

# UGM Develop Amphibi Drone for Volcano Monitoring

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Universitas Gadjah Mada (UGM) researchers have developed an Unmanned Aerial Vehicle (UAV), *Amphibi Gama V2*. The fixed wings drone can take off and land on the water.

“This UAV serves as a monitor and make mappings of active volcanoes in Indonesia for supporting disaster response alertness,” said team chairman, Dr. Tri Kuntoro Priyambodo, M.Sc., to journalists on Tuesday (16/7) during the UAV demo at Samas lagoon in Bantul.

Tri Kuntoro said the UAV *Amphibi Gama V2* was the second generation to the UAV *Gama UX 628*. The idea came up when the team took aerial images to analyse flood potential and risk in Tanjung Selor, North Kalimantan. At that time the team found it difficult to get a long, flat area for take-off and landing.

“It was difficult to get a flat area for take-off and landing. The only possibility was to make do with poodles, so an idea emerged that the UAV ought to be able to take off and land on the water,” he said.



The UAV Amphibi then became a flexible tool to monitor various types of disasters, including floods, landslides, drought, fires, and storms.

The UAV can fly for 40 minutes to cover an area of 40 kilometer and a maximum altitude of 1,200 meter. It reaches a maximum speed of 25 meter per second, coverage speed 13 meter per second and minimum speed of 8 meter per second.

*Amphibi Gama V2* spans 1,350 mm with wings 2,000 mm in width. The body is made from composite material. Batteries are LiPo 11,000 mAh. Load capacity is 1.5 Kg and maximum load for take-off is 6 Kg.

“The UAV is installed with sensors such as accelerometer, gyroscope, barometer, air speed, and GPS navigation system,” he explained.

A brushless motor is used with servo motor controls. It is also equipped with microprocessor and manual control which is a 2.4 Mhz remote and 433 Mhz telemetry.

“Besides, we add on an autopilot system to the machine so it can fly independently for monitoring and mapping volcanic areas,” he said.

*Amphibi Gama V2* has been developed by Tri Kuntoro and other researchers at Faculty of Mathematics and Natural Sciences UGM, Oktaf Agni Dhewa, S.Si., M.Cs., Nur Achmad Sulistyio Putro, S.Si., M.Cs., Ardi Puspa Kartika, S.Si., M.Cs., Faisal Fajri Rahani, S.Si., M.Cs., Prasetya Aditama, S.P., S.Si., and Faris Yusuf Baktiar, S.Si.

Previous UAVs include flying wing type: *Gama Tipe UX 328*, *Gama Tipe UX 528*, *Gama Tipe UX 628* as well as fixed wing types: *Amphibi Gama V1*.

“To support various necessities, missions, and circumstances, we continue to develop the plane body and wing materials,” he concluded.

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