



FUGRO LADS HD

Airborne LiDAR Bathymetry continues to be the fastest and most cost efficient solution for safe and accurate charting and bathymetric surveys in shallow water, complex coastal zones and riverine environments.

AIRBORNE LIDAR BATHMETRY

Utilising a sophisticated laser sensor fitted to an aircraft, the Fugro LADS HD ALB system accurately measures water depth and collects supporting data over both the marine and coastal zone environments. An environmentally friendly design enables the system to operate from a wide range of aircraft including small turbo props. The system has been designed for safe, high speed and cost effective surveys of clean, shallow coastal areas in depths up to 80 metres. Accurate to IHO Order 1a and 1b data is collected using a 3 kHz laser with an efficient swath width up to 600 metres. Fugro has designed the system to enable the coastal zone to be surveyed faster, more cost effectively and with superior

seabed coverage through the collection of high quality data across a wide range of environmental conditions. Leading edge developments in shallow water performance, seabed reflectivity, target detection and operating altitudes are also key functionalities implemented within the Fugro LADS HD ALB system. Deliverable options include digital depth and topographic data in hydrographic and LAS formats, gridded models, spatial products, seabed relative reflectivity, LiDAR seabed classes and georeferenced digital mosaic imagery.

The LADS HD system is also designed to operate concurrently with high resolution topographic and shallow water bathymetry systems, including the Riegl VQ-820-G.





The Fugro LADS HD system can be used for the following applications:

- Collection of data for the production of nautical charts to International Hydrographic Organisation (IHO) standards.
- Support of safe, cost-effective offshore oil and gas exploration and field development.
- Support for marine and coastal engineering.
- Support for Coastal Zone Management including the ecological management of fragile coastal zones, climate change adaption and tsunami modelling programs.
- Accurate delineation and mapping of baselines in support of EEZ and territorial sea claims (UNCLOS).

LADS HD

Technical Specifications

Survey Configuration

Laser Rate:	3 kHz
Depth Range:	0-80m dependent on water clarity Nominally 3.0 times Secchi disk depth
Topographic Range:	0 - 50 m above sea level
Operating Altitude:	1200 - 3000 ft
Aircraft Speed:	125-175 knots
Swath Width:	100-600m dependent on sounding density & height
Sounding Densities (single pass):	2 x 2 to 4.6 x 4.6 selectable
Vertical:	IHO Order 1 (<0.5 m, 95% Confidence)*
Horizontal:	IHO Order 1 (<5.0 m, 95% Confidence)*
Object Detection:	IHO Order 1a (dependent on water clarity & sounding density)*

* IHO, SP44, Standards for Hydrographic Surveys, April 2008

System Configuration

Airborne System:	Sensor Platform Equipment Cabinet Cooling Unit Pilot Display Operator Laptop
Operational Capability:	Full day or night operation (VFR, IFR) 1 operator (observer optional) 1 or 2 pilot capable
Operating Temperature (inside cabin):	5-40 °c
Roll and Track Compensation:	± 7°
Positioning System:	Applanix POS AV Fugro MarineSTAR WADGPS DGPS and KPGS

PROCESSING SOFTWARE

Fugro LADS Ground System (GS) Data Processing Software, used for:

1. Mission Planning, Flight Line Planning, establishing data collection attributes for those lines and allocating flight lines to a Fugro LADS HD LiDAR sortie
2. Back2Base™ processing
3. Downloading, processing, merging, viewing, cleaning, editing and Quality Control of data collected by Fugro LADS HD and Riegl sensors.

Laser

Green (532nm):	Diode Pumped Nd:Yag
Power:	7mJ Laser power
Laser:	CLASS 4
Laser footprint size (surface):	2.7m dia
Compliant with AS/ NZS IEC 60825.	

Electrical

Sensor System:	100A @ 28Vdc
Air-Conditioner:	35A @ 28Vdc

Digital Camera

Type:	Redlake® Mega Plus II High Speed
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Mission Planning and Data Processing

Fugro LADS Ground System Data Processing Software
Optional Fledermaus® Embedded 3D, area-based data visualisation & editing system
POSPac MMS® GNSS/ Inertial Post-Processing Software
Back2Base™ Processing

Storage Media

Storage Media (sounding data, camera data, video, GPS data)	SD Card
Planning Media	USB Card

Complementary Sensors

Topographic and Shallow Water	Riegl VQ-820-G (or equivalent)
Hyperspectral	HySpex VNIR-1600 and/or HySpex SWIR-384
MultiBeam	Kongsberg, R2Sonic

