



**exail**

**R7 REMOTELY  
OPERATED VEHICLE FOR  
UXO DISPOSAL**

## **Enhancing UXO operations efficiency and safety with remote disposal means**

Maritime Unexploded Ordnance (UXO) disposal is crucial for safety and economic stability. The removal of these remnants prevents threats to human life, facilitates safe navigation, and upholds international agreements. Robotics, and particularly Remotely Operated Vehicles (ROVs) such as Exail R7 ROV, play a pivotal role in this process.

ROVs can navigate hazardous underwater environments, detect UXOs with precision, and execute controlled disposal operations, minimizing risks to human divers and ensuring effective and safe cleanup efforts. This integration of technology enhances efficiency, contributing to national security and post-conflicts reconstruction.

## exail at a glance

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**80**

YEARS OF  
EXPERIENCE

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**250+**

MILLION EUROS  
OF TURNOVER

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**80%**

OF TURNOVER  
ACHIEVED ABROAD

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**1700+**

EMPLOYEES

---

**80**

COUNTRIES SERVED  
WORLDWIDE

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**20%**

OF TURNOVER  
REINVESTED  
EACH YEAR IN R&D

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**50**

NAVIES  
EQUIPPED

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**1000+**

NAVAL PLATFORMS  
EQUIPPED

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**24/7**

TECHNICAL  
SUPPORT

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# WHY USE THE R7 ROV FOR UXO DISPOSAL OPERATIONS?

## Precise navigation and maneuverability in hazardous environments

Designed with precise thruster control and an intuitive piloting interface, the R7 ROV allows operators to navigate with exceptional accuracy and stability. This level of control is crucial in delicate UXO scenarios where precision is paramount.

## Modularity

The R7 is a versatile ROV that can be equipped with all necessary tools and sensors for various UXO detection, manipulation and neutralisation. Reliable, it can be tailored to meet the unique requirements of targeted UXO disposal operations.

## High-resolution imaging for accurate detection

The R7 is equipped with advanced imaging systems, including high-resolution tilt cameras. This provides UXO teams with clear and detailed 360° visuals of the target area, allowing for precise identification and assessment of explosive devices or hazardous materials.

## Enhanced operational efficiency

Compact and light, the R7 is easily deployable from a light support vessel or RHIB. The ROV enhances operational efficiency, streamlining the UXO disposal process and contributing to the swift and thorough cleanup of maritime environments.

## Minimized human risks

Remotely deploying the R7 ROV means that human divers no longer need to be sent on dangerous UXO disposal tasks, prioritizing safety first.



The R7 ROV is equipped with an innovative camera that enables real-time optimization of video quality (see image on the right)

# KEY CHARACTERISTICS

High stability  
up to **2 knots**  
of currents

## Specifications

Dimensions (mm)	L 780 x W 551 x H 424
Weight in air	< 35 kg
Propulsion	7 DC thrusters, 4 horizontal (vectored) / 3 vertical (for correct attitude)
Movements	In 3 axes + rotation on its own axis
Forward speed	3 knots (in 0 knot current)
Operating depth	300 m in sea water

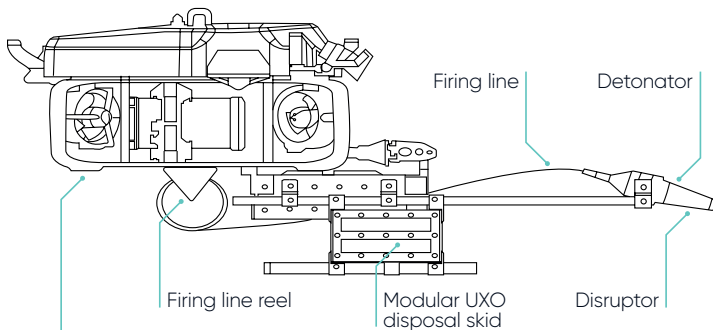
## Robust and ergonomic control of the R7 ROV in severe environments

Integrating two full HD high-brightness touchscreens into a shockproof and waterproof case, the R7's control unit is quickly mobilizable.

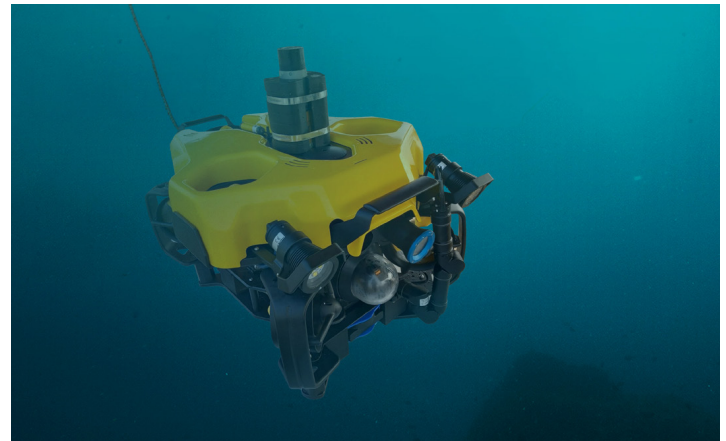
It provides easy ROV control from the surface, delivering all UXO mission data in real-time and at one glance:

- Inspection video
- Navigation map
- Navigation information
- Sonar and camera images

## R7 UXO configuration



- 1080p FHD inspection camera with tilt and optical zoom
- Real-time image processing camera
- Forward looking double frequency imaging sonar.
- INS/DVL
- GNSS
- USBL subsea positioning system
- LEDS spotlights
- 3-functions manipulator arm



