



Luis Martínez (ESR 02)

Diversified Power Generators for Smart Buildings with Advanced Power Sharing Capabilities



The EU Framework Programme
for Research and Innovation

HORIZON 2020



INNOVATIVE
TRAINING
NETWORKS

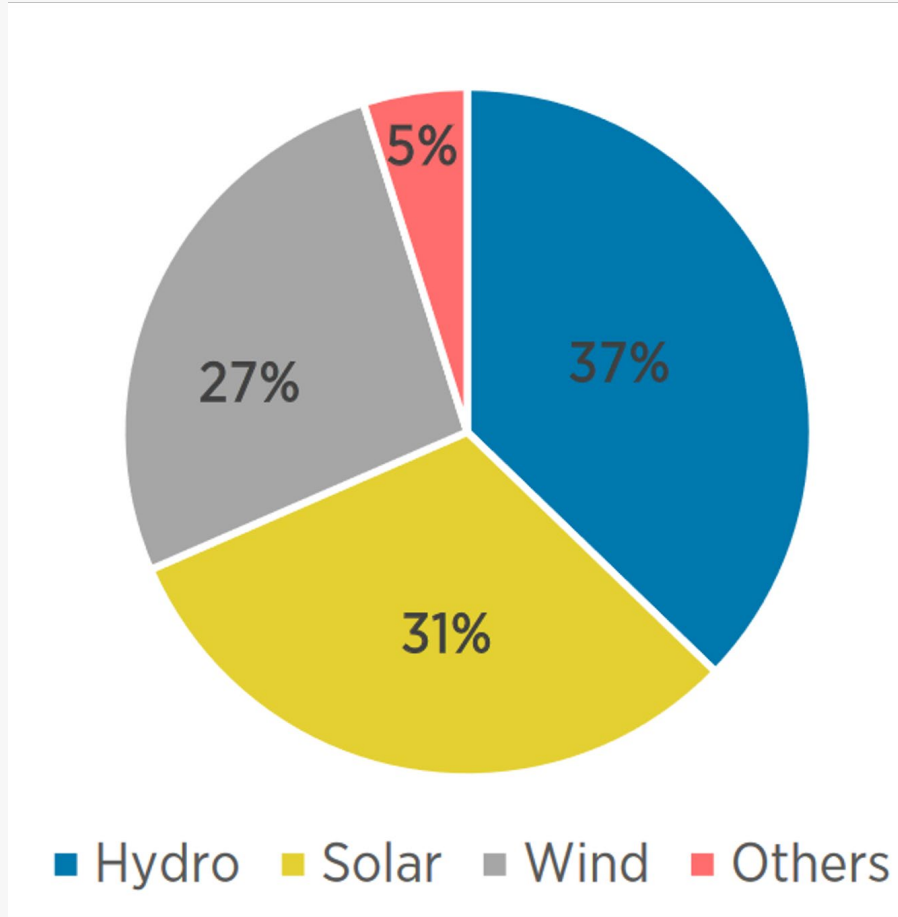


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Renewable generation capacity by energy source

