OST
Ostschweizer
Fachhochschule

CircuBAT – Batteriespeicher mit 2nd-Life-Batterien

brenet ForschungsLunch #3

Nigsch Simon
30. Oktober 2025

CircuBAT - Project

We want to advance the **technical** and **economical** potential of a **circular economy** for **automotive** lithium-ion batteries. The CircuBAT-project connects the major stakeholders along the **complete lifecycle** of lithium-ion batteries in Switzerland:

- **24 Swiss industry partners**
- **11 Swiss research groups from 7 research institutes**
- **7 subprojects**
- **1 circular economy model**

Project period: 2022 - 2025

2nd Life Battery Storage System

Project Goal

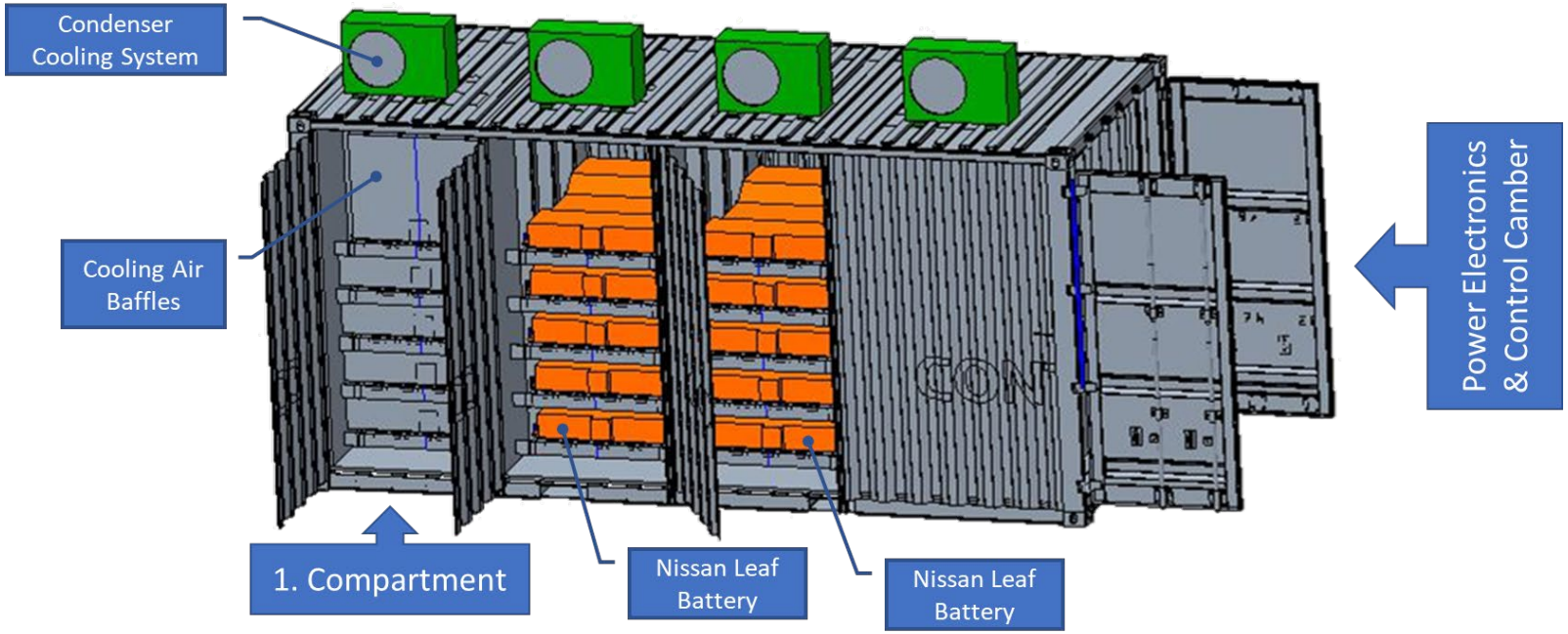
- Utilize complete second-life **EV batteries** for stationary energy storage
- **Extend battery life** cycle and support **renewable integration**
- **Modular** and **scalable** system for research and industrial use

