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GIVING A SECOND LIFE TO YOUR BATTERIES

THE MARKET FOR EV BATTERIES FOR RE-USE IN ENERGY STORAGE SYSTEMS

Dr. Trygve Burchardt

- Spin off from INCUBE AS, incubator for innovations in sustainable buildings.
- Agder Energy Venture invested in 2019 to become majority owner.
- Building up a team of battery and energy storage experts to develop our proprietary solutions for second life EV energy storage.

www.eco-stor.com

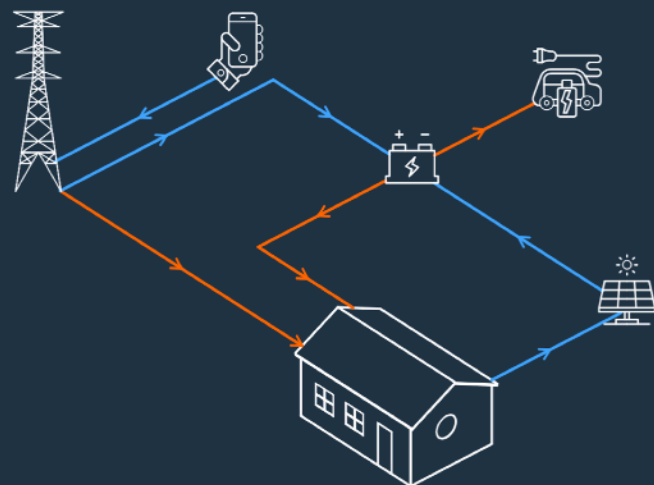
ABOUT US

ECO STOR established in 2018 to commercialize intellectual property and knowledge gained from several development programs since 2013. It was founded by **Incube AS**, a material-innovation and architecture company from Oslo, Norway.

In 2019, **Agder Energi Venture** invested in the company to become the majority owner.

