

# Q/A AND CHALLENGES DEBATE FINAL CONFERENCE CHESS SETUP

18 September 2020

## COLLECTION OF Q/A

### Question to LaVola Pilot (Bureaux Office in Spain):

Did you use PVT in summer also for cooling of storage during night?

The final solution of Lavola's pilot considered PV panels instead of PVT. Thus, energy generated by panels can either be used for heating and cooling through the air source heat pump.

More information on this point can be found at <https://www.chess-setup.net/lavola>

### Question to LaVola Pilot (Bureaux Office in Spain):

What is the reason for more savings than anticipated?

The main reason is that initially for LaVola pilot the project had only been planned to cover the heating demand. However, during the last design phase of the project, it has been decided to also cover the cooling demand with a combined HP.

More information on this point can be found at <https://www.chess-setup.net/lavola>

### Question to Sant Cugat Pilot (Sport Centre in Spain):

Could you operate the services of the sports centre normally during the construction phase? It seems it was quite a challenge. Was the swimming-pool still open or did you require to stop the operation for a long time?

Yes, we could. One of the conditions to carry out the works was that the activities of the sports centre, managed by an external company, were not affected. At the same time, municipal sports activities (basketball, volleyball, hockey, etc.) that were held in the three municipal pavilions (weekly training sessions and weekend competitions) could not be affected either. Curiously, the impact of the works in the pool was less compared to the rest of the activities in the pavilions. This was due to the fact that the roof that had to be reinforced to install the PVT panels and the location of the 100m<sup>3</sup> tank affected the three pavilions and not the building where the pool was located. The fact that there were no sports activities during weekday mornings and therefore critical activities could be scheduled at this time.

On the other hand, the energy connections (thermal and electrical) that forced the stop of the supply to the entire sports centre was made on Sunday and at night. There is no doubt that the premise to maintain the sports activities delayed the execution of the project, but it was undoubtedly widely accepted by users, who preferred to have minor effects than not be left without the sport facilities service.



### Question to Corby Pilot (Ecohomes in UK):

Why the COP (Coefficient of Performance) of the system implemented in CORBY is lower than the theoretical value obtained in the simulations?

It could be due to buffer tank temperature is low (simulated) compared to high (actual) which may affect COP.

### Question to CHESS SETUP Project – General:

Thus, you only use the thermal storage and HP in winter, 6 months of the year. Is that economically viable?

The system is proposed for buildings with a high annual demand for heating and DHW. How to be hospitals, gyms, hotels, multi-family housing, etc. In summer there is high solar radiation and low heat demand. The share of the collected energy which is not used is transferred to the seasonal storage tank to be stored.

During the winter the demand for heat increases and solar radiation is lower. Therefore, the heat pump transfers the heat stored during the summer with very low electricity consumption, to satisfy the energy demand of the building. This helps the self-sufficiency of the system, reduces operating costs and also GHG emissions.

More information on this point can be found at the [Final Brochure of CHESS SETUP](#)

And the payback time?

It depends of every individual case (location, building, energy demand, etc.). We invite you to try the [Simulation Software in CHESS SETUP website](#) to carry out a personalized preliminary system sizing, which includes an estimation of the economic savings, payback and CO<sub>2</sub> emissions reduction.

## CHALLENGES DEBATE

**Participant:** With PVT collectors it is possible to harvest per night and m<sup>2</sup> between 0,4 and 0,9 kWh/m free of cost. The temperature is between 5...10°C below the ambient temperature during night and can be stored in a big cold-water tank. If the size of PVT and the tank are adjusted to the cooling demand, the building air conditioning can be realized as free cooling w/o operation of a chiller.

**CHESS SETUP Consortium:** That's true but we must bear in mind the high amount of PV-T generation needed (therefore, the high amount of space needed as well as its investment costs) and also the investment costs of a thermal storage tank (civil works, piping, control & monitoring system, etc.). That's why it is way easier to deploy these kind of TES projects in new buildings (therefore we could improve the design of the CHESS SETUP system configuration). As Gerard (Sant Cugat Pilot) is explaining, its implementation in existing buildings limits the scope and capabilities of the system.



## EXTRA

**Participant:** Combining with our differential solar tracking systems with our BIFACIAL TRANSPARENT PVT systems, allows us to double the amount of energy per unit of space on the roof.

I have developed and built a new and revolutionary product in the hybrid field several generations beyond what currently exists in the market, to create electricity and hot water HYBRID BIFACIAL PV THERMAL PANEL. All this is done under the auspices and guidance of the Innovation Authority in Israel.

Recently, a combination with a DC / AC hybrid air conditioner and the use of DC electricity and at the same time hot water from the hybrid panels for the purpose of reducing the power consumption of hybrid air conditioners and hybrid heat pumps are leading the way.

Are you interested in collaborating? Do you have another project? I would like to take part in it.

**CHESS SETUP Consortium:** The EU H2020 funded project finishes this month and the project pilots are finished. Nevertheless, one of the objectives of the Project is to replicate and scale the CHESS SETUP system. The consortium is open to collaborate with all stakeholders interested in the system.

## CONTACT DETAILS:

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