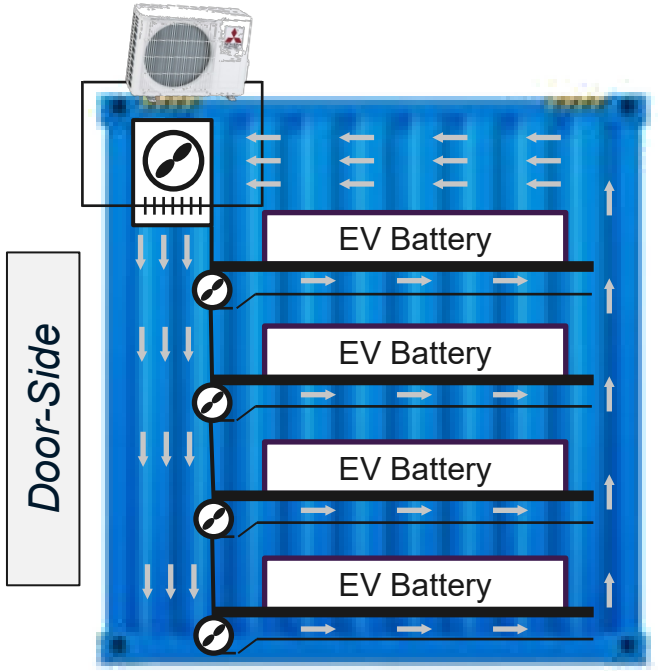
OST

2nd Life Battery Storage System – Container Design

Thermal Design

- Forced-air cooling with ceiling-mounted air coolers and circulation fans
- Thermal insulation to reduce external heat exchange
- Active control to maintain uniform temperature (<30 °C) and prolong battery life

