Wallbox-Inspektion

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Jan Körber

8. May 2025
www.wallbox-inspektion.de
www.ise.fraunhofer.de

Agenda

Targets Wallbox-Inspektion

How to test Charging Infrastructure?

Wallbox-Inspektion Test Guideline

Results

Conclusion & Outlook

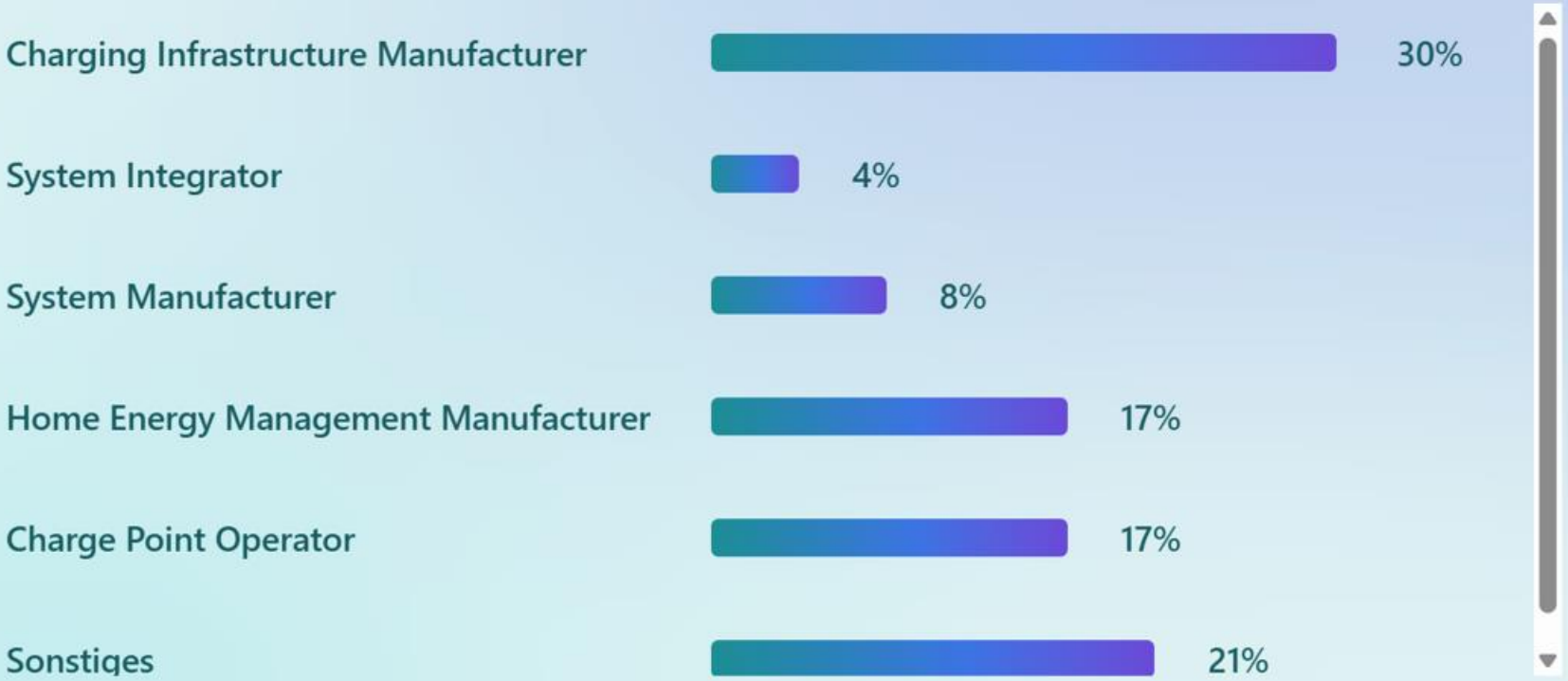
Scannen Sie den QR oder verwenden Sie den Link, um teilzunehmen

https://forms.office.com/e/AkxKkeDEKF

Link kopieren

20 übermittelte Antworten

Why do you work with Charging Infrastructure?



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20 übermittelte Antworten

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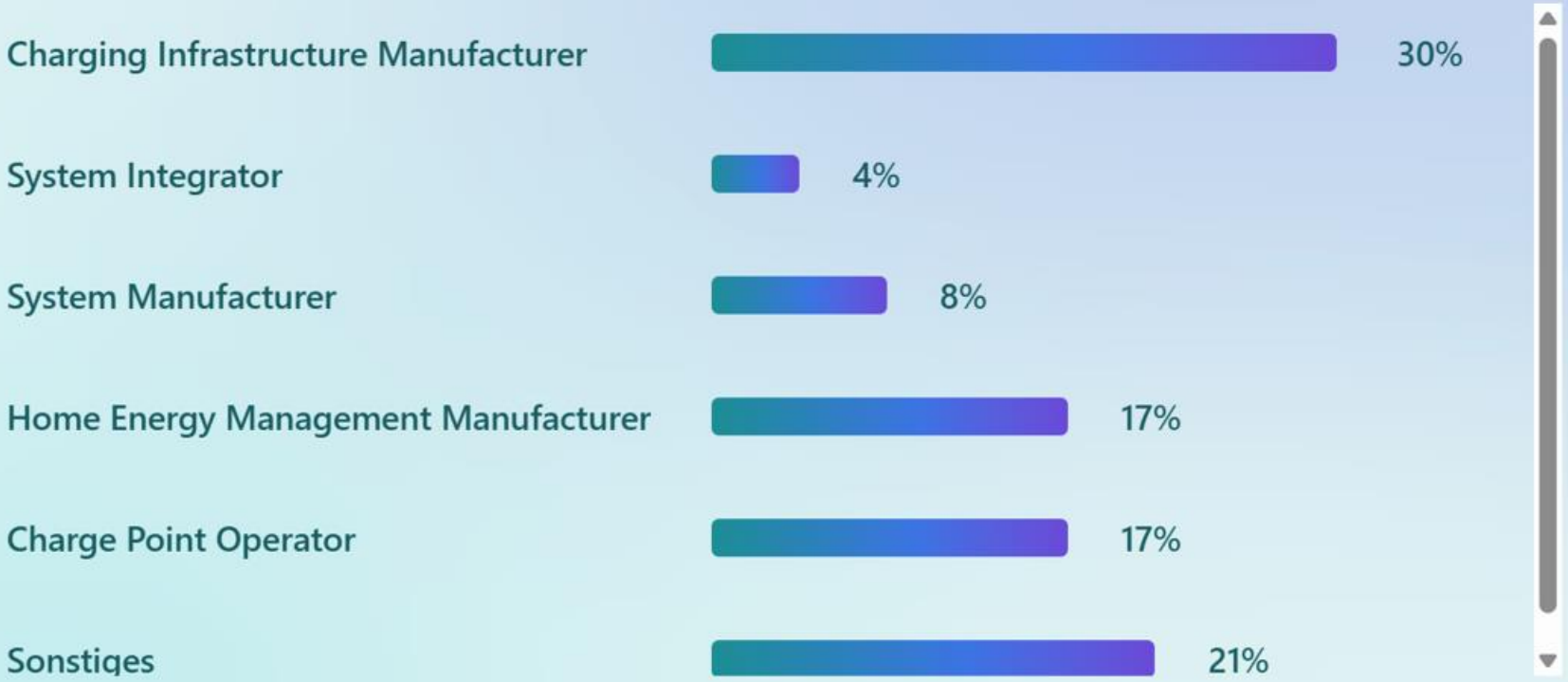
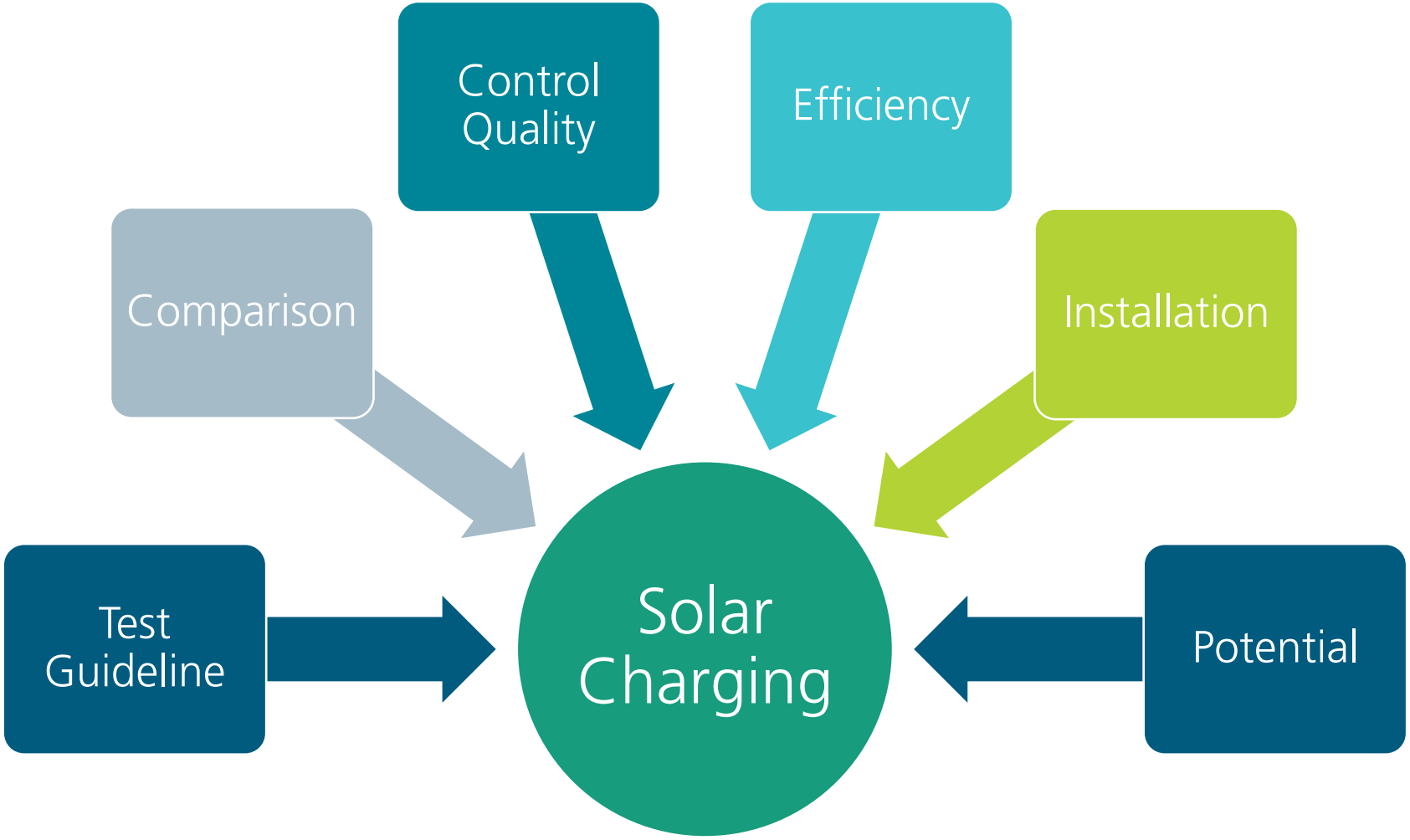