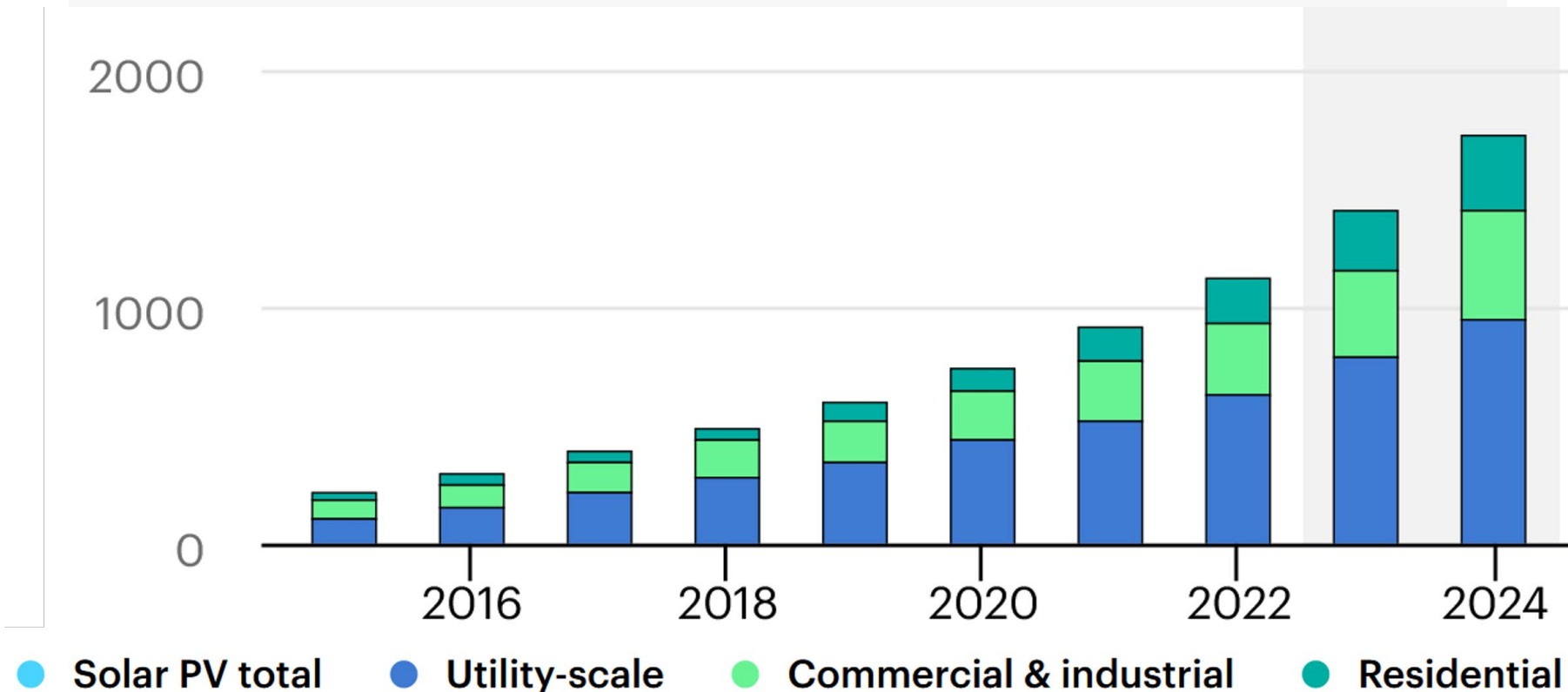


Generated with Gemini 3.

