

# **A metal-air scavenger for powering robots, vehicles, and electronics**

Pikul Research Lab

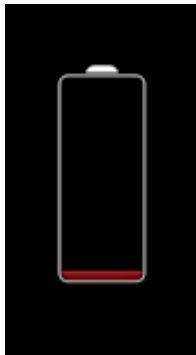
Mobile robots are becoming prevalent in society



<http://smartcity.lv/why-your-pizza-may-never-be-delivered-by-drone/>

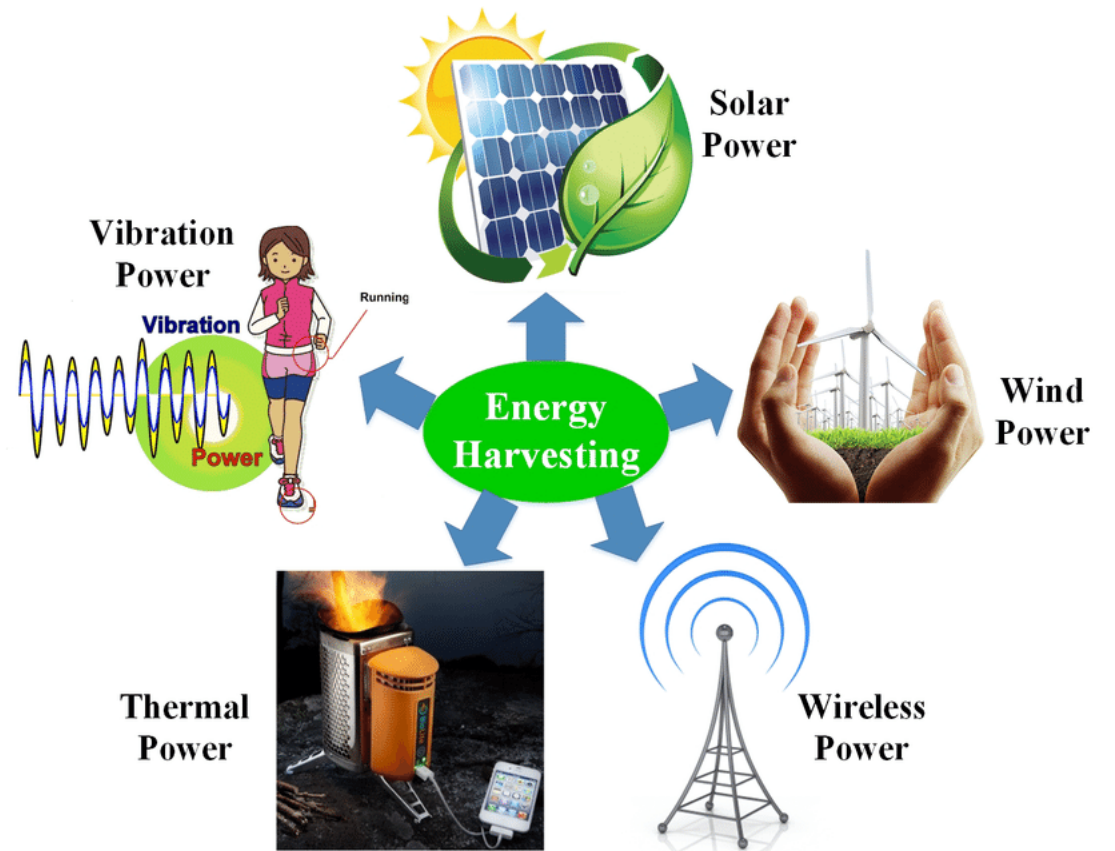


<https://newsroom.ferrovial.com/en/news/ferrovial-services-presents-the-a1a3-robot-an-innovative-trolley-for-street-cleaners/>



Most mobile and portable electronic technologies are limited by their ability to store energy.