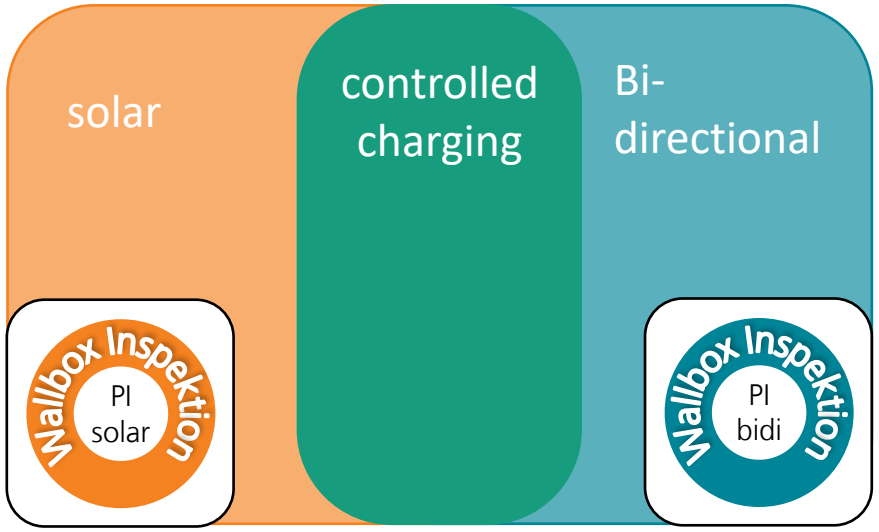
Wallbox-Inspektion

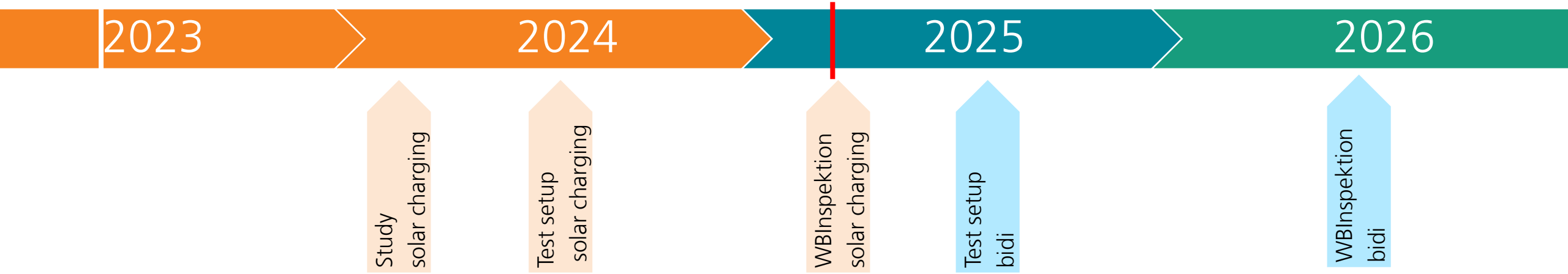
Motivation & Targets



Wallbox-Inspektion

Timeline





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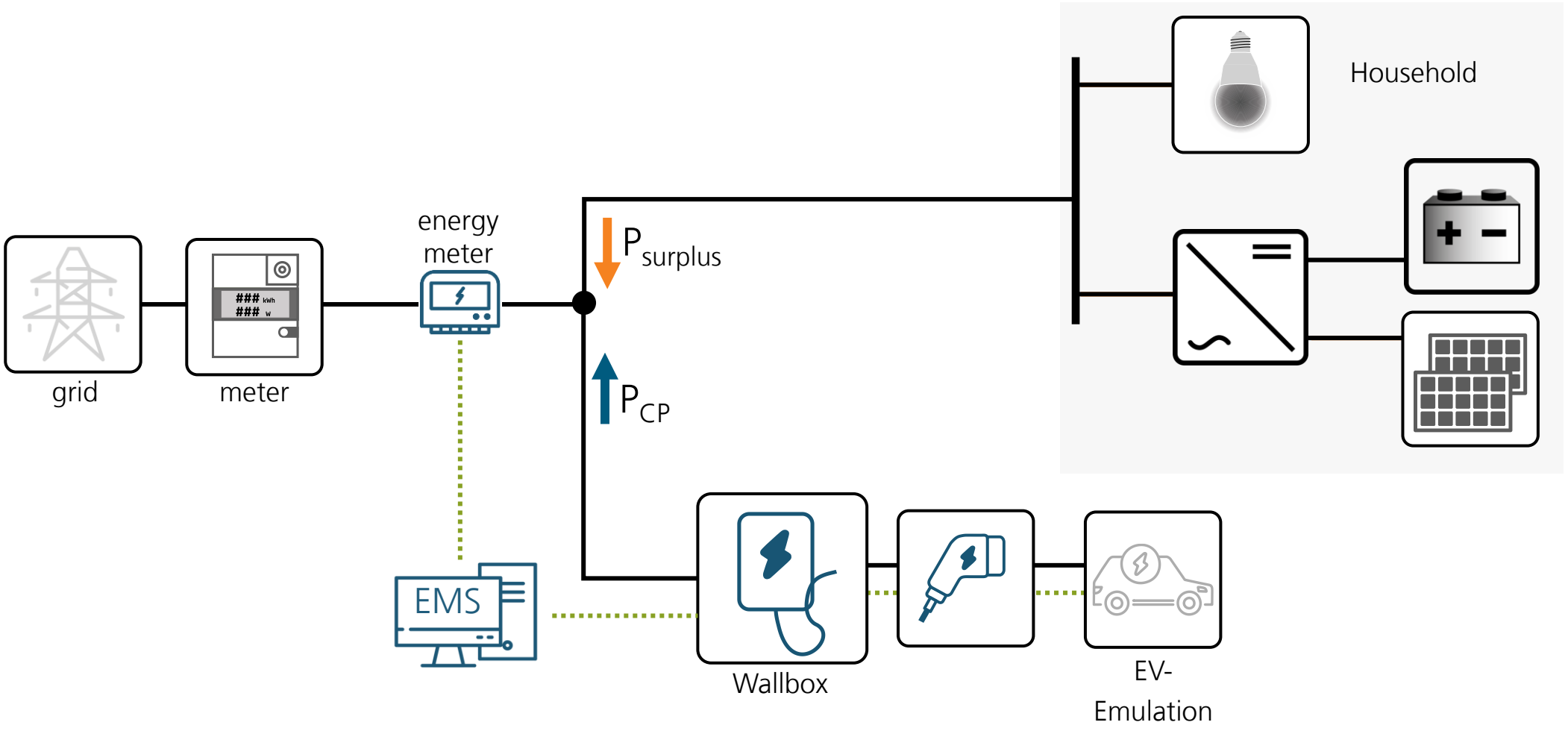
System under Test