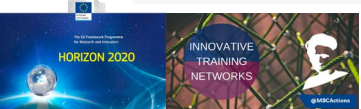
Source: ©IRENA

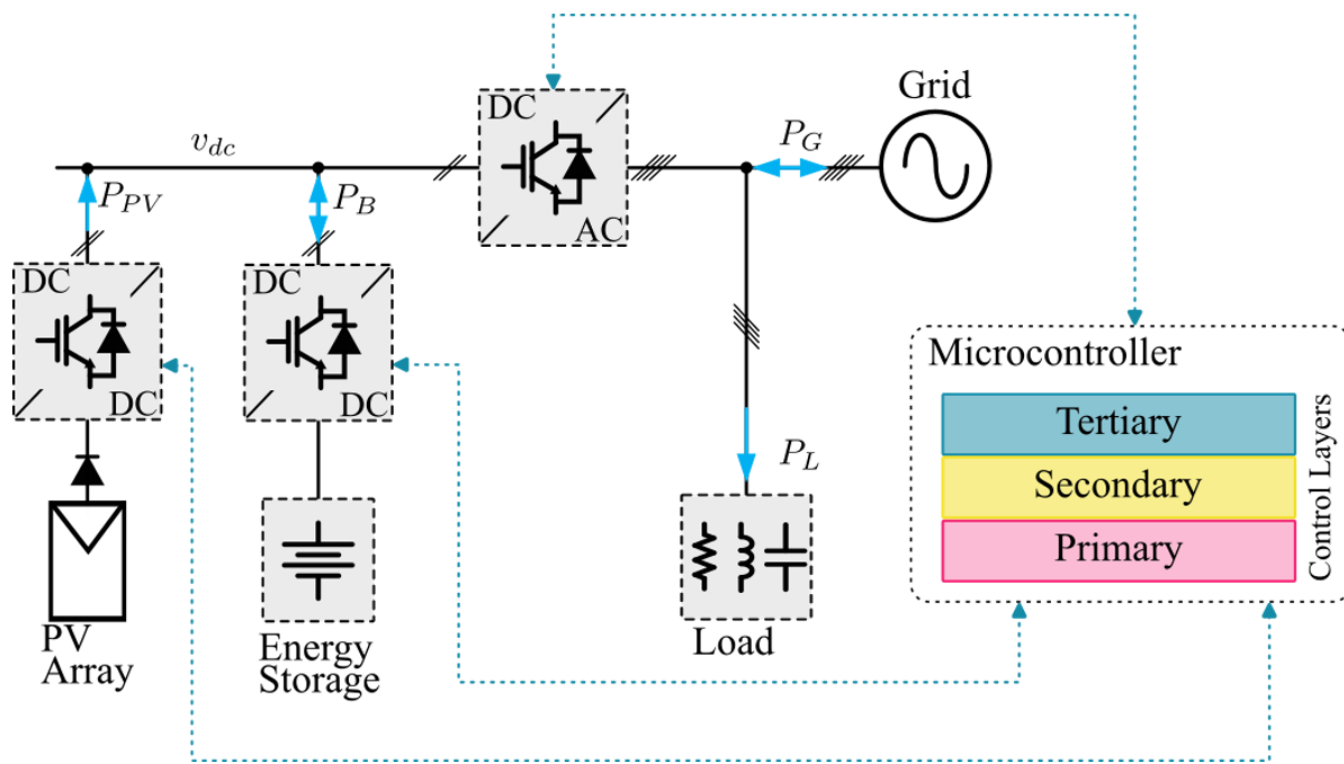
<https://www.irena.org/Publications/2023/Mar/Renewable-capacity-statistics-2023>

Solar PV capacity (GW)



