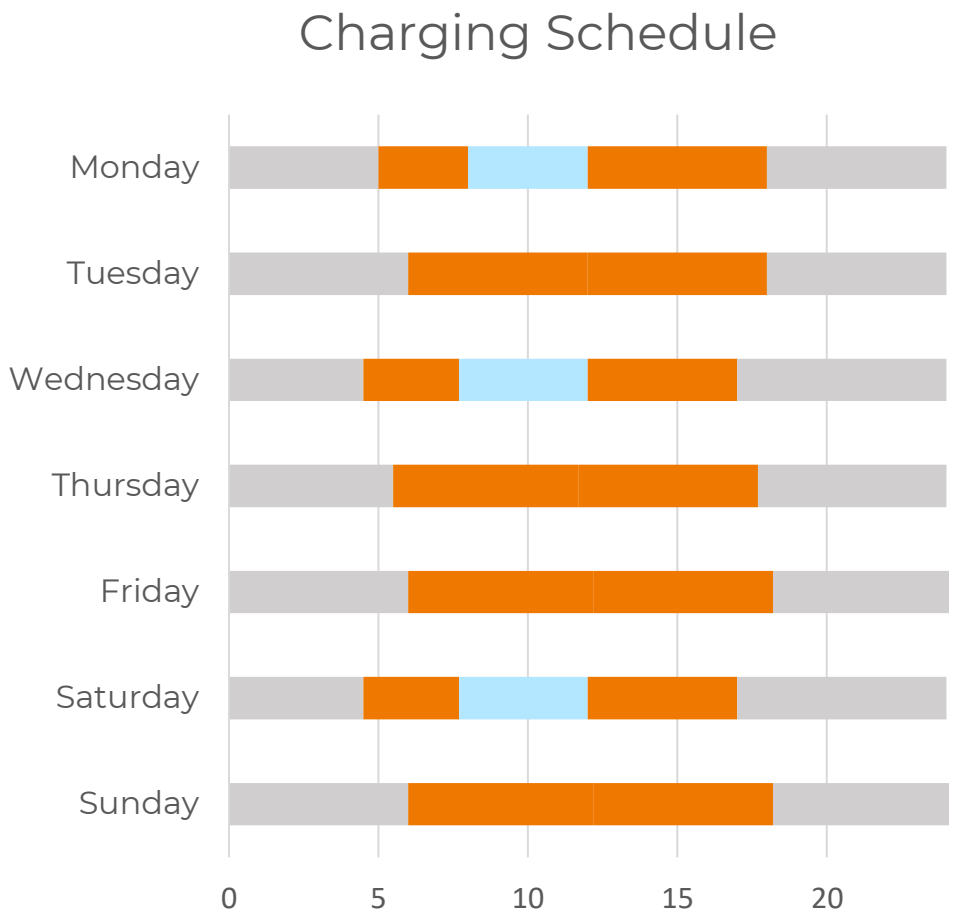
Charge 3 times per week

Maximize use of PV production to charge the EV

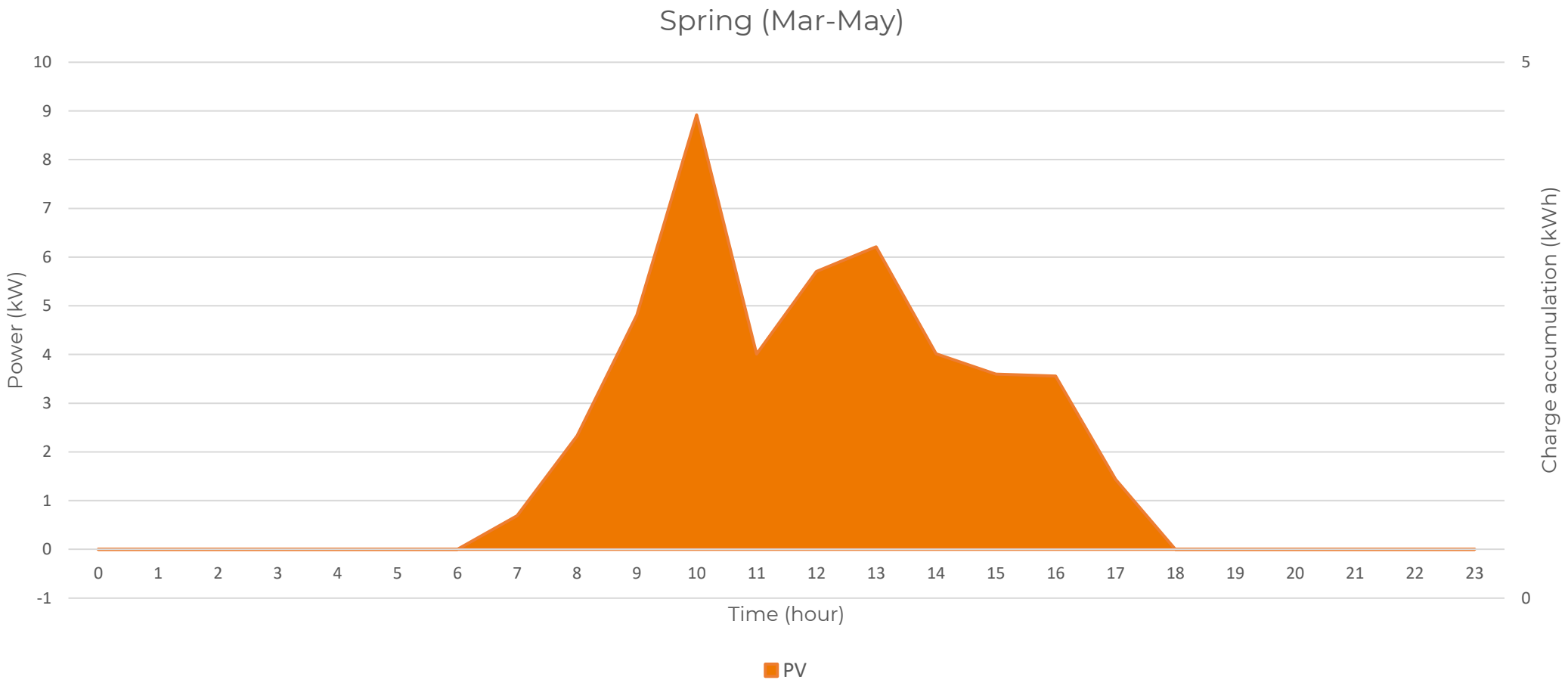
Charge starts at 8am

Charge 30kWh each time either from PV or Grid

Only using Energy injected in the grid to charge EV, house loads already covered by PV



