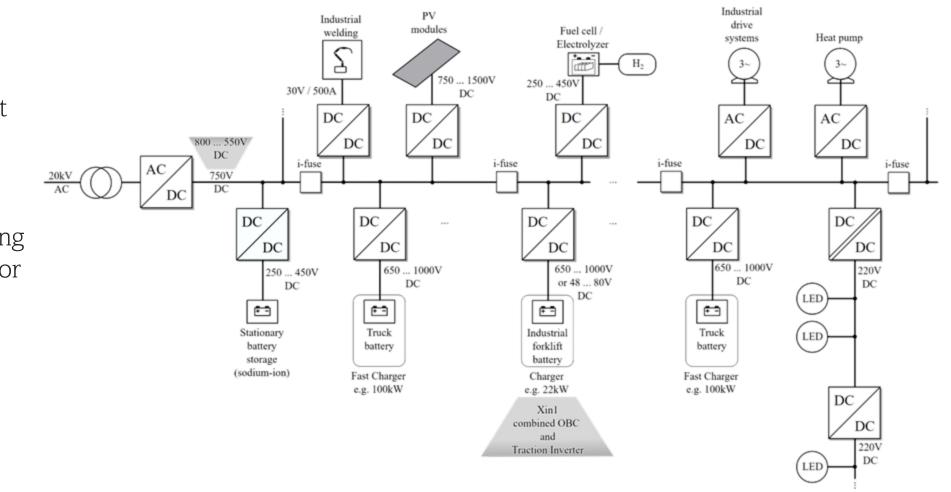


Powering Tomorrow: Revolutionizing Energy with a DC Microgrid

POWERING TOMORROW: REVOLUTIONIZING ENERGY WITH A DC MICROGRID



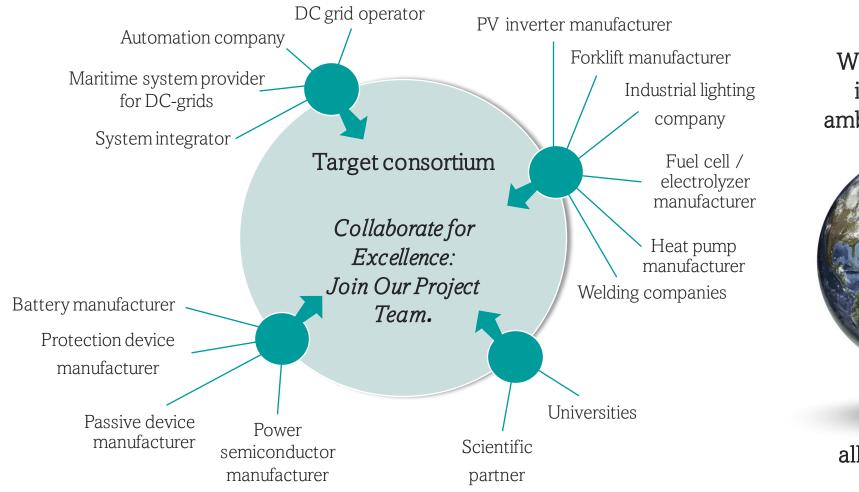
Scope: The project focuses on efficient energy conversion, designing versatile converters, optimizing system integration for demanding applications, and studying subsystem interactions.



Industrial lighting

POWERING TOMORROW: REVOLUTIONIZING ENERGY WITH A DC MICROGRID







all over the world.



Name	Use Cases	AC/DC conversion	Non-isolated DC/DC converters	Isolated DC/DC converters	DC/AC conversion
Description	Definition of use cases and demonstrators	Highly efficient bidirectional energy conversion for a varying DC voltage	High performance and energy efficient DC/DC conversion for varying DC port voltage	Highly efficient isolated DC/DC converter with high system integration and high current capabilities	Highly efficient DC/AC converter (drive systems) with high integration, modularity and potentially integrated charging functionalities
Output	Specification document	Grid connected isolated AC/DC converter	PV, battery storage, fuel cell, charging converters/inverters	Industrial lighting, welding converters	Forklifts, industrial drives, heat pump inverters

Example draft. Use cases, structure and possible outputs will be detailed during consortium build.

