

UGM Launches Low-Emission Electric Car

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UGM launched electric car, eSemar Xperimental, to be used formally as means of transportation on campus. Inauguration of the electric car was conducted by the Rector, Prof. Ir.Sudjarwadi, M.Eng., Ph.D., through a test drive around the yard of UGM Central Office, Wednesday (28/3).


The car launching is one of the efforts made by UGM to realize educopolis campus which is noise pollution-free. Previously, UGM has also sought the provision of low-emission means of transport by giving free service of campus bikes for its academic community. "The electric car is one of the efforts to provide low-emission transportation," Dr. Ing. Singgih Hawibowo, Director of Asset Management and Maintenance Directorate UGM explained at the launch.

Singgih said that the electric car is aimed at the disabled and elderly people, VIPs as well as academic community who are unable to travel within the campus by bicycle or on foot. To use the service, people can contact the manager of electric car by calling (0274) 69991555.

At present, Singgih said, UGM operates one unit of electric car. In the future, it will gradually develop more cars.

Dr. Jayan Sentanuhady, Semar Team Coordinator of Mechanical and Industrial Engineering Department and the electric car developer revealed that eSemar Xperimental car was made with the concept of energy saving which environmentally friendly. It uses AC 3 phase motor with 48 volts as the main driving machine. This makes it more energy efficient than other cars that usually use DC motor in the engine. "The advantage of using AC not DC motor engine can reach efficiency level up to 80%. Meanwhile, the efficiency of an ordinary is only about 35%," he explained.

However, Jayan said, there are a number of challenges related to the use of this car. The lowest cost is around 200 million rupiah for the assembly of this car, driving range is very limited to about 50 Km. "The battery is only able to go a distance of approximately 50 kilometers. After that it should be charged again for about 6 hours," Jayan said. Moreover, battery charging should take into account infrastructure charging since household electric capacity is usually limited.



Jayan said this electric car has been developed since 2011. It sits six, body made of composite fiber material with a 3 phase AC motor powered 48 volt as the main driving. Meanwhile, energy storage system uses deep cycle battery. It can run at speed 25-30 Km/h. "Currently, we have only 1 unit but there are two eSemar Experimental cars with 4 seats and a eSemar Hybrid car combining battery, solar cell and LPG engine for power which is planned for completion this year," he said.

These low-emission vehicles are entirely designed by students joining the UGM Semar team, namely Panji Setyo Nugroho (electrical designer) and Yahya Muhammad Nurul Ahbab (frame designer). The manufacture took over 6 months while not all materials are from local materials. At least 40 percent of components such as controllers and electric motors are imported. The rest is from local materials. "This car still uses 40% imported material. But in the future we would increase the use of local components in the manufacture of eSemar Hybrid and Green Bus," he said.

Jayan added, in 2013 Green Bus will also be developed using the hybrid system with 100% energy source of deep cycle batteries coupled with an electric generator with a main mover CNG Engine for backup. It is designed for 22 seats. The chassis and body design is built with green concept without glass window. It uses AC Motor 50 hp 380 volt as the main engine and CNG Dedicated Engine as the secondary one.

Meanwhile, the Rector appreciates the development of low-emission electric car. The development of electric cars is expected to further raise the name of UGM in national and international levels. "We are proud and grateful to the team that has developed this electric car. Hopefully, it is able to make UGM trusted by national and international community," he explained

According to the Rector, the launch is appropriate because it coincides with the momentum of fuel price rise. "This environmentally friendly car hopefully could be a solution to fuel issues," he said.

The event was attended by the elected UGM Rector for term of office between 2012-2017, Prof. Dr. Pratikno, M. Soc. Sc., and a number of other leaders of UGM.

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