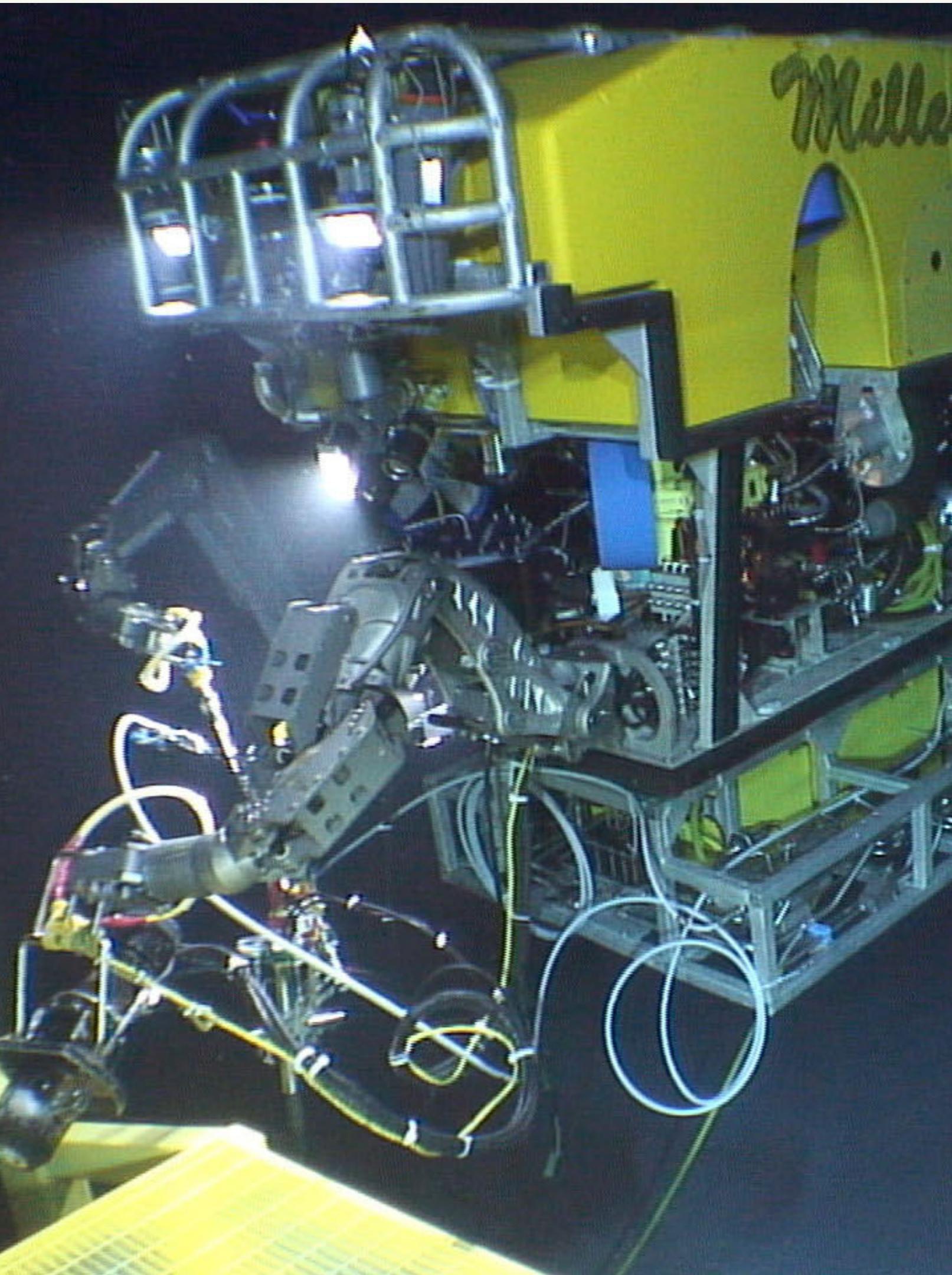


Remotely Operated Vehicles (ROVs)

