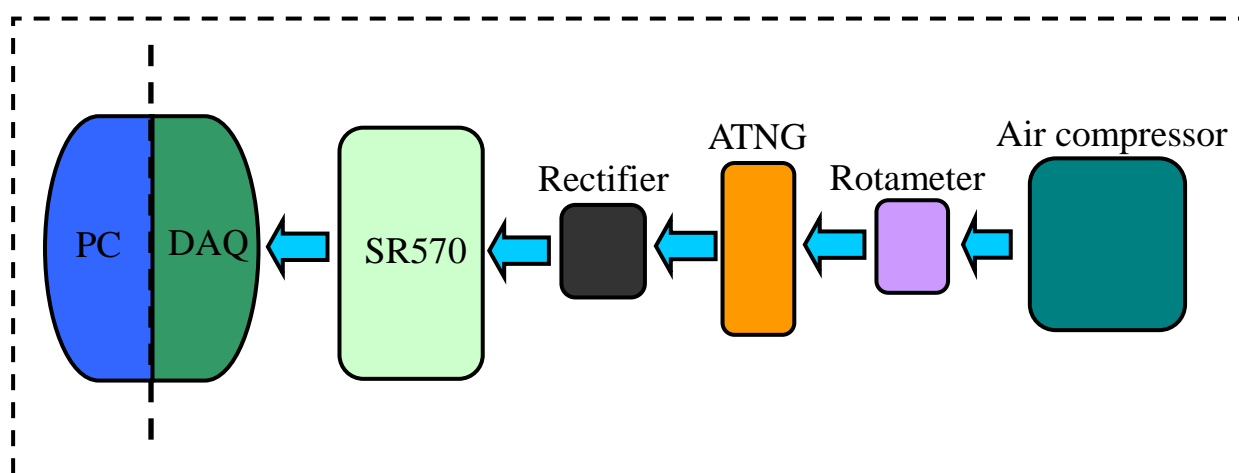
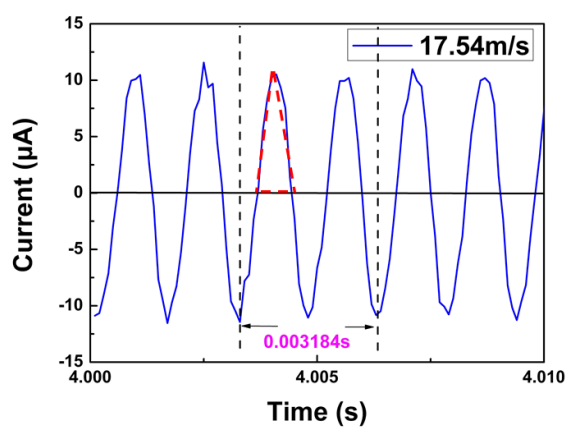