SCENARIO 1 RESULTS



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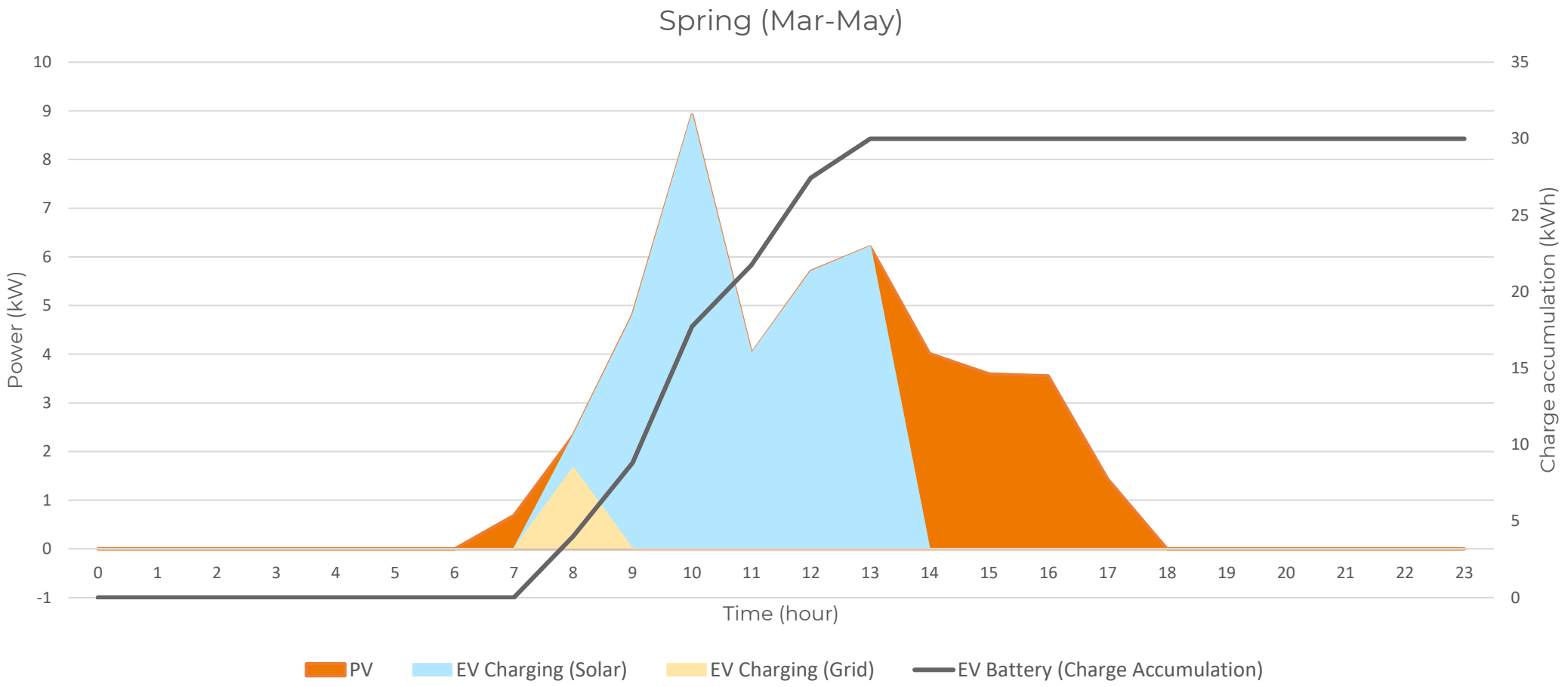
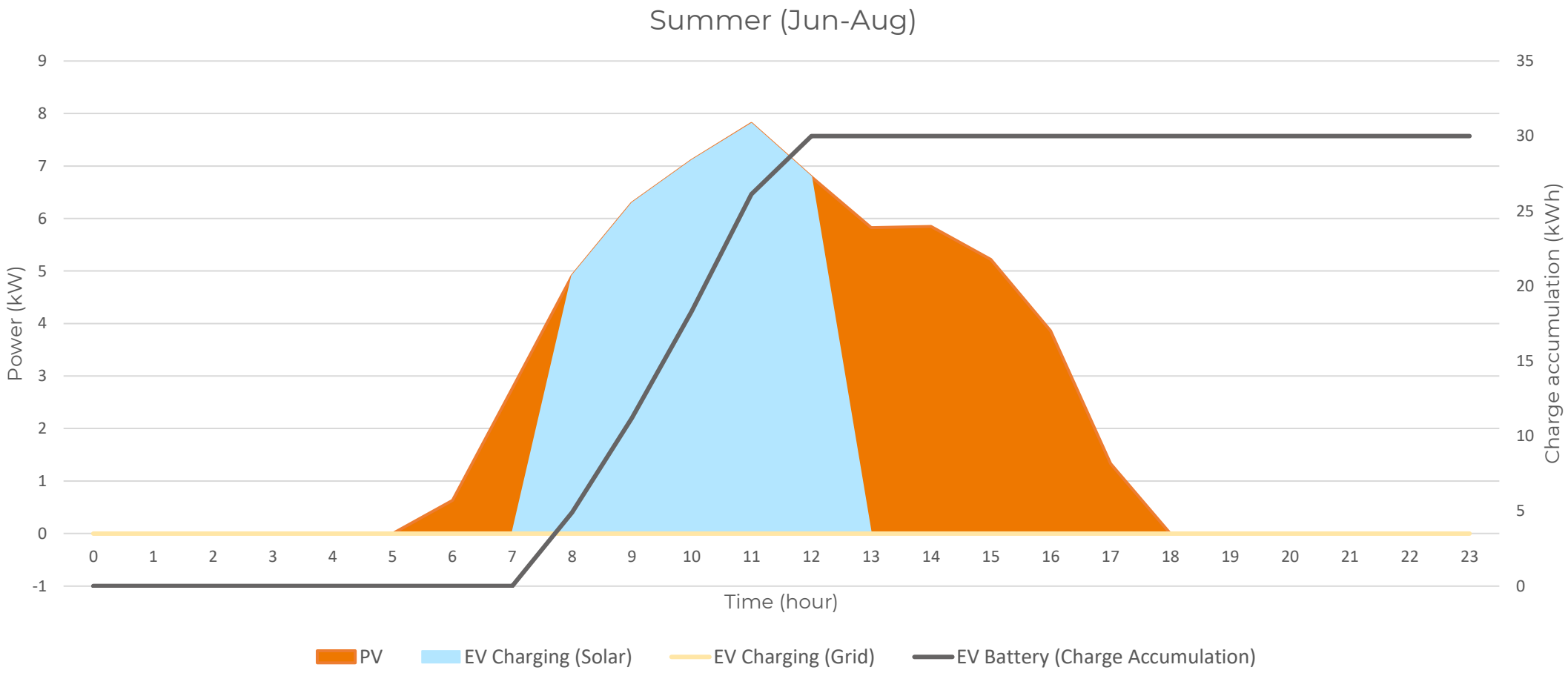