Explore the deep blue ocean with us



CONTENT

1. Introduction
2. History & Applications
3. Main components of the vehicle



WHAT IS ROV

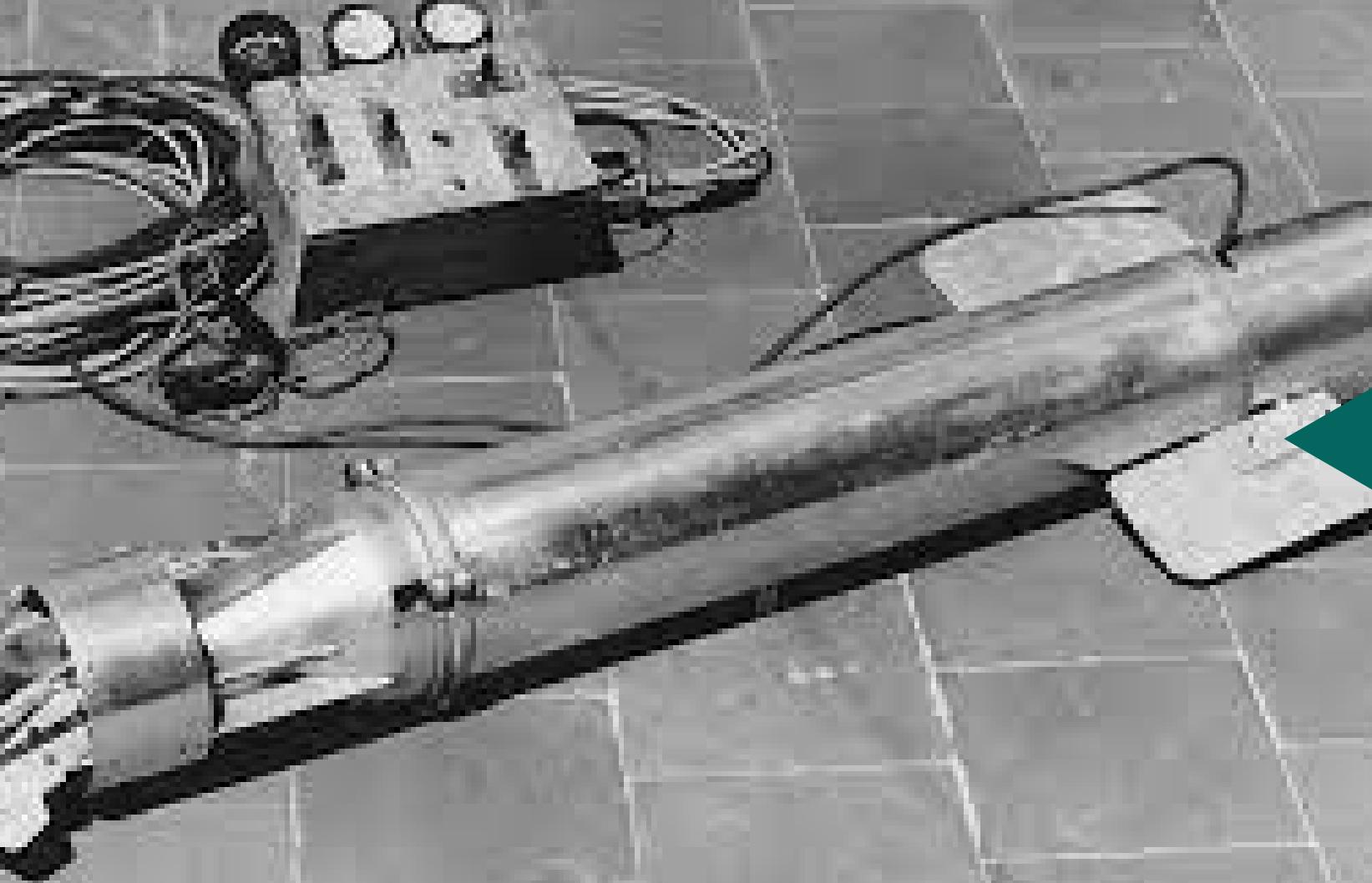
Remotely Operated Vehicles (ROVs):
Unmanned vehicles, which are operated
by a person aboard a vessel or on land.

The robot is controlled either wirelessly or
through a wired connection.