The R7 ROV embedded AHRS enables highly accurate roll, pitch and yaw control for 360° inspections



## An intuitive Human Machine Interface (HMI)

Operators can rely on easy and fully configurable access to all R7 ROV functions through a digital touch-screen HMI:

- Cameras
- Lighting
- Thrusters
- Real-time targets video recording and screenshots

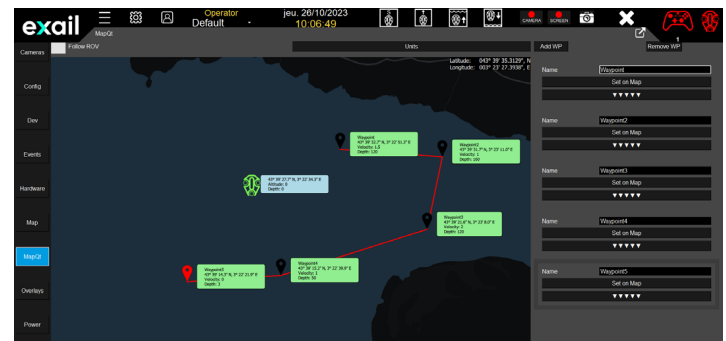
Easy operations are further enhanced via a fully configurable control joystick to meet operators' preferences. Quick status diagnosis also makes operations more efficient via real-time monitoring and data logging of all ROV functions.



## Advanced navigation features for highly precise and efficient missions

Advanced navigation functions are provided thanks to the R7's inertial navigation and positioning sensors. This results in reduced mission duration and highly accurate UXO neutralization.

- **Station keeping**  
Automatically holds the ROV in a fixed position for optimum UXO inspection and identification and an accurate handling of the neutralization kit.
- **Go to waypoint**  
Autonomous ROV navigation to predefined geographical points such as known UXO GNSS positions.
- **Tracking**  
Autonomous tracking of an object or diver at a fixed distance.



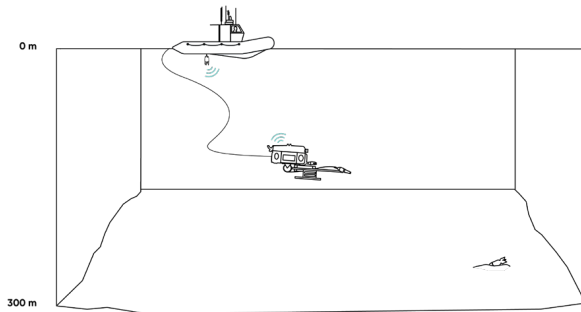
# UXO DISPOSAL OPERATIONAL SCENARIO

The threat has been identified and characterized and its GNSS location is known. The appropriate disruptor has been installed on the R7 ROV. The operator are positioned away from the danger area.

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## Deploying the R7 ROV and its UXO disposal skid

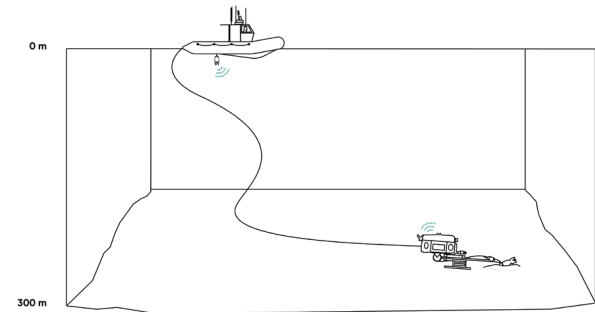
The R7 ROV is deployed at sea to reach the target exact GNSS position. This is done in full autonomy relying on the R7 automatic "Go to waypoint" mode. The ROV then hovers in position thanks to its advanced station keeping capabilities.



②

## Positioning the disposal system

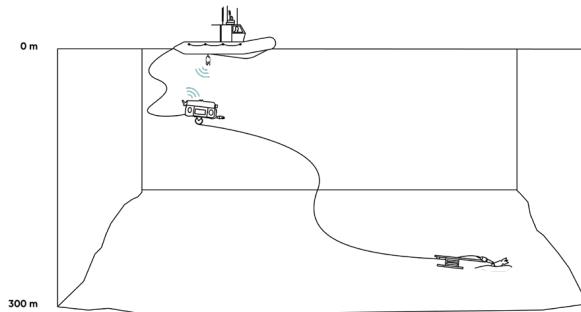
The disposal system and its shaped charge are remotely positioned on the target by the operator. Thanks to the R7 high-resolution imaging and subsea positioning sensors, this can be done with unmatched precision.



③

## Retrieving and connecting the firing line

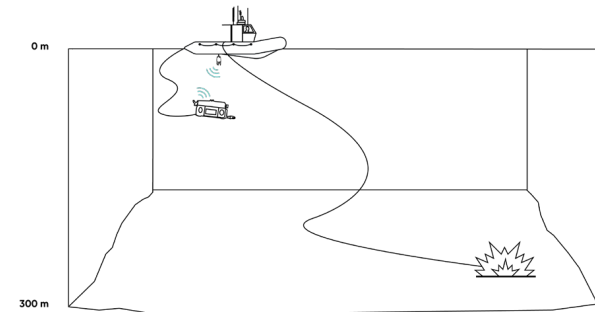
The operator releases the UXO skid and the R7 navigates back to the vessel. The operator connects the firing line to the detonator and checks the vessel's minimum safety distance is respected.



④

## Firing the system and neutralizing the UXO

The UXO disposal skid is fired. Once the operation is done, the R7 is deployed back again on the threat area using its "Go to waypoint" mode to check that the neutralization has been successful.



# our global footprint



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