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AARM v.5

ADVANCED AERIAL RADIATION MAPPING

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When it comes to cutting edge drone-based radiation mapping technologies the **Advanced Aerial Radiation Mapping (AARM)** system represents the most capable system on the international market. Better still, we've just released our new **version 5 system**, taking another technological leap ahead of the competition!

The **patented technology** was developed by the University of Bristol after the Fukushima Disaster in 2011 with funding from the UK Government.

In May 2013, the AARM v1 was the **first** UAV-based radiation mapping technology ever deployed on a UK nuclear site. Just 2 weeks later the same technology was deployed in the Fukushima exclusion zone to map contaminated areas of farm, villages and towns. **Imitec Ltd.** was founded in 2014, as a University spin-out aimed at commercialising this valuable new technology. Today the AARM technology is recognised by many as the best available for UAV-based radiation mapping.

CUTTING-EDGE

Today the Advanced Aerial Radiation Mapping **(AARM)** system is in its 5th commercial iteration.

It is quite simply the most advanced radiation mapping system on the market for aerial survey work, used by Sellafield, LANL, the UK's National Nuclear User Facility and extensively in the Chernobyl Exclusion Zone (CEZ).

Offering real-time radiation data visualisation on a hand-held device or laptop, it enables rapid decision making to support nuclear safety and environmental surveying.

‘Rapid deployment on almost any mid-sized multi-rotor drone’

DATA MEASUREMENTS

The AARM has been specifically developed for use with different emergency response drone systems. The following parameters can be measured using this AARM v5 Payload.

1. **Gamma counts per second & dose.**
2. **Gamma spectrum.**
3. **Distance above ground in meters.**

NUMEROUS APPLICATIONS

The AARM v5 is the world’s most advanced aerial radiation mapping system used a many of the world’s most hazardous nuclear sites.

- **Special surveys during plant dismantling.**
- **Repeated routine monitoring of plant.**
- **Repeated routine monitoring of waste sites.**
- **Environmental surveys over restricted zones to determine movement of materials.**
- **Hazard response.**
- **Mining and mineral prospecting.**

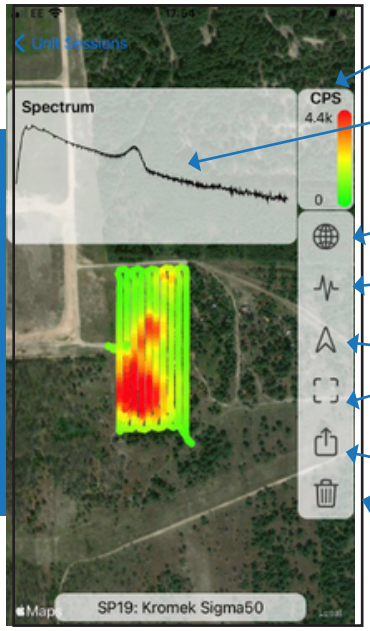
SYSTEM FEATURES

1. Real-time data display with several data screens
2. Single-push button for turning the AARM on and off and switching between display screens
3. Battery with up to 3.5 hours session time on a single charge.
4. Auto-shutdown on low power
5. On-board data storage
6. A choice of up to 4 different on-board gamma spectrometers or other detectors
7. Mobile 4G cellular (GSM) data transmission, supporting 14 LTE bands for worldwide usage
8. Local 100m wifi connectivity to IOS devices
9. 200m height-above-ground ranging LiDAR
10. Accurate geolocation via GNSS network
11. Inbuilt downwards facing camera
12. IP65 rated casing to prevent water & dust ingress

REAL-TIME DATA VISUALISATION USING IOS

AARM users can view their radiation mapping data in real-time as its recorded or any time afterwards using an iOS application available on Apple's **iPad**, Mac or **iPhone**.

The software allows data to be displayed on several different plotting scales, overlaid on map or satellite images to allow for correlation with geographical features or buildings. The recorded gamma spectra for the survey area can be displayed in an inset window for identification of characteristic gamma peaks.



CPS ranging and colour scale can be altered in the app settings to show data intuitively.