Silicon Austria Labs GmbH

4



Program Research Questions

Definition of challenging specifications beyond state-of-the-art

New highly efficient PV DC/DC converter concepts for high string voltages New DC/DC or grid connected converter concepts with newest power semiconductor devices System integration enabled by new passive device technologies and integration techniques Magnetics design for high efficiency and/or high system integration Improvement of protection measures/devices against arc, overcurrent and short circuits Modular and scalable industrial fast charging converter concepts

Xin1 combined onboard and traction converter for industrial applications; e.g., current source inverters, sodium-ion batteries, new drive designs, multilevel converters

High bandwidth DC/DC converters for stationary battery storage to enable fast and accurate DC bus voltage control

Subsystem interactions, conducted and radiated emissions, stability investigations due to e.g., shrinked converter DC-link capacitors or non-shielded cables

Distributed control and overall energy flow optimization and prediction



Ambition:

- International consortium comprising industrial partners along the value chain
- \equiv Target: ~ 10 Partners in the program
- \equiv 4 years project duration
- Universities and academic partners are eligible to participate (special contribution model applies)
- ➡ PhD students within project possible supervised by academic partners

Expected economical contribution of industrial partners:

- Average cash contribution of 80k€ per year
- Minimum cash contribution of 50k€ per year

Advantages for the industry:

- Competitive advantage easier and quicker exploitation of upcoming products, by utilization of generated IP
- Risk mitigation early targeting of technical problems for an upcoming market
- Innovation future technologies and exploration of emerging trends
- Partnership

cooperation in a pioneering and efficient eco-system

Market demand cost optimized system through intelligent converters controlling the energy flow

∃ Sustainability

providing solutions for a more efficient and ecological future



SAL resources

50 %

5 %

OUR business model - SAL Cooperative Research

- ➡ Applied Research (TRL 3 6)
- Projects customized to company needs
- Optional participations of universities as scientific partners
- ≡ 50/50 co-financing
- \equiv No funding application needed, no waiting time
- \equiv IPR rules compliant to state-aid-laws

Click here for an example project: <u>Tiny Power Box 1</u>



TO PUT IT IN NUMBERS*:

- \in 100 k In-kind contributions by company
- \in 100 k Cash by the company
- \in 200 k Co-financing by SAL (in-kind contributions)
- $\in 400 \, k$ Project Volume

Company resources

Cooperative Research

5,0/0

Cash

POWERING TOMORROW: REVOLUTIONIZING ENERGY WITH A DC MICROGRID PROGRAM

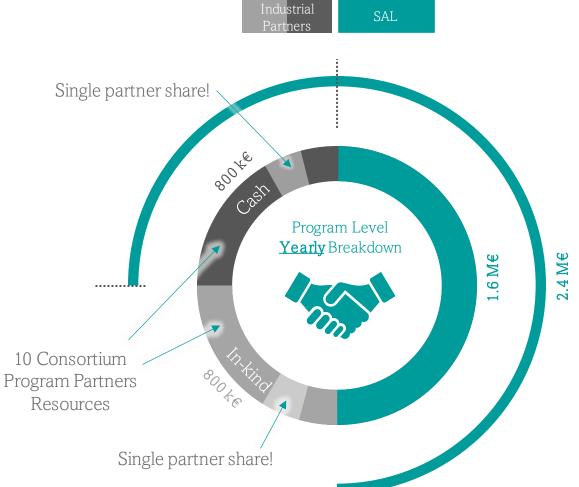


Example:

- Average cash contribution of 80k€ each, per year
- \equiv 4 years duration

Total Program volume:	12.8 M€
Total partner cash contributions:	3.2 M€
In-Kind partner contributions:	3.2 M€
Co-financing by SAL:	6.4 M€

High leveraging factor: with 320k€ cash contribution in total participation in 12.8M€ project



Consortium partners:



Intellectual Property Definitions

Background (BG)

- All pre-existing knowledge and IP a partner contributes to the project
- \equiv Necessary to perform the project
- Needs to be identified, substantiated and listed in the project description and consortium agreement

Foreground (FG)

- \equiv All results obtained during the execution of the project
- ➡ Foreground is to be reported to the steering committee (i.e., project deliverables)
- Types of IPR protection: patent, copy right, trademark, trade secret