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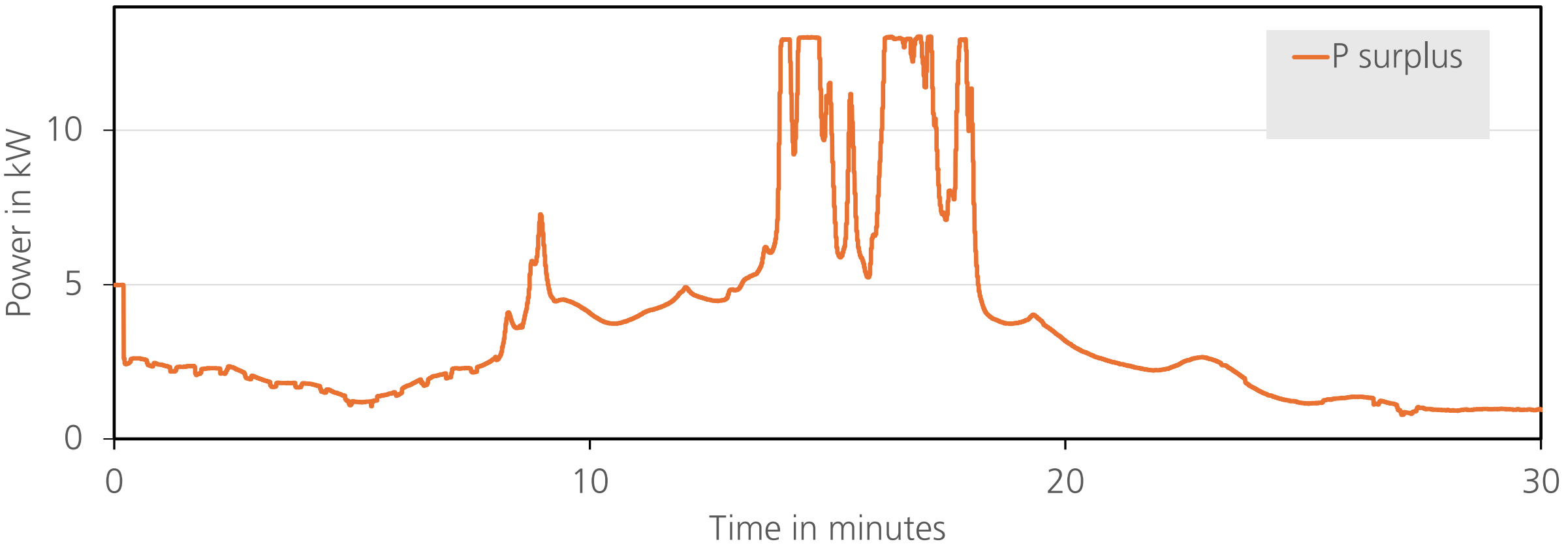
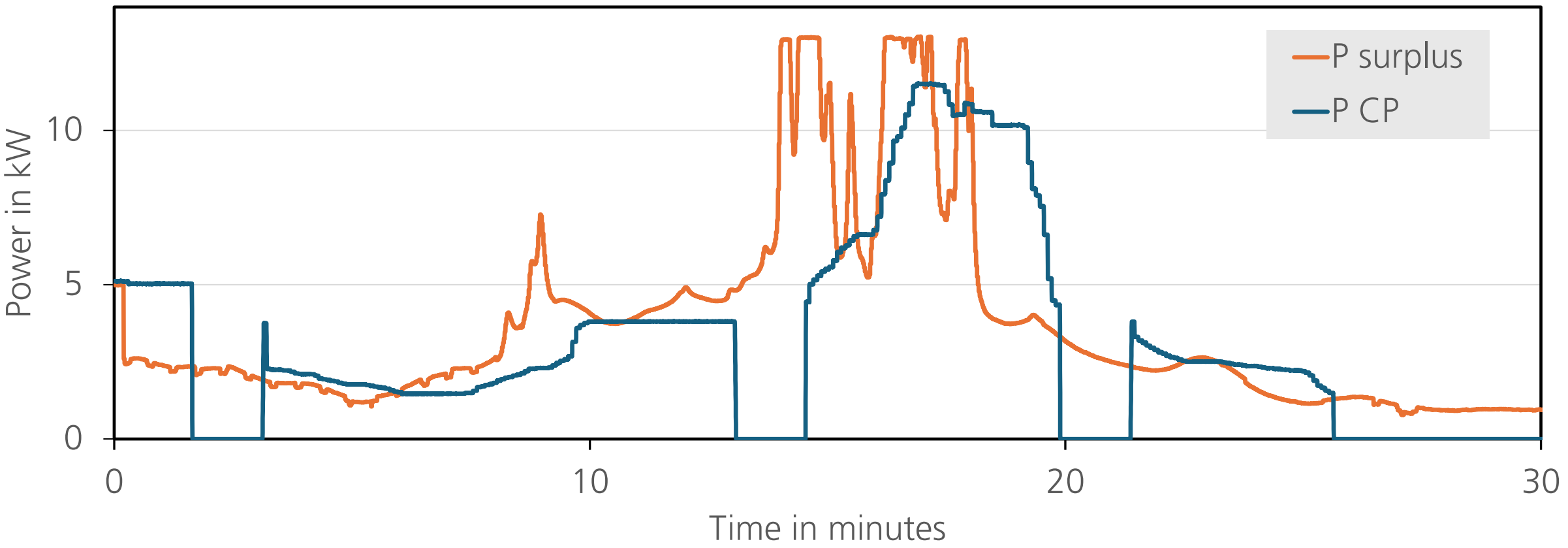
Surplus of PV-Generation



is consumed by the EV



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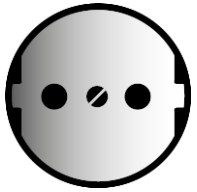
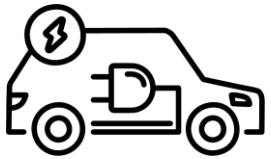
Link kopieren