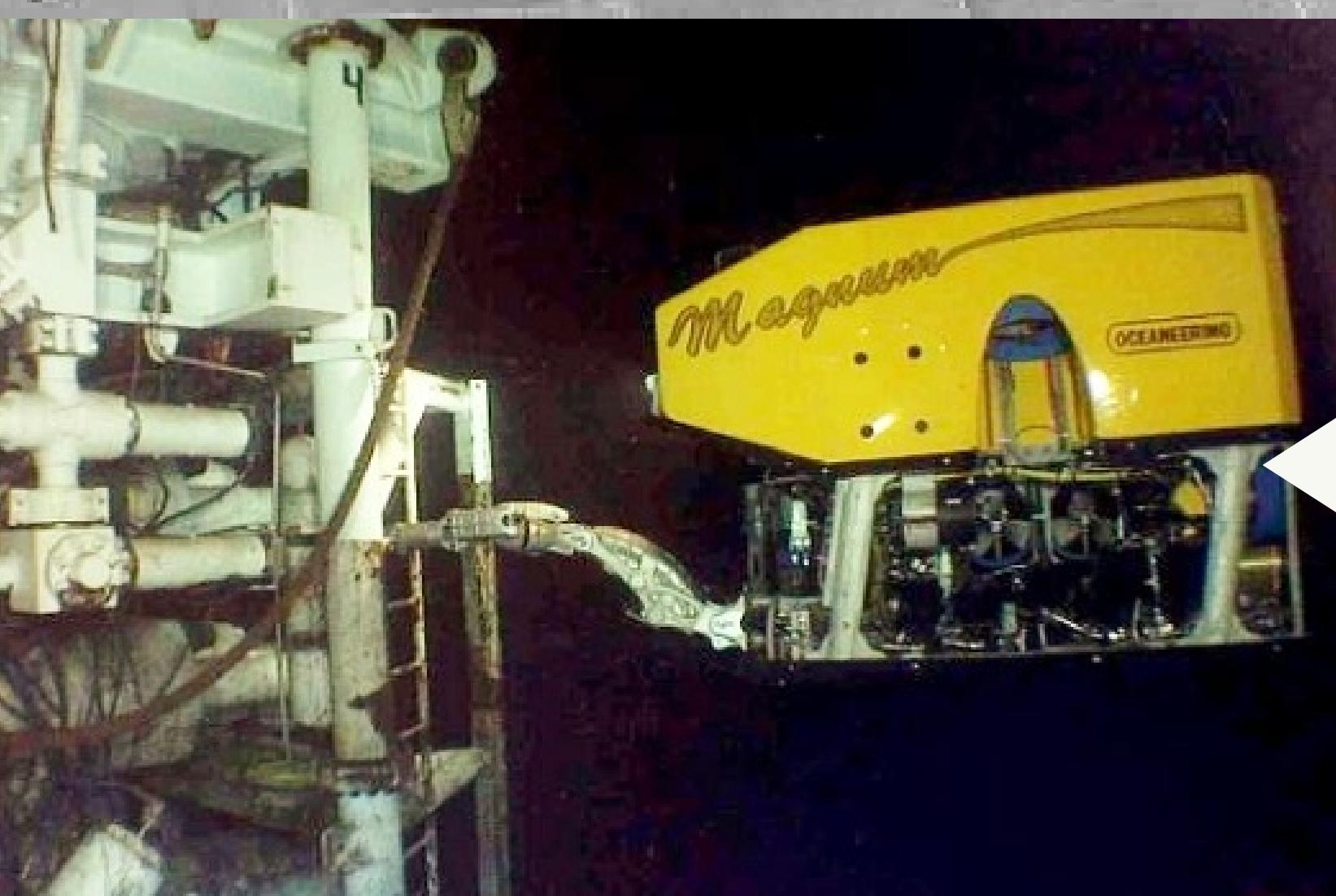
The ROVs is used for:

- **Deep-sea exploration**
- **Underwater construction**
- **Underwater research.**





