Hanzehogeschool Groningen
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Soiling and cleaning solar parks at two locations in the Netherlands

A pilot study to the impact of soiling and cleaning Dutch PV

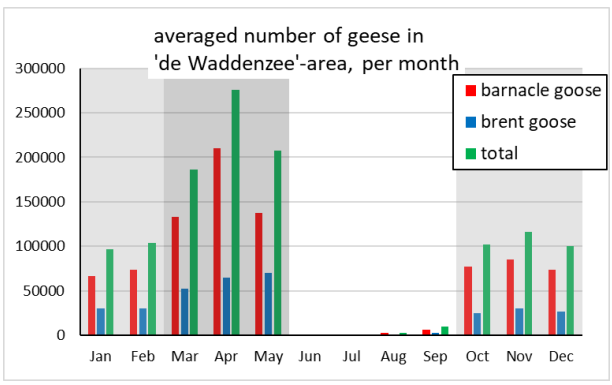
With a SIA subsidy (KIEM.K20.01.006) we studied the impact of bird droppings on the yield of the solar park on Ameland and the yield improvement after cleaning at the solar park in Groningen (at EnTranCe). Currently the advice of companies and organisation about the impact of soiling and cleaning is scattered, to say the least. The two case studies contribute to the development of a transparent recommendation about cleaning solar parks in the Netherlands.

The two case studies

Solar park Ameland	Cleaning at EnTranCe
	
Two times a year geese visit the island of Ameland. The dirt they leave on the PV panels worried the owners. Therefore, they asked us to determine the impact thereof on the PV production.	Part of solar panels at our own facility were cleaned monthly, half yearly and once, with professional equipment and osmosis water. The yield improvement per month was calculated.

Solar park Ameland

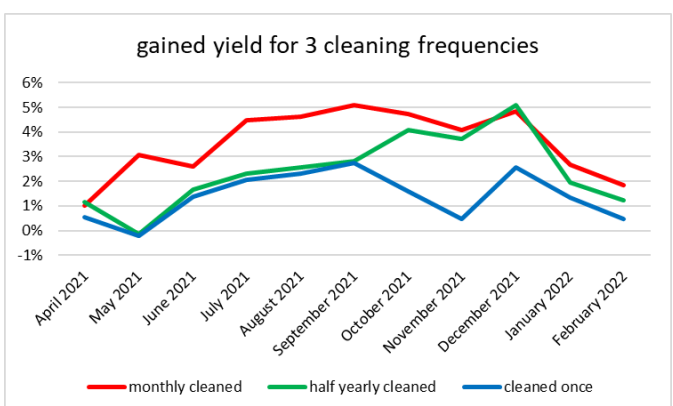
The geese migration pattern was correlated to the, irradiance corrected, monthly energy yield of the solar park.



No clear correlation was found, and we provisionally conclude that geese droppings hardly reduce the energy production of the solar park. This could be related to the relatively small area of the soiling or rain that ‘naturally’ cleans the panels regularly.

Cleaning at EnTranCe

Gained yield is defined as the difference between the obtained and the expected energy production of the cleaned panels. The expected yield is based on historical yield ratios between the cleaned and non-cleaned panels, and the actual yield of the non-cleaned panels. During winter periods the energy production of solar panels is very low, and the relative error in the calculation is therefore relatively large in that season.



Regular cleaning of EnTranCe’ PV panels resulted in a small gain in production, this effect is less when cleaning is less frequent.

Conclusion and follow-up

The two case studies detail examples of the impact of soiling and cleaning on PV park production.

Solar companies are aware of the strong dependence of the impact on location, panel orientation, tilt angles and much more. Therefore, we gathered a large number of partners interested in extending the pilot study to study more solar parks.

Researchers

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