

# 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



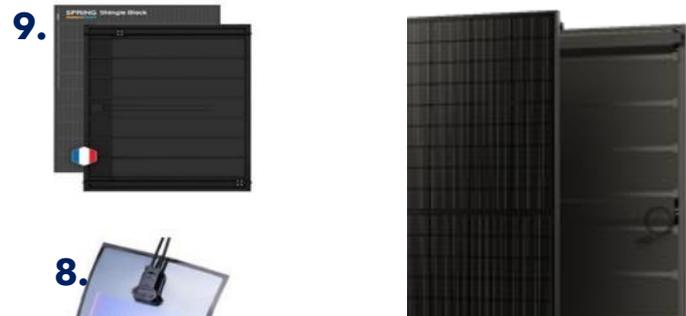
ADVANCED  
BUILDING SKINS

- 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

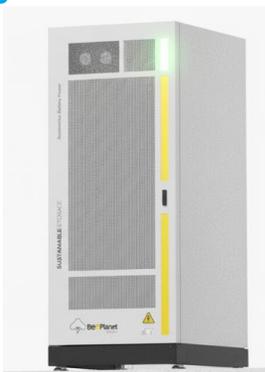
### Solar Energy



Hybrid panels



PV panels

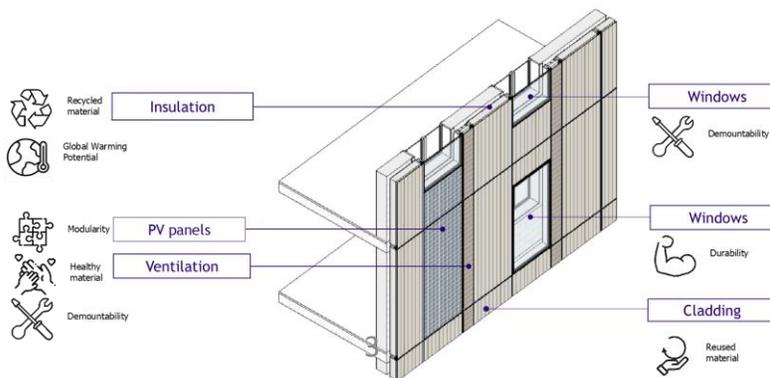


2<sup>nd</sup> life batteries

### Energy Storage



### Prefab insulated wall components



### Ventilation

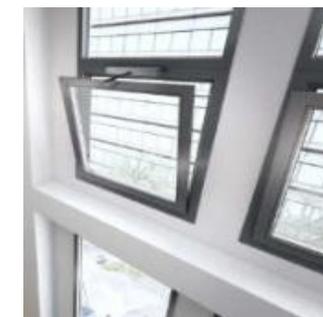


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Ventilation ducts integration in envelope solutions for retrofitting

7.