Source: ©IRENA <https://www.irena.org/Publications/2023/Mar/Renewable-capacity-statistics-2023>





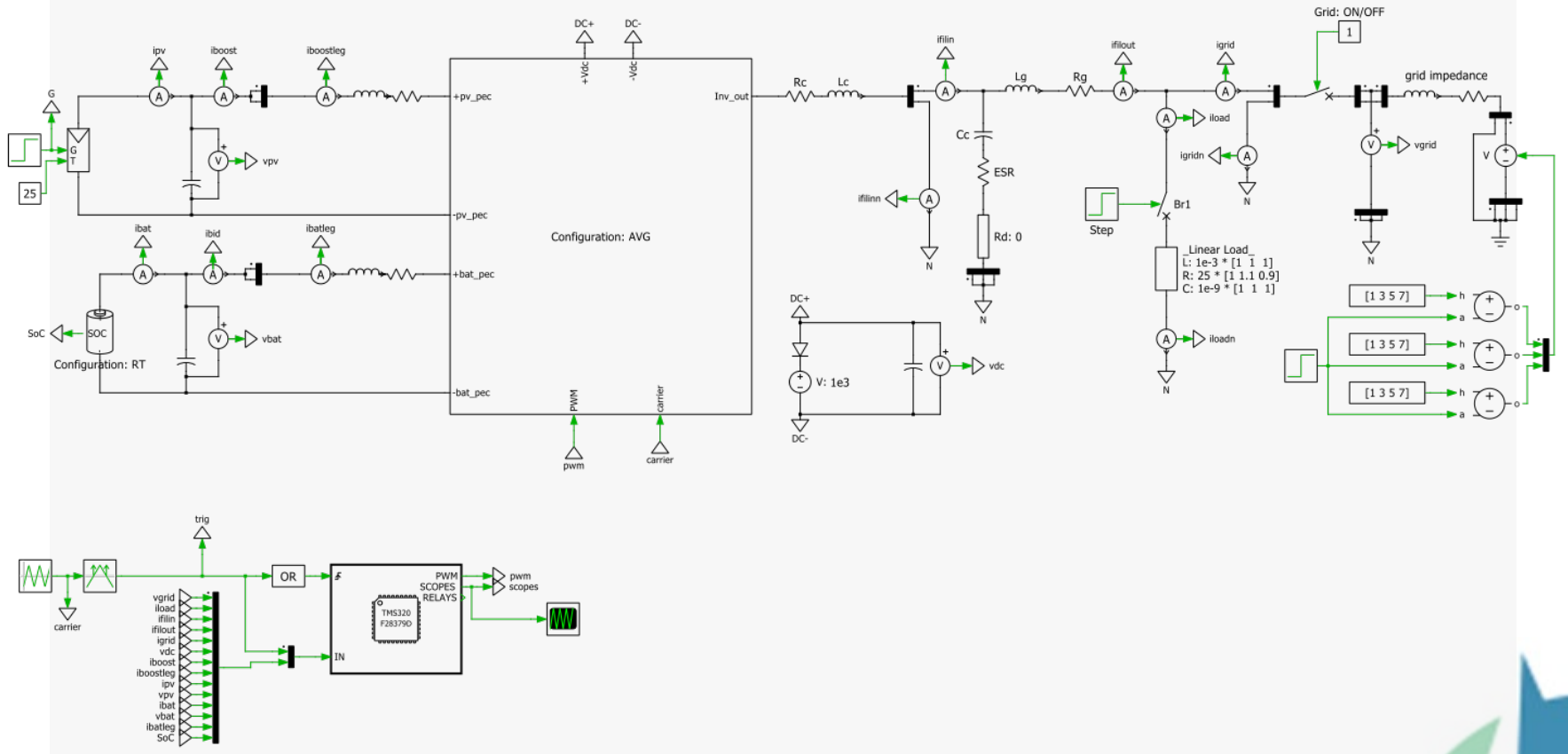
PV as renewable source supported by Li-ion battery