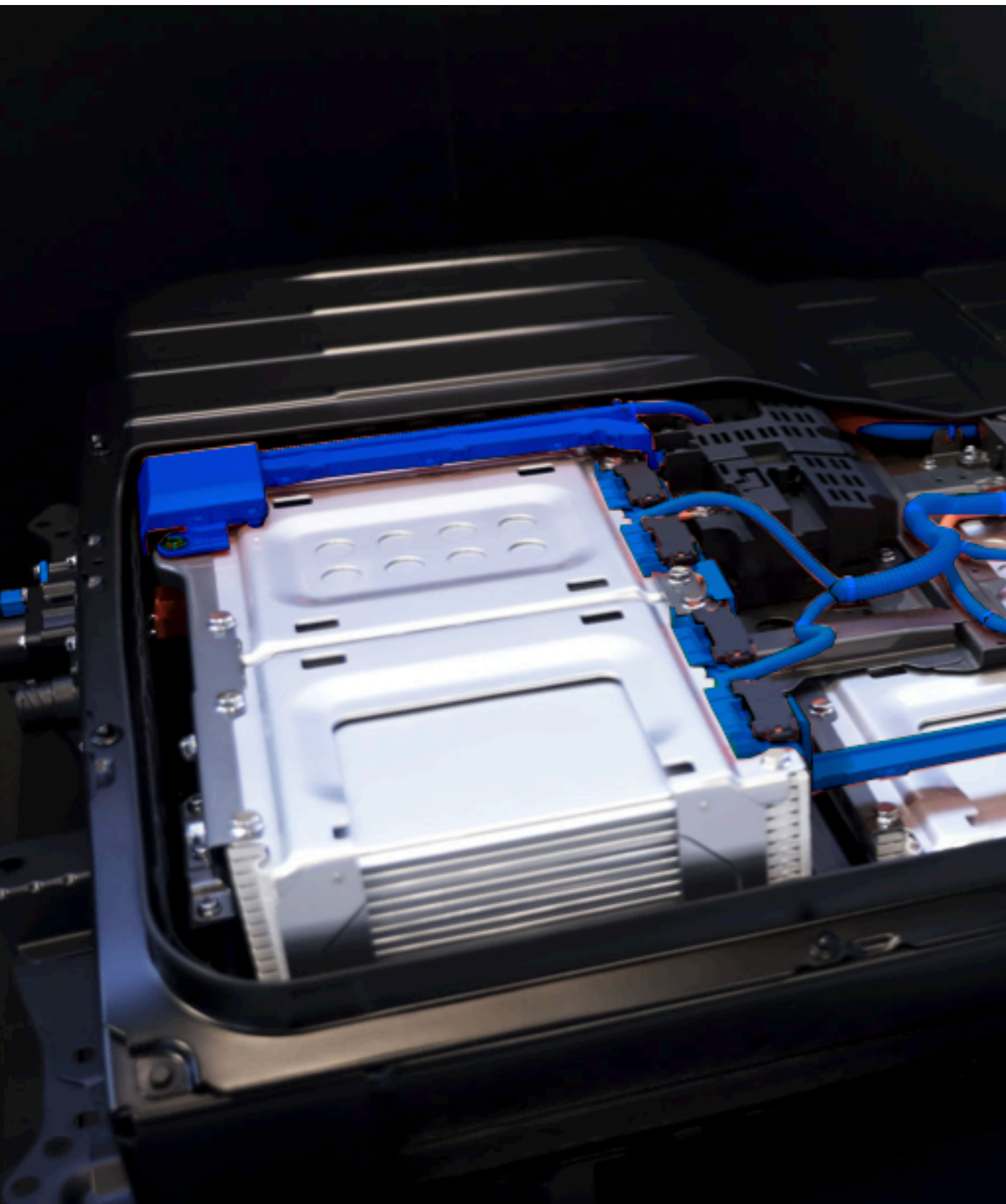
ECO STOR has secured several contracts for the delivery of energy storage systems and ECO STOR projects have won a number of **Innovation Norway** grants and received financial support from **ENOVA** and the **Research Council of Norway**.

To provide an affordable energy solution, ECO STOR enables the use of "second life" electric vehicle batteries as energy storage. The proprietary system introduces a complete solution for developers, builders and homeowners looking for low cost, energy efficient buildings.



- The accumulated sales of EV reached 4 million in 2018 with 120 GWh batteries installed, still only 2.1% of cars sold are EVs.
- EES installed world wide in 2018 was 6 GWh.
- EV battery market is predicted to grow to over 2 TWh by 2030.
- Expected amount of return batteries from the EV market is projected to grow faster than the growth of ESS.
- There will be a abundance of used EV batteries for energy storage **driving cost down and dominating the ESS market.**
- Norway is 5 years ahead of rest of Europe in adoption of EVs.





THE ECO STOR SOLUTION

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RE-USING THE **COMPLETE** EV BATTERY

