



Working
together for a
safer industry



ARREX

Autonomous Robot for
Radiological EXploration

THE FUTURE OF RADIATION PROTECTION

FROM CERAP'S PERSPECTIVE

Using new technology to reduce radiation doses



AUTOMATISE Radiological measures

Daily or statutory



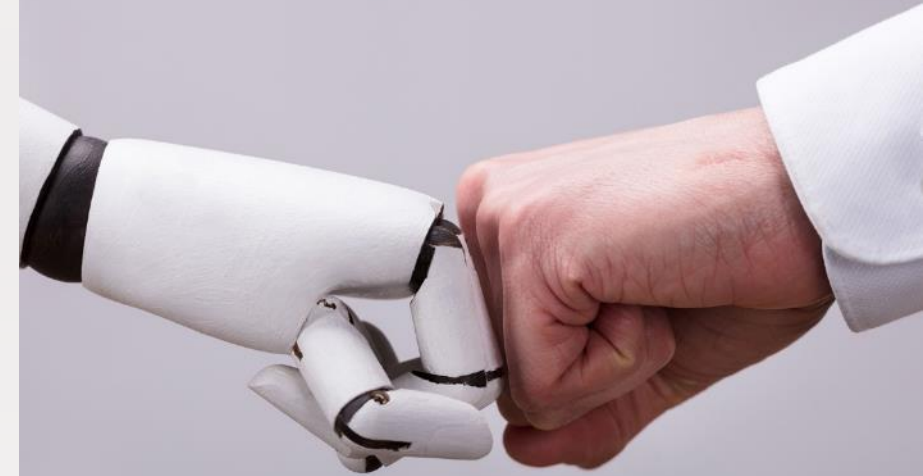
MAPPING For unknow environments

With robots



MONITORING Dose Rates on Sites

Precisely and
dynamically



ARREX

PRESENTATION

ARREX is an autonomous robot used as a measuring instrument for radiation monitoring.

In an unknown environment, it carries out measurements over the entire accessible surface of the premises and restores them in the form of mapping.

Fully configurable, ARREX can replace Human for many missions.

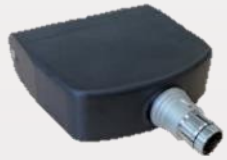
- ✓ **Dose Rates Map** for delayed reading
- ✓ **Continuous Mapping** on site transmitted in real time
- ✓ **Detection of hot spots** and real-time warning



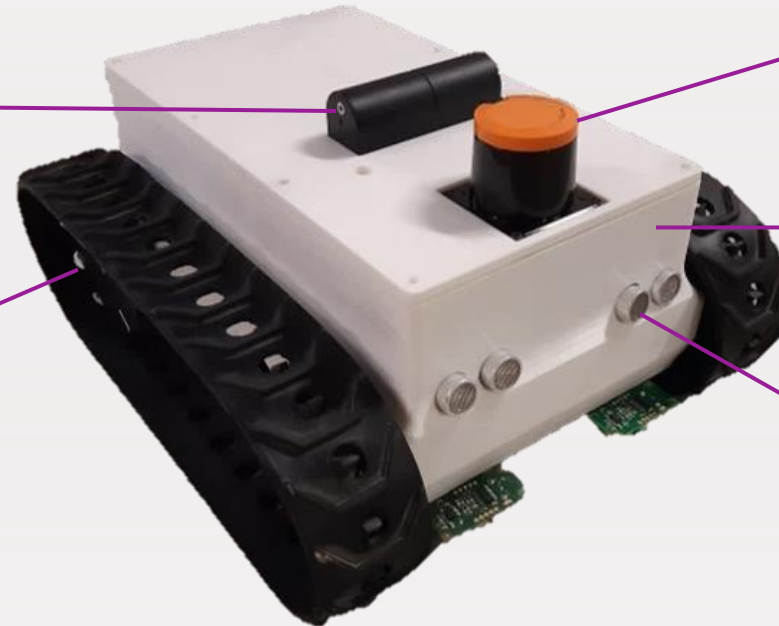
ARREX

DESCRIPTION

Probe VLDR



Odometry
Sensors



LIDAR

Framework:

- Processor
- Batteries
- Data storage

Ultrasound
Sensors

ARREX can be equipped with a **dustproof** and **decontaminable** bodywork in PVC or steel (shielding).

ARREX

PERFORMANCES



Allow mapping of **100% of the accessible surface**

Returns to the **starting location** at the end of the mapping

Monitoring speed

- **Up to 1,3 m²/min** in exhaustive control mode
- **> 2 m²/min** in exploration mode

Full Autonomy

- No route programming
- No data to be inputted beforehand
- No need for monitoring

Operates in the dark

Avoids holes and overcomes obstacles

(cable ducts, etc.) and inclined surfaces.

