

OUTPUT FACT SHEET

Pilot actions (including investment, if applicable)

Version 3

Project index number and acronym	CE1537 EfficienCE
Output number and title	Output O.T3.1 Pilot: Implementing a metro-station integrated PV system to power building auxiliaries with RES
Investment number and title (if applicable)	I1 metro station integrated PV-System
Responsible partner (PP name and number)	Wiener Linien, PP3 WL
Project website	https://www.interregcentral.eu/Content.Node/EfficienCE.html
Delivery date	09.2020

Summary description of the pilot action (including investment, if applicable) explaining its experimental nature, demonstration character and transnational added value

In the pilot project of Wiener Linien GmbH & Co KG a new type of photovoltaic system is tested on the Ottakring metro station. For the first time, PV foils were bonded to the roof of a subway station. These PV foils are five times lighter than conventional PV systems. This feature made the project possible at the first place since these metro stations were not built to withhold the additional weight of a conventional PV system. Another special feature is that a DC (Direct Current) railway system and PV power generation should be in operation together. Therefore, the chosen PV modules had to meet special technical requirements, although they are more expensive than conventional standard products. One of the main challenges was to place the technical equipment such as a frequency converter. Since it was not possible to install the converter on the stations roof (due to its din), we had to allocate it in a spot within the station itself. Once we found the right position, the cable routing needed a precise plan to shorten the distance between the technical room and low voltage main distributor room. The PV modules are merely glued to the roof and the cables are fixed in duct. Once we connected the low voltage main distributor with the technical room, we finally installed the measurement components at the power switch.

NUTS region(s) concerned by the pilot action (relevant NUTS level)

AT, DE, HU, PL, SI, CZ, IT

Investment costs (EUR), if applicable

The investment was financed by the EfficienCE project with a total amount of € 114.846,82 for PV-panels, power inverter, solar cables and the supporting system. The full amount is situated in BL5 (Equipment).

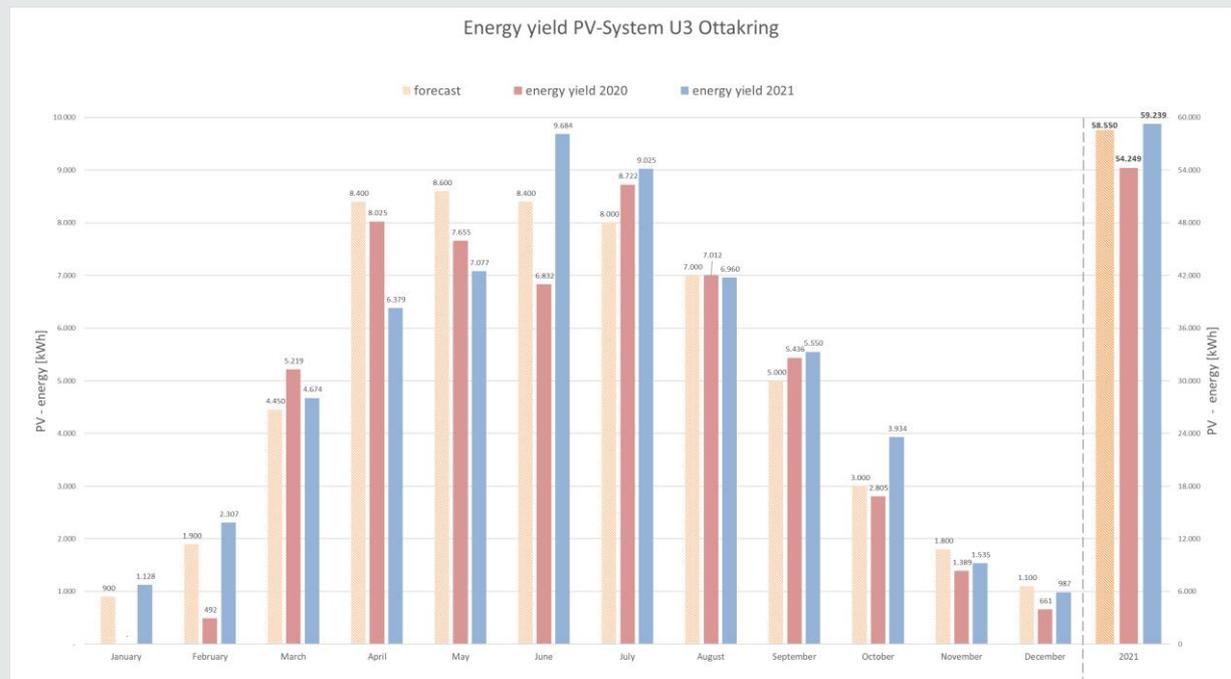
Expected impact and benefits of the pilot action for the concerned territory and target groups and leverage of additional funds (if applicable)

