



Hybrid solution to ensure energy self-sufficiency in a berry farm

A berry farm Sinikasvis LP located in Sukeva, eastern Finland, has invested into a hybrid renewable energy solution consisting of a solar PV installation (30 kW) and a wood gasification unit (110 kW) for combined heat (80 kW) and power (30 kW) production from wood chips. Sinikasvis LP produces several berry and fruit products such as strawberries, raspberries, forest berries and dried apple chips.

The hybrid solution providing energy self-sufficiency for the berry farm takes into account the seasonal variations of the energy consumption in the farm. During the spring and summer time, the installed solar PV-system produces electricity for berry freezing while the gasification unit is out of use. The operation of the wood gasification unit starts in the late summer when the berry season reaches its peak increasing the power demand for freezers and the heat demand for drying the berries and apple chips. The generated heat is also applied in drying the wood chips, which are used as a fuel for the gasification unit. The wood chips must have a moisture content below 10% for optimal operation of the gasification process. The gasification unit operates annually nine to ten months, as it also supplies heat for the buildings of the farm during the wintertime.

In addition to covering the electricity consumption at the farm, the CHP-plant and the solar PV-system together generate annually around 60 MWh of excess electricity, which is sold to the grid. The farmer has considered of investing into an electric car, as the car could be charged with electricity generated at the site.



KEY WORDS

Hybrid solution, wood gasification, solar PV

COUNTRY

Finland

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ADDITIONAL INFORMATION

According to the farmer, an important driver for the investment of the hybrid renewable energy solution was to financially secure the operation of the berry farm from the increasing electricity price. Freezing the berries has a high power demand throughout the year and the annual electricity consumption of the berry farm is approximately 160 MWh. The wood chips used in the gasification unit are obtained from the own forests of the farmer. The farmer has calculated that the economic value of the wood is higher when applied for own energy production in the farm in comparison to selling the wood for the domestic forest industry. The farmer has been able to establish an own supply-chain for the wood chips, as in addition to being able to harvest the wood for gasification from own forests, the farmer has an own harvester, forwarder and a co-owned woodchipper. An important driver for the investment was also an investment grant obtained from the Centre for Economic Development, Transport and the Environment in Finland.



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