## Electronic supporting information



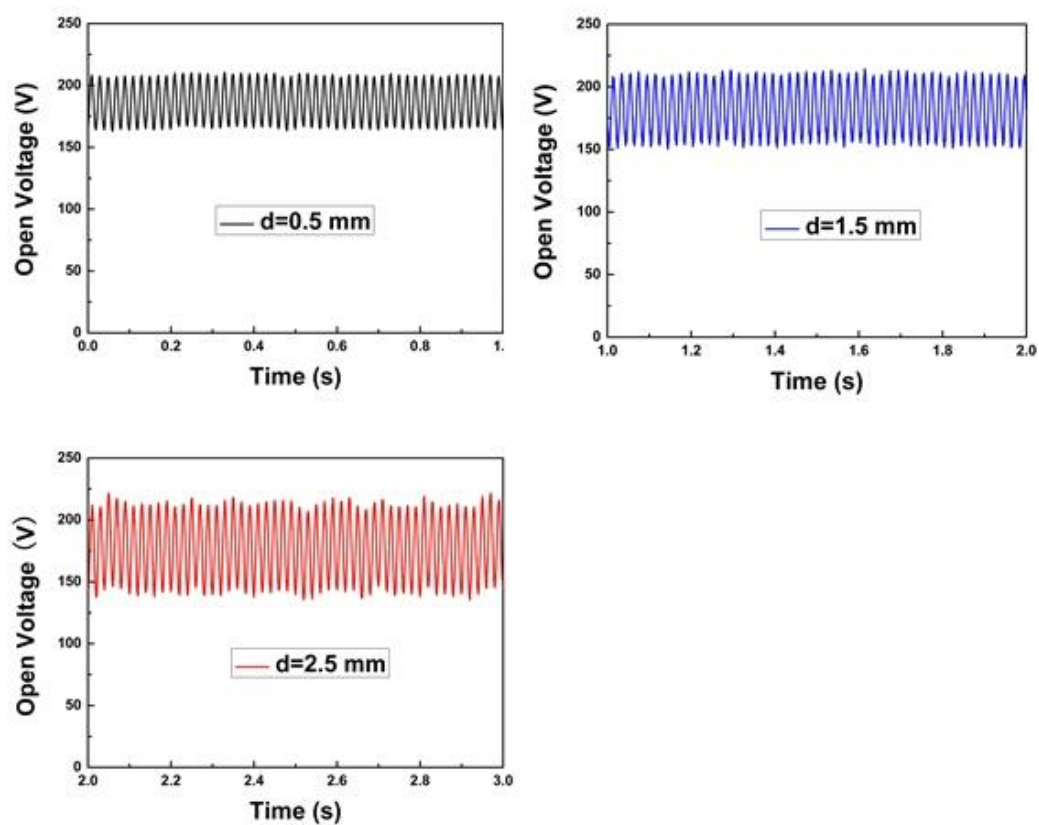
**Figure S1** Schematic diagram of the setup and measurement system for testing the performance of ATNG.



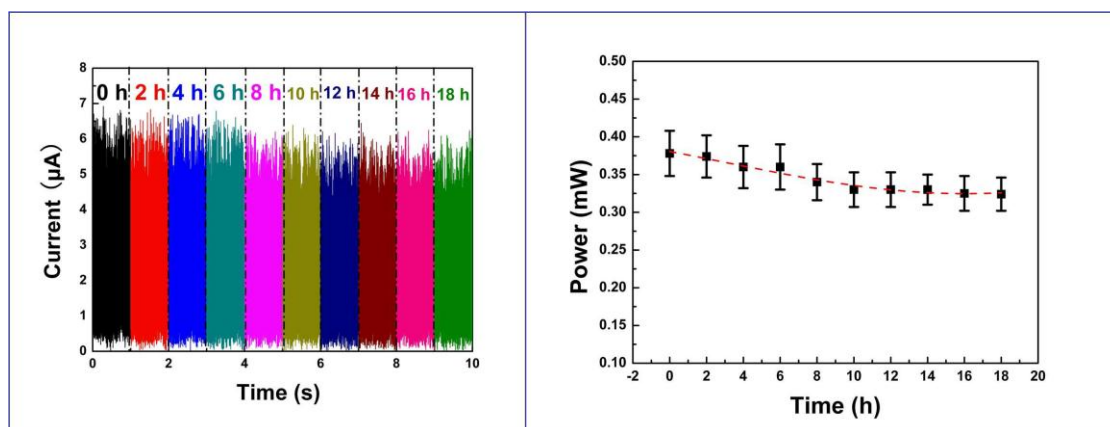
**Figure S2** The detailed calculation details of the charge quantity in Fig. 4.

As shown in **Figure S2**, the area circled with red dash line means charge transfer in half cycle due to the equation  $dQ = idt$ . As  $dt = 0.003184 \div 4$  (s),  $i = 10.6 \mu\text{A}$ , we calculated  $dQ = 8.4 \text{ nC}$ . Considering the working area of PTFE film  $2.0 \text{ cm}^2$ , the charge transfer quantity density  $dq = 4.2 \text{ nC/cm}^2$ .

