

# Sustainable renovations based on solutions coming from the AEGIR project

## Session: Scaling up sustainable renovations – AEGIR perspectives #2: Integration of active technologies in envelope

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MATERIALS	COMPONENTS	SYSTEMS	DIGITAL	DESIGN	CONSTRUCTION	DEMOS	ASSOCIATIONS / DISSEMINATION	RTOS



Kanton Bern  
Canton de Berne

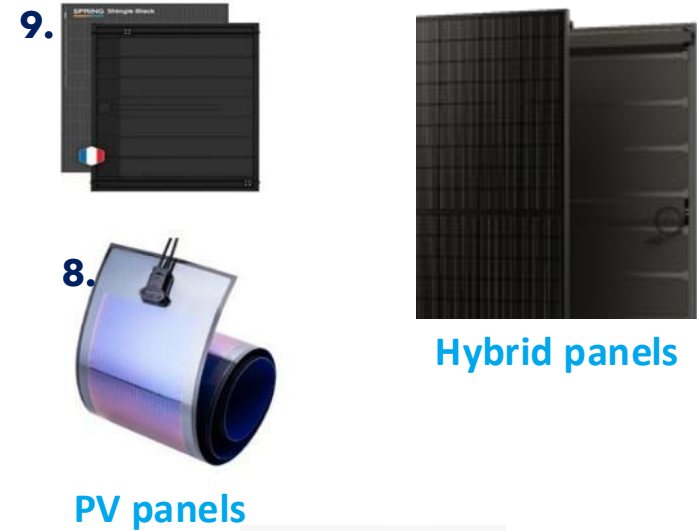


- AEGIR & active technologies introduction
- Prefabricated modular insulated wall components
- Ventilation integration
  - Heat recovery : Fresh air duct integration in the facade
  - Smart windows and ventilation
- Solar integration
  - PV panels and batteries
  - Hybrid panels & HVAC
- Conclusion

# Integration of active technologies in envelope

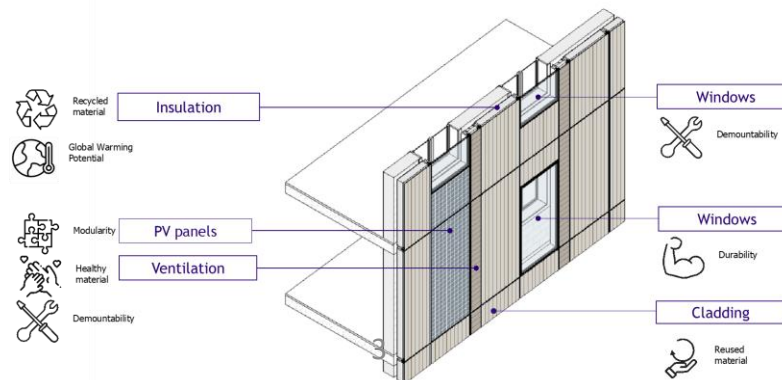
## AEGIR & active technologies introduction

### Solar Energy



### Energy Storage

### Prefab insulated wall components



### Ventilation



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Ventilation ducts integration in envelope solutions for retrofitting