Recognises himself in his environment if transferred

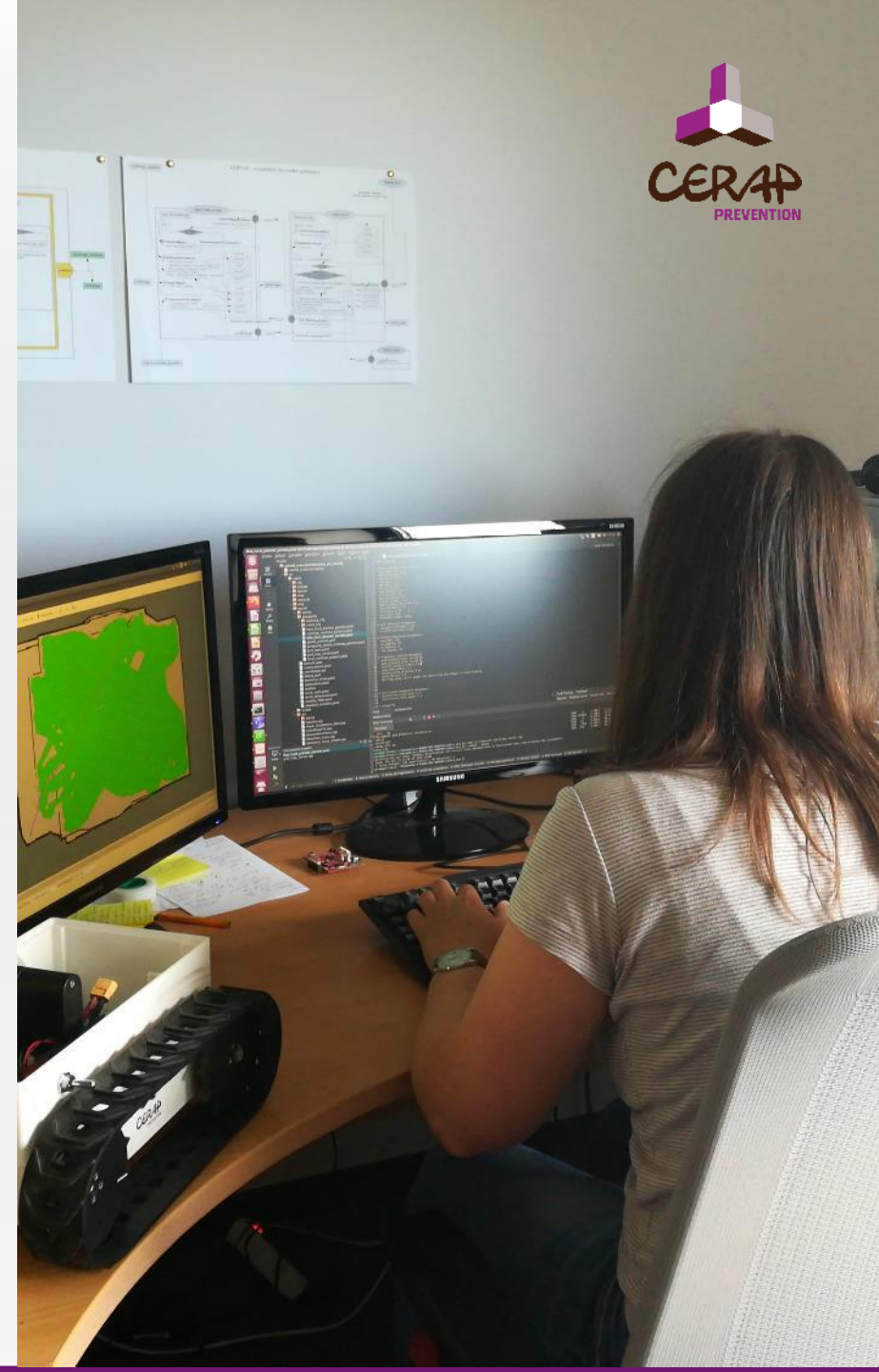
Battery life: approximately **4.5 hours**

ARREX

CHARACTERISTICS

ARREX is exclusively made by CERAP Prevention, from its design to IT development.

- ➔ **Reduced dimensions:** L 33 x l 29 x h 18 cm and 3,5 kg
- ➔ **Measuring probe for dose rate VLDR** (Canberra) from 0,1 $\mu\text{Sv/h}$ to 1mSv/h (can be replaced by another type of probe)
- ➔ **Communication via WIFI** with a laptop (can be deactivated)
- ➔ **Saving data** to internal memory or USB stick
- ➔ **Possibility of real-time monitoring** of the robot's path
- ➔ **Metrology:** adaptation of speed to the measured dose rate



ARREX SAFETY

- ➔ **POLYMERE BODY**
No accessible live parts
- ➔ **HOLES AND OBSTACLES DETECTION**
No risk of environmental damage
- ➔ **BREAKDOWN MANAGEMENT SYSTEM**
Guarantees emergency shutdown in case of loss of communication of a (functional) organ



Surface contamination measurement module

Scintillation counter - 300 cm²

To simultaneously and efficiently detect radiation γ , β , et α

Specific mode of operation

Does not put its track in the contamination



**measuring module at a
height 1.50m**

Adjustable height for the measure

Shock Sensor

To protect the probe, the tilting of the robot
and the environment.



ARREX

REPORTING OF MEASURES

CERAP Prevention has developed RADMAP, a software for visualising mapping on a 2D or 3D model.

Time-stamped Measurements

- ➔ Enable a posteriori reanalysis of the evolution of dose rates in order to capitalise on experience

Real or Delayed Time

- ➔ Possibility of viewing the mapping in real time (communication by WIFI) or future viewing (via USB key).