The photovoltaic plant has a size of 360 sqm, a nominal power of 60,3 kWp and an annual output of approximately 60,000 kWh. This energy generation leads to an energy share of the whole metro station (also including a parking hall for metro trains) of 6% of yearly energy consumption. In single month this energy share even reaches up to 13 %. On a daily base, on a sunny summerdy 50 % of the stations power demand is covered by the PV-system. To sum up, the PV-system saves more than 21 tons of CO₂ and more than 6000 Euro every year. The investment is ecologically and also economically beneficial for the company, for the environment and for our passengers.

Sustainability of the pilot action results and transferability to other territories and stakeholders

Regarding the feasibility, our pilot project covers all obstacles (e.g. weight, electrical earthing) other potential locations of mobility providers equally struggle with. Therefore, we do not see any technical, but sure some economical barriers. Regarding the output O.T3.1, the PV system started operating in January 2020 and the energy monitoring started on February 20th 2020, so the data for 2020 are not completely available. The measurements are carried out in common steps of 15 minutes. As measuring equipment, the Siemens PAC 3200 is used, and the obtained data automatically transferred to our energy control system.

On the graph attached you can see the estimated PV output (forecast) compared to the monitored data of 2020 and 2021.



Due to the excellent experience at this metro station, Wiener Linien is currently checking other metro-stations for the possibility of installing a PV system. The goal is to install a PV system on as many stations as possible, to use as much green energy as possible for powering the auxiliary of the station. But with a view to the financial aspect, Wiener Linien will use conventional PV-Systems where it is possible.

References to relevant deliverables (e.g. pilot action report, studies), investment factsheet and web-links
If applicable, additional documentation, pictures or images to be provided as annex

- Deliverable D.T3.1.1 Report on pilot action 1 preparation phase*
- Deliverable D.T3.1.2 Report on pilot action 1 implementation phase*
- Deliverable D.T3.1.3 Energy Audit Metro Station*
- Deliverable D.T3.1.4 Evaluation report on pilot action 1*

Relevant pictures and images



Figure 1: PV-foils on the roof of the metro station



Figure 2: opening event with local authorities, November 2019

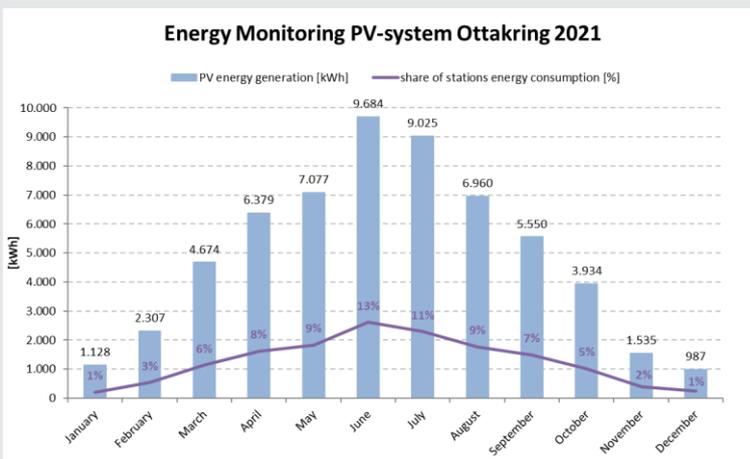


Figure 3: Energy Monitoring of PV-System 2021