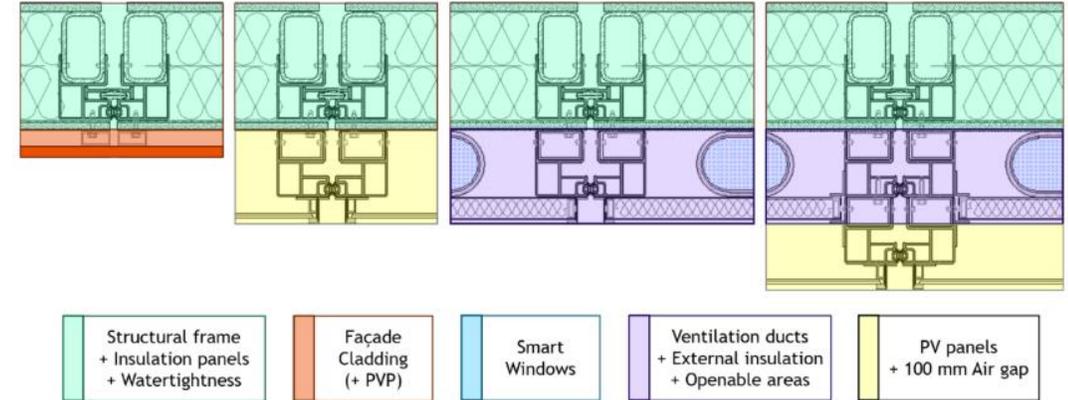
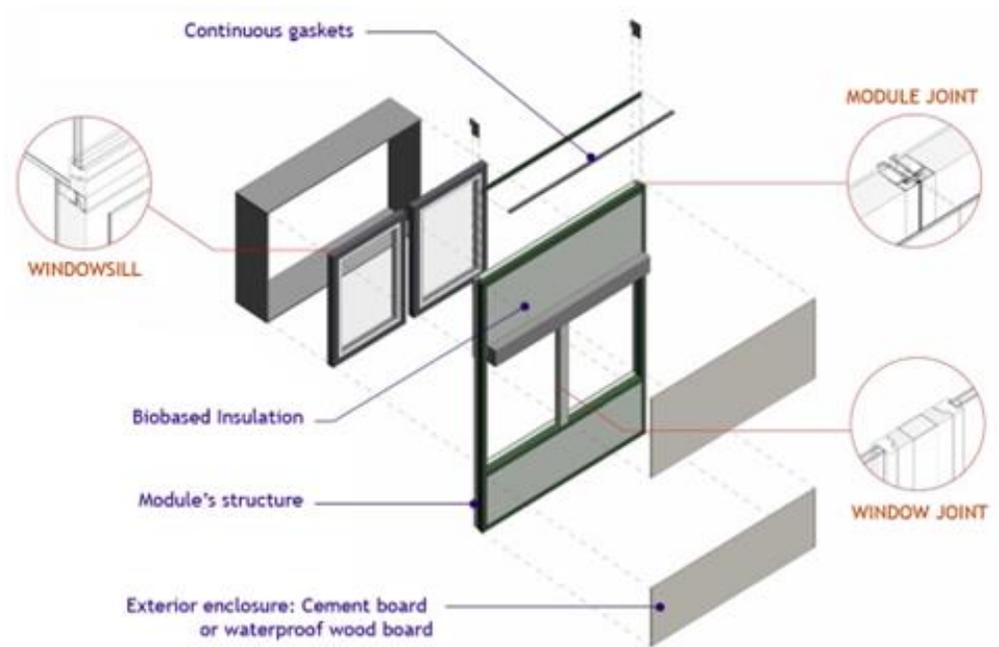


Smart Windows

# Integration of active technologies in envelope

## Prefabricated modular insulated wall component

- AEGIR a modular solution



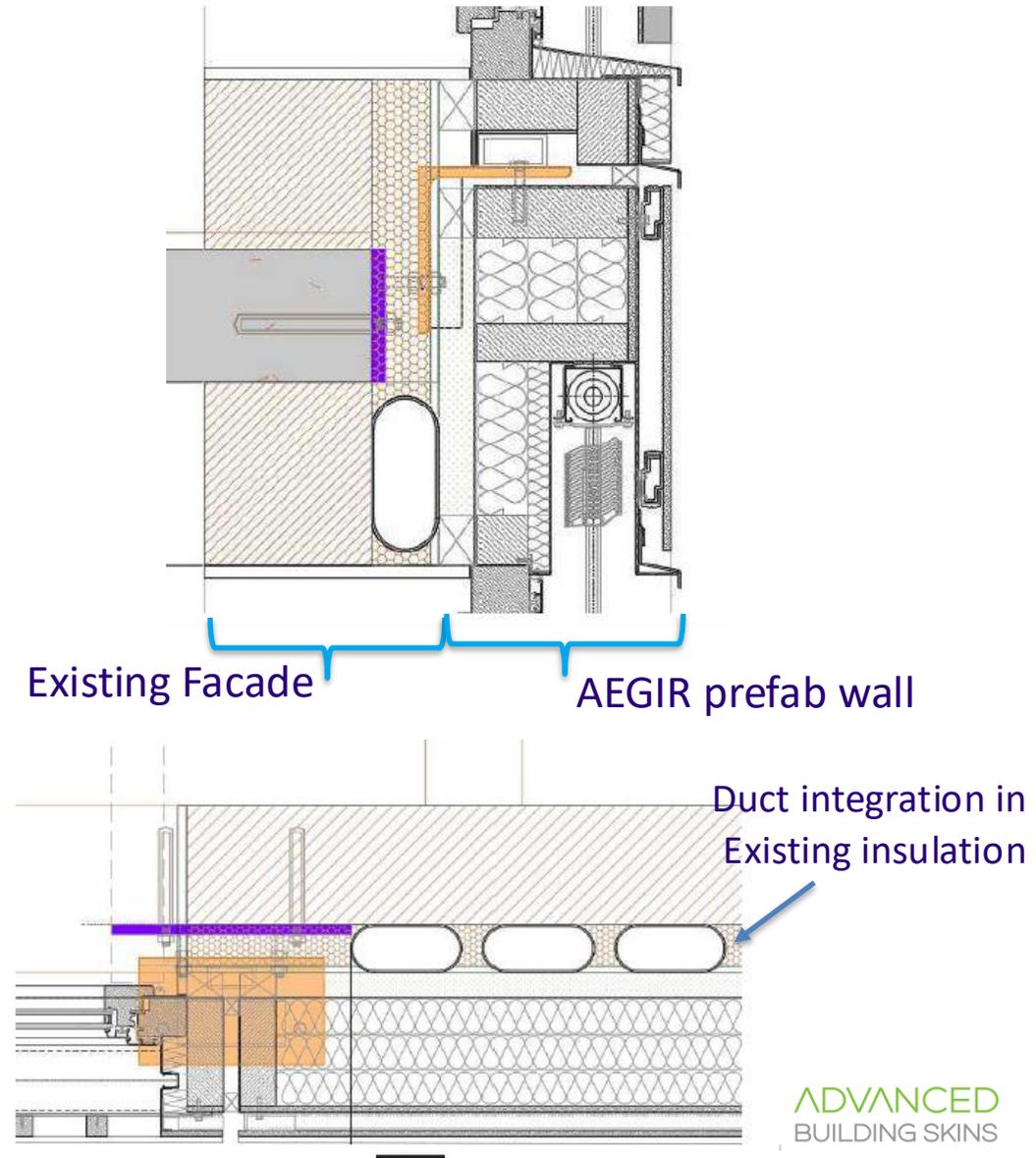
- **Objective:** Implement a Heat recovery ventilation unit for a high energy efficient building retrofitting
- **Challenge:** Integrate fresh air ducts with minimal disturbance for inhabitants
- **AEGIR solution:** Integrate Fresh air duct through the external facade with high integration to the Prefab-facade

