BroilerNet Factsheet S1-C3-4

Roof insulation and electricity from photovoltaics

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Intro to Good Practice

This Good Practice (GP) addresses the issue of improving the carbon neutrality of a broiler farm producing about 380.000 medium-heavy broilers per year, that installed in 2012 a 50 kW power photovoltaic system, 90 m^2 large, on the shed roof.

The shed roof was renovated too with new corrugated sandwich panels, including 15 mm thick polystyrene layer in between.

Size, location and exposition of the photovoltaic system must be considered carefully to maximize the energetic and economic benefits.

There is no risk involved in adopting this good practice; however, the farmer recommends a fire insurance policy that guarantees the replacement value of the insured property.

Figure 1 xxxx

Background & challenges

Broiler farms require electricity to power ventilation equipment, lighting, heating and other needs. By using solar energy generated by photovoltaics, broiler breeders can significantly reduce their long-term energy costs because they are less dependent on traditional grid-supplied electricity.

This independence reduces vulnerability to possible blackouts or interruptions in the supply of electricity from the grid. This is especially important in emergency situations or in rural areas where the reliability of the electricity grid may be limited.

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Additional information

- Investment cost for replacing the roof cover of the two sheds and installing solar panels was 176.000€ and 82.000€, respectively, including regulatory cost.
- Previously, the farm's roofs were made of tiles, in the two-floor shed, and of fiber cement with rock wool insulation, in the one-floor shed.
- Photovoltaic energy production results in improved working conditions for farm operators, reducing the need for maintenance and supervision of traditional energy systems.

Figure 2 xxxxx

Benefits

The main benefit was the reduction in energy costs for electricity and methane. In 2013, 62% of electricity consumption (86.244 kWh) was self-generated.

Further benefits are related to the improvement of the microclimate within the shed, improved litter quality, reduced ammonia emissions, reduced mortality and increased production performance (average daily growth, feed conversion rate).

Additional information

- After the procedure, the mortality rate decreased by 25%, the average daily growth rate increased by 7% and the food conversion rate decreased by an average of 2,5%. A reduction in water use for drinking (10% less) and cleaning (15% less) was achieved due to improved thermal comfort, hygiene and litter quality.
- Improved roof insulation reduced methane consumption for heating by 52% (from 12.239 to 5.805 m^3 standard in 2013).

Publication date: April 2024

Version: 1 (English)

Funded by the European Union

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No101060979. It reflects only the authors view. The European Commission is not responsible for any use that may be made of the information it contains.