

## Palm Oil Waste Converted into Hydrogen

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There are at least 1,599 palm oil companies in Indonesia. The processing of palms by the companies causes liquid waste in the form of Palm Oil Mill Effluent (POME). Such waste, however, has not been utilised optimally while actually some 27% of the waste are potential as renewable energy resources.

Six UGM students joining Green Energy team have tried to convert the waste into hydrogen. Utilising endemic microbes around the oil palm industry, they processed the waste into hydrogen through fermentation process. "We use microbes that are potential to be made into hydrogen," said Cahaya Prautama, team member, delivering their research to journalists on Wednesday (15/11) at UGM.

Skipping to mention the type of microbes for the waste processing, Cahaya Prautama said the microbe was used to help the fermentation process of the palm oil. "Hydrogen can be harvested using chromatography gas to separate the hydrogen from other gases," he said.

According to Cahaya, the research has been done in several laboratories of Faculty of Agriculture, Faculty of Animal Sciences, and Faculty of Engineering for six months, all at UGM. The hydrogen product can be utilised as renewable energy resources, even as power generator fuel. "The combustion power is 2,75 bigger than petroleum or hydrocarbon," said the Microbiology student of

Faculty of Ariculture.

Amidst the ongoing research, another team member, Fano Alfian, said the team were establishing a startup to develop the project further. They plan to offer the research to palm oil companies. "But we don't close the opportunity to build a small industry to produce hydrogen," said the Industrial Engineering student.

The business ideas stemming from research by Cahaya Prautama and Fano Alfian along with four other fellow students have been awarded by the *Universitas Teuku Umar Awards* (UTU Awards). They beat 511 other teams and became the research excellence category's first winner in the competition running from 9 - 11 November 2017 in Meulaboh, West Aceh.

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