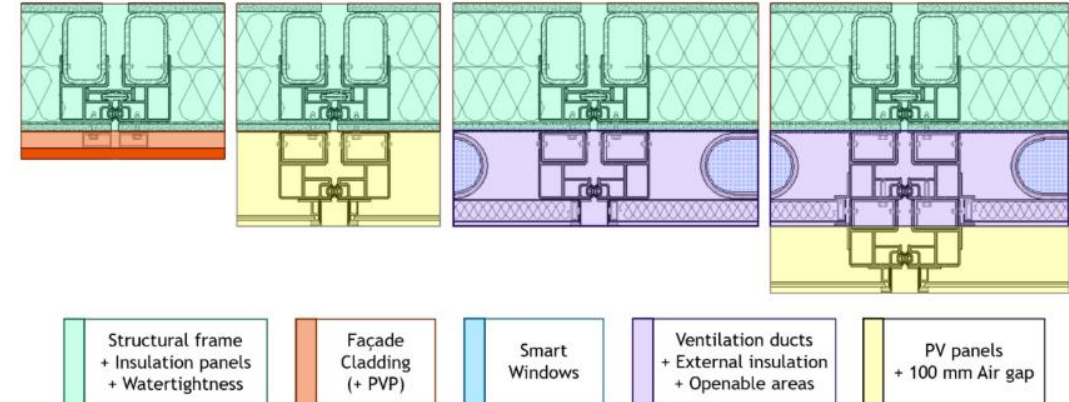
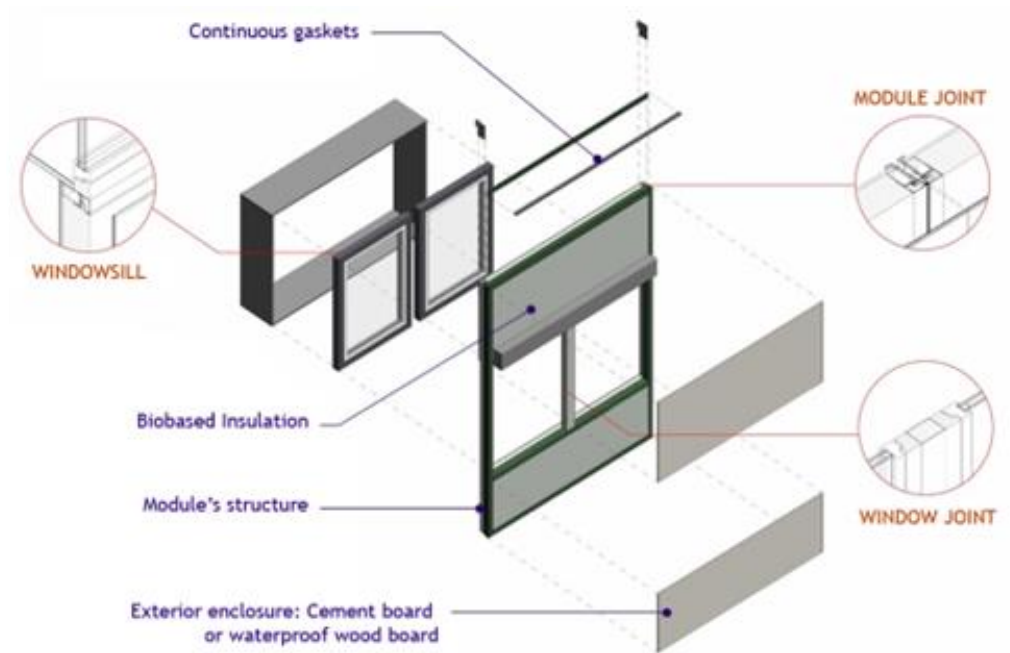


### Smart Windows

# Integration of active technologies in envelope

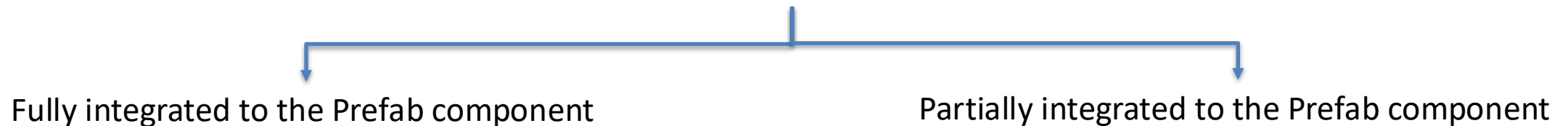
## Prefabricated modular insulated wall component