SUNGROW

SCENARIO 1 RESULTS



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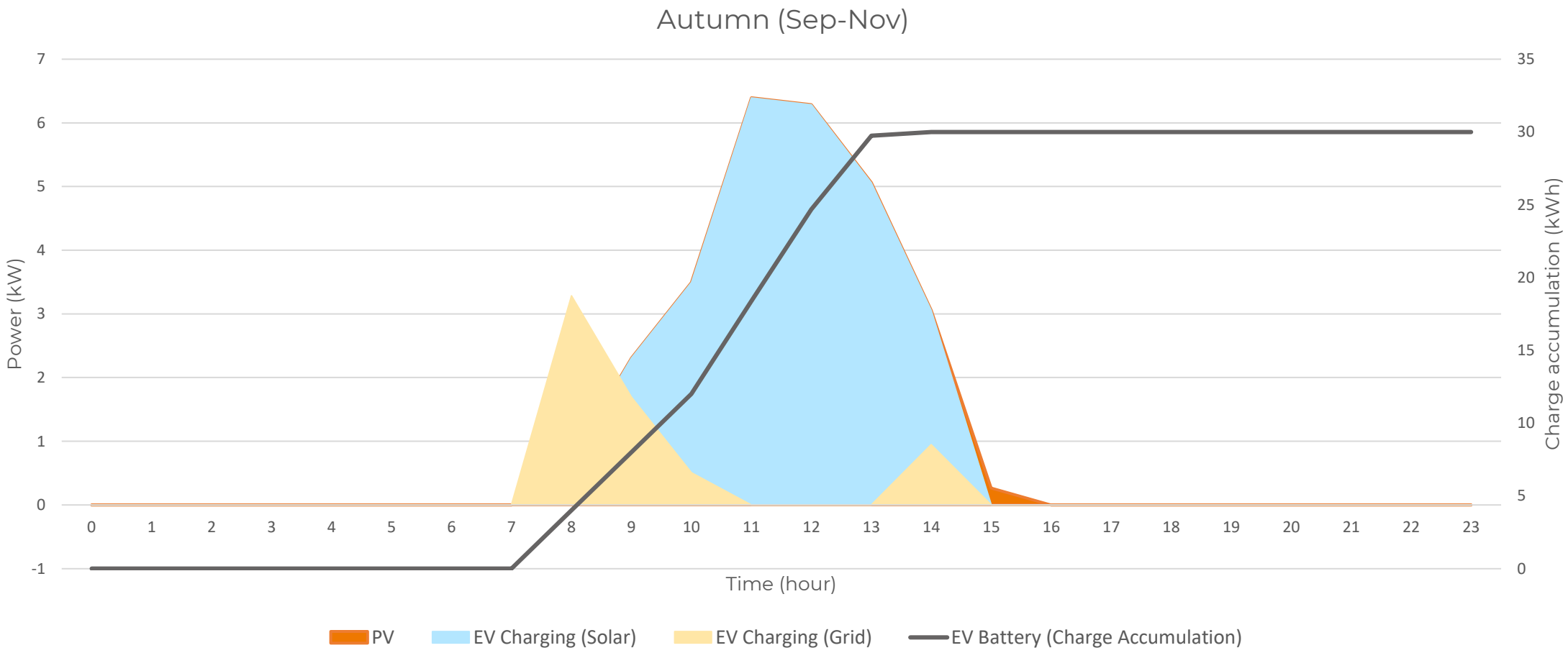

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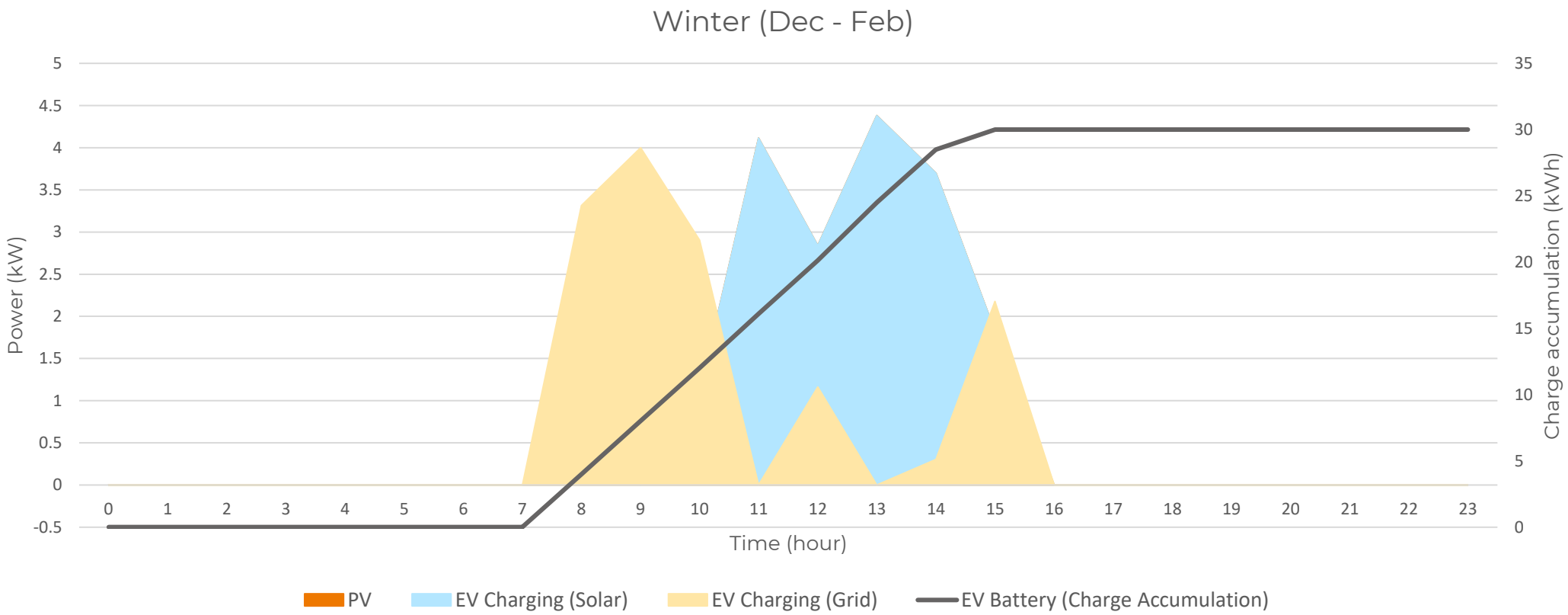