### AEGIR modular solution

Fully integrated to the Prefab component

Partially integrated to the Prefab component

- Partially integrated : The French demo example

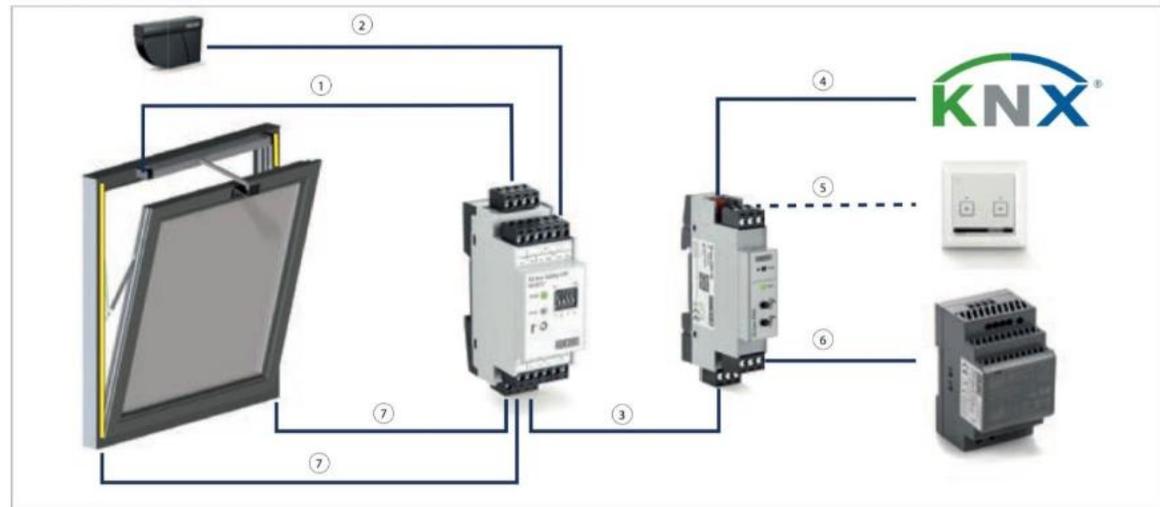


# Integration of active technologies in envelope

## AEGIR & Ventilation coupled to windows automation

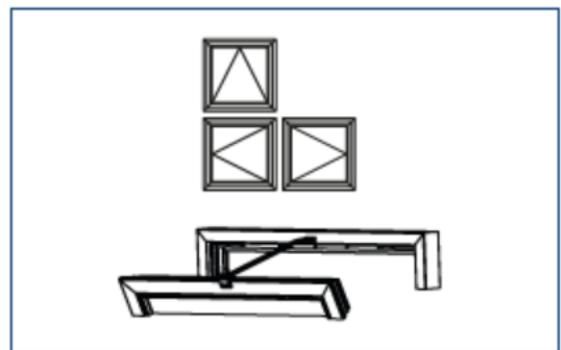
- **Objective:** Value natural ventilation to increase Aire Change Rate and/or reduce mechanical ventilation
- **AEGIR solution:** integrate in the prefab insulated walls a few keys smart-windows and define a control strategy coupled to ventilation unit.

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



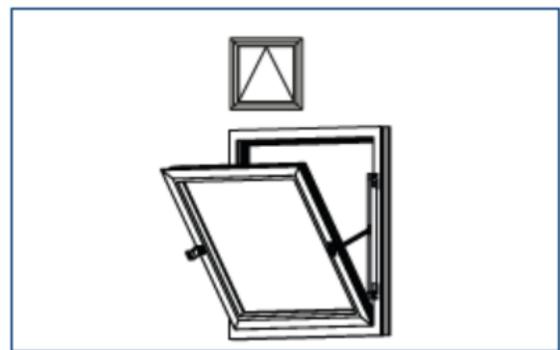
1 = Drive connector cable A/B/S/L (4-core) | 2 = GC 342 sensor fitted to the outside of the window +24 V/GND/TST /Si | 3 = IQ box Safety connection cable and IQ box KNX A/B/S/L (4-core) | 4 = KNX Bus (2-core) | 5 = Vent switch (optional) | 6 = Power supply 24 V/GND (2-core) | 7 = Safety edge connection