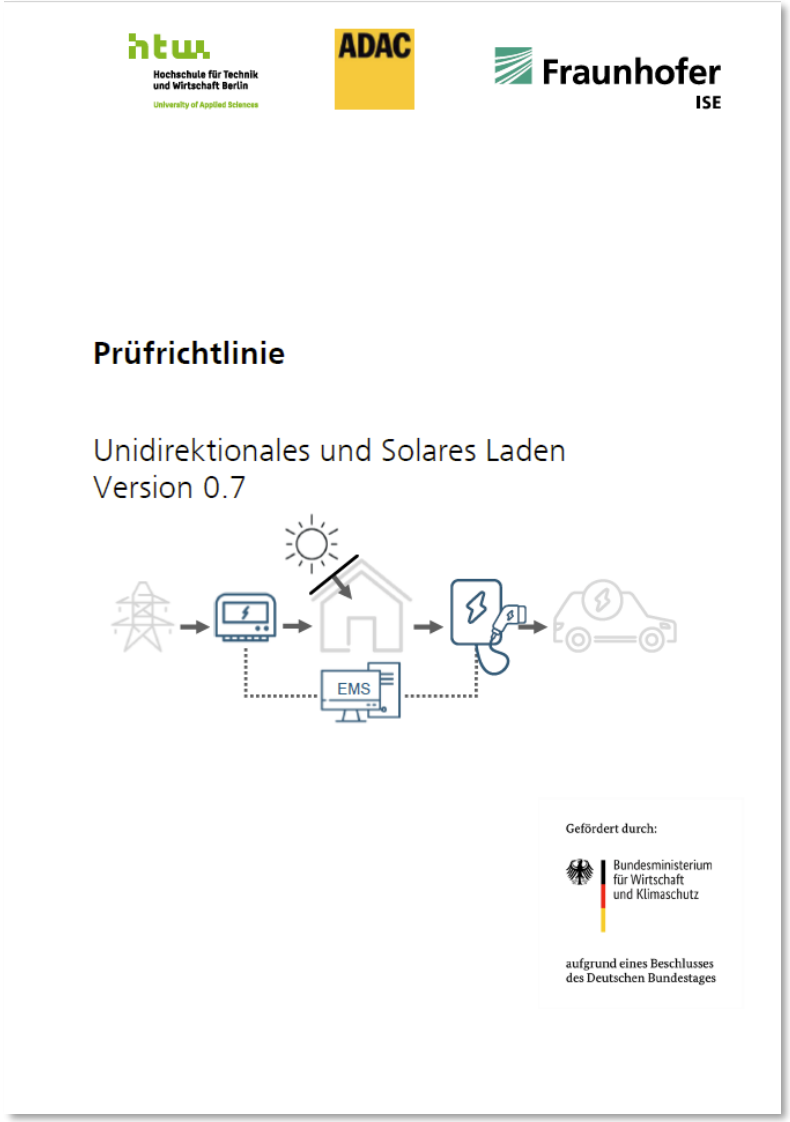
11 übermittelte Antworten

What is imprtant for testing Charging Infrastructure

Wordcloud | Alle Antworten

Targets
for Wallbox Testing

	Grid		Household	Electric vehicle	
	emulator	grid	emulator	real car	emulator
					
reproducible	√	O	√	√	√
automatized	√	√	√	x	√



Prüfrichtlinie
Unidirektionales und Solares Laden

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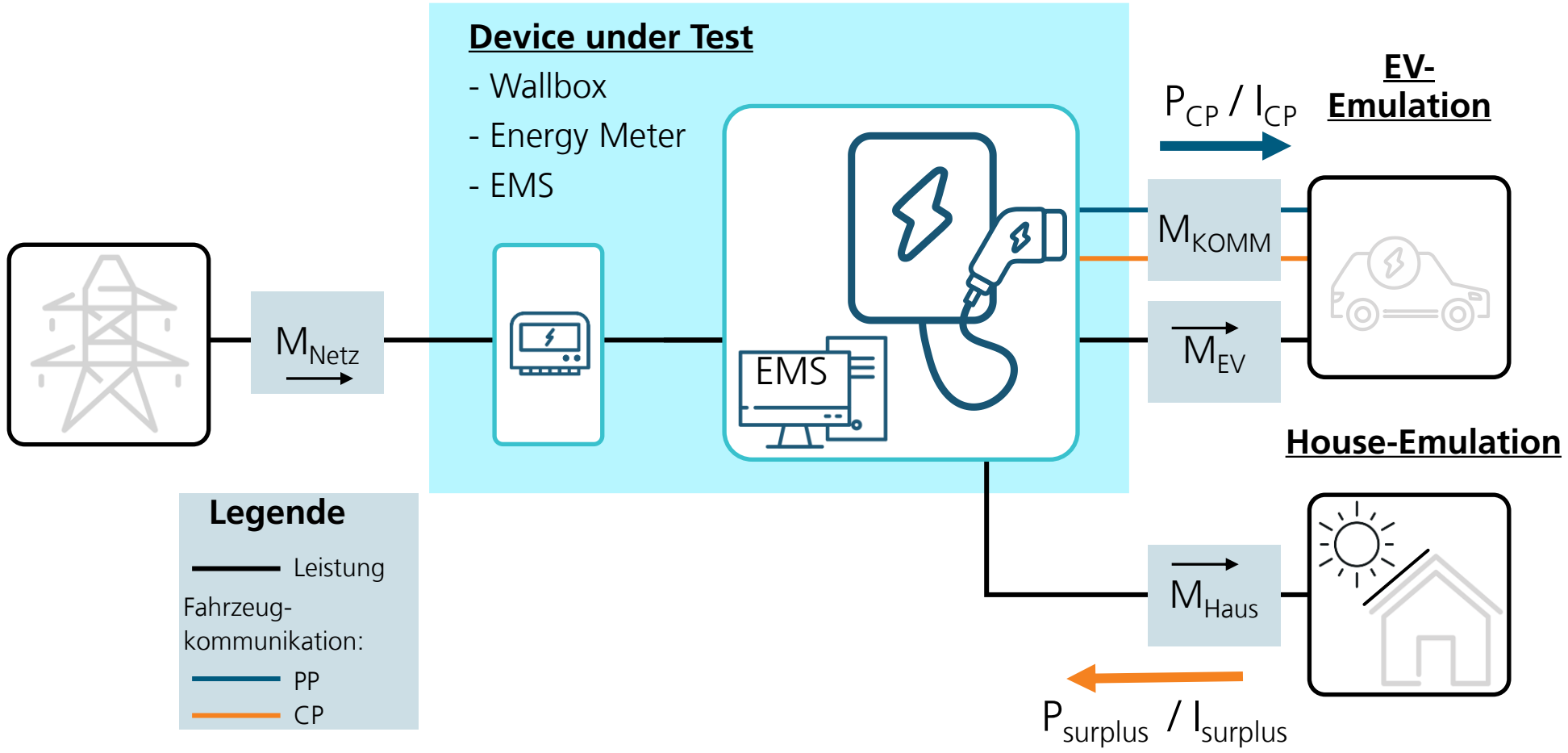
Measurements

Definitions of Currents around EV



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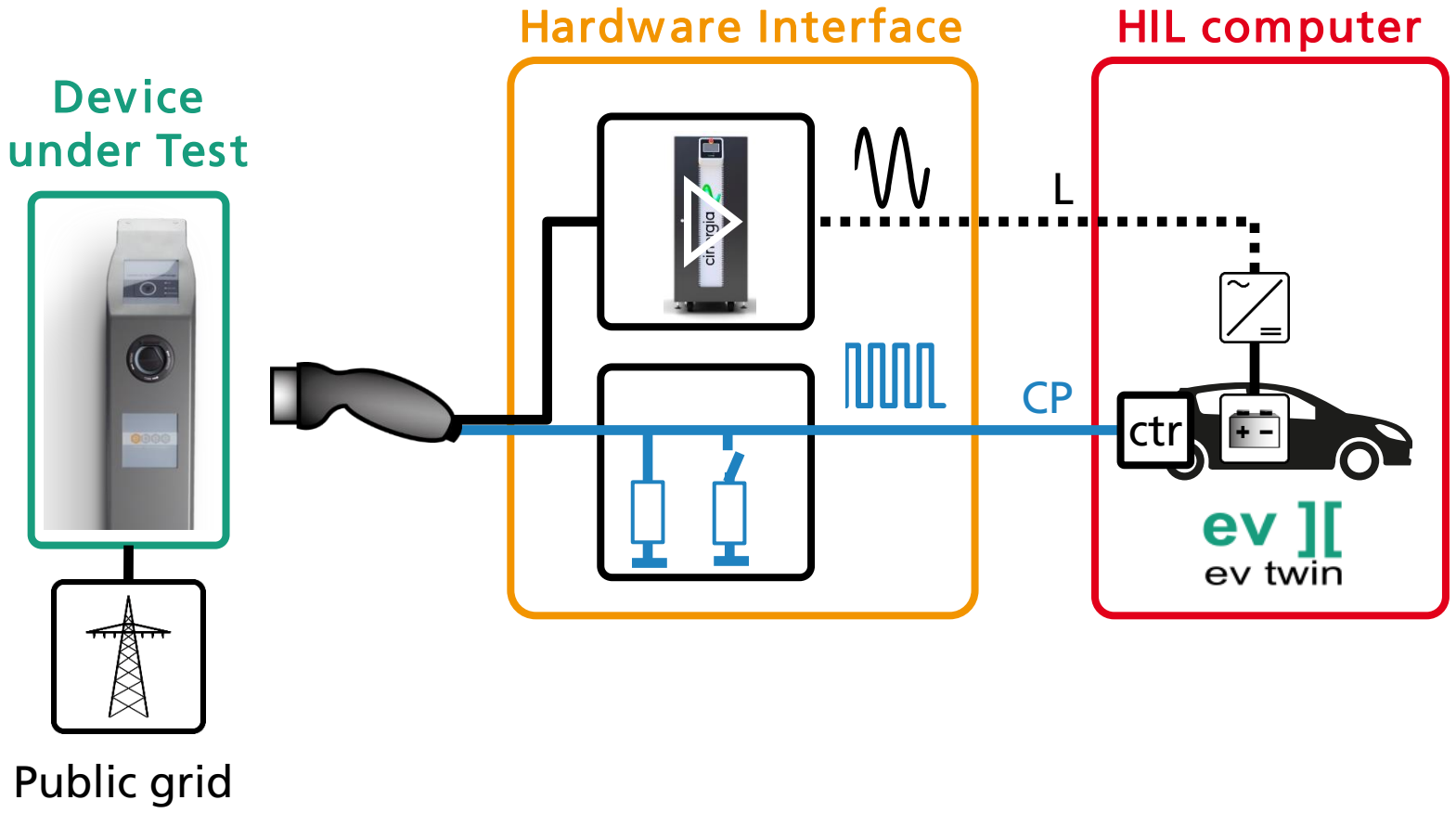
EV-Emulation – Power HIL