Focus on power and energy management

Validation of control layers and system coordination

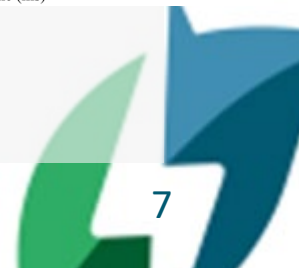
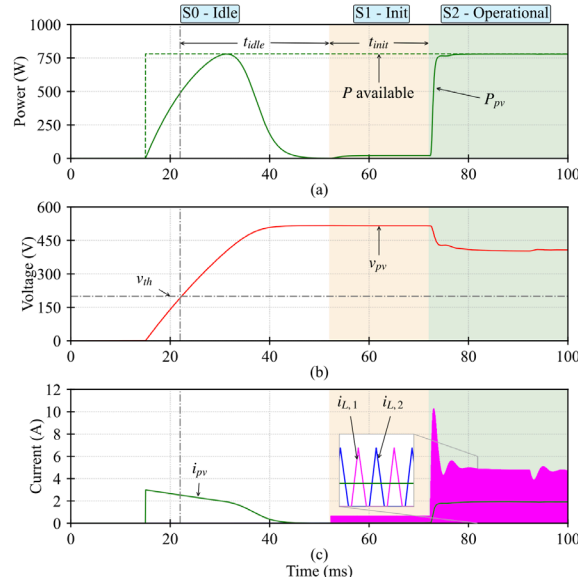
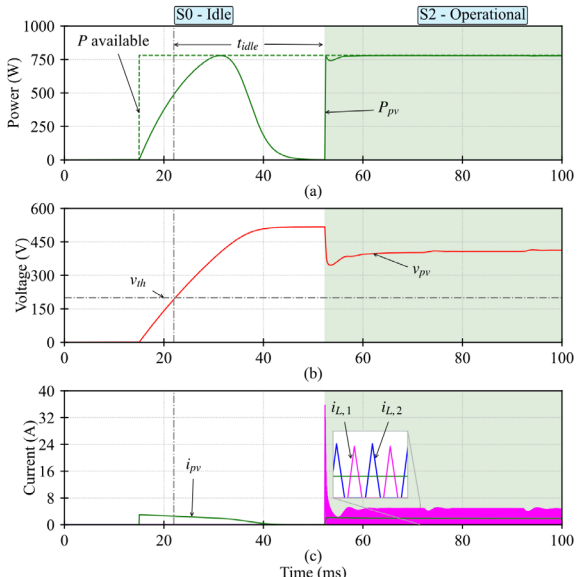
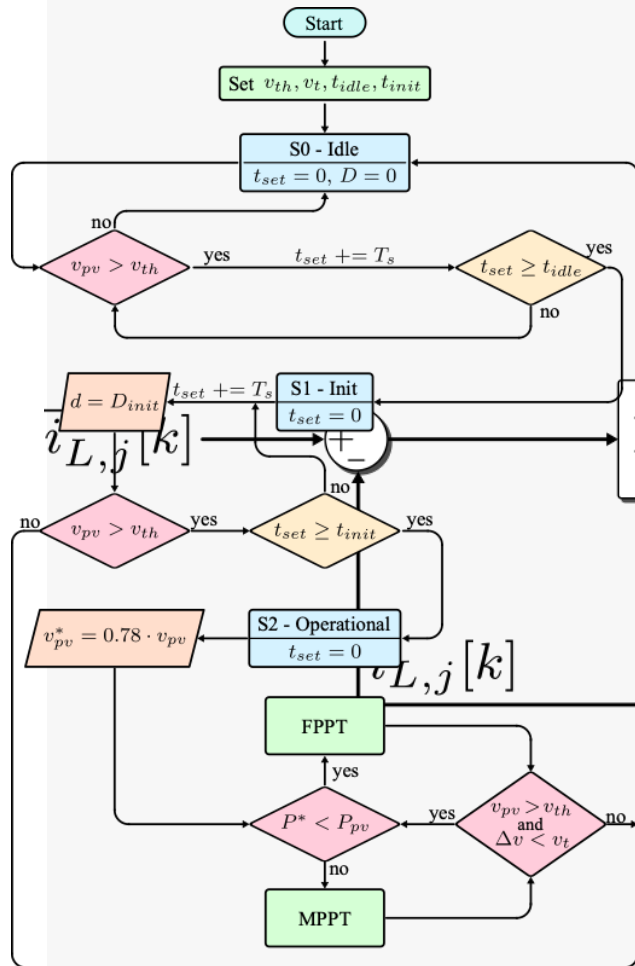
1. Averaged simulation model

Switching and averaged model comparison [C1]