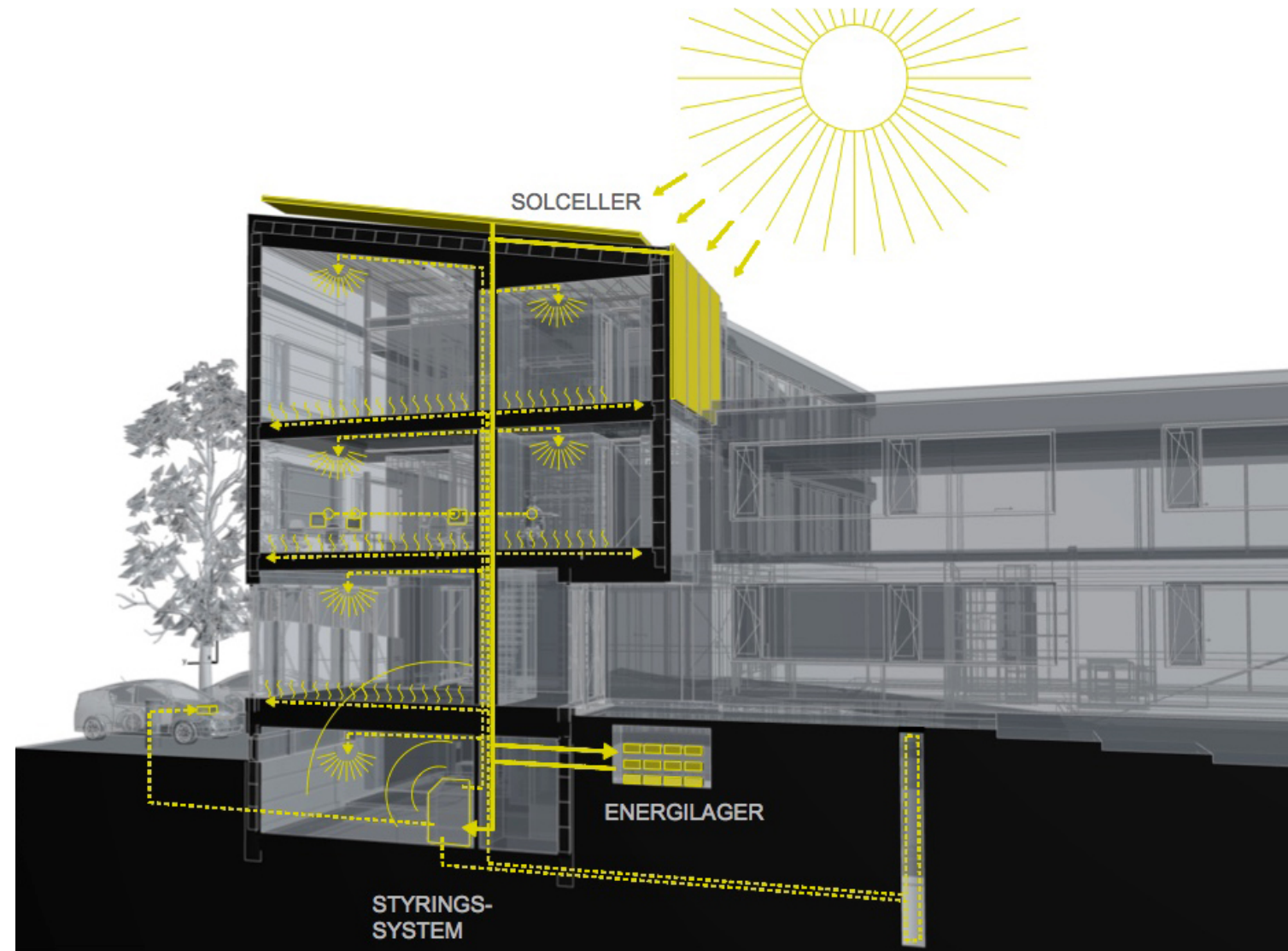
- SIMPLE CONTROL UNIT
- PATENTED SYSTEM
- LOW COST
- ROI < 5 years



