

## **4RinEU demonstration activities: where do we stand?**

**European construction sites have been hit hard by the recent COVID-19 pandemic. 4RinEU looks to the future.**

### **Haugerudsenteret (Oslo, Norway) – Our first success story. Energy performance to be assessed**

The Norwegian demo case, located in Oslo, is the first example of a successful implementation of 4RinEU methodology. The renovation works took place in the second half of 2018 and lasted only eight weeks, during which the tenants kept living in their dwellings.

The interventions implied a massive use of 4RinEU timber prefabricated technology to refurbish both the roof and the façade of the building, the latter being integrated with new windows and PV panels. New air handling units connected to the [prefabricated façade](#) by means of ventilation ducts have been installed in dedicated technical rooms. Our researchers are currently analysing the data collected before and after the renovation works to assess the improvement of the building's energy performance.

[Read more about Haugerudsenteret deep energy renovation](#)

### **Mariënheuvel (Soest, The Netherlands) – Renovation works on hold**

In the Netherlands, 4RinEU is renovating part (15 over 79 total apartments) of a big apartment block for social housing.

Our strategy here includes the application of a timber prefabricated façade with integrated sun shadings, the replacement of balconies and the enhancement of the HVAC (Heating, Ventilation and Air Conditioning) system through the introduction of mechanical ventilation with heat recovery.

The renovation works were supposed to start towards the end of March with a view to being completed by May. Due to the global emergency caused by COVID-19, the building site had to stop its activities. Despite this, the production of prefabricated façade modules could go ahead as planned, and so did the evaluation process for the installation of the monitoring system which will allow us to compare the building's performance in terms of energy efficiency before and after the interventions. The construction site will reopen by July 2020.

### **La Vall 9 (Bellpuig, Spain) – Tender to find a constructor postponed**

The Spanish demo of Bellpuig consists of a recently built multifamily house with poor performances.

4RinEU will renovate the east-oriented main façade by installing timber prefabricated façade modules, which will include new windows with shading system, decentralised ventilation machines with heat recovery and PV panels. The placement of the façade has been optimised using [EarlyReno](#), a tool created by the project to help designers and professionals choose the best renovation strategy to maximise the use of renewable energy. In line with the other demos, a monitoring system will be set-up to evaluate the performance in the pre and post retrofit condition.

After a few months of closure, the activities in Bellpuig are now resuming starting with the procurement process for the selection of a constructor. Renovation works will start by autumn 2002 and will last approximately four months from the appointment of the construction company.

### **A new demo: Pinerolo, Italy**

The recently acquired demo case of Pinerolo, Italy, will see the implementation of the 4RieEU [plug&play hydronic technology](#) in a multifamily house with 13 dwellings.

The renovation concept that will be tested in this demo is based on three pillars: reducing fossil fuel consumption, increasing the efficiency of the HVAC and finally producing and delivering DHW (domestic hot water). The project involves the installation of an inverse heat-pump connected to the existing condensing boilers via hydronic modules. Thanks to a digital controller, the hydronic modules supply water for domestic use and space heating while minimising energy consumption. The heat pump will be placed over the rooftop, while the 13 hydronic modules (one for each dwelling) will be located under the roof, in a space which is not used at present. All the duct connections between the hubs and the components with the apartments will pass through a cavity in the ventilated façade.

As for the impact of the current crisis on the renovation works and monitoring phase, hydronic units and other components are being produced by Thermics, but the delivery to the demo will be delayed of a few months.

[Read more on 4RinEU new demo site in Pinerolo](#)

### **Looking ahead**

«At the time the lockdown was announced, the four demo buildings were at different stages of progress, from procurement to monitoring of the building's performance after deep renovation» said the project's coordinator Roberto Lollini from [Eurac Research](#). «Fieldwork stalled, but in conformity with 4RinEU approach, we could still analyse data and work on several activities, like the off-site preparation of prefabricated components». Despite the challenges and uncertainties posed by this situation, Mr. Lollini is confident on the possibility to complete the activities in the construction sites by the end of the year and then start evaluating the benefits of the interventions in terms of energy consumptions, comfort, timing of the construction site and costs in the life cycle, as well as the environmental impact.