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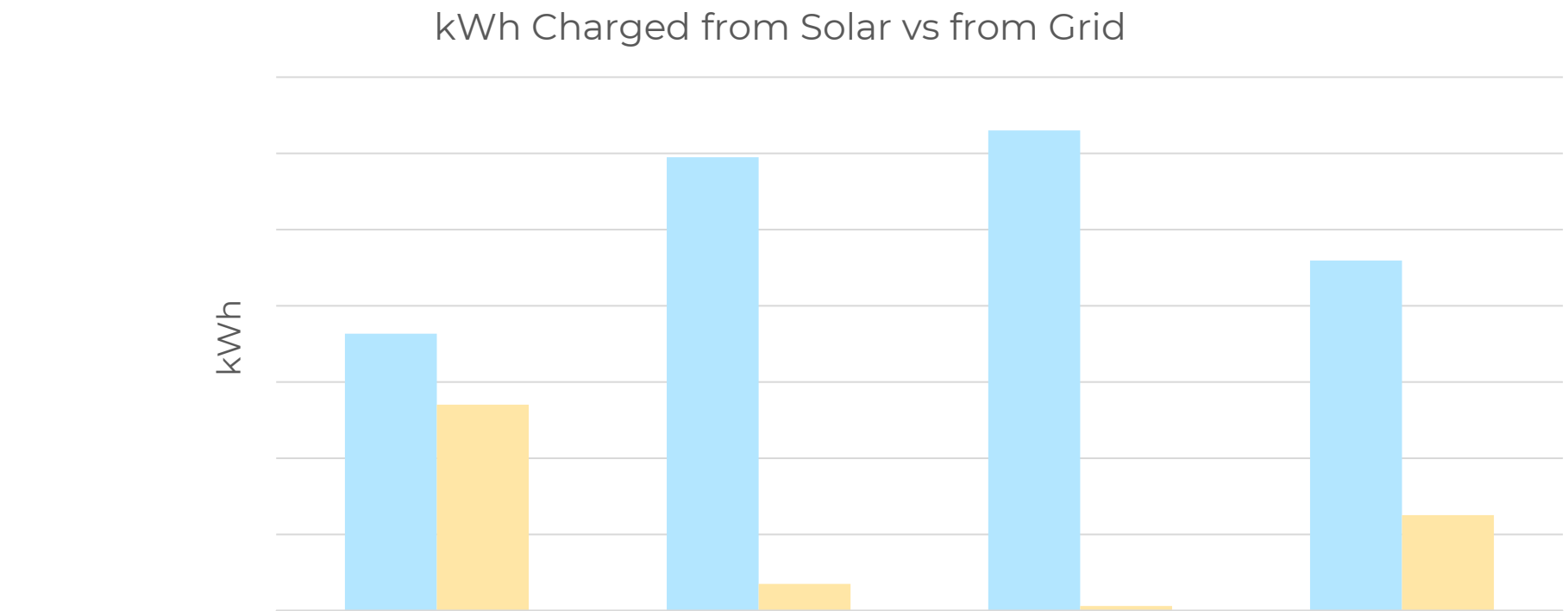


	Winter	Spring	Summer	Autumn
EV Charging Solar	727.0	1189.8	1260.0	919.3
EV Charging Grid	540.5	70.2	12.6	250.7

SCENARIO 1 COSTS

Considering recent prices:

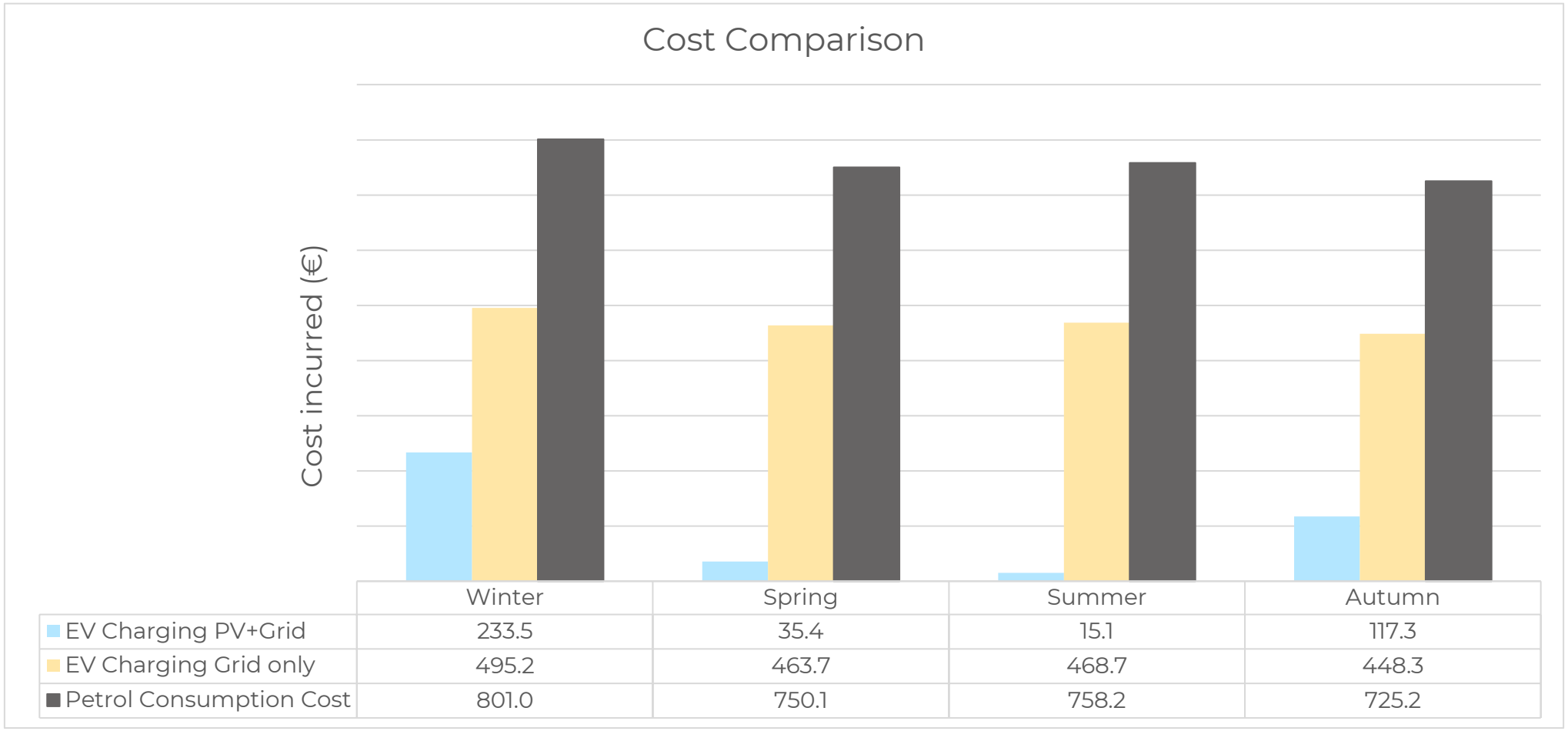
Electricity in Germany 36€ct / kWh

Petrol in Germany 2 € / l

Example Tesla Model 3 Long Range 73 kWh Battery
Use around 30’000 km/year with ~ 90kWh use per week
Comparing with Audi A4 2022 - 5.5 l/100km

Yearly km travelled	27’586 km
Total kWh Charged	5’210 kWh
l of petrol consumed	1’517 l

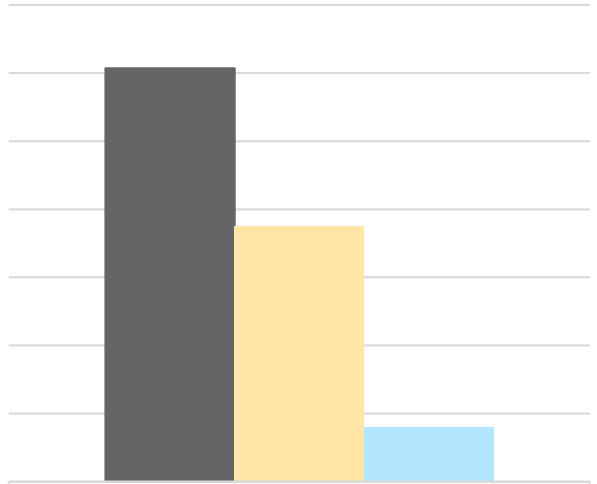
SCENARIO 1 COSTS



	Winter	Spring	Summer	Autumn
EV Charging PV+Grid	233.5	35.4	15.1	117.3
EV Charging Grid only	495.2	463.7	468.7	448.3
Petrol Consumption Cost	801.0	750.1	758.2	725.2

SCENARIO 1 SAVINGS

Yearly Cost Comparison



	Yearly Average (€)
Petrol car	3034.5
EV from Grid only	1875.9
EV from Grid + PV	401.3