COMMERCIAL BUILDINGS

60kWh TO 600kWh
1C CHARGE / DISCHARGE

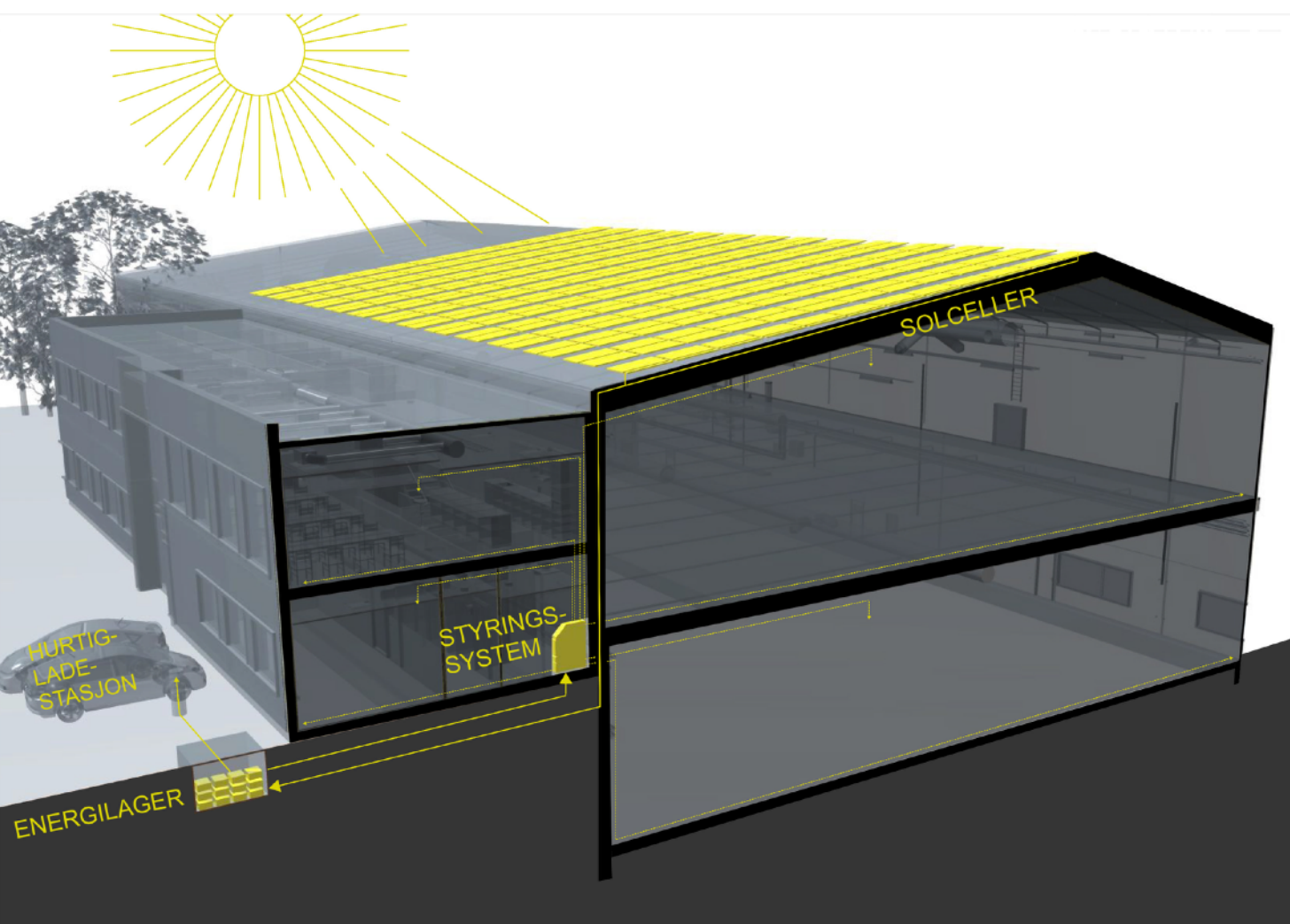
- RACK OF 4 TO 40 BATTERIES
- FULLY INTEGRATED WITH INVERTER AND SOFTWARE
- IDEAL FOR ZERO ENERGY BUILDINGS AND PEAK SHAVING IN COMBINATION WITH PV SOLAR



DUAL USE

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HOW TO MAKE SYSTEM PROFITABLE QUICKLY



