NEW

BathyCopter®

The BathyCopter is a sUAV-based LiDAR surveying system for bathymetric applications, ideally suited for generating profiles of inland waterbodies.

The robust and reliable platform design of *RIEGL*'s remotely piloted RiCOPTER now integrates the new ***RIEGL* BDF-1**, a compact and lightweight bathymetric depth finder comprising a tilt compensation, an IMU/GNSS unit with antenna, a control unit, and up to two external digital cameras. The ***RIEGL* BDF-1** can optionally be supplemented with a miniVUX-1UAV.

NEW BathyCopter®

sUAV-Based Surveying System for Hydrographic Applications

Typical Applications

• Generation of profiles of inland water bodies (rivers, lakes, channels) • Repeated survey of water reservoirs • Canal surveying • Landscaping • Surveys for planning and hydraulic engineering work

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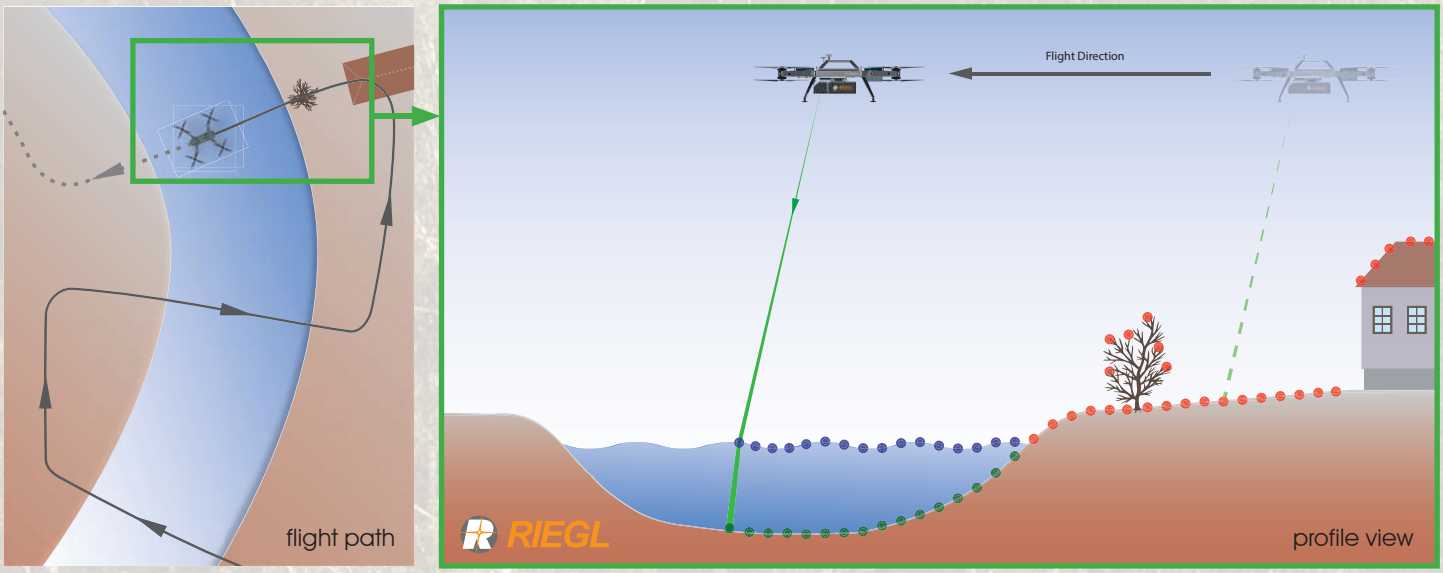
BathyCopter Measuring Principle



The figures above illustrate the measurement principle of the BathyCopter with fully integrated BDF-1: The BathyCopter performs a meander-like flight path over an inland water body (river, channel, or lake) while the BDF-1 is measuring downward with its defined and stabilized look-ahead angle. Profiles of the water surface (blue circles), ground (green circles) as well as the surrounding landscape (red circles) are generated this way. The multi-target capability of the rangefinder is not only employed for separating the water surface from the ground but also for vegetation penetration.