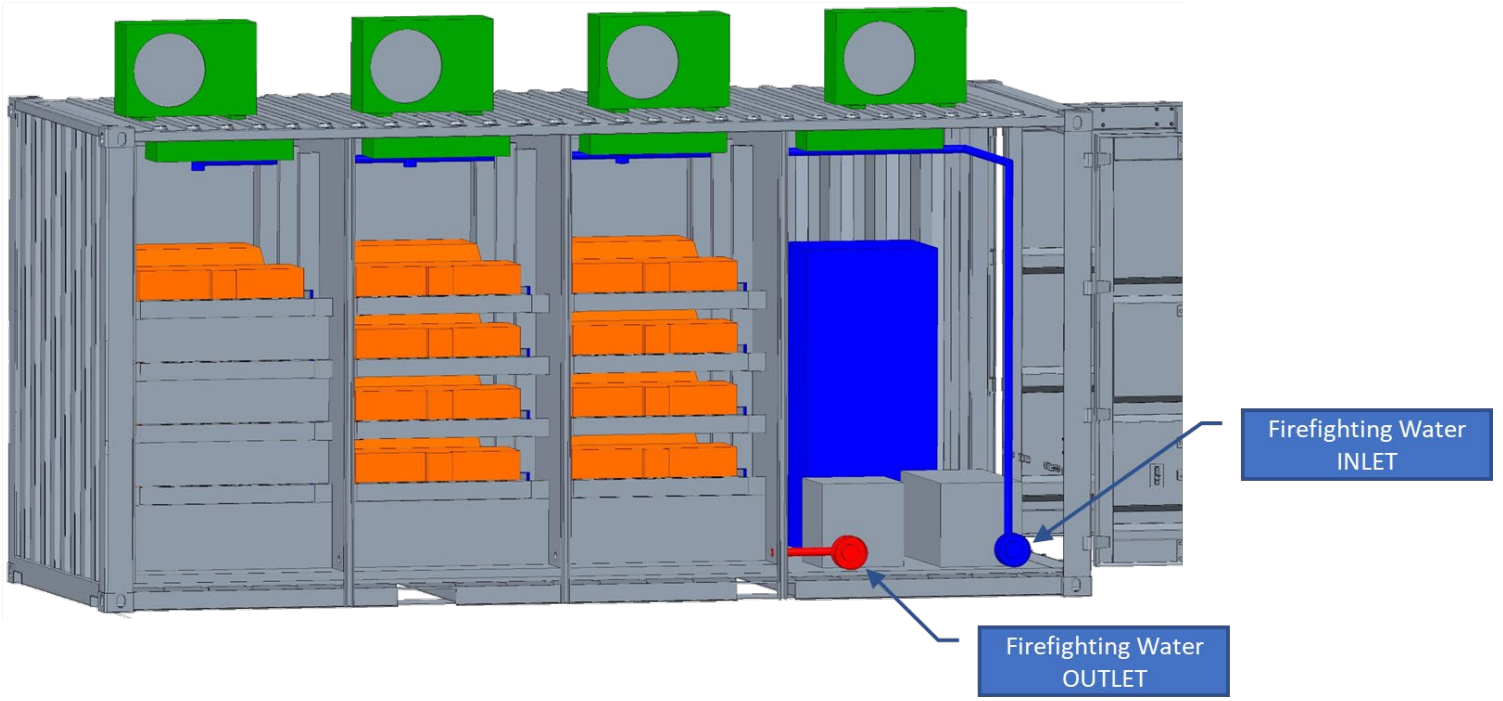




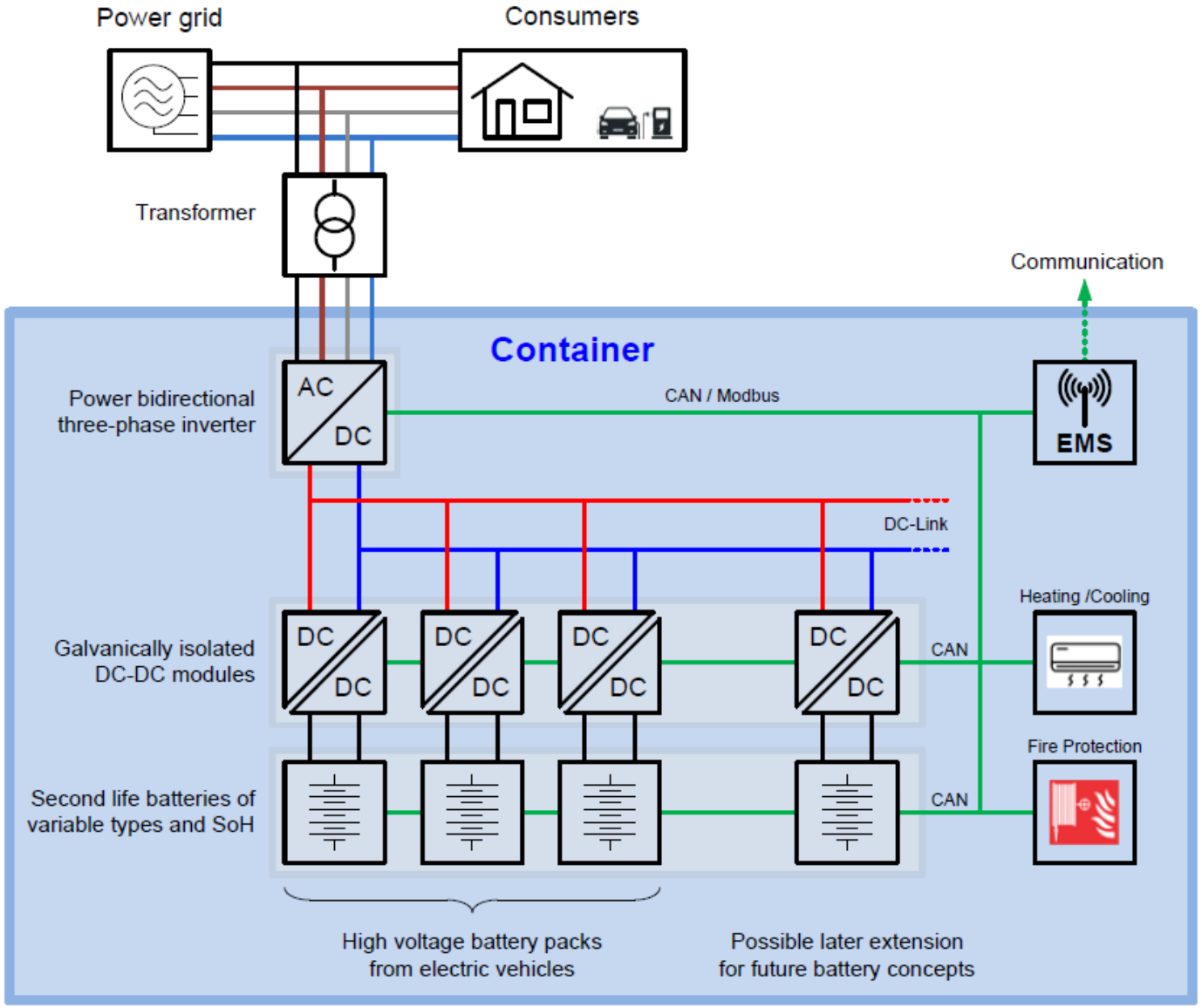
2nd Life Battery Storage System – Container Design