- AEGIR a modular solution



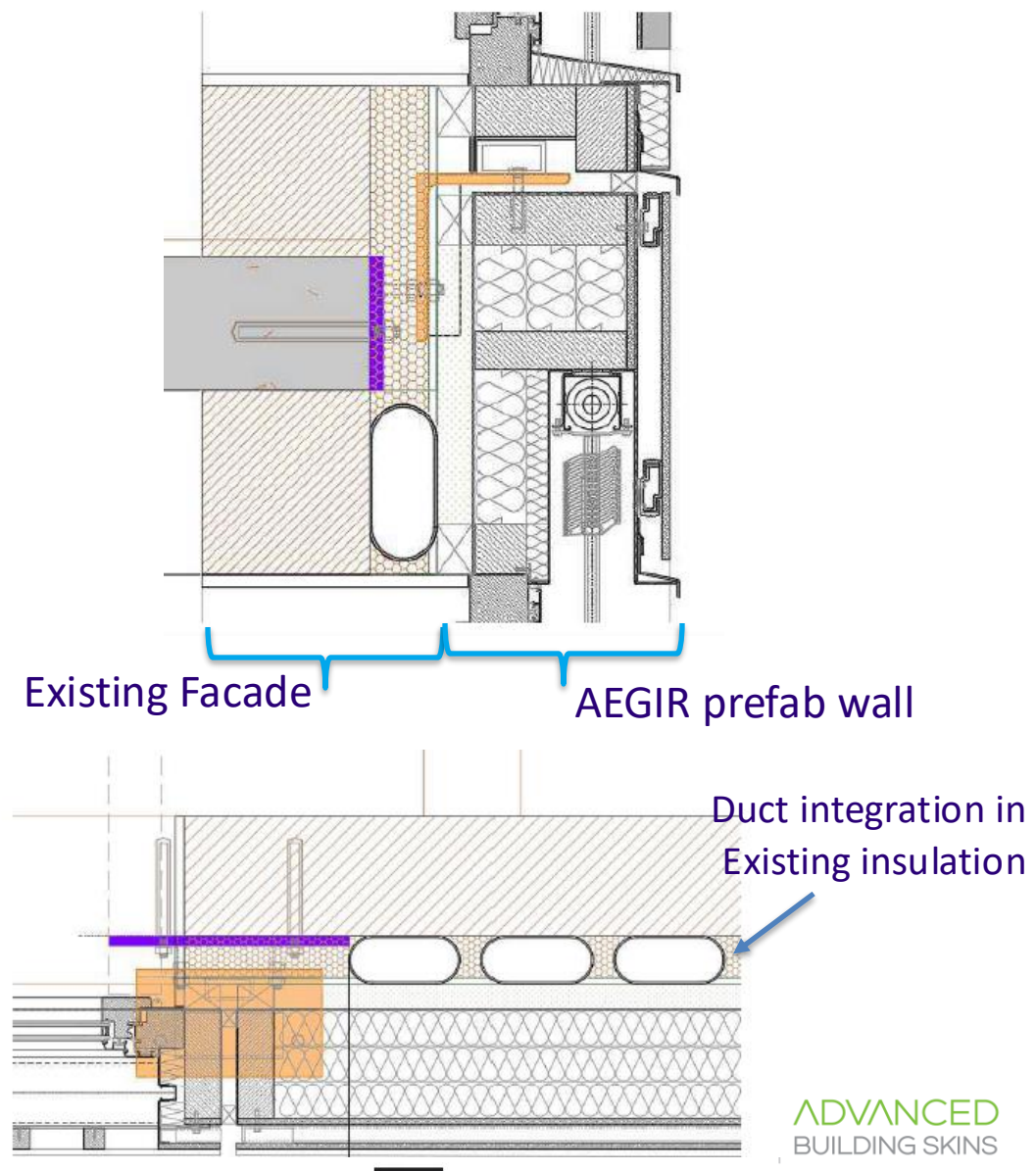
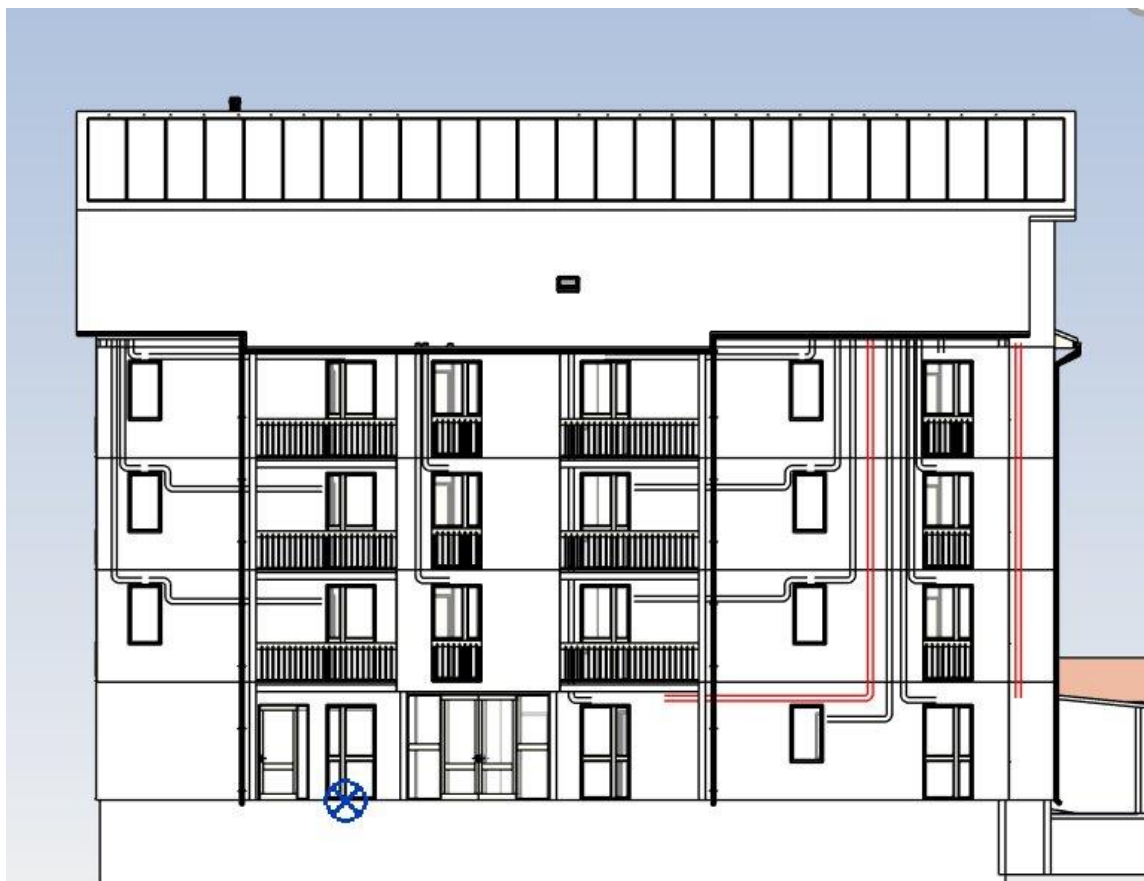
- **Objective:** Implement a Heat recovery ventilation unit for a high energy efficient building retrofitting
- **Challenge:** Integrate fresh air ducts with minimal disturbance for inhabitants
- **AEGIR solution:** Integrate Fresh air duct through the external facade with high integration to the Prefab-facade