- BEHIND THE METER FAST CHARGING
- PEAK SHAVING
- HARVEST SURPLUS SOLAR
- OFFER GRID SUPPORT

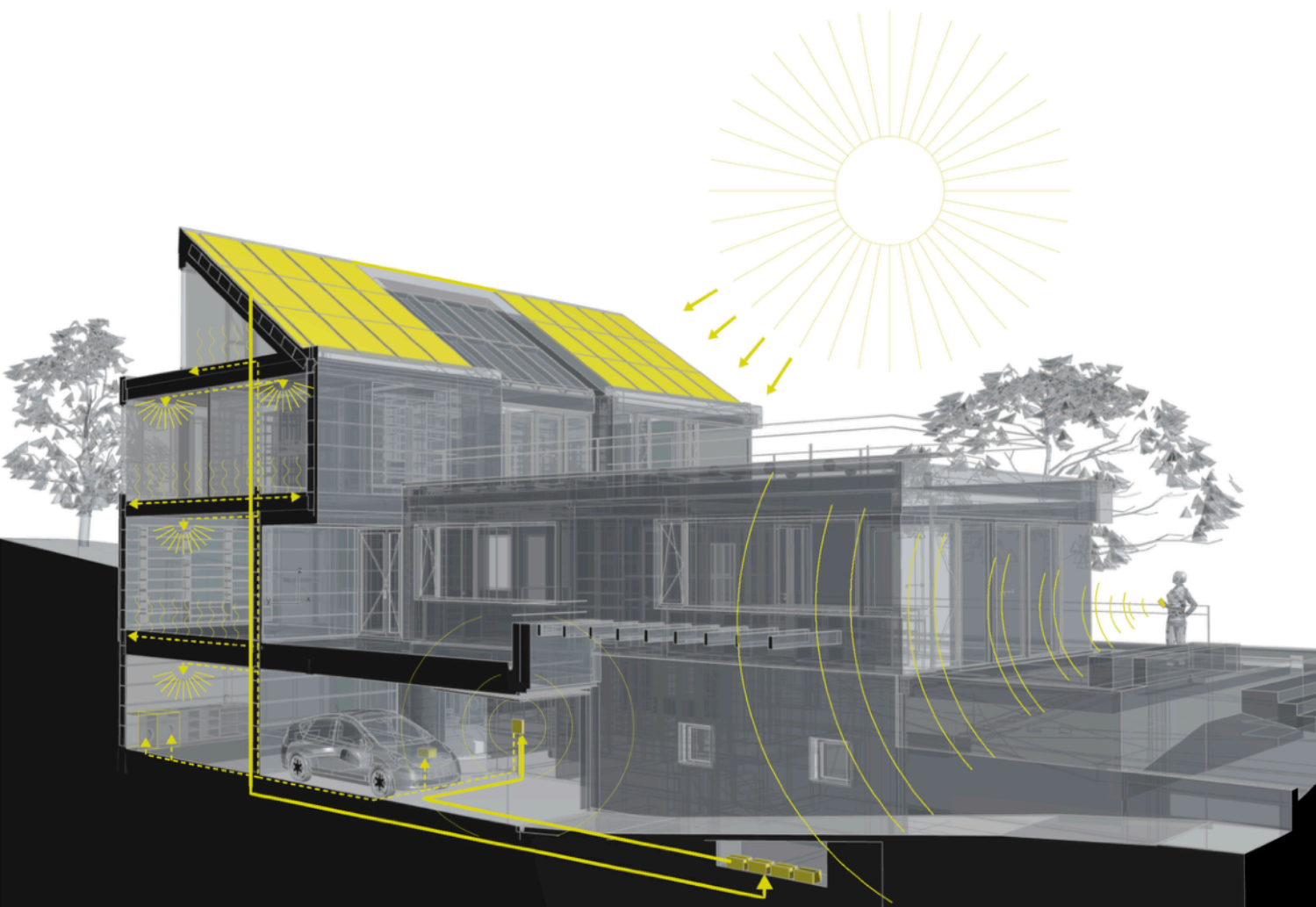


ECO HOME RESIDENTIAL

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ONE USED EV BATTERY IN

EVERY HOME



- 15kWh storage / 10-15kW
- 4-5kW rooftop PV solar
- Zero or Plus home
- Underground / outdoor storage