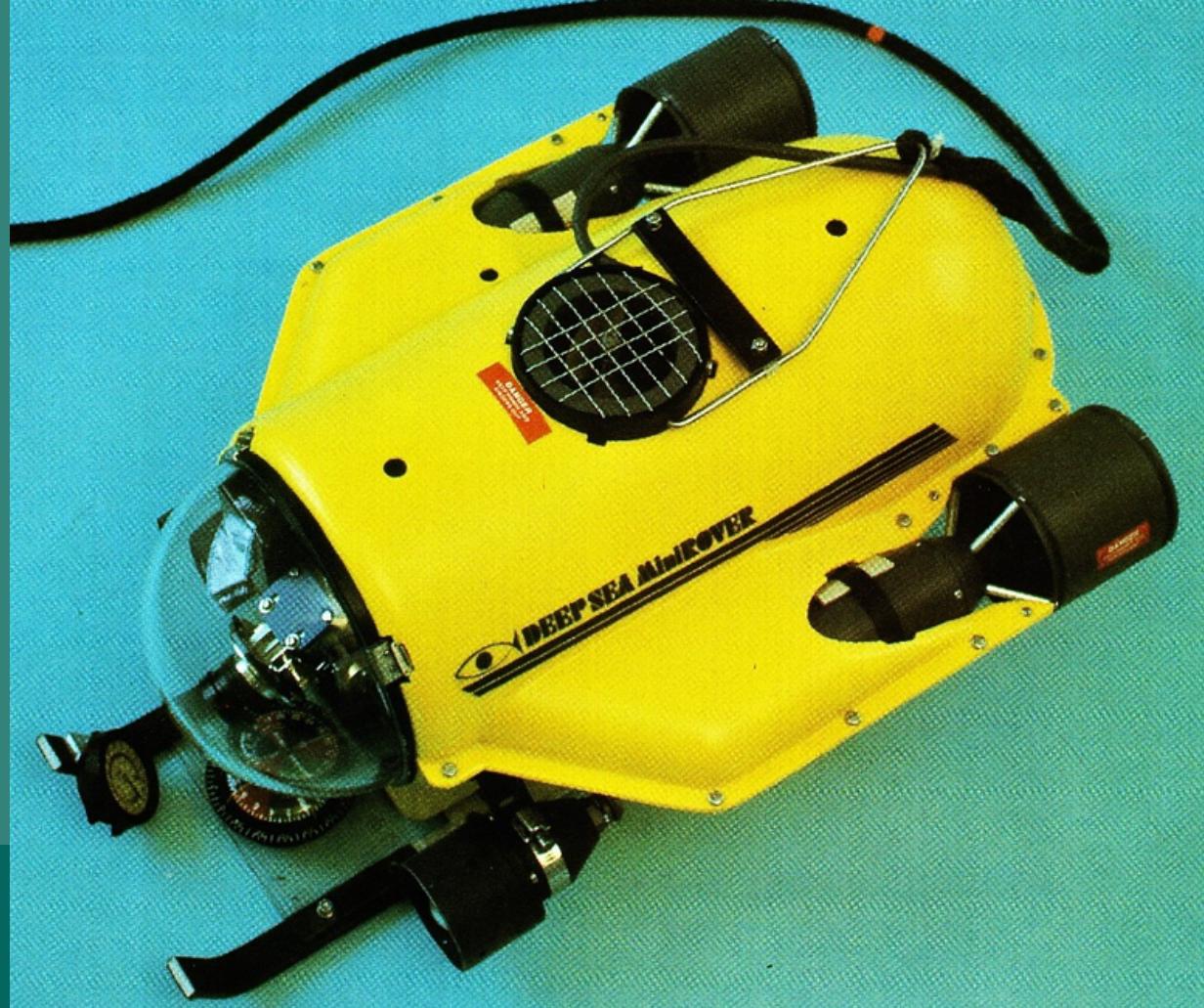
In the 1950s the US Navy developed the first remotely operated underwater vehicle called the "Cable-Controlled Underwater Recovery Vehicle," or CURV, used for recovering lost objects from the ocean floor.



In the 1960s and 1970s, the oil and gas industry began to use ROVs for pipeline inspection and maintenance.

Advancements in technology in the 1980s led to the development of more sophisticated ROVs that were capable of performing a wider range of tasks. These new ROVs were equipped with advanced sensors, cameras, and robotic arms, which allowed them to perform complex operations such as manipulating objects on the seafloor.

The 1990s saw further advancements in ROV technology, including the development of autonomous ROVs that could operate without a tether. These vehicles were equipped with onboard power and communication systems that allowed them to operate independently for long periods of time.



Thrusters

The thrusters are electrically or hydraulically powered propellers used to maneuver the vehicle.

Camera

The only view that the pilot has is through the onboard camera, which must be able to provide an image with low-latency.

Lights

The lights provide illumination for the camera underwater.

Tether

Nearly all ROVs have a tether that carries electrical power and/or signals to the surface so that the pilot can control the vehicle and see the camera.