### AEGIR modular solution





- Partially integrated : The French demo example

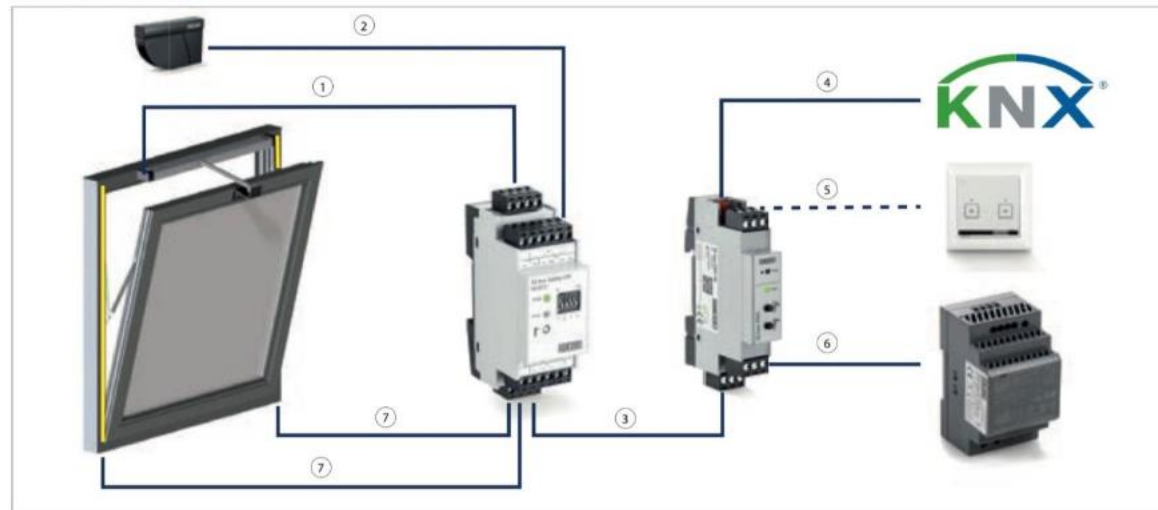


# Integration of active technologies in envelope

## AEGIR & Ventilation coupled to windows automation

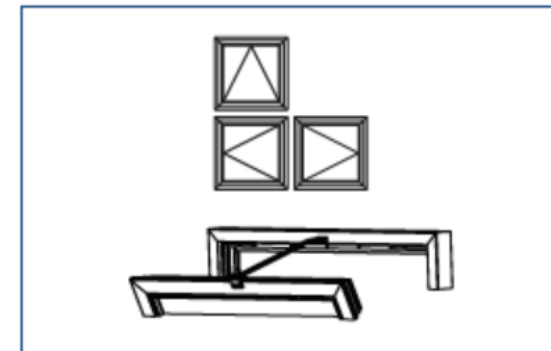
- **Objective:** Value natural ventilation to increase Aire Change Rate and/or reduce mechanical ventilation
- **AEGIR solution:** integrate in the prefab insulated walls a few keys smart-windows and define a control strategy coupled to ventilation unit.