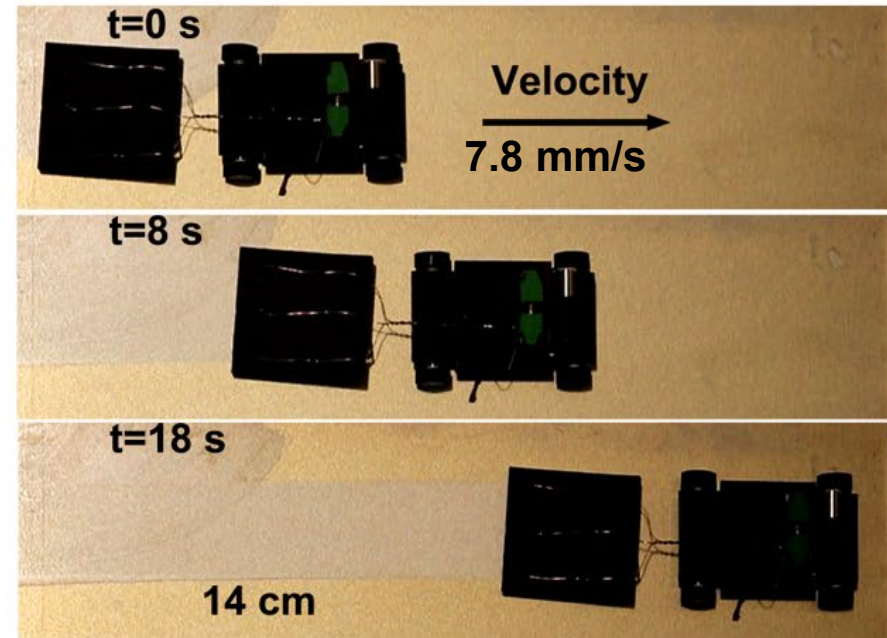
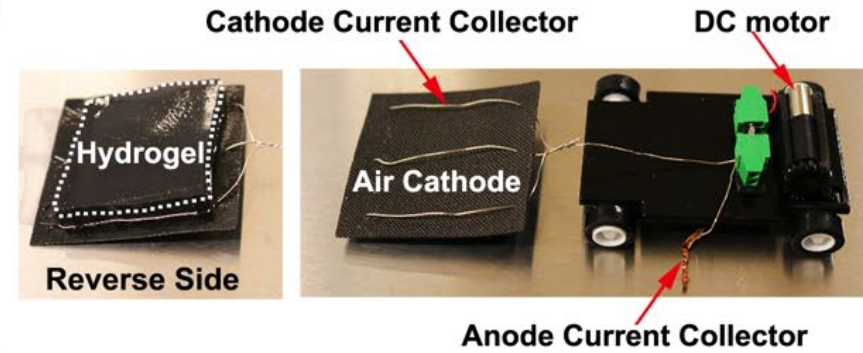
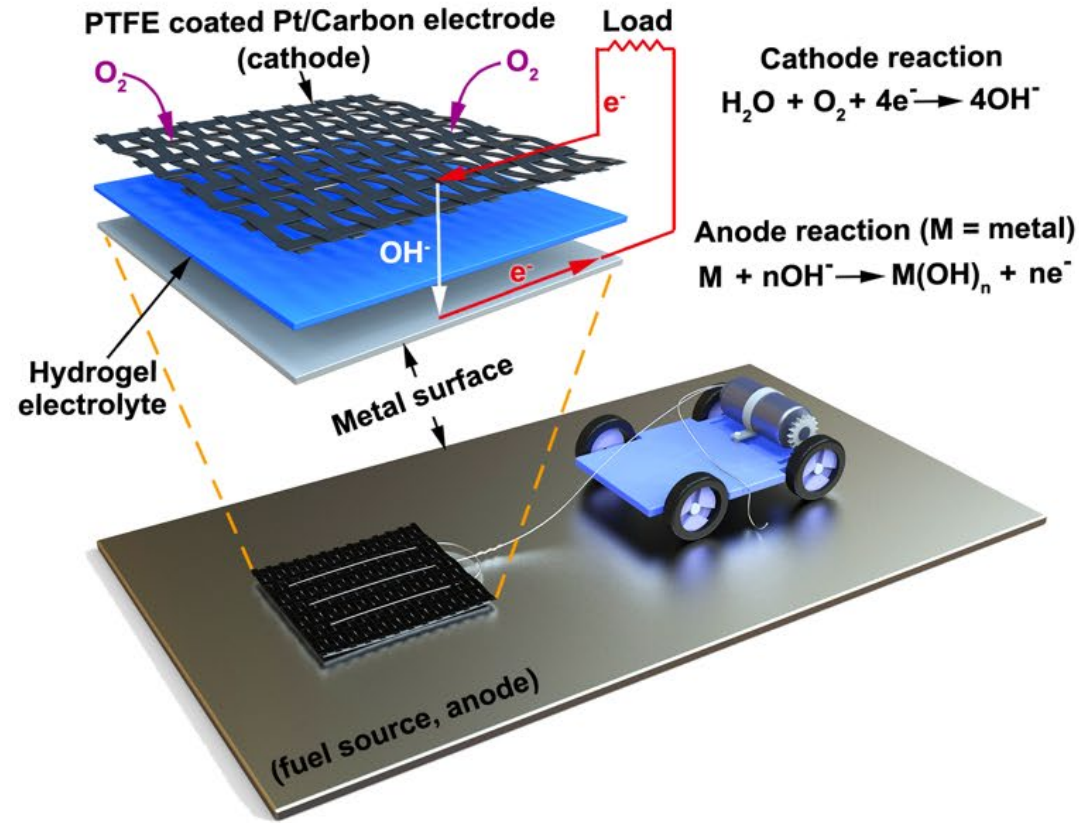
For example, The max flying distance of a drone is limited to 4.3 miles because of the battery (DJI company)