Integrated Installation  
Frame Installation, INWARD opening



Bracket set C

Drawbridge Installation  
Frame Installation, INWARD opening

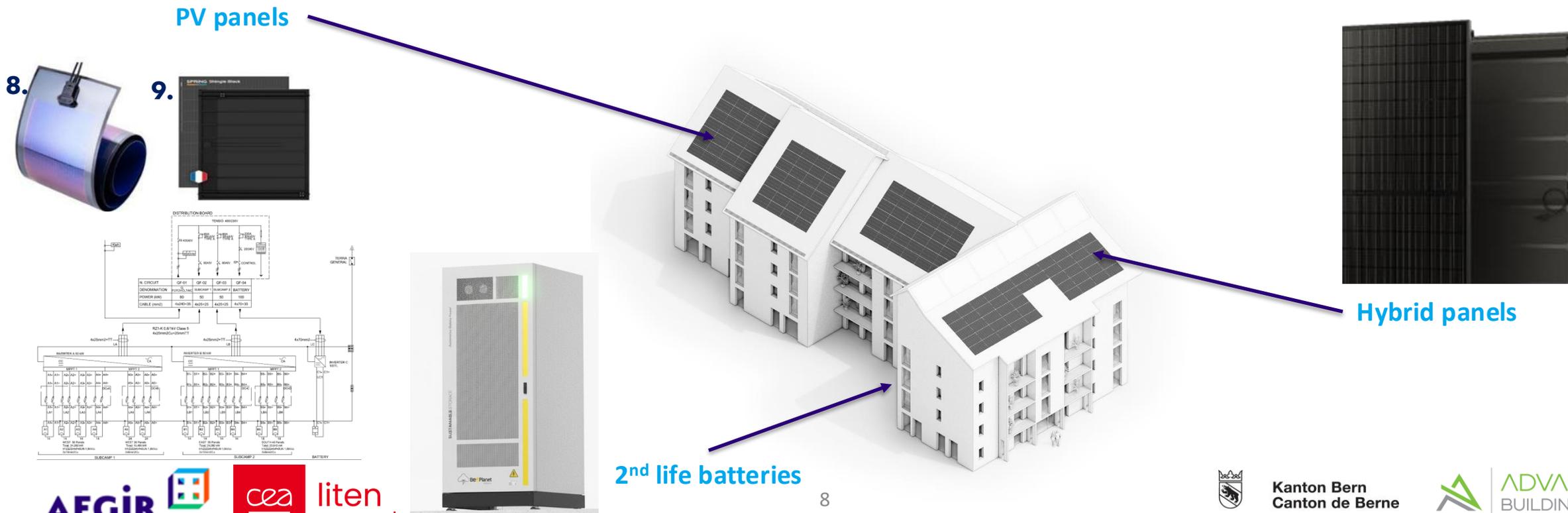


Bracket set A

# Integration of active technologies in envelope

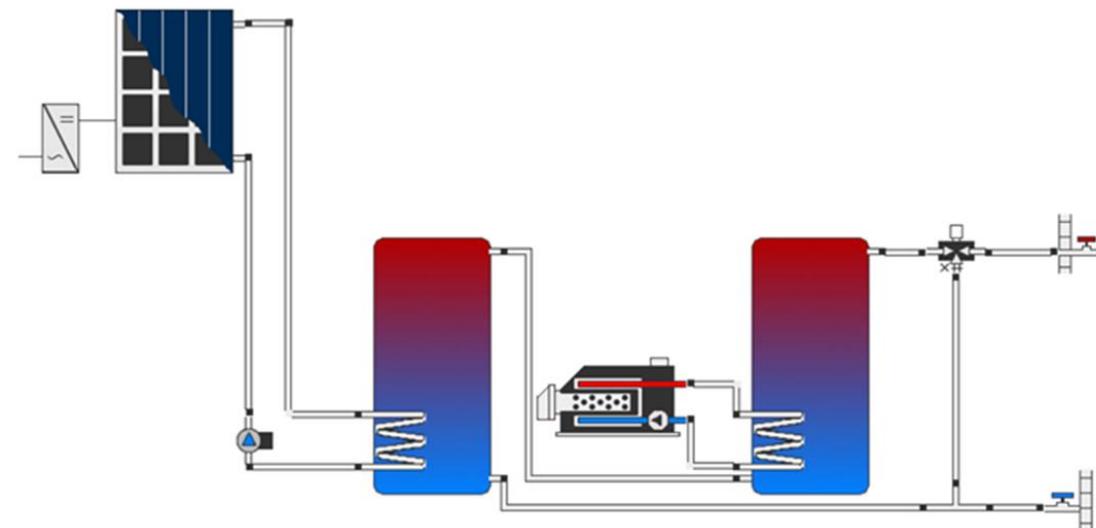
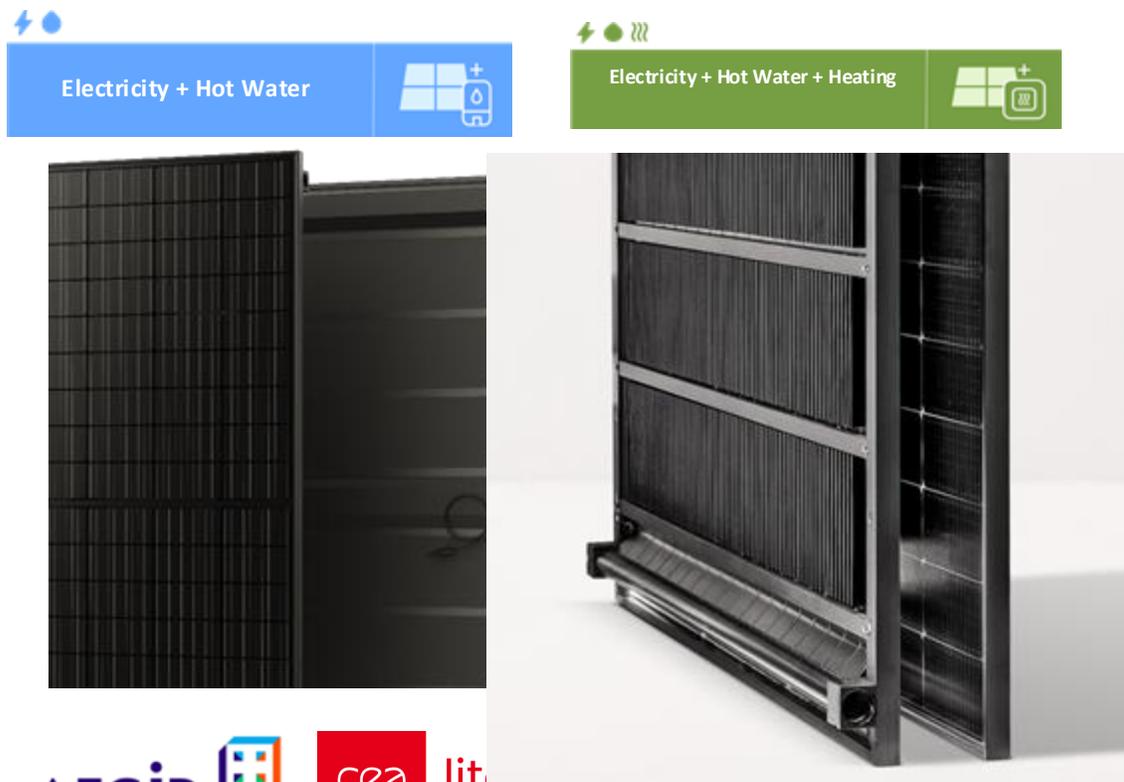
## AEGIR & Solar integration: PV & Batteries