EXAMPLE OF ACTIVATION VIA KNX: WINDOW SAFETY SYSTEM ON THE AUTOMATED INWARD OPENING BOTTOM-HUNG WINDOW



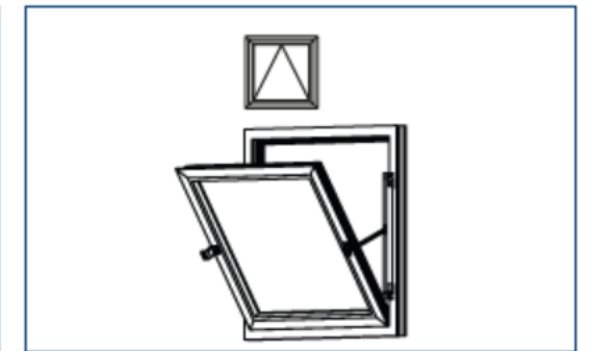
1 = Drive connector cable A/B/S/L (4-core) | 2 = GC 342 sensor fitted to the outside of the window +24 V/GND/TST /Si | 3 = IQ box Safety connection cable and IQ box KNX A/B/S/L (4-core) | 4 = KNX Bus (2-core) | 5 = Vent switch (optional) | 6 = Power supply 24 V/GND (2-core) | 7 = Safety edge connection