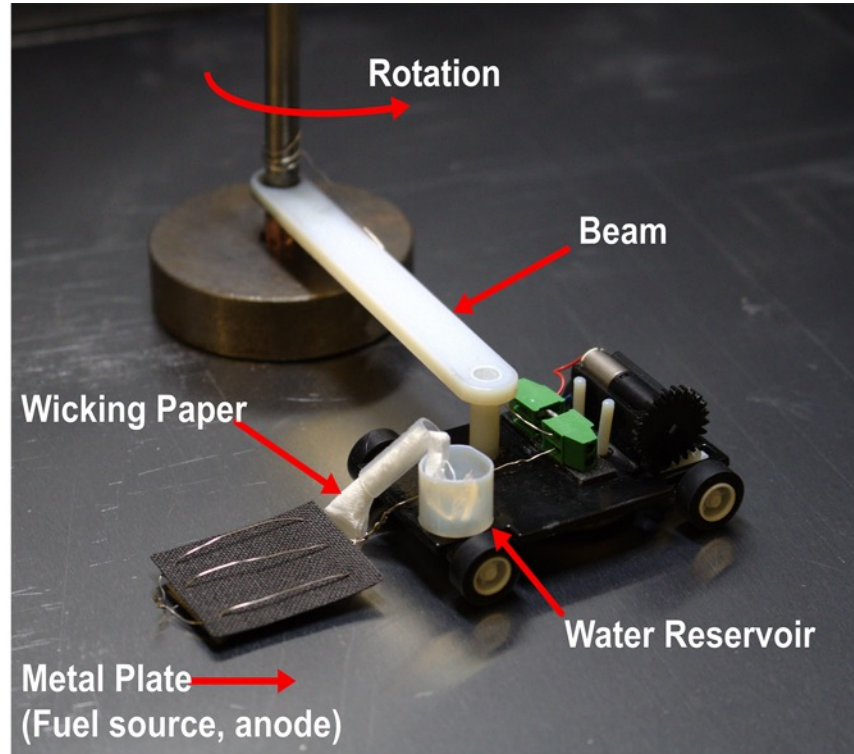
Zhao, Nan, et al. IEEE Access 5 (2017): 10403-10421

In addition to storing energy, there are technologies that allow devices to extract energy from their environment, but these tend to have low power and require specific environmental conditions.

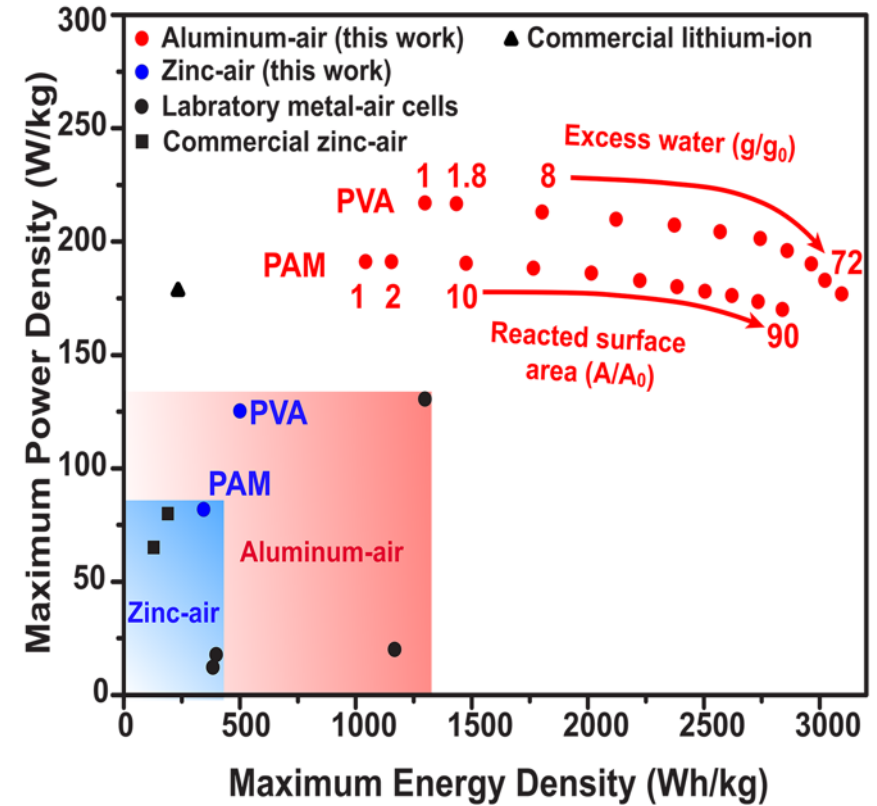
# Metal-air scavenger (MAS)



We have developed a technology that can power electronics by “consuming” metal from external surfaces and “breathing” oxygen from the air.



This technology can power robots, vehicles, and electronics by being dragged across metal surfaces. We demonstrate this with a toy-vehicle driving in a circle on top of the metal sheet. which powers the vehicle.



The ability to move and extract energy from large metal surfaces makes the effective energy density of our technology 1-3 X higher than the best batteries.