

EENX15-21-25 Stop climate change: generate electricity from rainwater

Background

Most of the CO₂ emissions, origin from coal and oil, are due to our need of energy. CO₂ neutral electric energy is a main alternative, but it needs to be produced. There are many ways, or equivalently, competing technologies, for the climate friendly generation of electric energy. Each alternative has its bottleneck, sometimes it is cost, for example solar panels, sometimes it is availability, such as the limited number of rivers for waterpower. Historically, power generation plants have been large to be economically efficient, however, the past decades there have been new possibilities for small producers to be economically competitive. This project is about to design a technical solution for generate electricity from rainwater falling on roofs, and to calculate the conditions for such solutions to be economically motivated.

Problem description

Design a system generate electricity from rainwater on roofs of basically all kind of buildings. The amount of electricity which can be generated in this way from a single roof is not large. Hence, to be economically motivated, the system needs to be cheap. Calculate the economy of such a system, a realistic cost for the designed system, + necessary equipment and work for connecting it to the grid in the house. What is the price of the electricity generated in this way? Is it economically motivated only for higher buildings and larger roofs? Compare the price with the price of solar generated electricity. Potentially, the same roof can be equipped with both solar panels and rainwater generators, and then, to some extent, the rainwater will make the roof generating the electricity when the panels are not. Investigate how this will decrease the need of use of the grid, or storage in batteries.

Målgrupp: TKAUT, TKMAS, TKELT, TKDAT, TKTFY,

Gruppstorlek: 3–6

Antal grupper: 1

Förkunskapskrav: Basic control, basic mechanics

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(Handledare och Examinator kan meddelas senare när projekten är tilldelade)