

Bike Made of Used-Aluminum

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Used items such as aluminum usually just end up in the trash or sold to junk collectors. Actually, used stuff can be a means of transportation.

There is Dr. Suyitno, a lecturer of Department of Mechanical and Industrial Engineering, Faculty of Engineering UGM, who has made used-aluminum bike. The used-aluminum now becomes more valuable.

The process involves small and medium enterprises (SMEs) comprising aluminum crafters from Giwangan, Yogyakarta. A number of components such as frame, pedals, handlebars, and stem used are the recycled products of aluminum crafters. "The bike manufacture involves SMEs in the making of bicycle components through recycling process," he said at his office recently.

Smart recycling method as practised by aluminum crafters in Yogyakarta was introduced by Suyitno. He was concerned that aluminum craftsman only produced similar mass housewares. There will be a dilemma when raw materials are scarce in the market and the crafters cannot raise prices, causing sluggishness in the sector.

To address the situation, he offered crafters to diversify products of recycled aluminum. After assistance has been given since year 2006, the aluminum crafters not only produce household appliances such as wok, steamer and pot, but also other items such as vehicle accessories and equipment that are now used by Suyitno in the bicycle manufacture.

Casting

The bike developed by Suyitno is unique not only because it comes from recycled materials. The bike named Castbike has frame made through casting process. The bike frame is generally made with jointed pipe through welding. "Manufacture of bicycle frame of pipe materials requires a relatively

complex welding technology for mass production," explained the man who focuses on Metallurgy.

This encouraged Suyitno to seek alternative of bike frame production using simple casting technology. Such technology is expected to reduce dependence on the pipe and complex welding. "The production process is simpler with this casting. Additionally, this technology provides an opportunity for SMEs in Indonesia to produce bike frame without relying on the use of pipes and complex welding," Suyitno said.

The frame is composed of three parts, namely the front, right side frame, and left side frame. The three components are arranged and connected with bolts. While the front frame on saddle mounting hole, handlebar mounting hole, and pedal shaft hole is molded solid and perforated using a lathe. "We do assembling ourselves," he said.

Currently, Suyitno is developing three models of castbike; urban bikes for men, urban bikes for women and mountain bike. He also targets that in one day he is able to produce 5 units. "Production has been running and the patent has been filed. Hopefully, in the near future it would be released," he said.

Castbike innovation utilizes used materials and offers a simpler production process. It also involves small and medium industry. Suyitno's work has been selected as one of 104 works of the most prospective innovation of Indonesia in the year 2012 held by the Business Innovation Center (BIC) of the Ministry of Research and Technology. The competition showcased 2,519 innovations in various fields. Besides Suyitno, a lecturer of Faculty of Agricultural Technology UGM, Sri Rahayoe, S.TP., MP., is also ranked in the list with her work of Coconut Sap-based Sugar Powder.

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