Integrated installation  
Frame Installation, INWARD opening



Bracket set C

Drawbridge Installation  
Frame Installation, INWARD opening

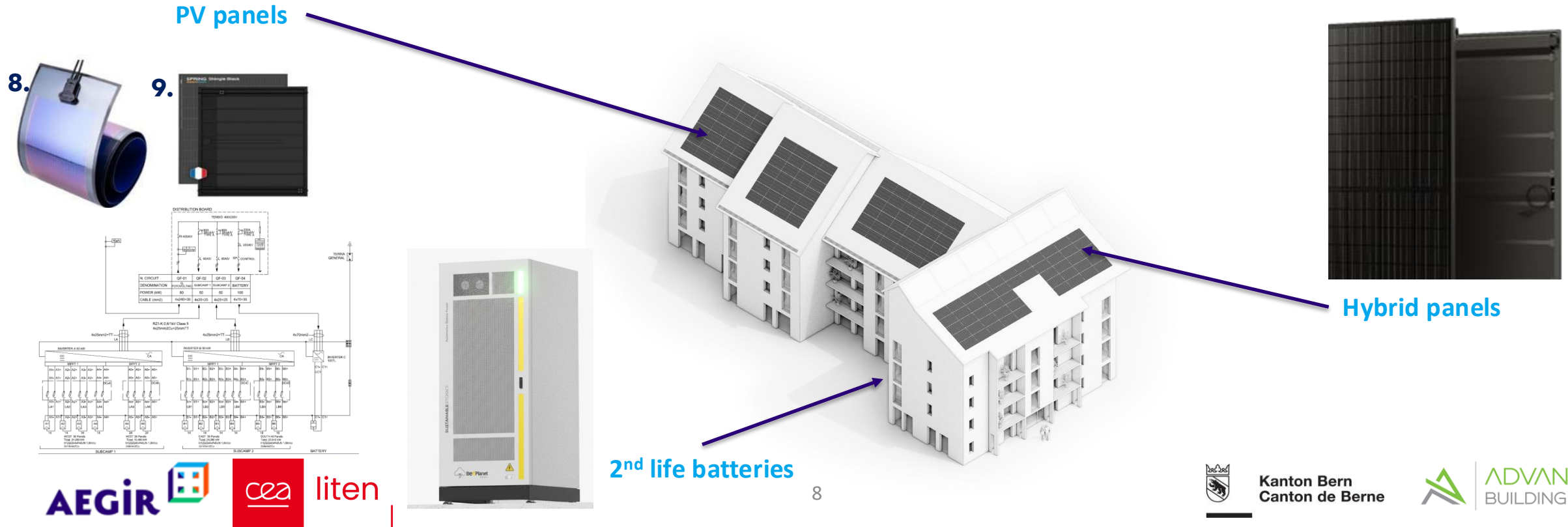


Bracket set A

# Integration of active technologies in envelope

## AEGIR & Solar integration: PV & Batteries

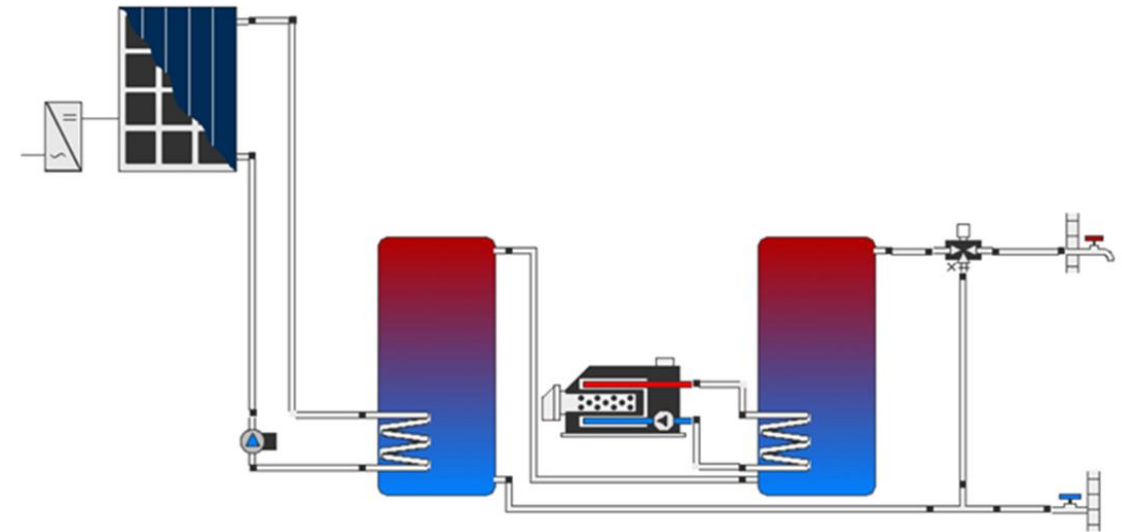
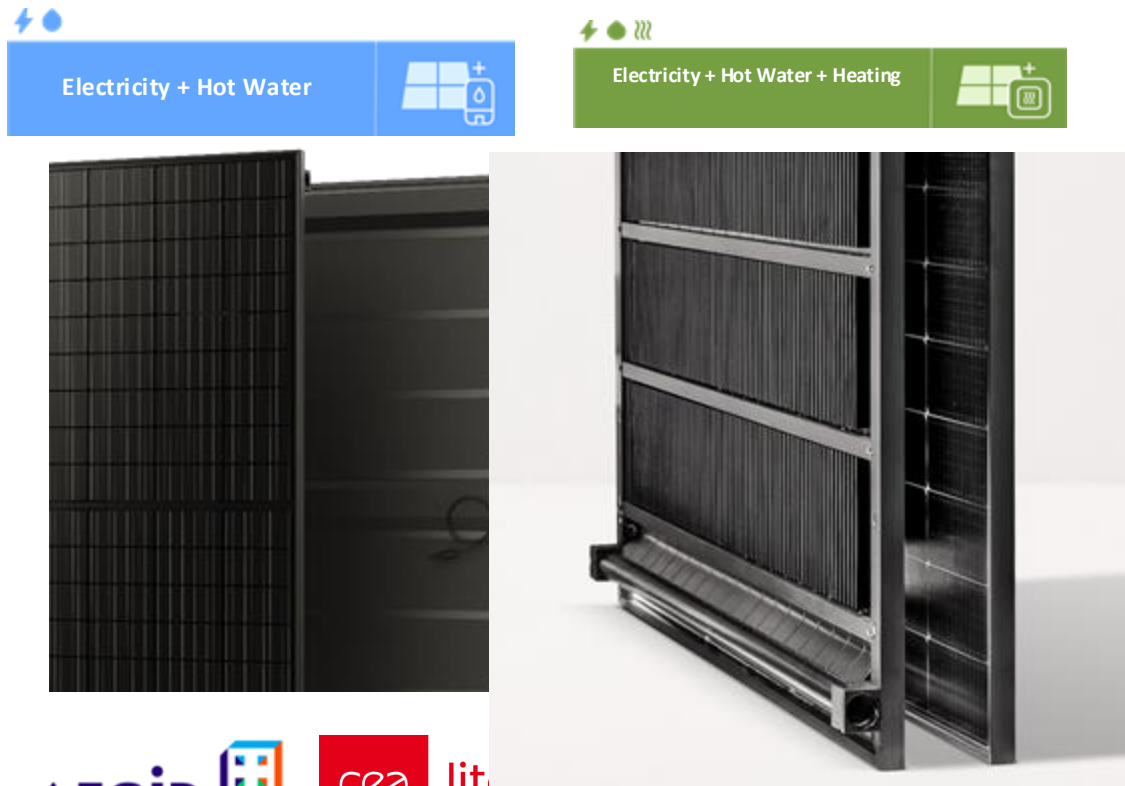
- **Objective**: Maximize the self consumption of a building and minimize its impact to the grid
- **AEGIR solution**: Couple electrical production from PV and hybrid panels to 2<sup>nd</sup> life batteries, and deploy a control strategy adapted to each demo building.