Digital Twin Electric Vehicle – AC Charging



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Digital Twin EV Charging

ev twin

Emulation of EV charging behavior

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Available typhoon Marketplace

IEC 61851-1

ISO 15118-2

ISO15118-20 bidirectional charging

DC und AC

Further EV models

??? Conformity Tests IEC 61851-23

DC electric vehicle charging station

2023 — 2024 — 2025

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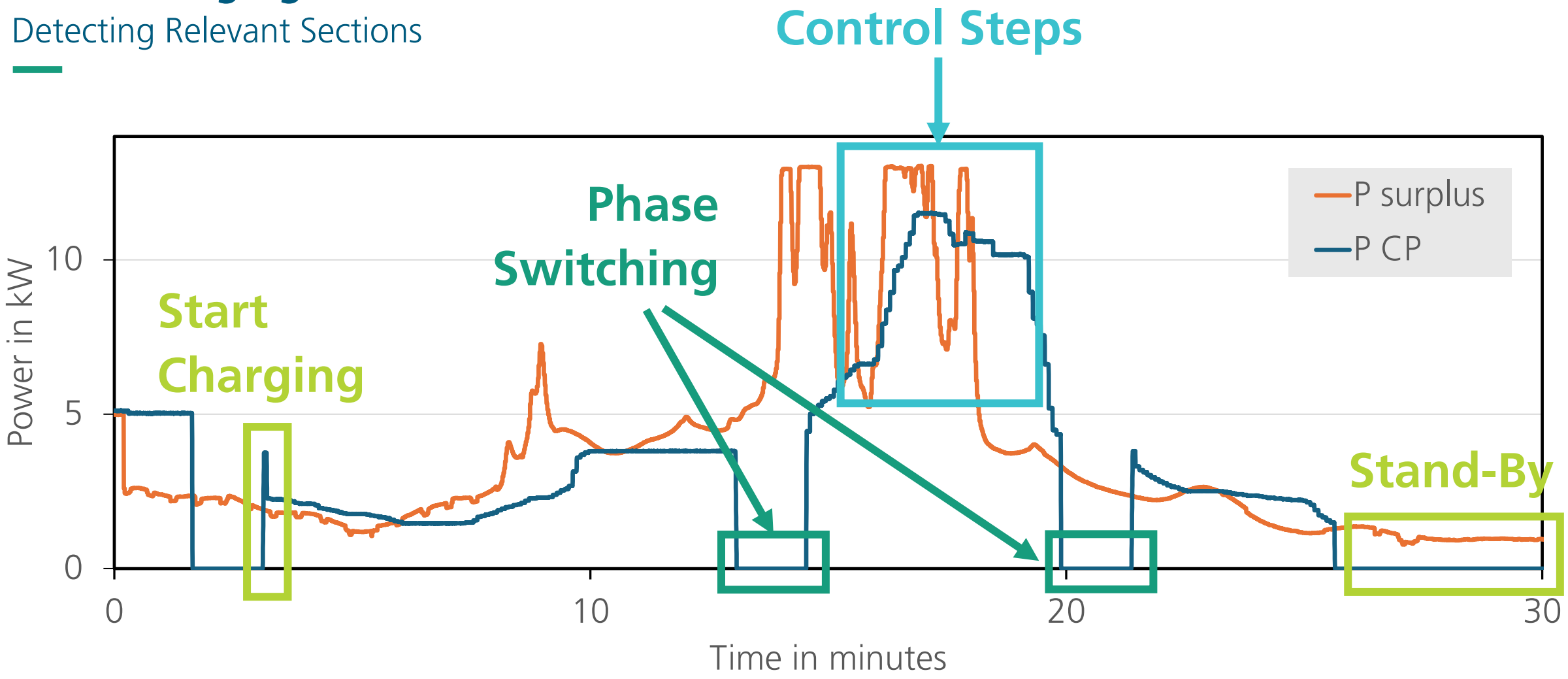
Solar Charging Test

Detecting Relevant Sections



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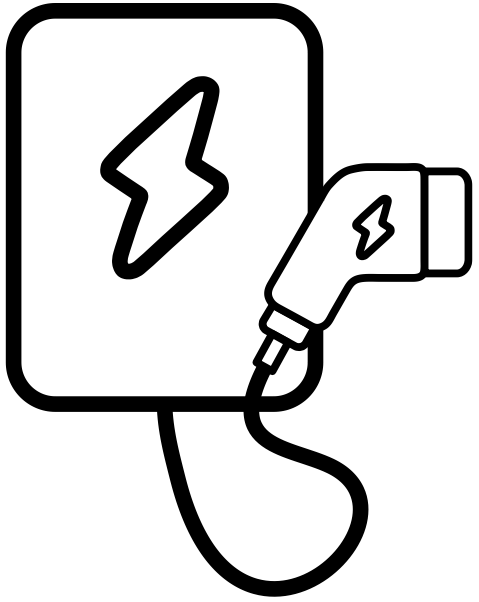