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GRID CONNECTED

**1MWh / 1MW in 40
foot container**

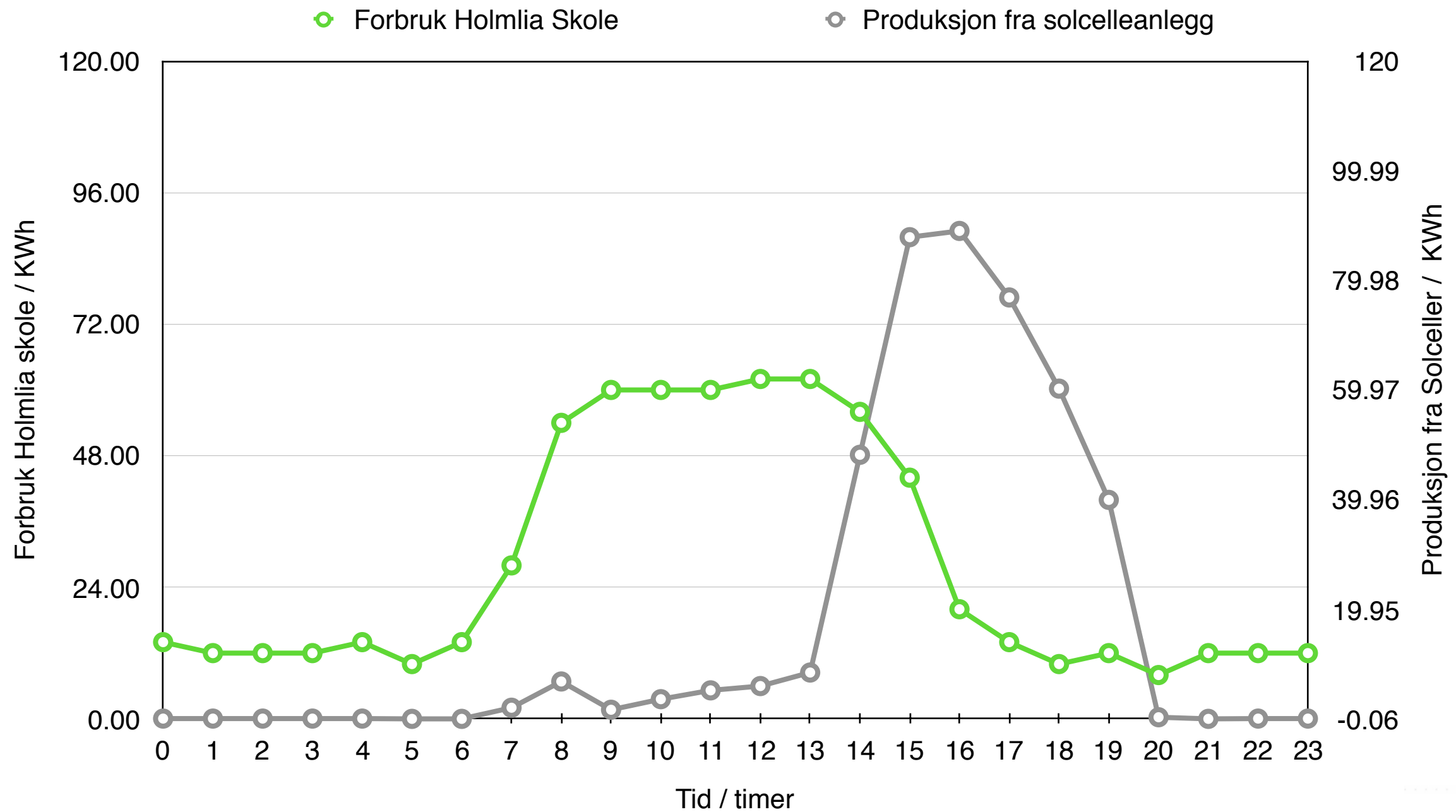
- Fully integrated with inverters, controls and software for grid connection
- Flexible / easy to move between sites
- Safety of automotive quality batteries and packaging
- Sustainable by reuse with low to no CO2 footprint



FLEKSIBELT



WHY STORAGE?