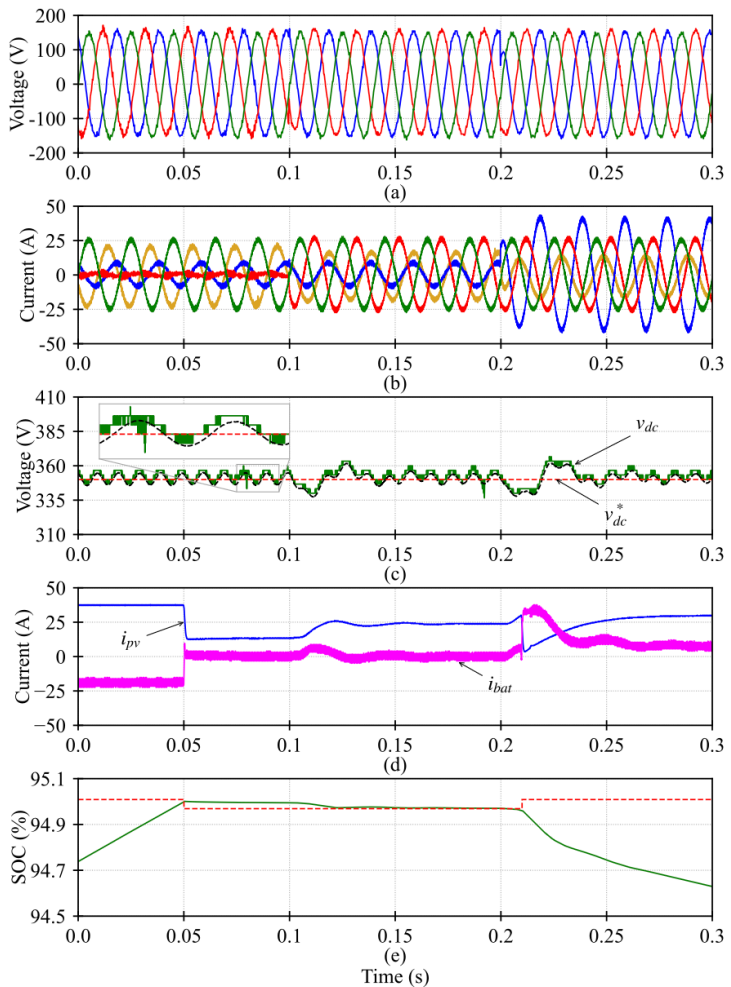


Improvement of current control (CCM/DCM) [C2]

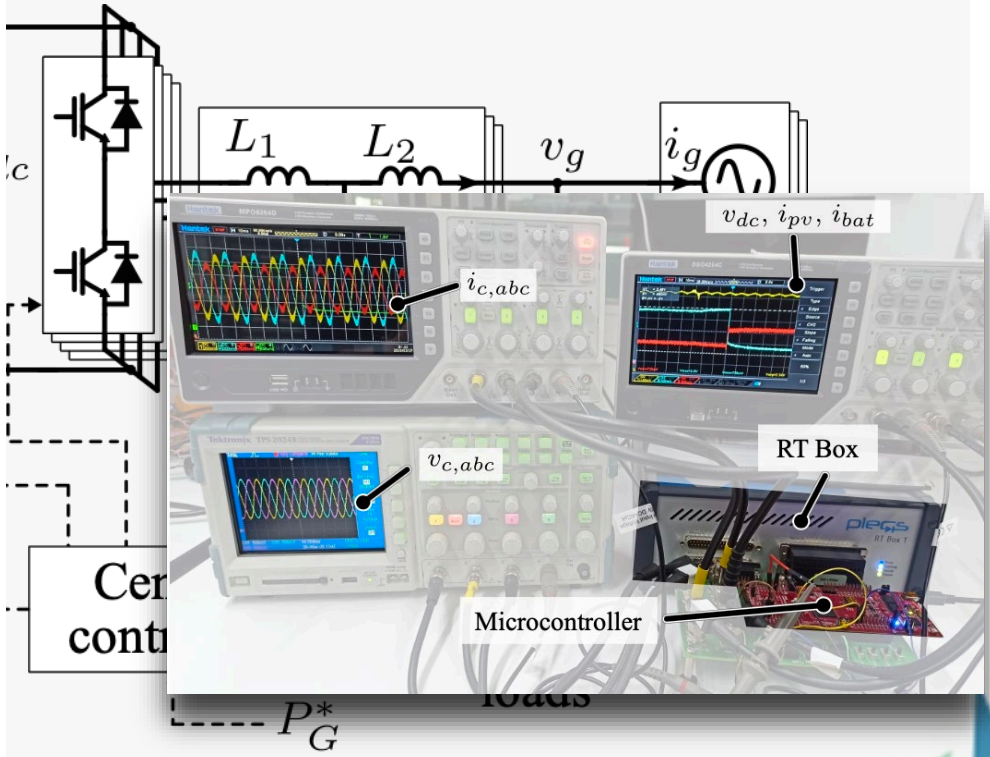
Soft-start method for PV system [C3]



Grid Active Power Control [C4]