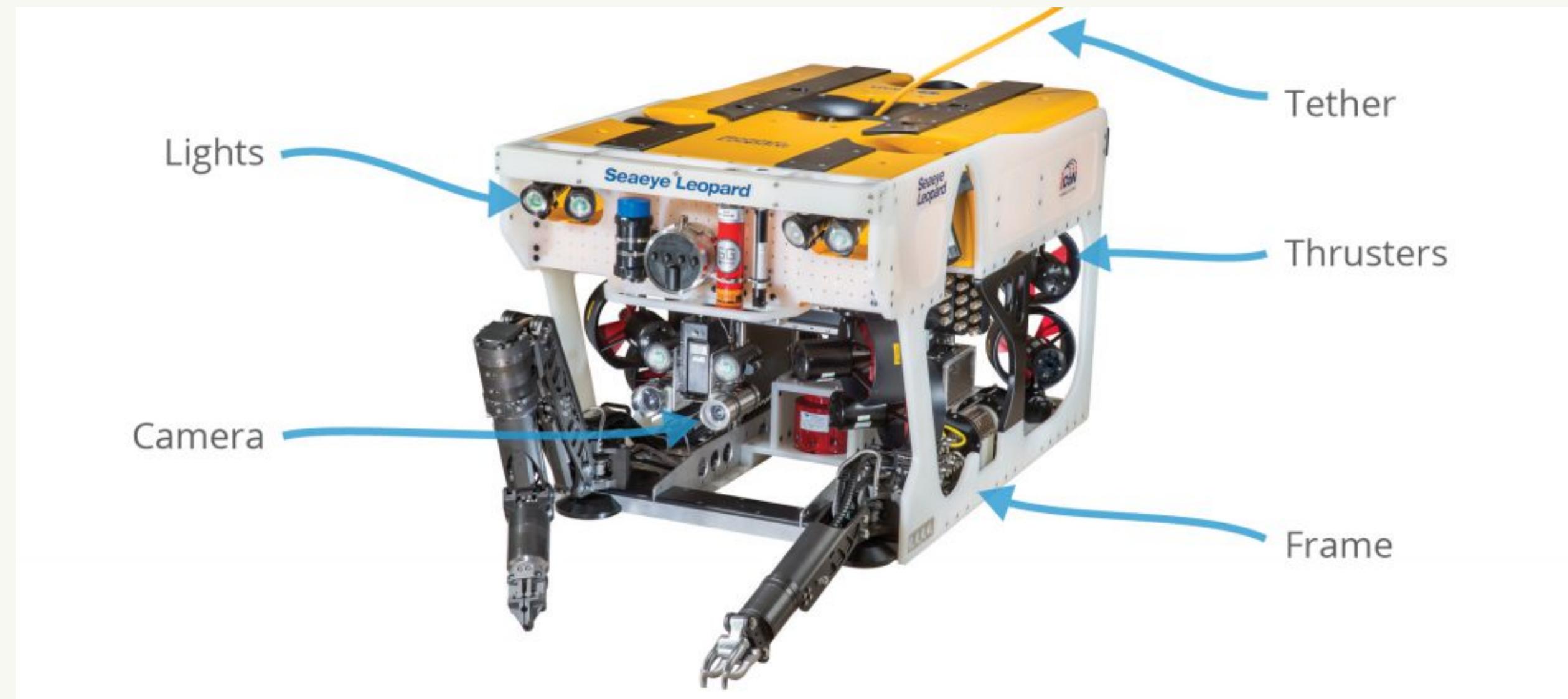
Frame

The frame provides a structure to attach the thrusters, camera, lights, tether, and other components of the ROV.

