

UGM Students Design Eco-Friendly Power Bank


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The number of active smartphone users in Indonesia has increased from 55 million in 2015 to 100 million users in 2018. This increase is directly proportional to the increasing use of power banks as electrical energy deposit. However, conventional power banks are not eco-friendly due to the use of Lithium batteries. Not to mention its short lifetime, long charging time, and inflexibility because it depends on power sources to recharge.

Initiated from the problem, a team of Student Creativity Program for Karsa Cipta (PKM-KC) led by Eki Bagas Candra Wardhana (Electrical Engineering of Vocational School) and joined by Afifah Alnun Mardiyah (Engineering Physics) also Wida Reza Hardiyanti (Economics), has successfully invented an environmentally friendly power bank. The product called Polt or power life time is a power bank that uses solar energy, motion, and pressure energy. "The abundant energy from sunlight, motion, and pressure around us can be converted into electricity to charge the power bank," said Bagas on Friday (7/13) at UGM.

The power bank equipped with fast-charging feature, he said, uses piezoelectric to convert pressure into electricity, kinetic with Halbach Array to convert motion, and solar cell to convert solar energy. After that, the power obtained is channeled to the super-capacitor so it can charge quickly.



One advantage of Polt is the eco-friendly feature because it does not use Lithium batteries that contain mercury. In fact, it is more power efficient for not depending on the State Electricity Company. “Polt comes with a fast-charging feature so it charges quicker than conventional power banks.”

From the experiment performed by Afifah, putting the power bank under the sun for 1 hour can charge the smartphone for 1.5 hours. Meanwhile, running for 30 minutes or walking for 10,000 steps while carrying the device will generate enough power to charge smartphone for 1.5 hours. Therefore, this innovation by UGM students is expected to be a solution to the electricity crisis in the future.

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