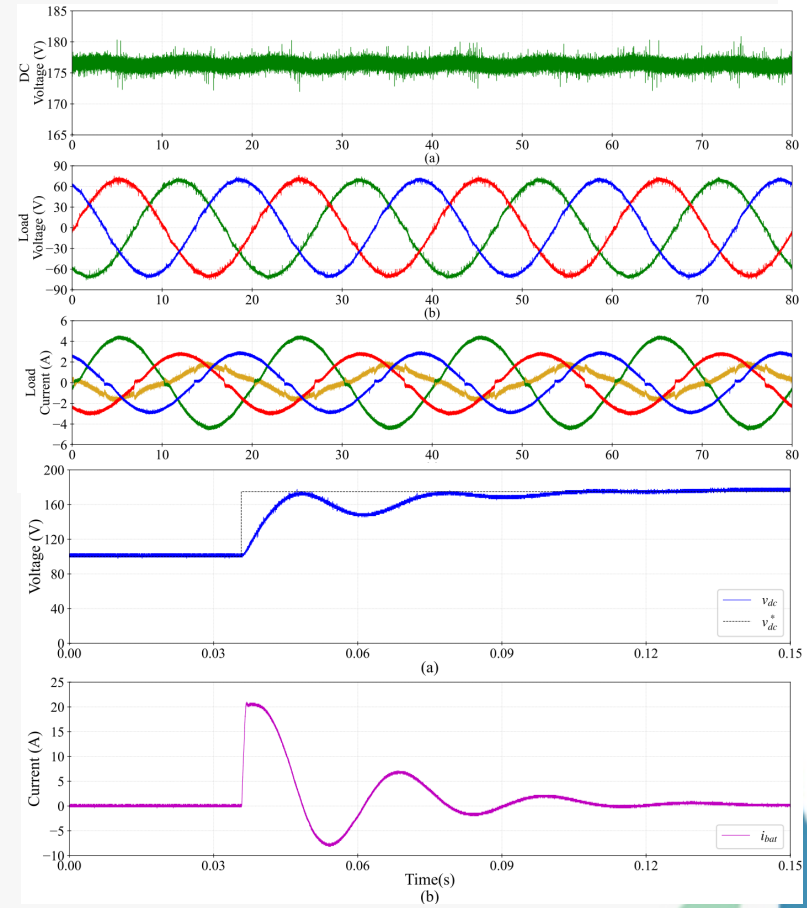
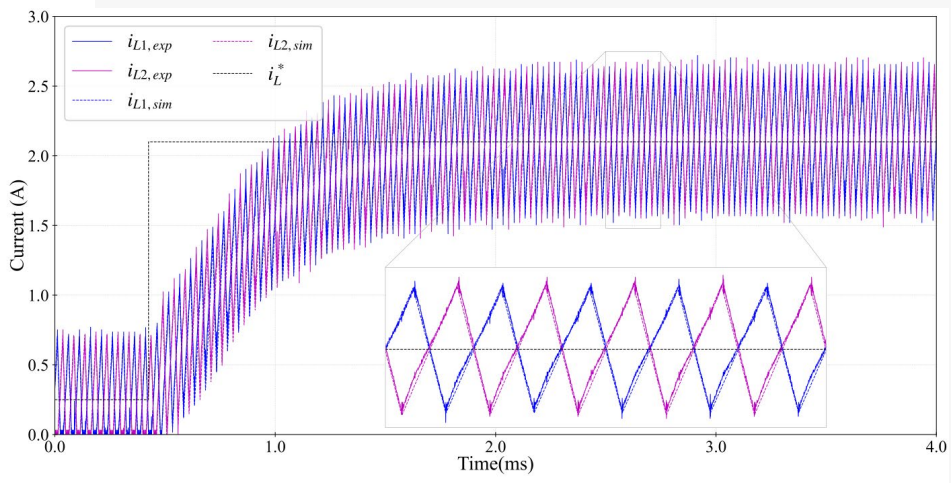
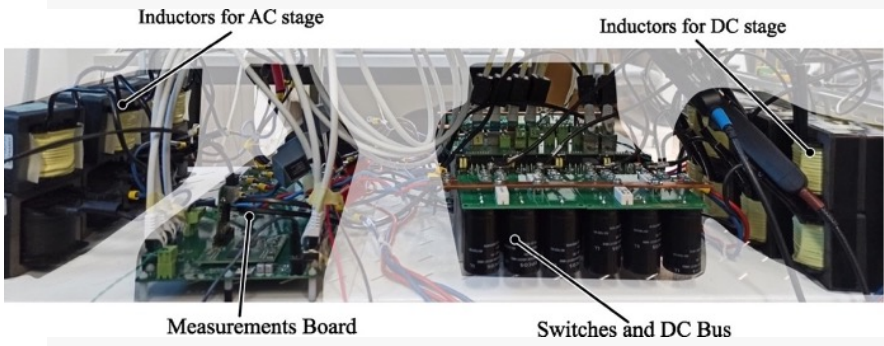


