

# AUV Leng

## Exploration-AUV for Long-Term Missions

### System Description

The autonomous underwater vehicle (AUV) Leng was designed as long-distance exploration vehicle. Its shape was specifically designed to meet the requirements of the Europa-Explorer-Project: very small diameter (in order to fit into the ice drill) as well as a hydrodynamically optimized outer hull (in order to reduce energy consumption and enable long-range missions). The vehicle is equipped with a large number of different navigation sensors since localization quality and availability are of key importance – in the Europa-Explorer-scenario the vehicle has to return to its starting position (ice drill) even after having conducted long-distance missions. Besides operating fully-autonomously, the AUV can be operated in hybrid-ROV-mode by connecting either a fiber or copper data cable.

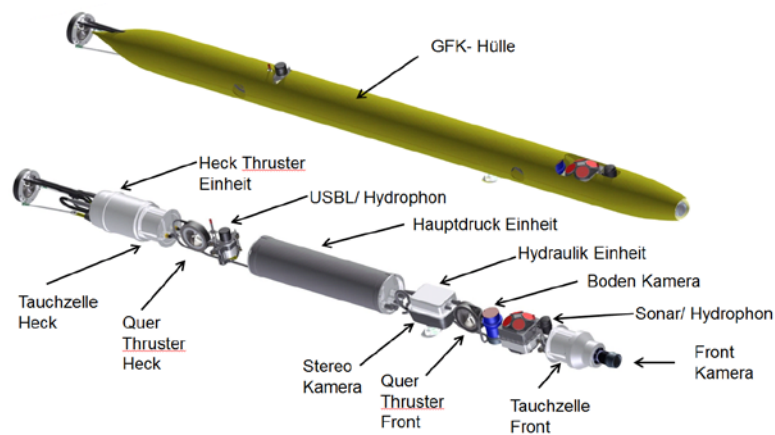
### Technical Details

- **Size:** Ø 0.22 m x 3.5 m
- **Weight:** 73 kg
- **Propulsion:** 3 x Enitech hubless thrusters, one as main thruster (inkl. pan-tilt), two for lateral motion
- **Maximum speed (horizontally):** 6 kn
- **Vertical motion:** 2 dive-cells (1.35 l volume)
- **Battery life:** approx. 10 hours
- **USBL:** Evologics S2CR 48/78
- **DVL:** RTI dual-head 1.2 MHz
- **IMU:** KVH 1750 3-Axis FOG
- **Pressure sensor:** Paroscientific Series 6000
- **Obstacle-Avoidance:** Teledyne Micron DST
- **Hydrophone:** 2 x Reson TC4013
- **Stereo camera system:** 2 x Prosilica GB1380CH, 100 mm base-line
- **Bottom camera:** 1 x Prosilica GE 2040C
- **Docking camera:** 1 x Prosilica GC1380HC
- **Illumination:** 9 x 3500 Lumen LED-Blitzer
- **Control:** ARM-based system-management-module, Intel-Atom-PC for navigation and Intel i7-PC for image-processing

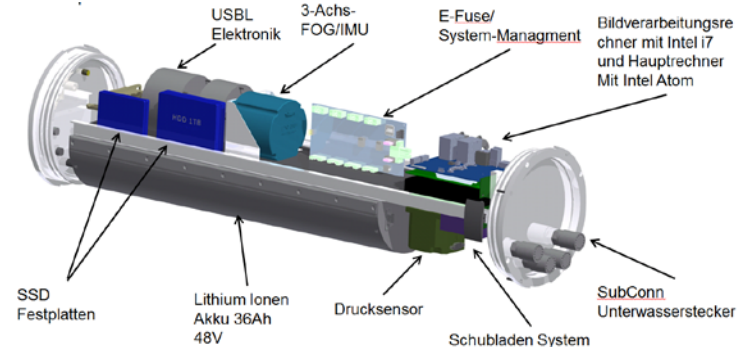


**Application:** Exploration (Planetary & Arctic)

**Projects:** EurEx  
Europa-Explorer  
(12/2012 – 04/2016)



### Main Pressure Compartment



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