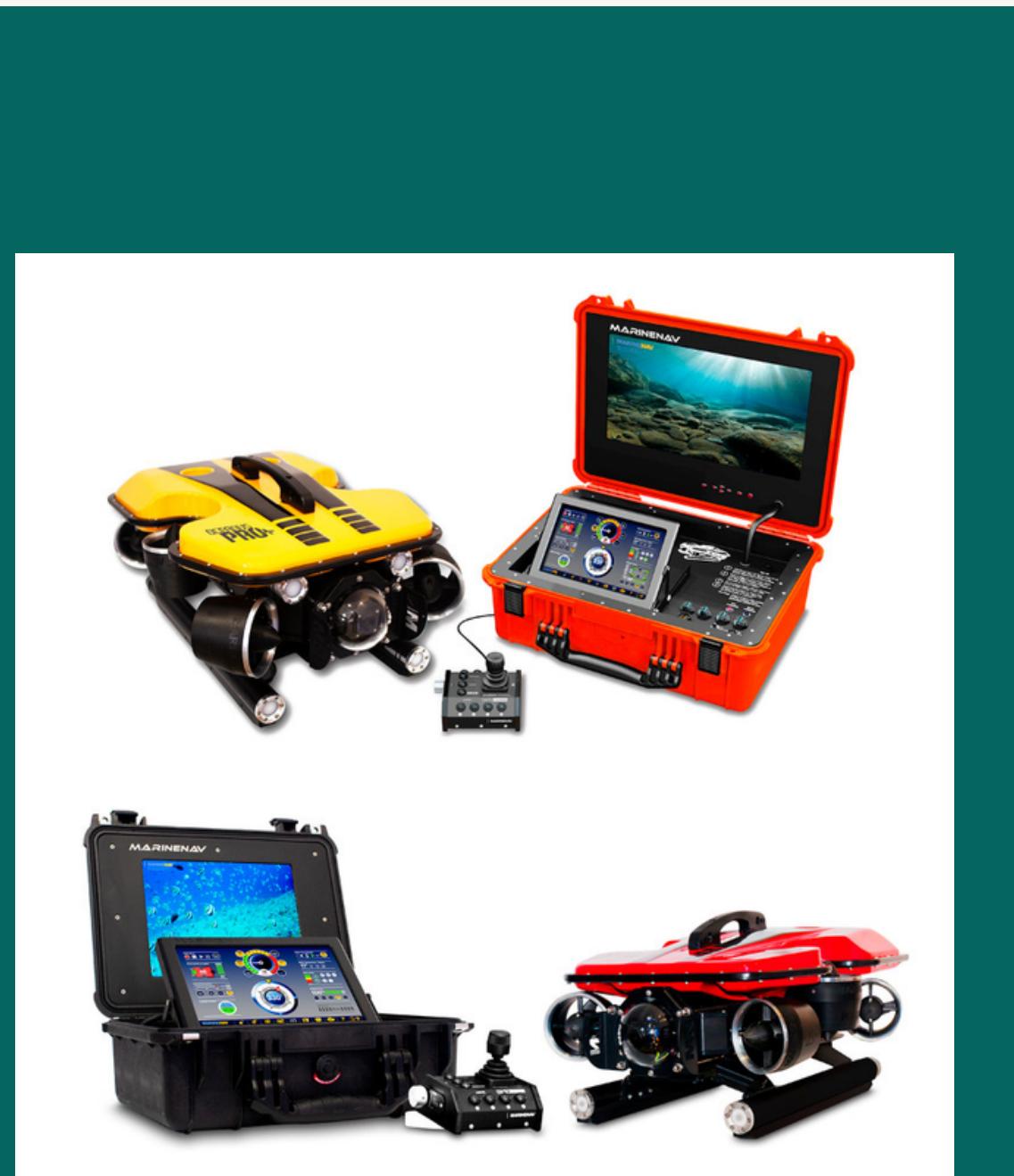
Pilot Controls

The surface controls can range from something that looks like the control room for a spaceship to something as simple as a smartphone.