## AEGIR & Solar integration: Hybrid panels

- **Objective**: Produce both Electricity and Heat from one panel
- **AEGIR solution**: Ease hybrid panels integration in retrofitting strategies

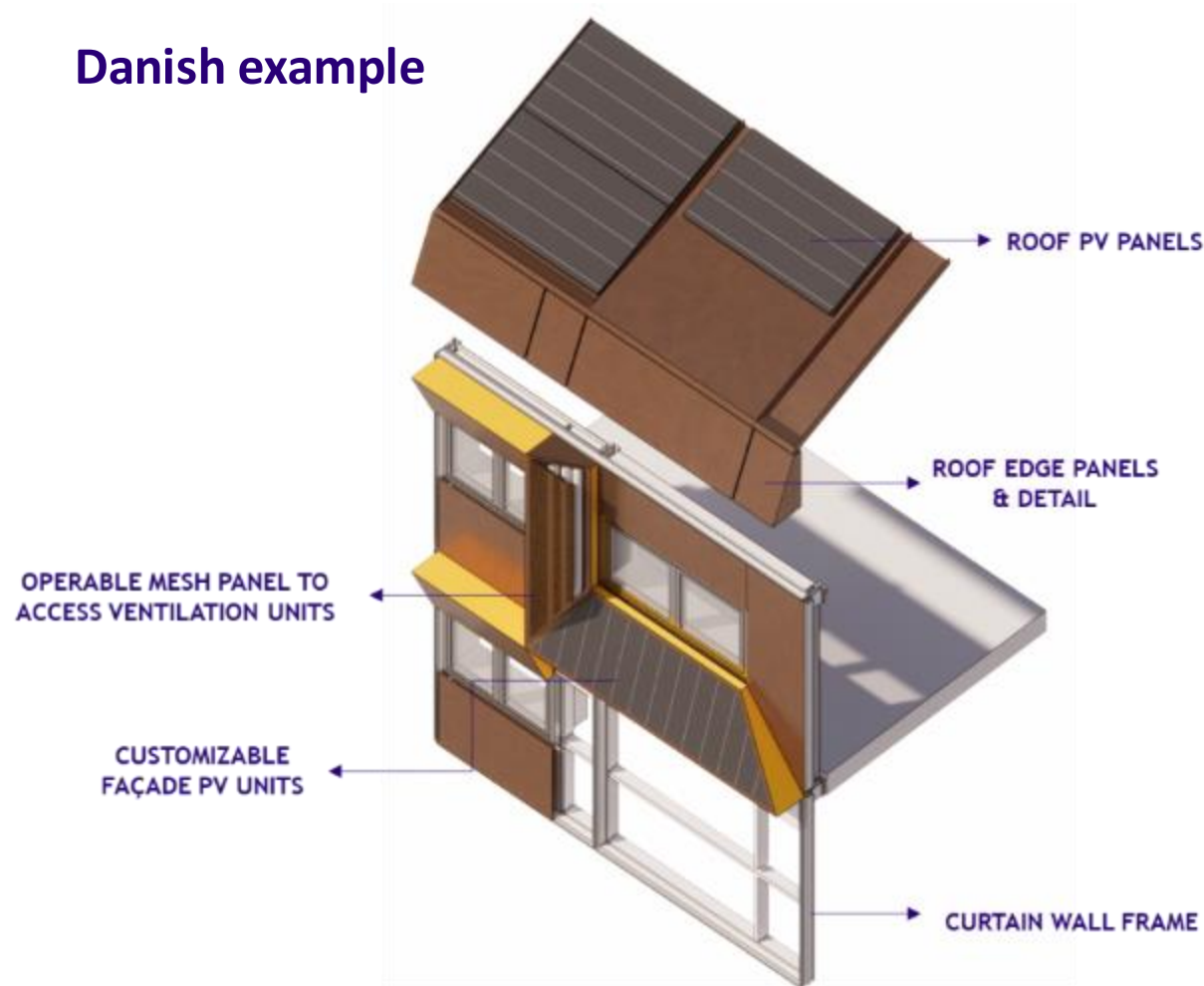


Type of collective hot water system into which PVT panel can be integrated.