Stand-By

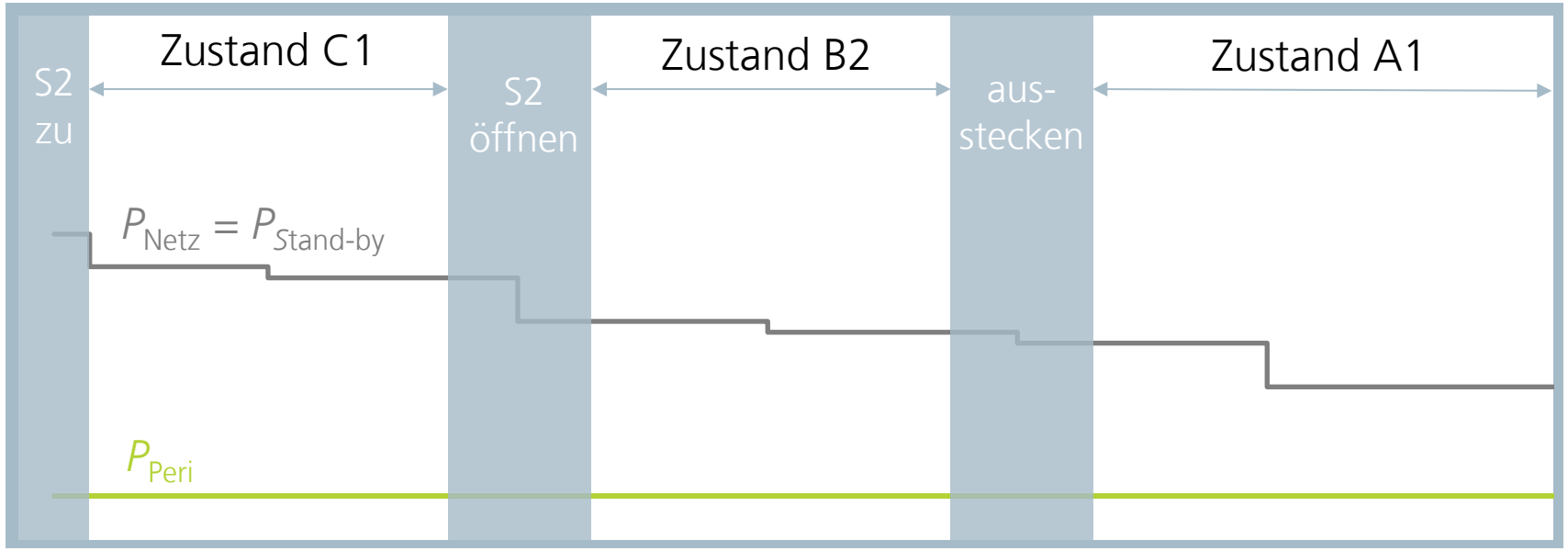
Testdefinition and Results

Stand-By
and periphery

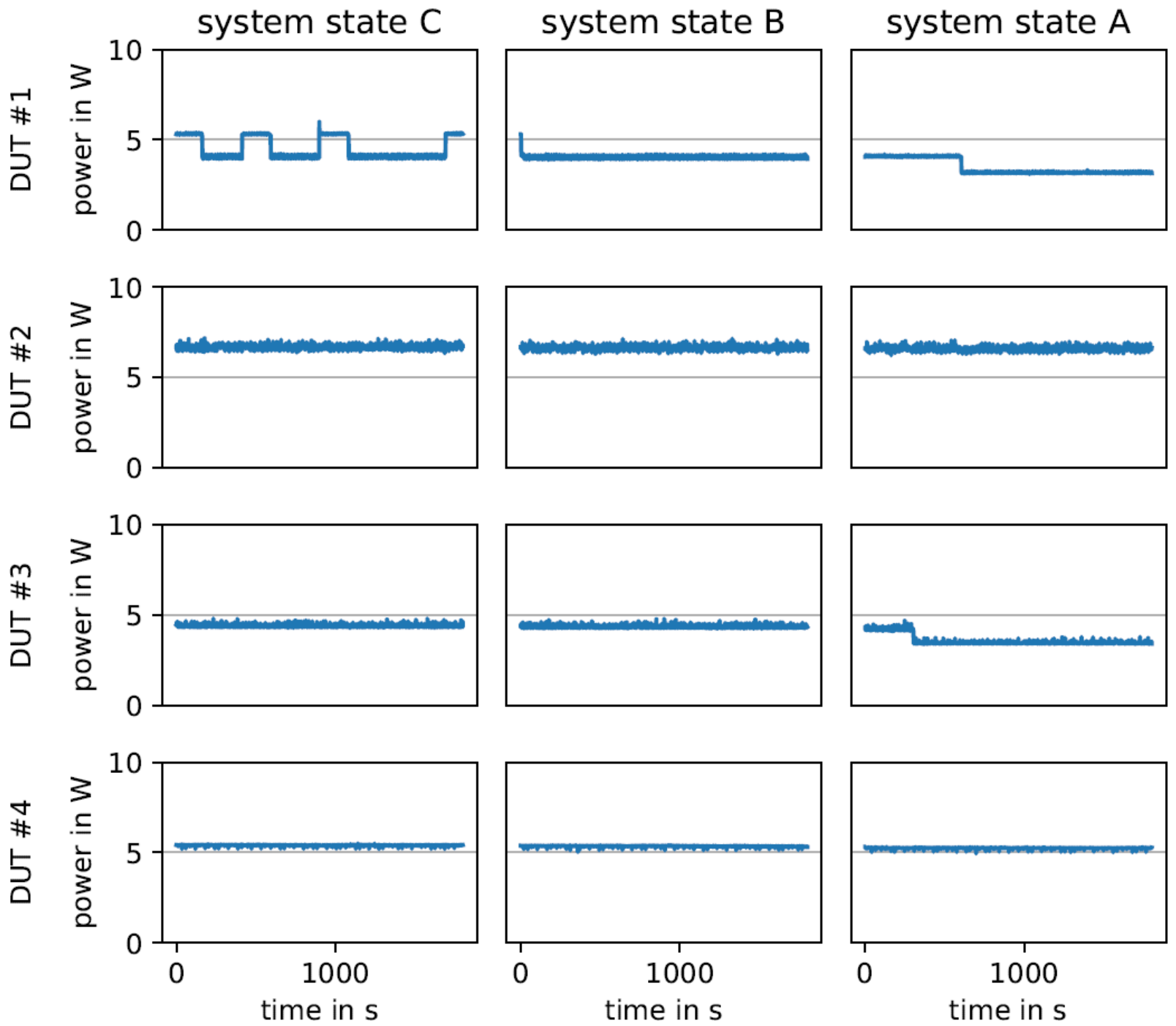
Follow the system states: C, B, A

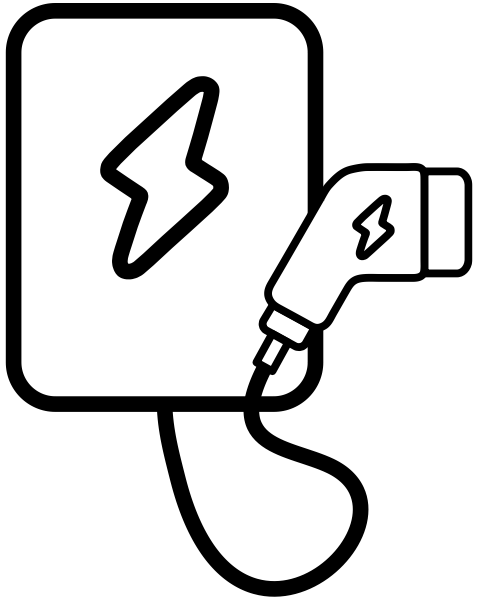
Check if deep Stand-By

Additional measurement of periphery consumers



Stand-by





Control Steps

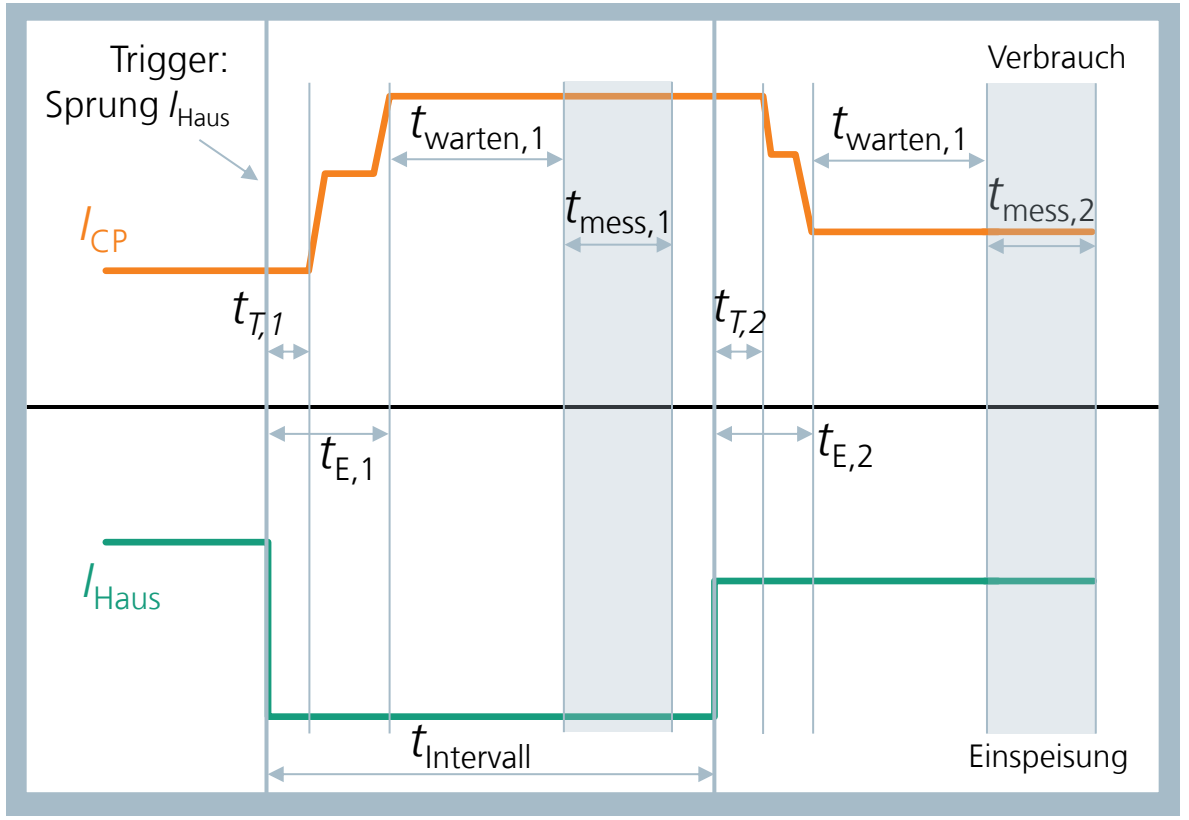