Ownership

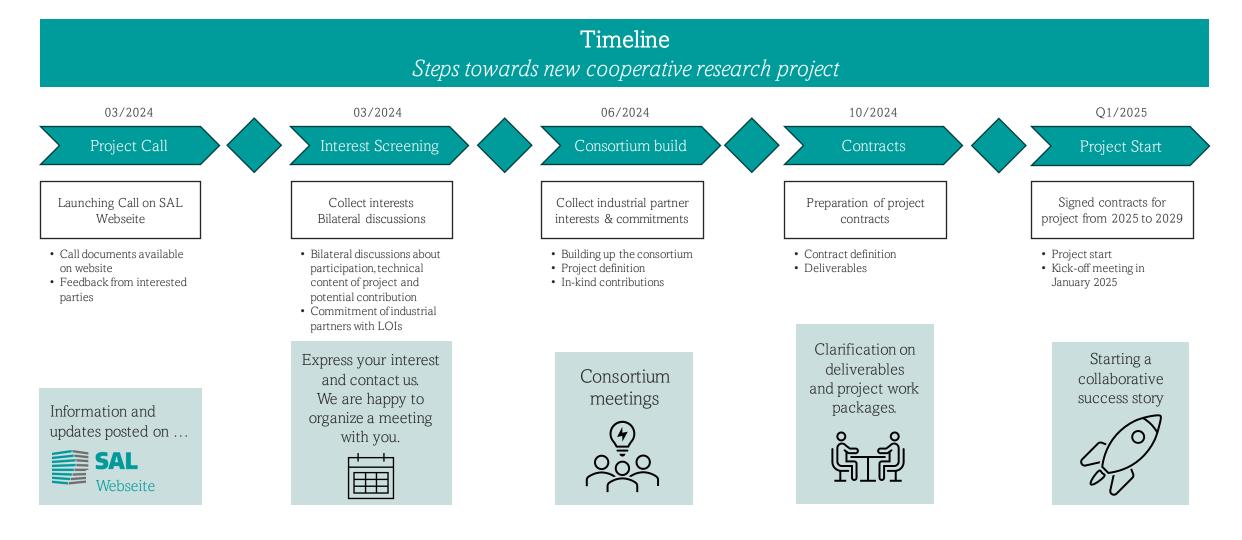
- Each partner is and remains sole owner of own Background and Foreground IP
- Exception: co-ownership when Foreground is created by two or more parties and when it is impossible to divide and unambiguously attribute parts of the results to each partner

Access Rights During project execution

Elicense to Background and Foreground free of charge

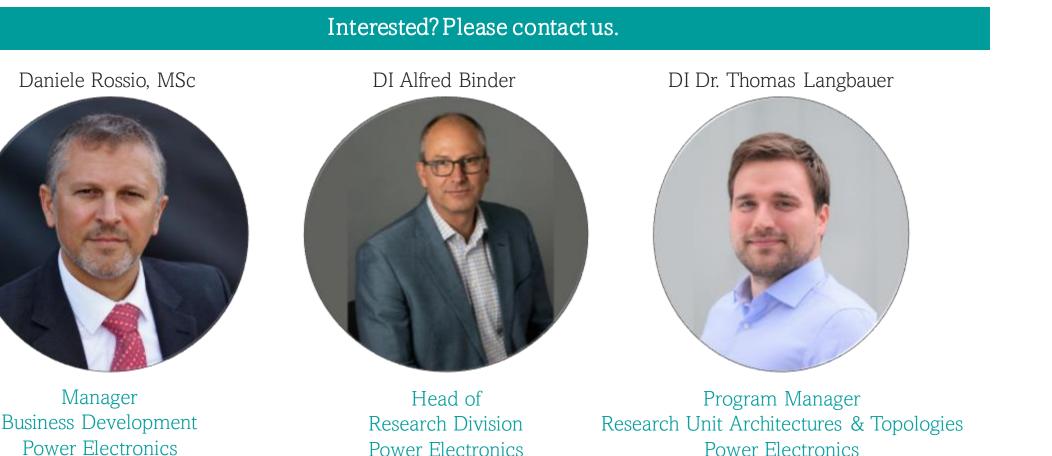
For valorization after project of a Party's own Results

Access-Rights/License to SAL's Background (on Fair and Reasonable terms) and Foreground granted free of charge in the area of interest upon fulfillment of balance project contributions regarding tasks and financial commitments (non-exclusive license)



POWERING TOMORROW: REVOLUTIONIZING ENERGY WITH A DC MICROGRID PROGRAM





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