PROJECTS

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GC Rieber

**A developer
with focus on
sustainability**

— 150kWh - 50kW for
peak shaving

— Under construction
to be installed in
2020



PROSJEKTGRUPPEN

ARK:	Paal J Kahrs Arkitekter AS/ OG Arkitekter AS
PL/PGL/RIB:	Smidt & Ingebrigtsen AS
RIBT:	Ny Struktur AS/ iTre AS
RIV/RIE:	Sweco AS
LARK:	Smedsvig Landskapsarkitekter AS
RIBR:	Firesafe AS
Kjøkken:	Vidar Bøe AS



PROJECTS

Undervisningsbygg KF want all new built or rehabilitations to be Pluss or Zero Energy Building

150kWh / 50kW for peak shaving and for fast charger
Under construction to be installed in 2020



Holmlia School, Oslo, Norway

PROJECTS

- 15kWh Nissan Leaf
- 4.5kW solar PV
- Goal to make a zero energy home

ENOVA Concept evaluation



Sarbuuvolveien 34, Oslo, Norway



PROJECTS

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DNB Eiendom Lade Arena Trondheim

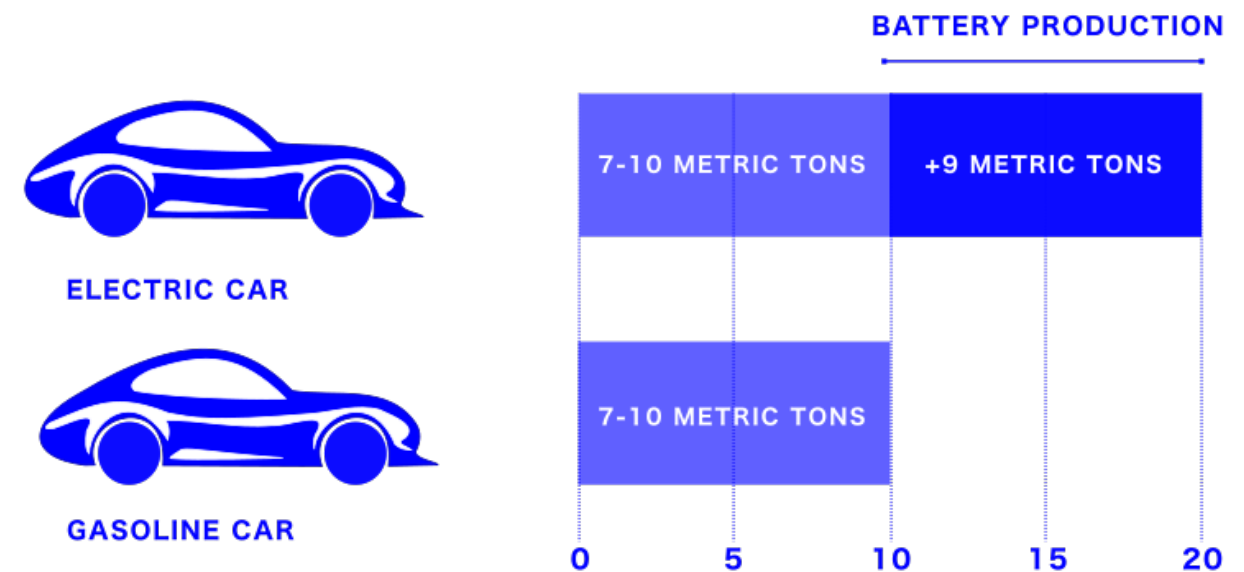
- 2 to 3MW rooftop PV solar
- Sustainability goals
- Fast chargers to attract customers and tenants
- Distributed 100kWH or centralized 2MWH storage