Testdefinition and Results

Control Steps

t_T dead time

t_S settling time

ΔI_{CP} deviation of current



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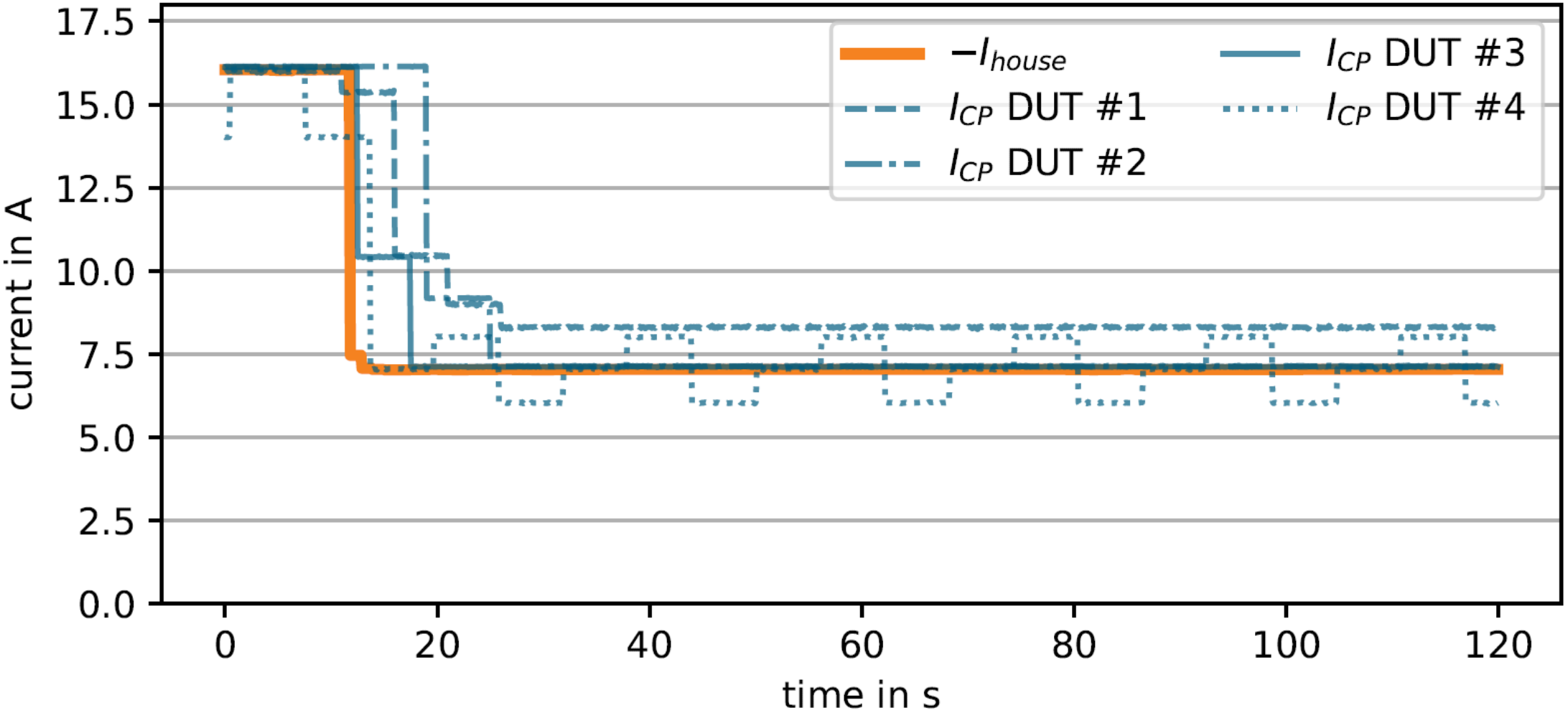
Step 7A to 16A

Comparison



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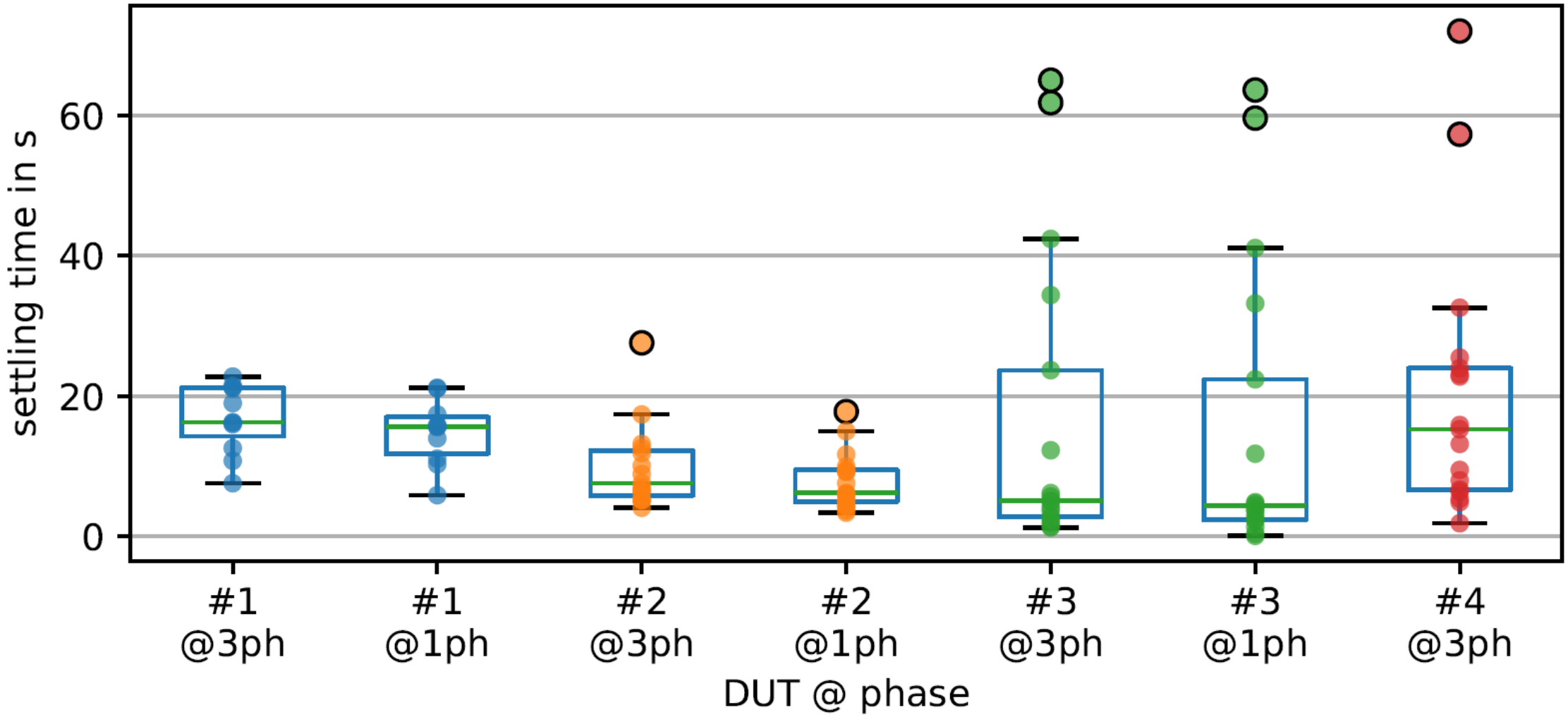
Control Steps

