Zurich University
of Applied Sciences

School of
Engineering

IMES Institute of
Mechanical Systems

Measuring device platform - Wingcopter methane in the lower atmosphere

Together with the German Research Center for Geosciences in Potsdam, the ZHAW developed a measuring device system that is designed to measure climate gases (methane, CO_2) in the lower atmosphere. The aircraft can take off and land vertically.

Application
Due to climate warming, large amounts of gases are released from peatlands and permafrost. In order to measure not only gas concentration but also the flow, a 3D wind vector measurement system is integrated on the measurement platform in addition to the CO_2 and methane sensors. This is being developed in collaboration with the University of Tübingen.

Sensors
CO_2 sensor Li7500, methane sensor, temperature, surface temperature, humidity, five-hole probe for wind vector, GPS module, IMU module, radiation meters pyranometer and pyrometer, laser altimeter and a camera for documentation of the subsurface. Measurement and recording frequency is 10 to 20 Hz.

Technical data Wingcopter with sensors

Wingspan:	1.78 m	Length:	1.47 m
Speed:	80 km/h	Tare weight:	6.0 kg
Drive:	Electric	Payload:	4.0 kg
Batteries:	Lithium Polymer	Range:	60 km

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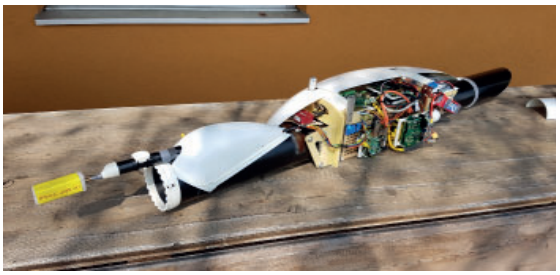
Wingcopter in hover flight - Two swivel motors provide the thrust in cross-country flight

Measuring pod with open flow tube and visible measuring section of the optical CO_2 sensor



Sensorpod with removed side panel - under the panel are various other sensors, batteries and measurement electronics