- **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

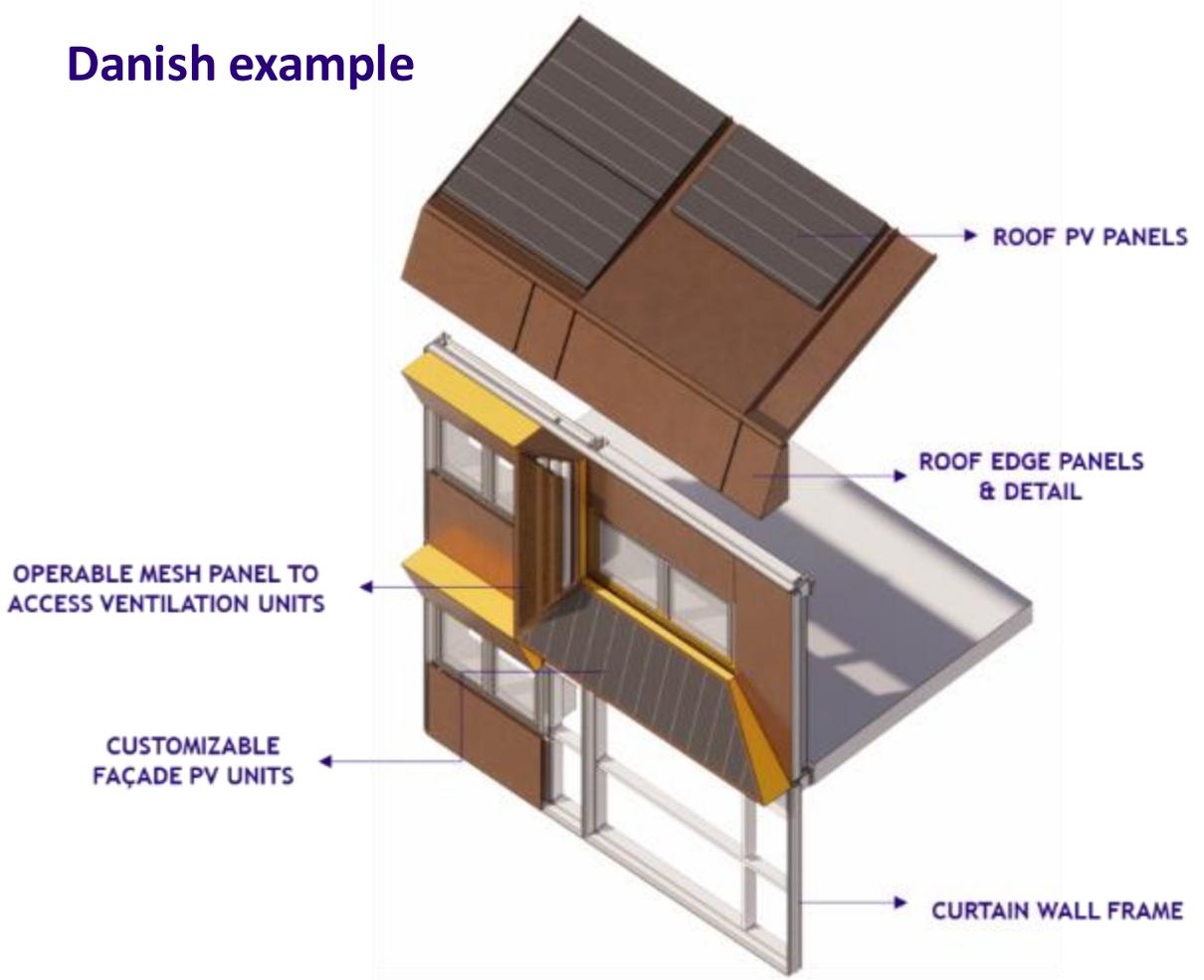


Type of collective hot water system into which PVT panel can be integrated.

