The revolutionary camera for 3D underwater vision

UTOFIA is a compact underwater camera with integrated laser illumination that provides visual images and high-resolution 3D data. It uses range-gated imaging technology to capture clearer subsea images by reducing the backscattering effect from suspended matter. The integrated illumination allows operation independent of light conditions, including complete darkness, with no deterioration in performance. Real-time visualisation enables easy interpretation of images including spatial information.

Key application areas:
- Biomass estimation
- Fish behaviour
- Navigation
- Obstacle avoidance
- Seafloor inspection
- Inspection, maintenance and repair

UTOFIA Camera user interface (2D image on left, 3D image on right)

UTOFIA camera with supporting power box and cable

2D and 3D real time images of cod fishes in a tank
Main features

- **Depth rating**: 300 m standard (1000 m optional)
- **Dimensions**: Length 370 mm excl. connectors, Diameter 155 mm
- **Weight**: In air: 9 kg / In water: < 2 kg

### Power and communication

- **Voltage**: 22-28 V DC. Other voltages on demand, cable voltage drop must be compensated. Topside electronics box included for running from 220V.
- **Power**: 200 W
- **Data**: Gigabit Ethernet. 100 Mbit optional with reduced resolution/framerate. RS485 for monitoring (not necessary with topside electronics box).
- **Connector**: Impulse MCBH-16 (16 pins, wet-mateable)
- **Umbilical**: Hybrid: GigE, RS485, power up to 70 meter. Pig tail with connector: 1.2 m for ROV connection.

#### Imaging

- **Laser**: 3 mJ at 1 kHz, active Q-switch. Eye safety: 3R class
- **Camera**: Range gated 3D camera.
- **Frame rate**: 10-20 Hz (tunable)
- **Imaging range**: 3-4 attenuation lengths
- **Resolution**: 1280x1024 px (maximum). 960x512 (default).
- **Camera lens**: 10.5/17.5 mm focal length, f/# 0.95 + optional sunlight filter
- **Field of View**: 70° diagonal
- **Temperature control**: Active water cooling. Water temperature: -5° to 25° C. 30° C optional.

### Housing materials

<table>
<thead>
<tr>
<th>Component</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front/rear flanges</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Body</td>
<td>POM (Acetal)</td>
</tr>
<tr>
<td>Windows</td>
<td>PMMA</td>
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</tbody>
</table>

### Packaging and documentation

- **Transport**: All in one transport case (Peli type) with wheels and handle, total weight < 20kg (camera, surface console and whip cable)
- **Maintenance**: None except flushing/cleaning with fresh water after use.
- **Documentation**: Operator manual in paper and electronic version
- **Warranty**: 1 year parts and labor excluding transport cost

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