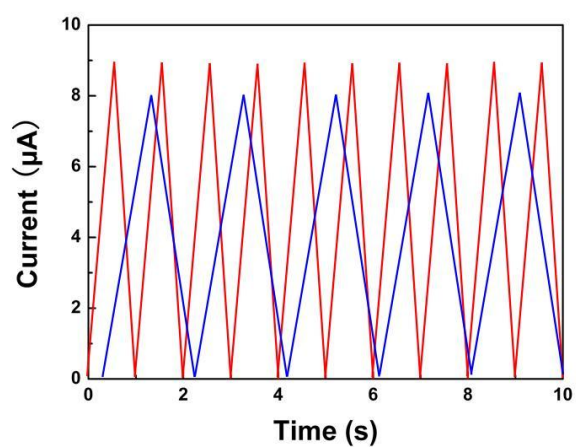
This area also can be calculated by origin program using 'Integral' option.



**Figure S3** The open-circuit voltage output signals of three ATNGs with different electrode gaps.



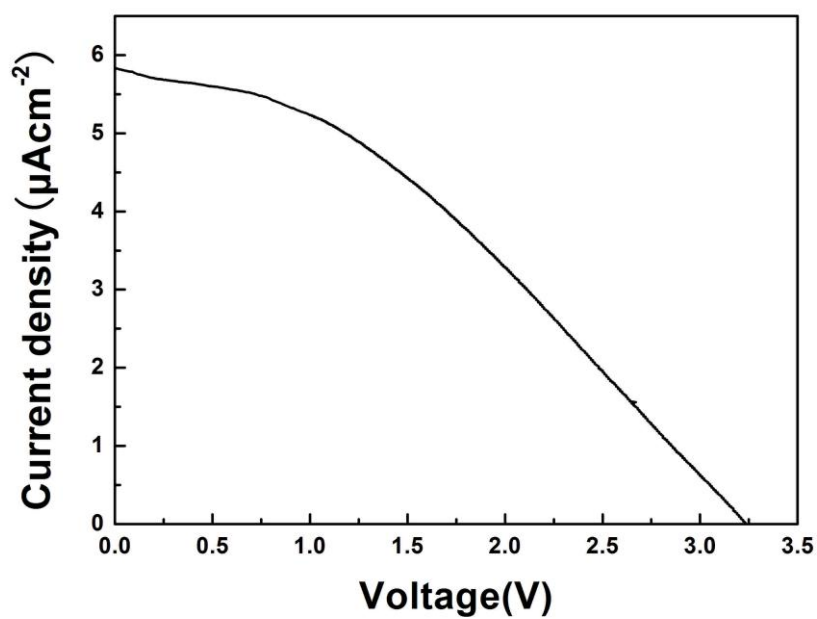
**Figure S4** Stability test of ATNG (size: 1×3 cm, electrode gap: 1.5 mm) under a wind speed of 7 m/s.



**Figure S5**

**Figure S5** The example to show the bottom of the G1+G2 curve above zero value baseline.

Two current-time curves are shown in **Figure S5**, from which we can observe that the frequency of blue curve is a little smaller than that of red one. When the initiative phases of two signals have a little difference, we can observe that most of the superposition of two signals must locate above the baseline except some spots such as (time=10 s).



*Figure S6* Performance of DSCs under simulated sunlight (1 mW/cm<sup>2</sup>)

**Table S1** A list of wind scale and corresponding wind speed.

Breeze	3.4~5.4 m/s
Moderate breeze	5.5~7.9 m/s
Cool breeze	8.0~10.7 m/s
Strong breeze	10.8~13.8 m/s
Moderate gale	13.9~17.1 m/s
Gale	17.2~20.7 m/s