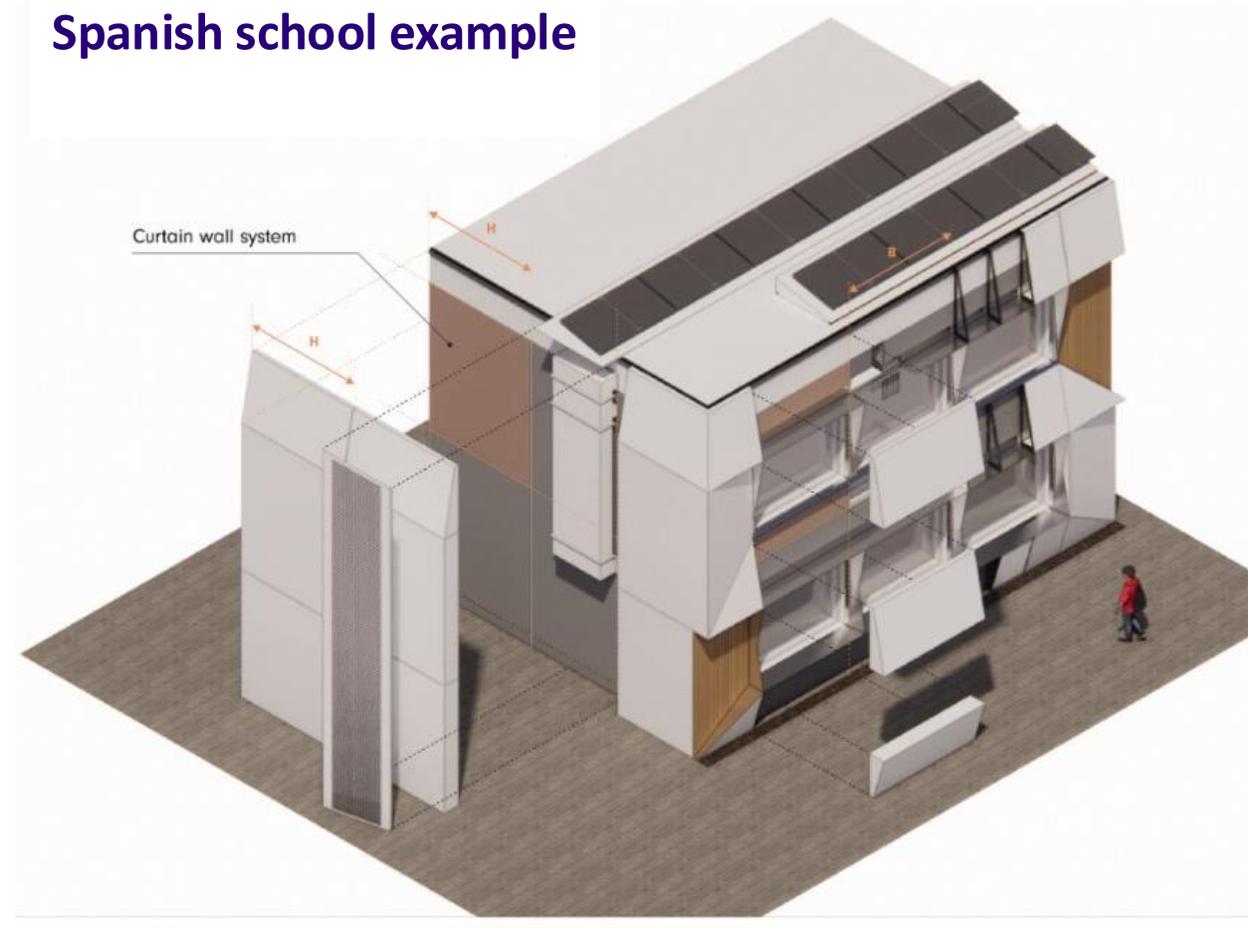
# Integration of active technologies in envelope

## AEGIR modular solar integration & ventilation

### Danish example



### Spanish school example



# THANK YOU FOR YOUR ATTENTION!

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