

Response to reviewer

Reviewers' Comments:

Reviewer: 1

This paper proposed a harvester with a helix s-type vertical axis to catch the wind energy. Through the structure design, this harvester gains 10.1 mW at the wind speed of 10.1 m/s, which is larger than the conventional configuration energy harvester. However, the explanation of the energy conversion process is lack. In addition, the paper writing does not meet the requirement of the journal. I think that this article cannot be accepted and major revision is needed.

1) The process of energy conversion should be a core part of an article related to the wind energy harvester. The detailed mechanism of the generation unit should be explained on the Page 3.

Response:

In order to better explain the structure and mechanism of generation units, we have added Section 2.3 and Figure 2. The mechanism has been explained on Page 4, Line 126.

2) Please check the figures in the article carefully. The Figure 7 is very unclear. Please replace it with the high-resolution image.

Response:

We have carefully checked throughout all figures. The unclear Figure.7 have been replaced in on Page 9, Line 273.

3) The effect of the inner plates number is discussed in this article in Page 5, while the energy harvest performance of the helix s-type vertical axis configuration energy harvester without inner plates should be added.

Response:

The inner plates of the HSVA harvester has been added on Page 2, Line 79 in the revised manuscript.

4) Some sentences do not meet the requirement of academic writing in a qualified academic paper. The grammar mistakes and confusion are marked red.

Response:

We have carefully checked throughout the manuscript to correct grammatical errors. All those mistakes have been listed as following:

1. On Page 1 Line 43: “ [32] proposed a self-power supply device which is base on triboelectric

nanogenerators and electromagnetic generator.” has been modified to “[32] proposes a self-power supply device which is base on triboelectric nanogenerators and electromagnetic generator.”

2. On Page 2 Line 47: “[14] designed the triboelectric electromagnetic hybrid nanogenerator for self-powered sensors.” has been modified to “[14] designs the triboelectric electromagnetic hybrid nanogenerator for self-powered sensors.”

3. On Page 2 Line 68: “When the external wind speed changes, the HSVA harvester can enhance the power generation efficiency of the generator to reduce the gap between actual and desired power by changing its own mechanical structure to match wind speed.” has been modified to “When the external wind speed changes, the HSVA harvester can enhance the power generation efficiency of the generator to decrease the power error by changing its own mechanical structure to match wind speed.”

4. On Page 2 Line 75: “Additionally, the structure of the HSVA harvester has a strong protective effect as the wind speeds rose 10.1m/s.” has been modified to “Additionally, the structure of the HSVA harvester has a strong protective effect as the wind speed rises to 10m/s.”

5. On Page 6 Line 183: “In addition, it also increases the replenishing breeze energy of the concave surface airflow on the side air side of the convex surface, and the positive torque has also increased.” has been modified to “In addition, it increases the replenishing breeze energy of the concave surface airflow on the side air side of the convex surface, and the positive torque also increases.”

6. On Page 6 Line 201: “In a moderate breeze environment, the star-up wind speed of the HSVA harvester is 0.8m/s, are smaller than those when the HFA harvester is driven (1.2m/s).” has been modified to “In a moderate breeze environment, the star-up wind speed of the HSVA harvester is 0.8m/s, is smaller than the star-up wind speed of the HFA harvester (1.2m/s).”

7. On Page 7 Line 237: “Therefore, as wind speed increased or decreased, the wind cup captures the random breeze energy of the environment directly, and the HSVA harvester can automatically adjust to typical of different winds.” has been modified to “Therefore, as wind speed increases or decreases, the wind cup captures the random breeze energy of the environment directly, and the HSVA harvester can automatically adjust to typical of different winds.”

8. On Page 9 Line 257: “Moreover, as in environment of strong breeze, the function of helix s-type vertical axis can protect the structure of the HSVA harvester avoiding damage.” has been modified to “Moreover, in environment of strong breeze, the function of helix s-type vertical axis can protect the structure of the HSVA harvester avoiding damage.”

9. On Page 9 Line 265: “*On Fig. 7b, when wind speed is 4.1 m/s, the voltage trends are charged with different capacitors.*” has been modified to “*In Fig. 7b, when the wind speed is 4.1 m/s, the voltage are charged with different capacitors.*”

10. On Page 10 Line 279: “*Additionally, in Fig. 7d and 7e, the HSVA harvester is applied to power a wireless hygrothermograph, which can sense the surrounding temperature as well as humidity, and the data can be send to the smart phone though the bluetooth technology.*” has been modified to “*Additionally, in Fig. 7d and 7e, the HSVA harvester is applied to power a wireless hygrothermograph, which can sense the surrounding temperature as well as humidity, and the data is transmitted to the smart phone though the bluetooth technology.*”

11. On Page 10 Line 304: “*the HSVA harvester is well suited for the exploitation of natural random wind that normally has weak driving force, varied speed, and intermittent availability.*” has been modified to “*The HSVA harvester is well suited for the exploitation of natural random wind that normally has weak driving force, varied speed, and intermittent availability.*”