

## UGM Students Design Car using Fuel from Plastic Waste

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A group of UGM students have designed a smart car that can process plastic waste into low emission fuel.

Chemical Engineering students, Herman Amrullah, Sholahuddin Alayyubi, Thya Laurencia Benedita Araujo, and Naufal Muflih joined Smart Car MCS (Microalgae Cultivation Support) team.

“We have developed a technology that can change plastic waste into liquid fuel and reduce emissions,” said Herman, team chairman, to reporters on Monday (23/7) at UGM Public Relations Office.

Herman said they modified the car by adding pyrolysis reactor tube to contain and process the plastic waste into liquid fuel. The tube can hold up to 2 kilogram of waste.

The plastic waste is undergone pyrolysis process and converted into liquid fuel by utilising the heat from the emission that may reach 400-500 Celsius degree. The liquid fuel is contained in a tube under the car body.



Herman added as much as 2 kg of waste can be converted into 2 litres of fuel. All types of plastic except pvc can be made into fuel.

“All kinds of plastic can be processed except pvc as as it contains chloride that is hazardous to health and corrosive to the machine,” he said.

The car is installed with Microalgae Cultivation Support (MCS) technology that is used to reduce the amount of CO<sub>2</sub> of the emission.

Alayyubi added they started to design the car after concerns over the huge amount of plastic waste that pollutes the environment.

“Plastic waste is a derivative product of petroleum so we thought to convert it back into petroleum,” he said,

But to convert the waste into fuel needs much energy. So, they came up with the idea to utilise the heat from the emission for this process.

The car has won the world competition, *Shell Ideas360*, in London recently. The UGM team guided by Hanifrahmawan Sudiby, S.T., M.Eng., and Yano Surya Pradana, S.T., M.Eng., won the championship after beating 3,336 university teams from 140 countries.

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