BathyCopter Scan Data Example

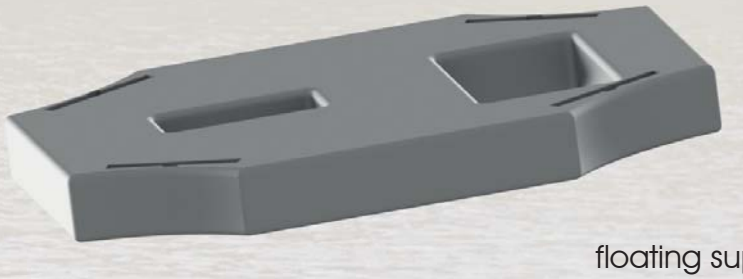
Riverine zone surveying is a typical application of the BathyCopter:
The image above shows a colorized 3D point cloud acquired with a VUX-1UAV combined with profiles acquired by the BDF-1. Both devices were mounted on the RiCOPTER. The combined dataset provides comprehensive information about the topography of the river and its surroundings. The locations of the detailed river profiles are selected according to hydrographic viewpoints. They can be used to assess water transportation, roughness, and clarity.

BathyCopter General Setup

RiCOPTER

miniVUX-1UAV
with Applanix AP20 IMU/GNSS unit

BDF-1 bathymetric depth finder
with Sony alpha 6000 camera



floating support

BathyCopter Key Features

- UAV-based surveying system for hydrographic applications
- ideally suited for generating profiles of inland waterbodies
- fully integrated solution, comprising *RIEGL*'s new Bathymetric Depth Finder BDF-1 providing up to 1.5 Secchi depth measuring range
- floating support for safe water landing and take-off from water bodies
- excellent performance even at adverse conditions based on predetection averaging
- highly accurate, reliable and informative bathymetric data resulting from *RIEGL*'s proprietary hydrographic waveform processing
- **modular setup**[1]**:**
  The RiCOPTER can be equipped with any combination of:
  BDF-1, floating support, camera(s), and/or miniVUX-1UAV LiDAR sensor.

1) Note: Operation is subject to legal conditions, especially for configurations with MTOM >25 kg

BathyCopter Specifications

Laser Class according to IEC60825-1:2014 (Ed.03)	Class 2 
Operating Flight Altitude	10 - 40 m AWSL (Above Water Surface Level)
MTOM (Maximum Take-Off Mass)	25 kg [2]
Flight Endurance	up to 30 min
Measurement Direction	downward-looking, 15° off nadir
Active Pitch Compansation	24° range
Achievable Secchi Depth vs. Measurement Rate [3]	1.0 @ 4,000 meas./sec (single pulse) 1.2 @ 400 meas./sec (10 pulses averaged) 1.5 @ 40 meas./sec (100 pulses averaged)
Integrated Camera	Sony Alpha 6000
IMU/GNSS unit	Applanix APX-15 UAV
Operation Temperature	+10°C up to +40°C
Main Dimensions arms folded (for transportation & storage) arms unfolded (ready to fly)	 624 mm x 986 mm x 470 mm 1,920 mm x 1,820 mm x 470 mm
Transportation Case (dimensions)	1,220 mm x 810 mm x 540 mm

2) applies for basic setup RiCOPTER with BDF-1
3) @ flight altitude 15 m above water surface

BathyCopter Highlights

easy to carry

BathyCopter in action

foldable arms facilitate easy transportation and storage

BathyCopter Ground Station (optional)

YouTube
Watch our videos!
youtube.com/rieglIms

The RiCOPTER/BathyCopter is a high performance unmanned multi-rotor aircraft, designed & manufactured by *RIEGL* Laser Measurement Systems GmbH.
It is distributed, supported and serviced by RiCOPTER UAV GmbH, also a *RIEGL* company.

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