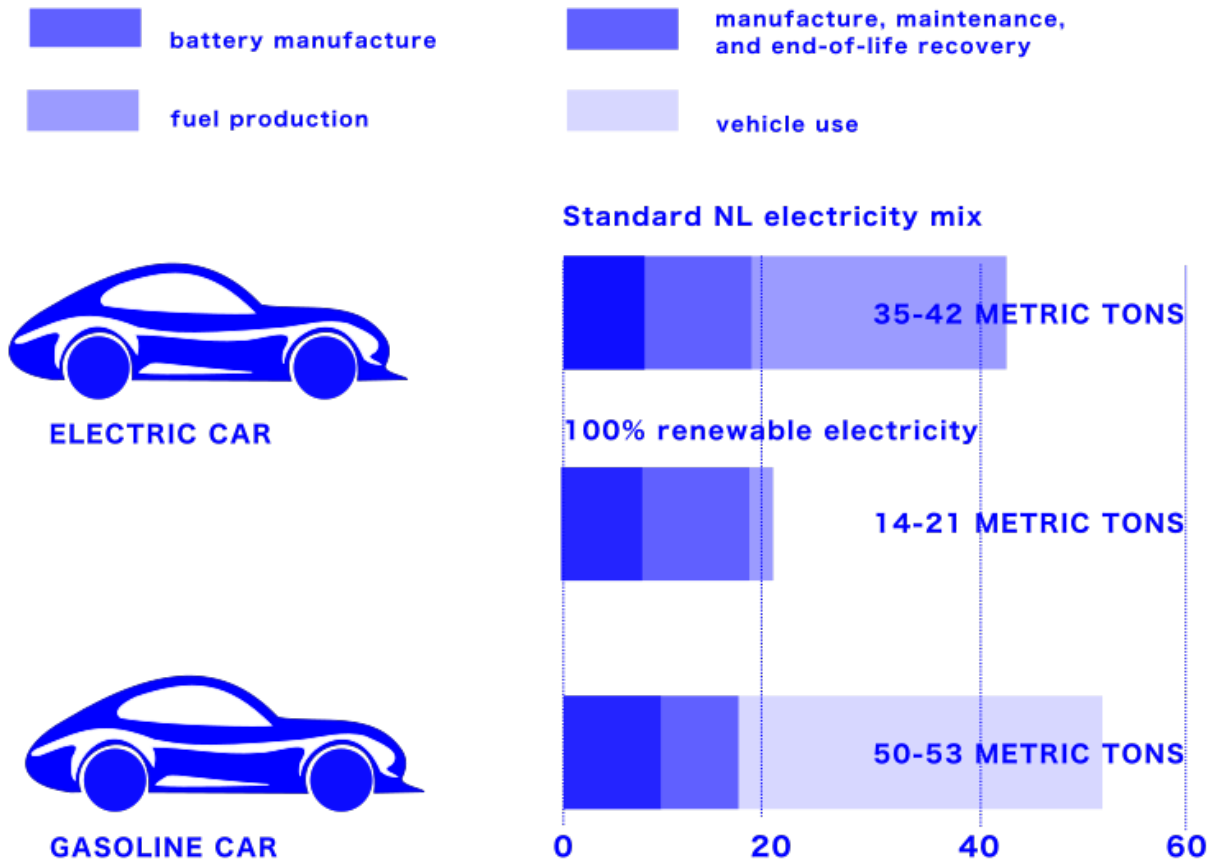
CLIMATE IMPACT

- Production of a new battery results in 178kg CO₂eq. per KWh
- Second life battery 0kg CO₂eq. per KWh

TOTAL CO₂ EMISSIONS TO MANUFACTURE THE CAR



TOTAL LIFETIME CO₂ EMISSIONS



THANK YOU

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We are hiring

If you are interested to work
with us please contact me