

# Making Water Sensors for Shrimp Farming, UGM Students Win International Competition

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YOGYAKARTA -Engineering students of Universitas Gadjah Mada (UGM), Ridwan Wicaksono and Imaduddin Madjid, won International,Technology and Innovation competition, *ASME Innovation Showcase*, held in India from 19-21 April. As many as 55 teams from corporations, communities, and students joined the competition. The only Indonesian team became the winner along with two others from India. They were entitled for a 15 thousands US dollars in prize.

Talking to the media (6/5), Ridwan and Imaduddin said they had not expected to win the competition. The tool they created was to help farmers in Bantul regency who complained that their vaname shrimps had died before being harvested. "We were invited to help resolve the problem," the electrical engineering graduate student said at UGM Main Office.

Despite their lack of knowledge in agriculture, Ridwan and around ten of his fellow students then discussed to overcome the problem, facilitated by an agricultural company. They eventually learned that the death of the shrimps was due to the abnormal condition of pond water. Lack of oxygen, salinity excess, ammonia and heavy metals in the water all pose the risks for the shrimps.

Then, Ridwan and friends made a micro-controller and sensors to control the water condition. The lunch-box-shaped tool measuring 15x10 cm and weighing 500 grams cost them Rp10 millions to make.

It has six sensors to measure temperatures, humidity, (pH), oxygen, salinity and heavy metal levels.



“The data in the sensor is read by the micro-controller, then processed and uploaded to the Internet to be downloaded on smartphones. Farmers without smartphones may send sms with broadcast technology,” said Ridwan. As such, the condition of the water can be obtained real time and farmers can take a quick step to tackle it.

Imaduddin said the vaname shrimps are to be exported to China, Japan, and the U.S. Ridwan and friends will introduce the tool to other farmers in Bantul, and Cirebon and Pangandaran in West Java. They hoped the tool can be produced in mass for an affordable prices. “We hope our shrimp farmers would become more prosperous and our shrimp exports increase,” Ridwan concluded.

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