Savings vs Petrol

	Yearly Average (€)
EV from Grid only	1158.6
EV from Grid + PV	2633.2

SCENARIO 2

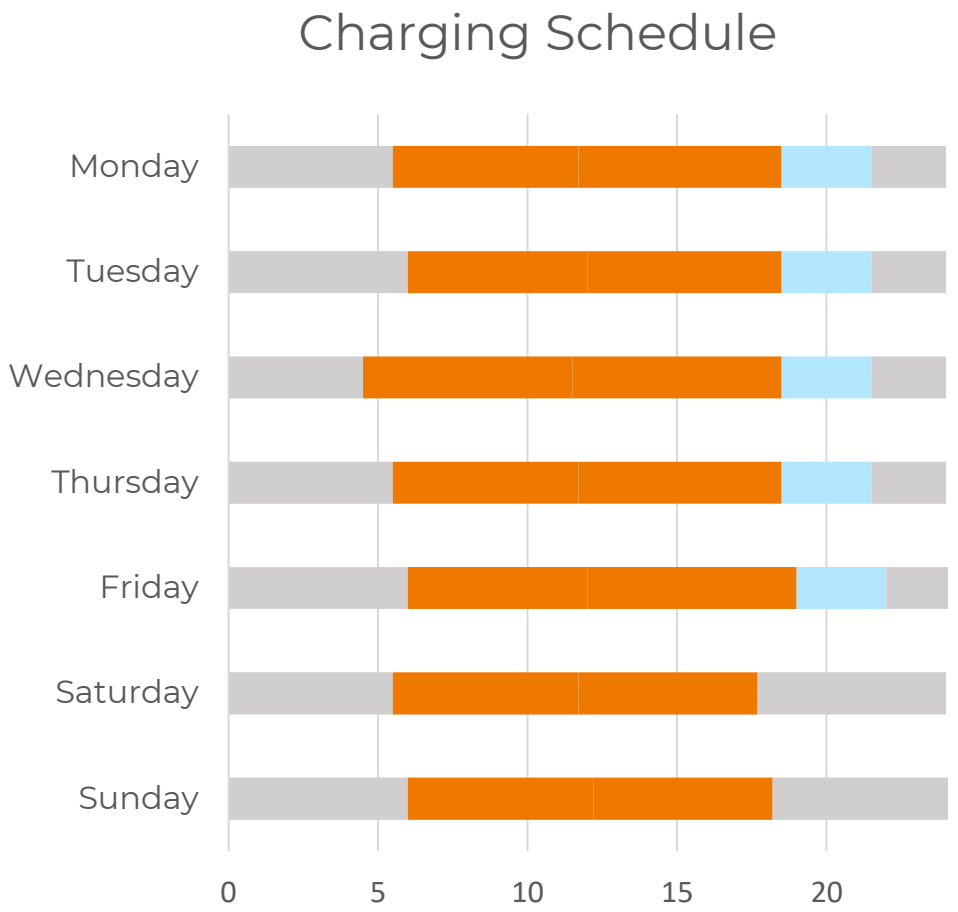
CASE STUDY SCENARIO 2

Charge 5 times per week

Maximise use of home battery to charge the EV, charge evening

Charge for 10kWh with battery and the rest from grid

Charge home battery from solar without discharging, battery full every day



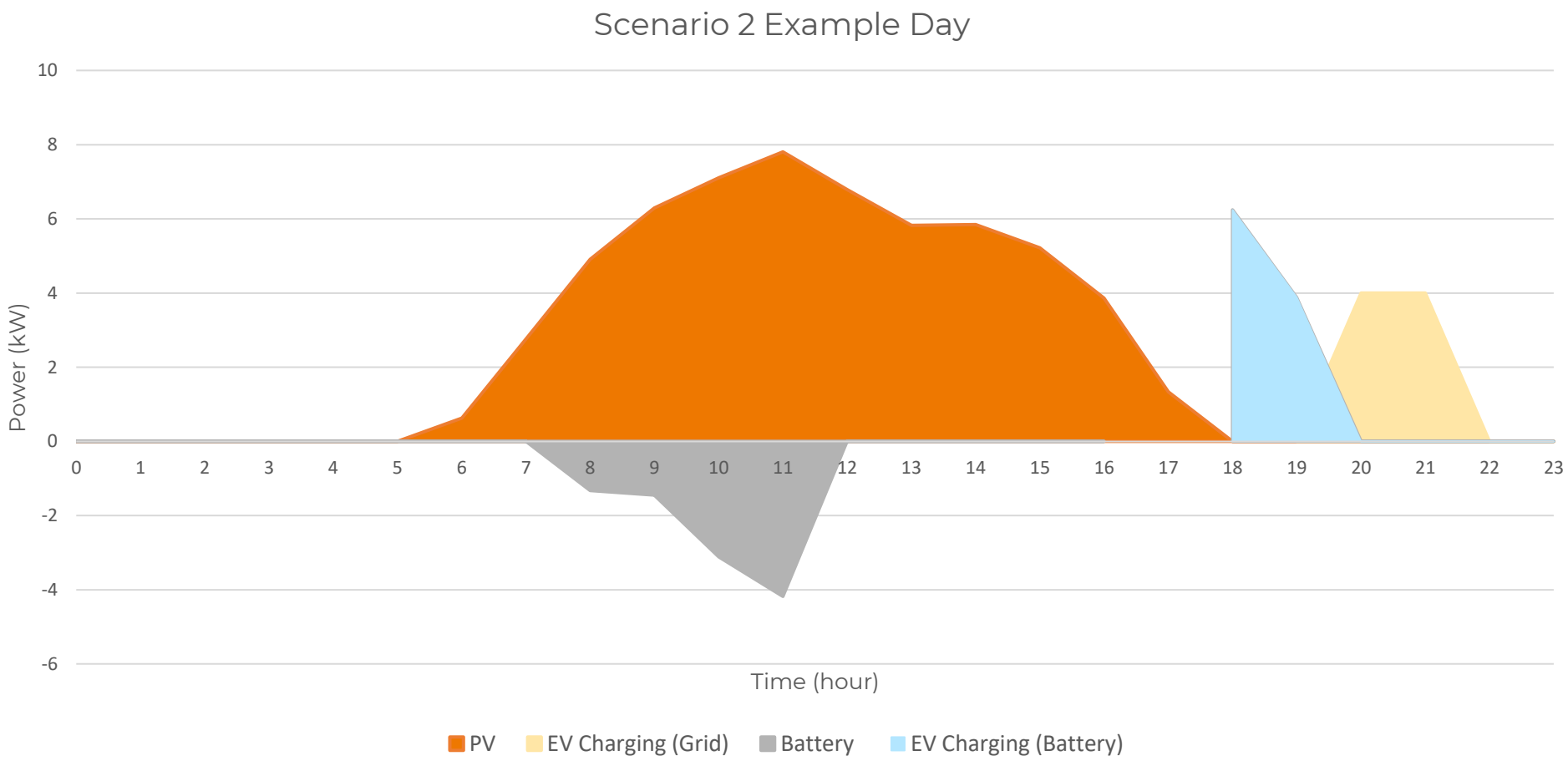
CASE STUDY SCENARIO 2

Common Parameter Settings

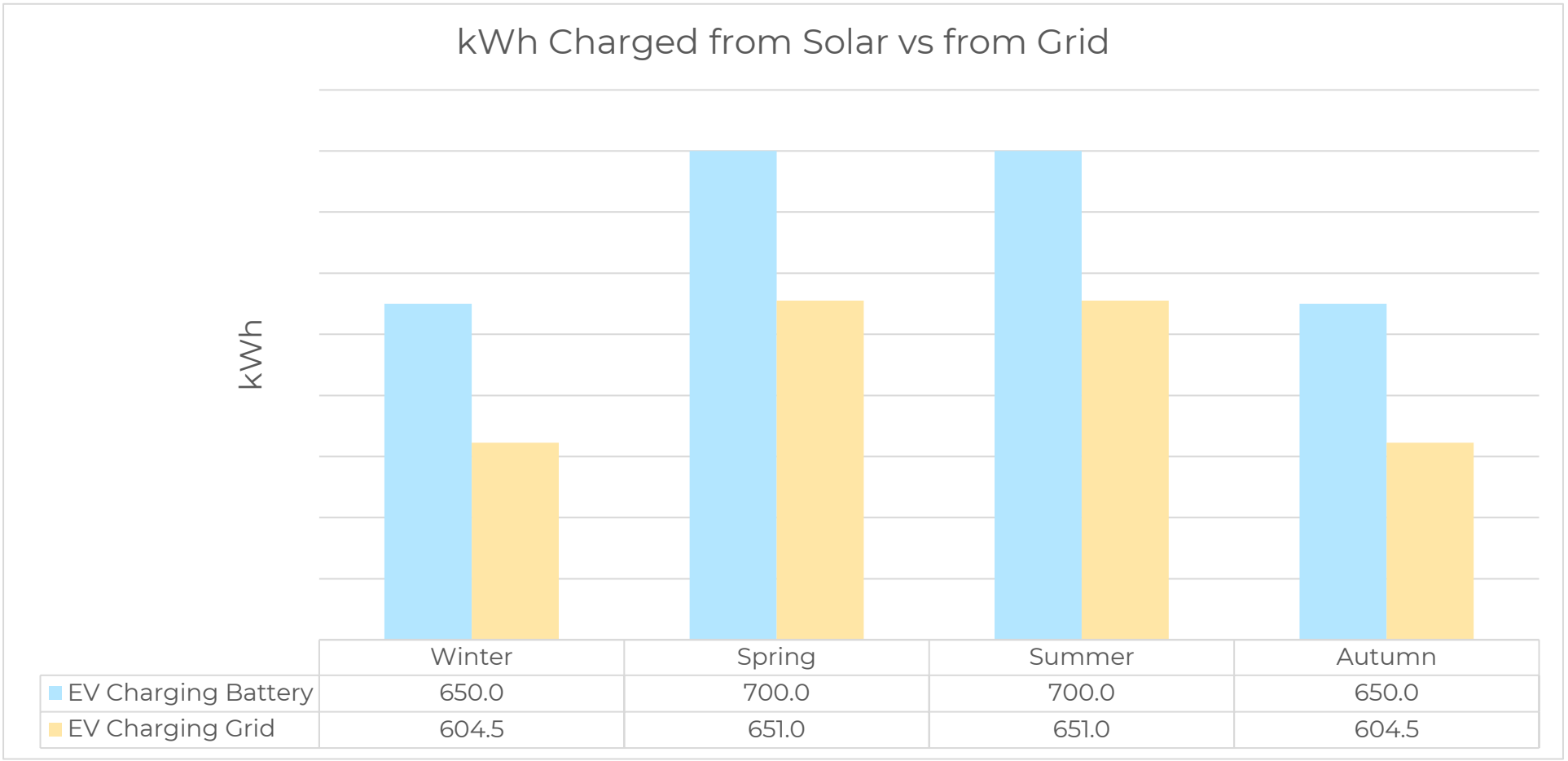
System Parameters | Protection Parameters | Power Control | Energy Management Parameters