Power balance in Standalone Mode [J2]



Individual tests of converters

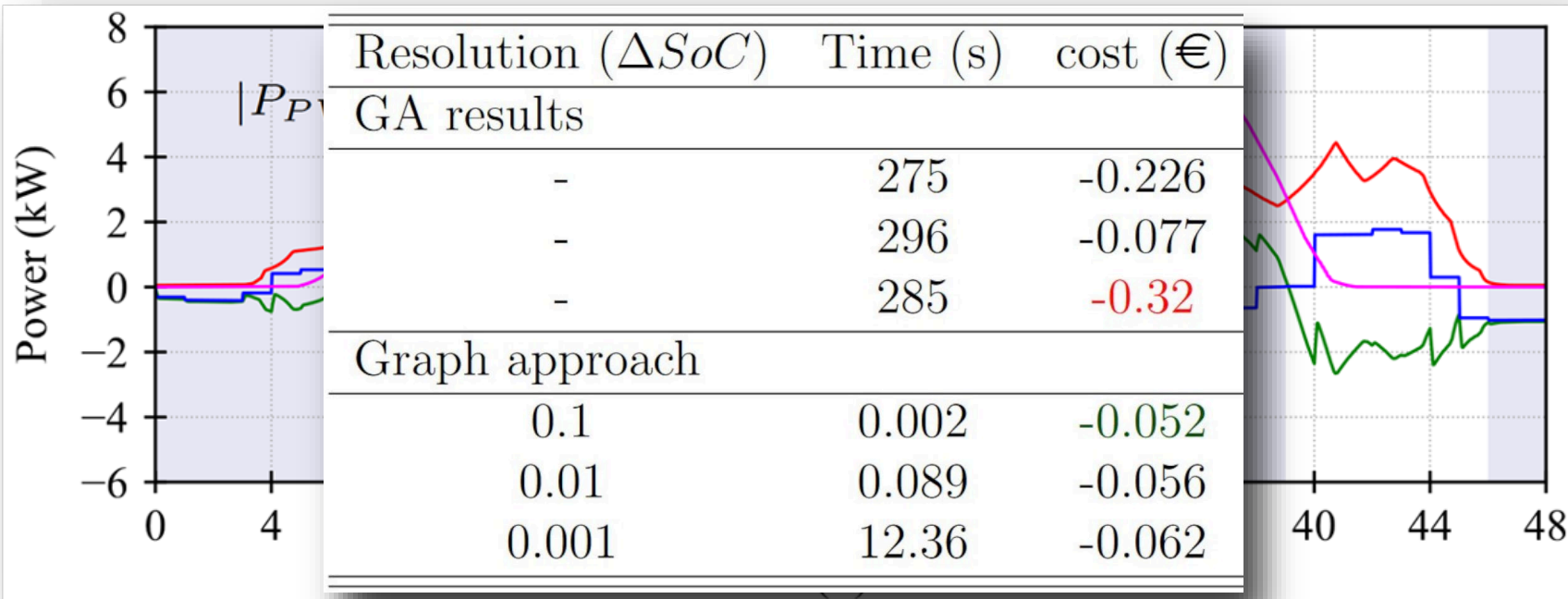
Experimental validation of the system



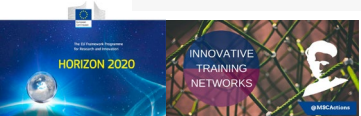
5. Energy Management Strategies

Simulation of GA based EMS [J1]

Comparison of GA and Shortest-path based optimization



Live Tour



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Research and Training Network for
Smart and Green Energy Systems and Business Models

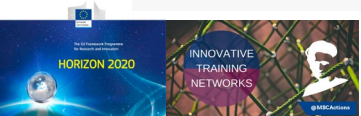
Warsaw University of Technology



University of Extremadura



Aalborg University



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Thank you!