ROV Components



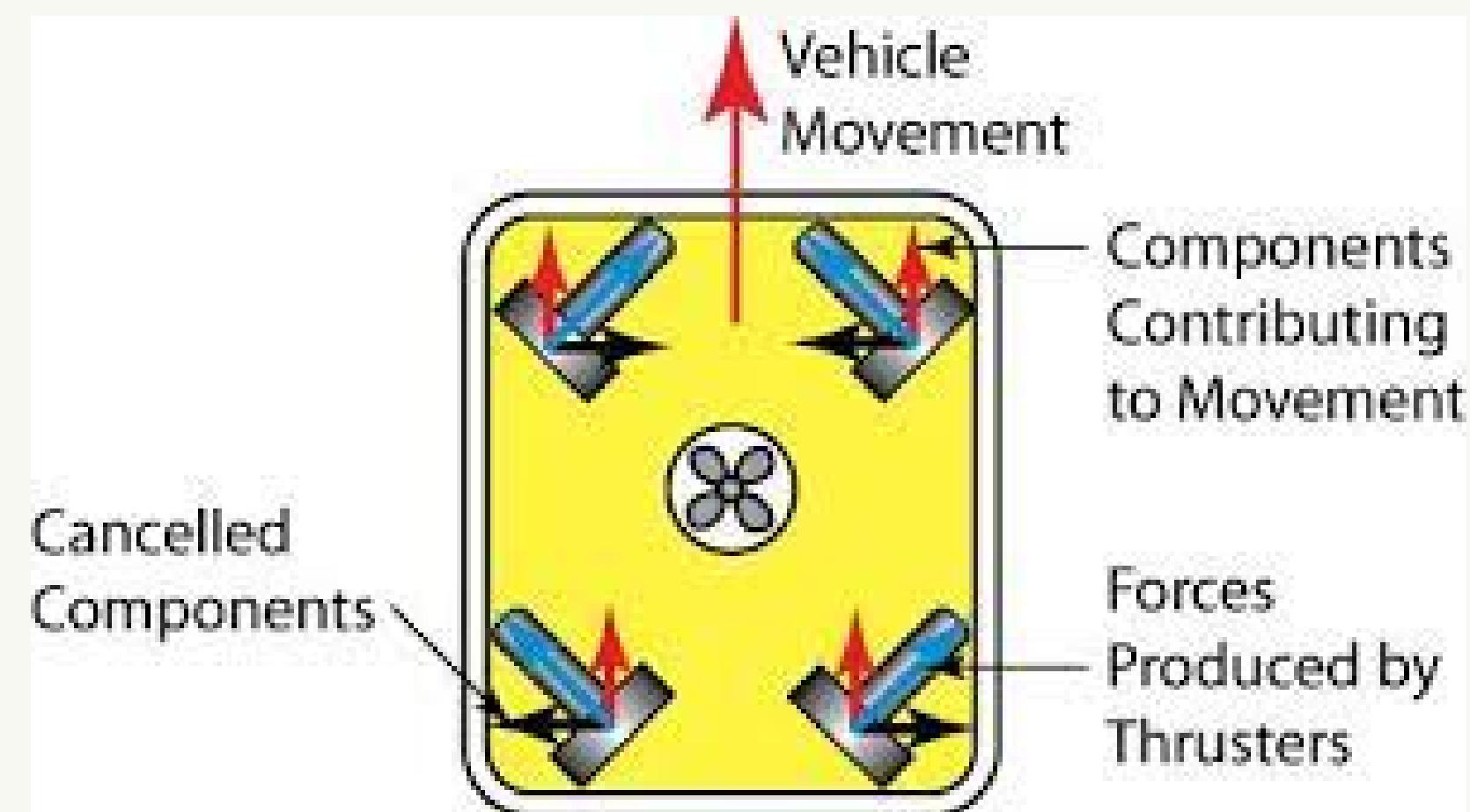
CONTROLLER AND NAVIGATION CIRCUIT



The control system for an ROV includes a set of joysticks, buttons, and other controls that allow the operator to control the movement and operation of the vehicle.

THRUSTERS FOR MANEUVERING (PROPULSION)

ROVs are equipped with a number of thrusters that provide the vehicle with the ability to move in any direction, including forward, backward, up, down, left, and right.



Power system

A remotely operated underwater vehicle (ROV) typically uses an electric power system to run its propulsion, sensors, and other equipment. This system often includes rechargeable batteries or a tethered power supply to provide the necessary energy to operate the ROV at varying depths and pressures in underwater environments. The power system must be carefully designed and maintained to ensure the safety and efficiency of the ROV's operations.

CATEGORIZATION OF ROVS

1. Micro ROVs
2. Mini ROVs
3. General ROVs
4. Inspection Class
5. Light Work Class
6. Heavy Work Class
7. Trenching and Burial ROVs





MICRO & MINI ROV

A small-sized ROV that weighs below 3 kg and 15 kg respectively. These attributes enable the ROVs to explore minuscule cavities or pipeline cracks, which is physically impossible for a diver to achieve and it only takes just one person to operate it

THE GENERAL ROV

Usually have below 5 HP (propulsion) and comprises three-finger manipulators, like in the old RCV 225. These are specially built to aid in light survey tasks, as these usually bear a sonar unit.

THE LIGHTWORK CLASS

Generally has below 50 HP and can support several manipulators. These ROVs allow a maximum working depth of 2000 meters. Polyethene, a kind of polymer, is used in construction which varies from the typical aluminium alloys or stainless steel.



THE HEAVY CLASS

The Heavy workplace machine supports below 220 HP with two manipulators and can achieve a depth of 3500 meters.

