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360's off-grid agro-voltaic roof top system

Pilot system

The pilot system is installed at Sherman's Hotel in the Midrasha at Sde Boker, Israel. The site is not connected to the electricity system of the Israeli electricity company. The hotel is located on the cliffs overlooking the Zin Wadi, one of the largest wadis of the Arava desert in the South of Israel.

An off-grid agro-voltaic system

The Sherman's hotel is a boutique hotel near the nature reserve of Wadi Zin and the National Park Ein Avdat. The hotel desires to be sustainable but it cannot run a regular solar infrastructure since it is not connected to the electricity grid. The 360 agro voltaic system is an off-grid rooftop system that provides electricity for heating and cooling, as well as for charging electric cars that are at use at the compound. Underneath the solar panels, hydroponic vegetables, lettuce of different kinds and herbs, are grown and then served in the dining room of the hotel. This system makes double or triple use of the rooftop spaces and it allows growing vegetables with a minimum of water. The fact that the vegetables are consumed where they are produced leaves a zero-carbon imprint and this in the middle of the desert!

When the plan was turned into reality, several challenges came up that made changes in the implementation. The statics of the building of the hotel did not allow for a rooftop agro-voltaic system, which is relatively heavy because of the water system, and therefore this system was moved to the ground. The hotel does have enough space, so this challenge was solved with relative ease. On the roof, innovative panels with dual use were installed: they produce electricity and can heat water on the spot. The innovative panels have a dual use: the production of electricity and direct water heating.

The heavy hydroponic system was moved to the ground and one solar panel is sufficient to produce the electricity for this system. The system is not covered by solar panels like originally planned, and therefore not an agro-voltaic system. Finally, however this fact became an advantage. The Sherman's hotel is in direct proximity to the Ben Gurion Field School and several academic institutes, as well as the high school for environmental studies, which is a boarding school. Students from these institutions come to learn about the hydroponic and solar systems at the Sherman's as well as hydroponic rooftops systems and the site turned into an outdoor study ground.



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Solar system that heats water on the spot and produces electricity.



Hydroponic system with one solar panel only.