Settling Time



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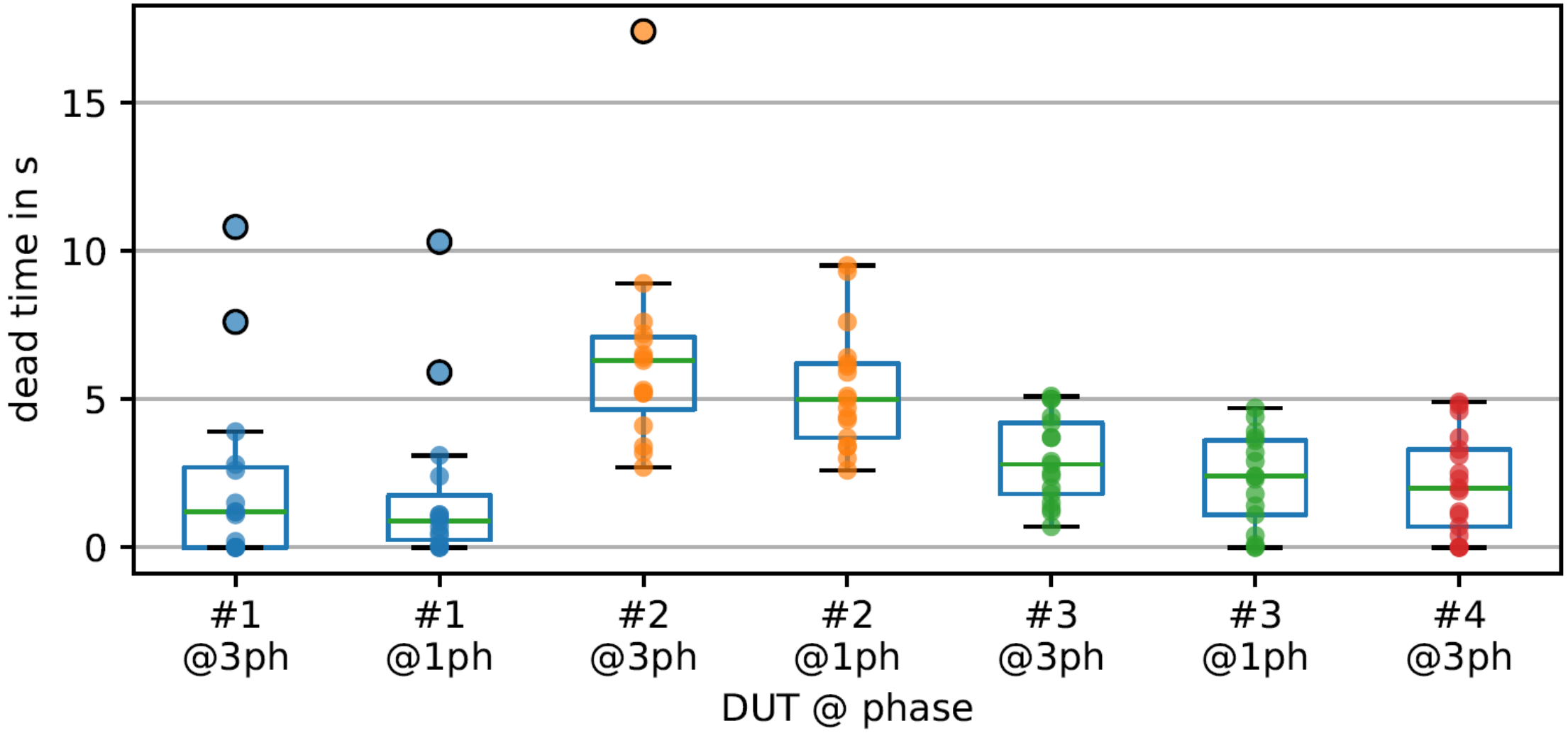
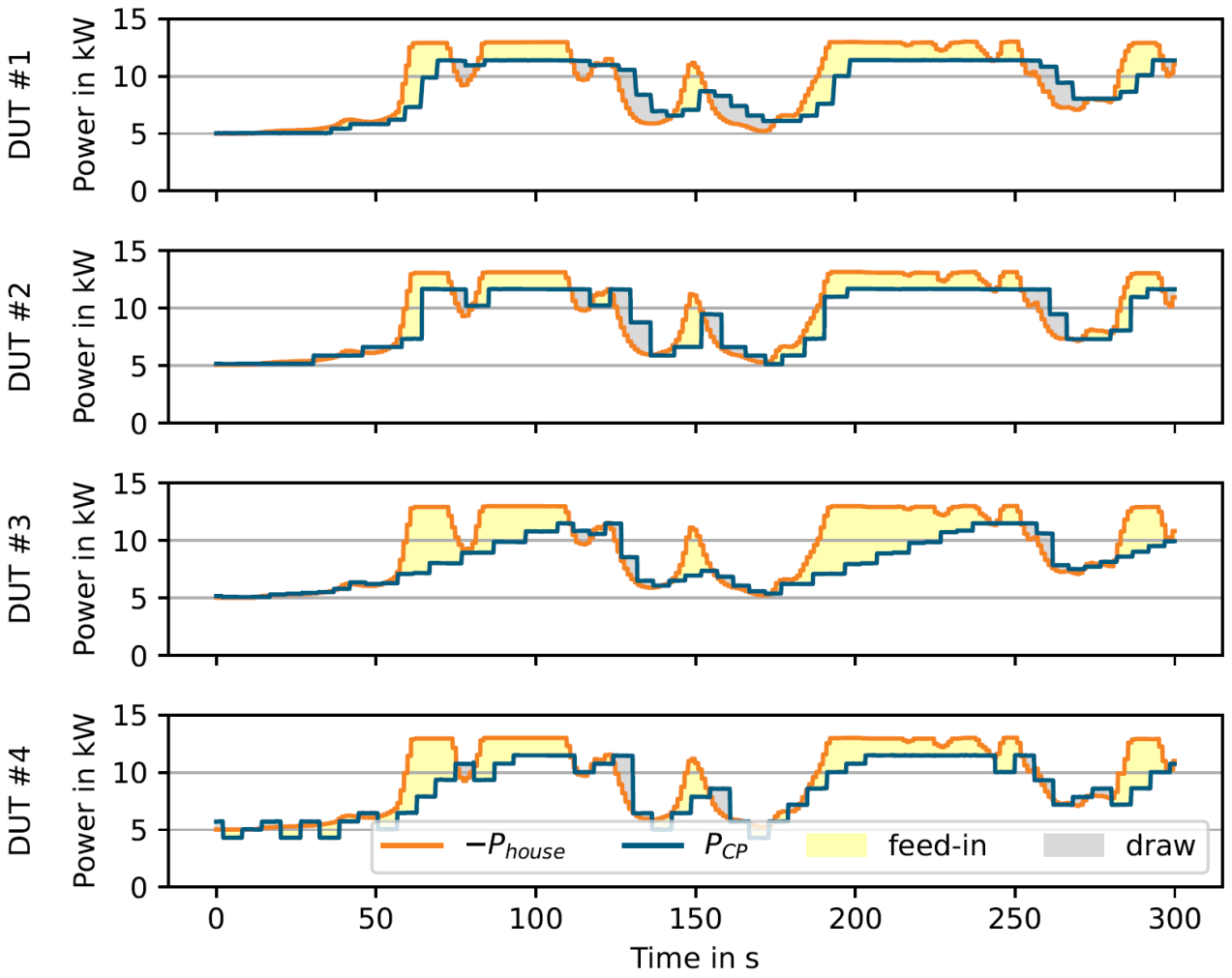
Control Steps

Dead Time



Application Test



E_{draw} [Wh]	$E_{feed\text{-}in}$ [Wh]	E_{EV} [Wh]	E_{house} [Wh]
50.1	94.7	740.5	789.0
49.8	81.1	752.0	798.1
17.6	135.0	673.3	787.0
37.8	116.1	704.2	790.6

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Conclusion and Outlook

Conclusion

Stand-By & Control Steps are significant

Both can be heavily impacted by user configuration (delays, LEDs off)

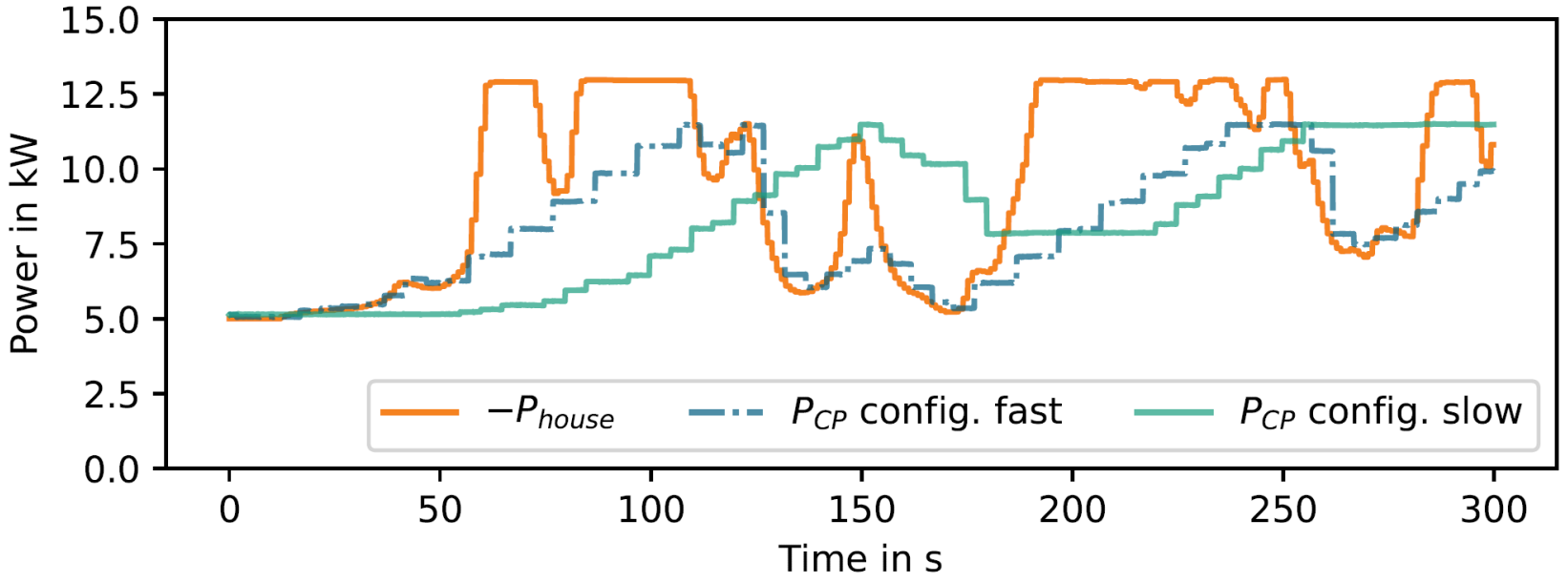
Control steps:

symmetric & asymmetric strategy

tradeoff SC vs. SS

depends on electricity prices

depends on dimensioning of PV



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3 übermittelte Antworten

What are your suggestions / wishes?

Wordcloud | Alle Antworten

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