Safety Measures

- Compartmentalized design prevents fire propagation
- Independent smoke detection and fire-flooding system (water-based)
- Galvanic isolation and automatic battery disconnection on fault
- Compliance with **IEC 62485-1** and **IEEE 2030.2.1** standards

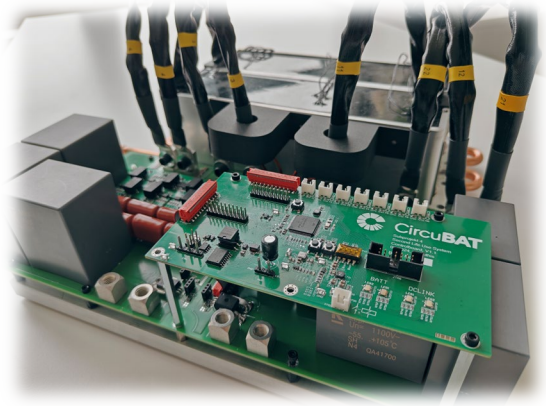


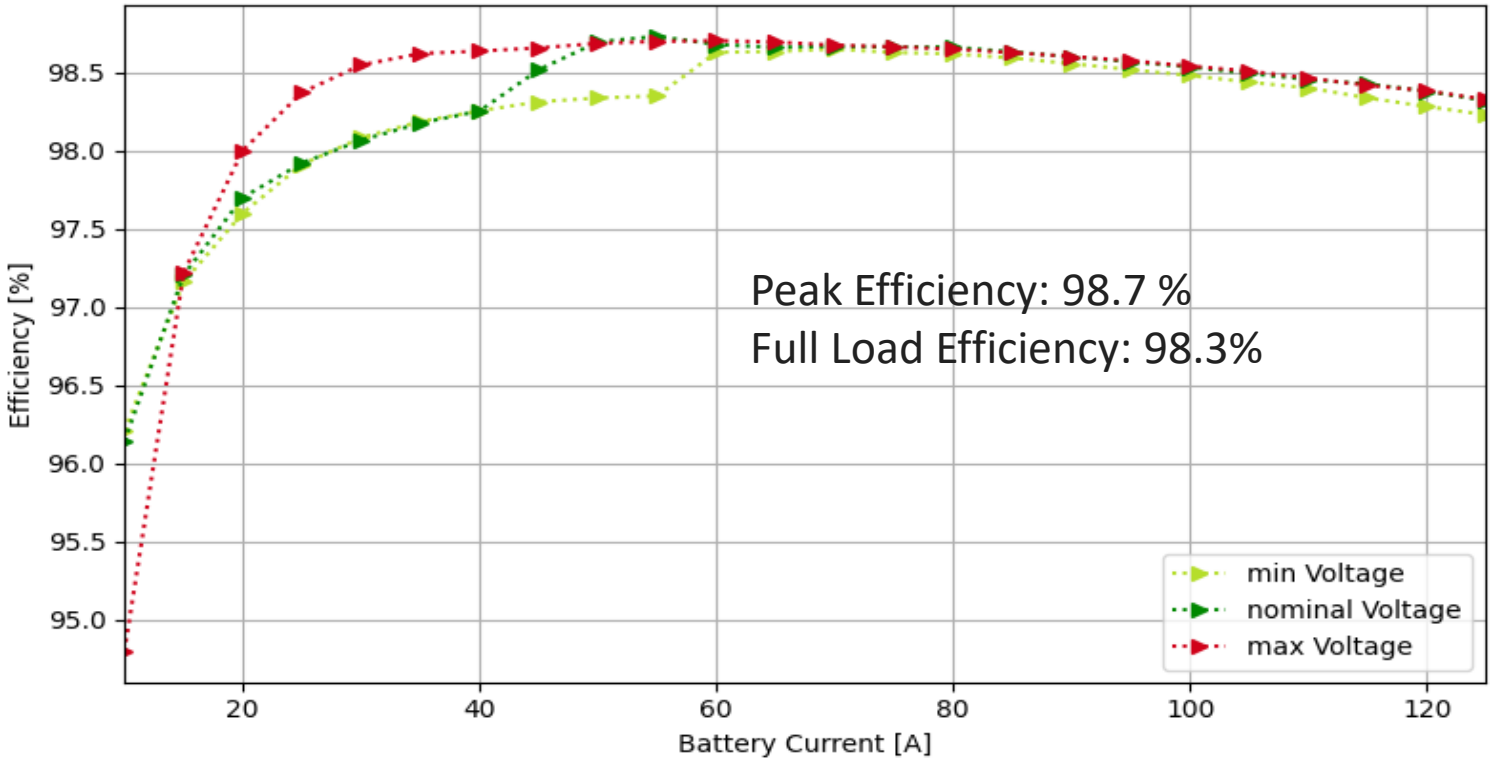
2nd Life Battery Storage System – System Design



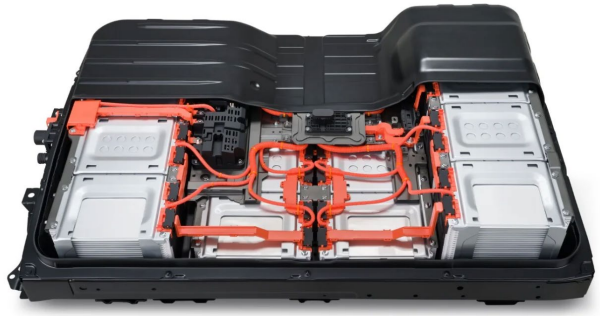
2nd Life Battery Storage System – DC-DC-Converter

Galv. Isolated DC-DC Converter
Power: 50 kW
DC-Link: 720 V – 880 V
Battery-Voltage: 150 V – 900 V
Current: 0-125 A





Nissan Leaf Battery
Type: NCM 523
Capacity: 40 kWh (total pack)
Voltage: 307 V – 403 V (total pack)
Load Current up to 1C (115 A)



OST

CircuBAT – Conference 2025

13. November 2025

- Final Public Conference
- 1.30 pm – 7.30 pm
- The event will be held in German.
- The participation is free of costs. The registration is mandatory.

14. November 2025

- Scientific Conference / Technology update with international speakers
- 9 am – 7.30 pm
- The event will be held in English.
- CHF 290.– regular registration fee

https://circubat.ch/circubat-2025-conference/

Berner Fachhochschule
Haute école spécialisée bernoise
Bern University of Applied Sciences

csem

Empa
Materials Science and Technology

EPFL

OST
Ostschweizer Fachhochschule

Swiss Battery Technology Center

powered by SWITZERLAND INNOVATION PARK BIEL/BIENNE

University of St.Gallen
Institute for Economy and the Environment

Vielen Dank

Simon Nigsch
Leiter Elektrische Energiesysteme
+41 58 257 31 78
simon.nigsch@ost.ch
ost.ch