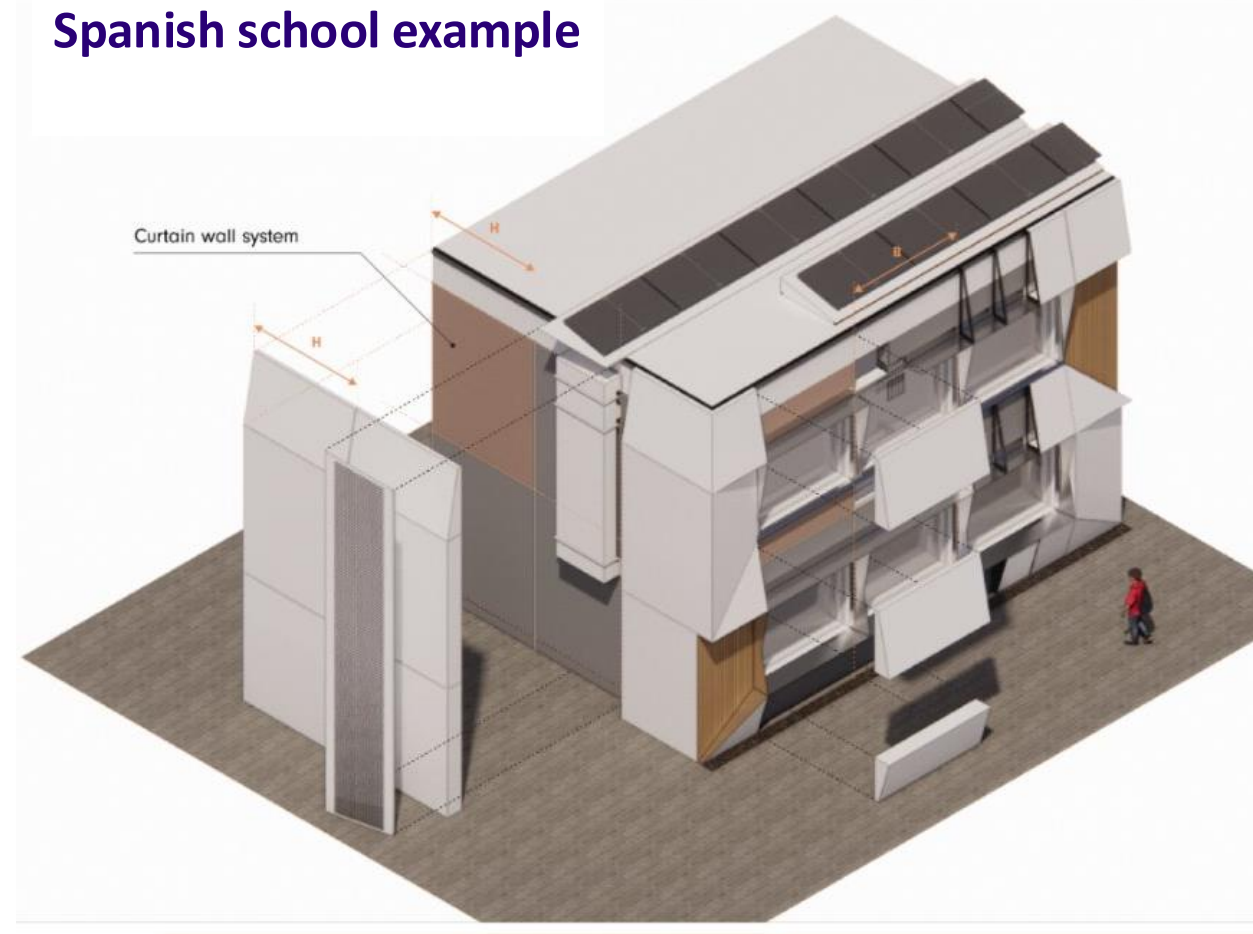
# Integration of active technologies in envelope

## AEGIR modular solar integration & ventilation

### Danish example



### Spanish school example



# THANK YOU FOR YOUR ATTENTION!

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## Session: Unlocking Replicability - Scaling AEGIR Solutions Across Europe

Bard Rama, PhD PMP



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- The EU Renovation Wave and Cities Mission targets demand approaches that go beyond individual pilots.
- AEGIR contributes by developing and testing models that can be adapted and scaled across Europe.
- Replication is essential to multiply the impact of innovation, ensuring solutions become mainstream practice.

- **What is the biggest challenge to replicating renovation solutions?**
- Technology and technical complexity
- Finance and investment
- Policy and regulation
- Social and workforce capacity

*Audience will be asked for a show  
of hands or short comments*

Replication means transferring solutions across building types: residential, public, and tertiary.

It requires adaptation to different climatic and geographic contexts.

It must work across governance structures and market frameworks.

Replication is never copy-paste; it demands flexibility and local adaptation.

**Which activity would be most useful for enabling replication?**

- Study visits
- Replication workshops
- Direct guidance - virtual and face-to-face formats
- Peer-to-peer exchanges

*a show of hands or short comments*



SMEs play a role by offering modular and scalable solutions.

Policymakers can establish enabling frameworks and incentives.

Financial institutions can provide de-risking and accessible financing schemes.

Cities act as testbeds and multipliers for replication efforts.

- **Where do you see the greatest potential for replication of AEGIR-type solutions?**
- Residential buildings
- Public buildings (schools, hospitals, offices)
- Commercial or tertiary buildings
- Other

*a show of hands or short comments*

## Which factor is most critical to enable replication at scale?

- Innovative financing
- Supportive policy and regulation
- Skills and capacity building
- Digitalisation and data tools

*a show of hands or short comments*

Replication is essential to scaling sustainable renovation across Europe.

Barriers are multi-dimensional and systemic; they cannot be solved in isolation.

Turning barriers into opportunities requires dialogue, business innovation, and supportive frameworks.



# THANK YOU FOR YOUR ATTENTION!

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