No.	Parameter Name	Latest Value Update Time:2022-03-30 10:55:02	Numerical Term	Data Range (min.)
1	Weekday Discharging Start Time 1	00:00	19:00	
2	Weekday Discharging End Time 1	24:00	24:00	
3	Weekday Discharging Start Time 2	00:00	19:00	
4	Weekday Discharging End Time 2	24:00	24:00	
5	Weekend Discharging	Enable	Please Select	--
6	Forced Charging	Disable	Please Select	--
7	DO Configuration	Close	Please Select	--

SCENARIO 2 RESULTS

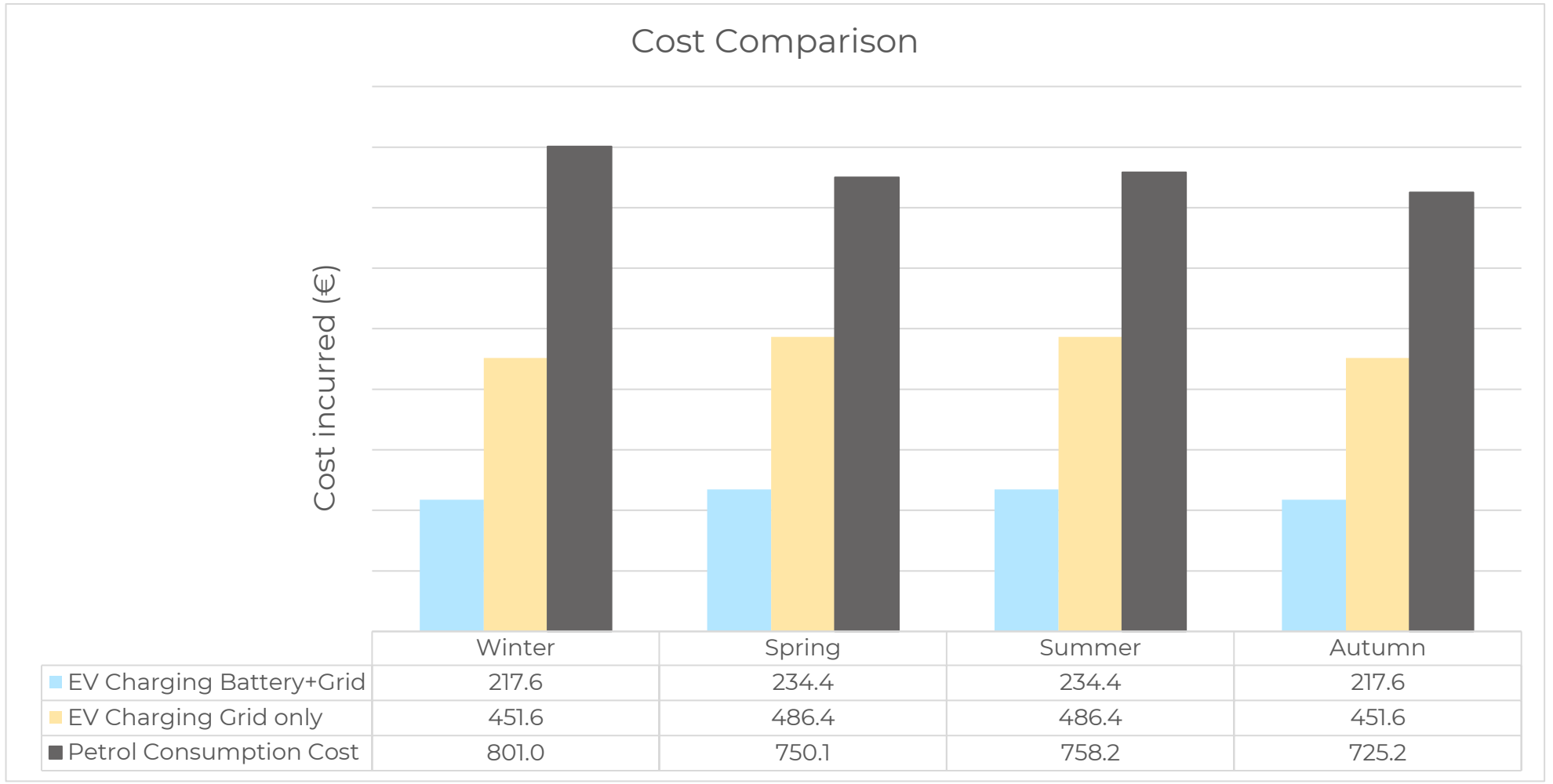


SCENARIO 2 SAVINGS



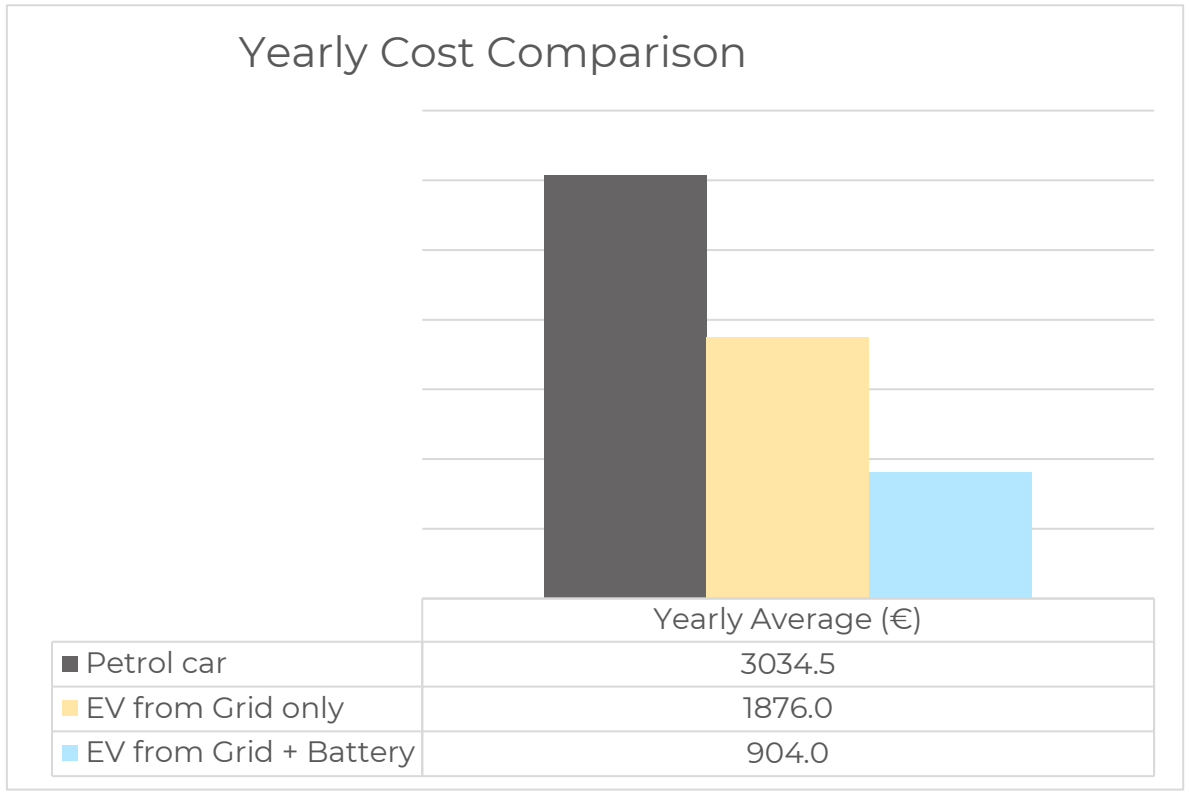
	Winter	Spring	Summer	Autumn
EV Charging Battery	650.0	700.0	700.0	650.0
EV Charging Grid	604.5	651.0	651.0	604.5

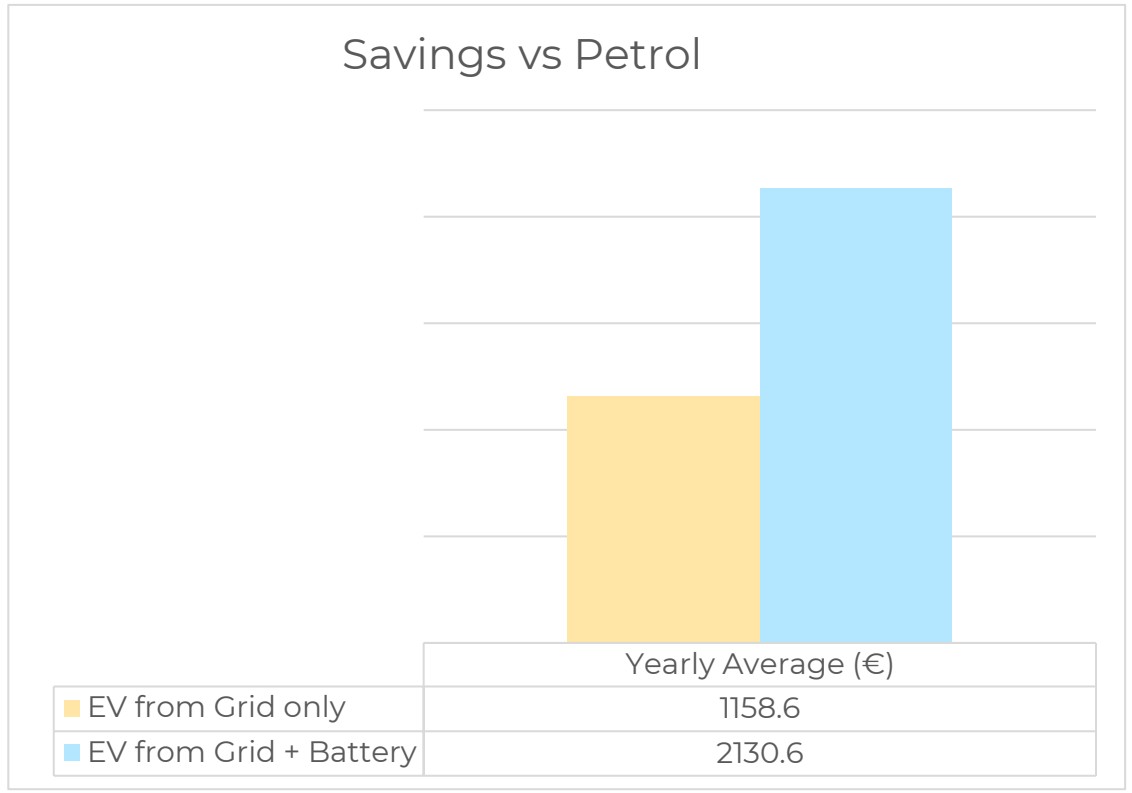
SCENARIO 2 SAVINGS



	Winter	Spring	Summer	Autumn
EV Charging Battery+Grid	217.6	234.4	234.4	217.6
EV Charging Grid only	451.6	486.4	486.4	451.6
Petrol Consumption Cost	801.0	750.1	758.2	725.2

SCENARIO 2 SAVINGS





CASE STUDY SUMMARY

Substantial savings for both scenarios

Not even considering additional savings from feed-in tariff

There has never been a better time to install a PV and Battery system integrated with EV charger

SUNGROW

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QUESTIONS?

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The potential of renewables and EV charger integration for residential homes: what difference can it make?

Q&A

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5:00 pm – 6:00 pm | EEST, Athens

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Tristan Rayner
Editor
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Thank you for joining today!