Gamma-spectrum display window overlies map data.

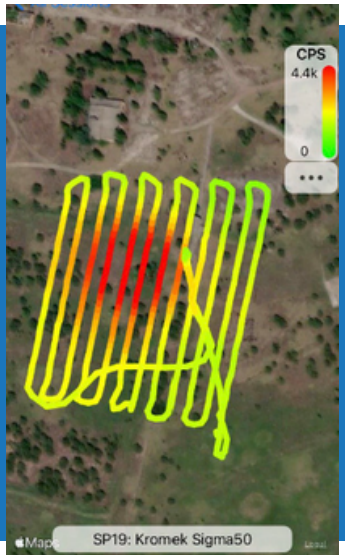
App can be toggled between digital map and satellite map.

Combined gamma spectrum can be displayed on/off to identify gamma 'fingerprint' peaks for nuclear materials.

Navigation tools help you zoom in to the mapping area and orient North-South.

Data can be quickly exported locally onto your iOS device.

Details of the detector being used is also displayed.



AARM is good with autonomous AND piloted drone missions to allow for intuitive survey missions.
Data can also be viewed remotely in the iOS application by other 'cleared' users to allow for strategic decision making.

NOTE - Data presented herein was recorded and by the University of Bristol Hot Robotics National Nuclear User Facility team in the Chornobyl Exclusion Zone (CEZ) in September 2021.

SUMMARY

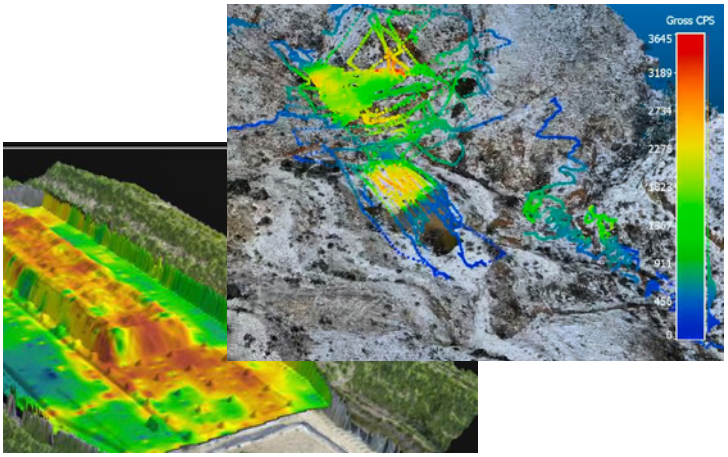
The **AARM v5** is the world's most advanced aerial radiation mapping system used a many of the world's most hazardous nuclear sites.
The AARM is ideally suited for applications at nuclear, industrial and mining sites to assist with:

- *Special surveys during plant dismantling*
- *Repeated routine monitoring of plant*
- *Repeated routine monitoring of waste sites and active mining sites for regulatory compliance*
- *Environmental surveys over restricted zones to determine movement of materials.*
- *Mineral prospecting and surveying*

Imitec is pleased to offer the AARM technology with accompanying training and support so you collect **best data possible** for every survey.

DATA PROCESSING

AARM data can be easily exported and incorporated into other **geographical information system (GIS)** software where it can be combined with maps of different types as well as 3D digital elevation models.



SPECIFICATIONS

Specifications	Details
Gamma spectrometer detector	Up to 4 radiation detectors - CZT and CsI options to select from, at a variety of different crystal sizes. Neutron detection options also available.
Spectrometer energy range and resolution for CsI spectrometer option	• Energy range. 30 keV to 3.0 MeV. • Energy resolution < 7.2 % FWHM @ 662 keV • Maximum throughput: 10,000 cps. • Number of channels: 4096 (12 bit) • Gamma sensitivity for Cs137: 5 cps/µR/h (500 cps/µSv/h) • Maximum dose rate: 2.0 mR/h (20 µSv/h) at 662 keV
Power	Built-in Li-polymer-battery giving 3.5 hours of operation (40% increase on the AARM v4)
System operation conditions	Temperature from -10°C to +40°C; humidity from 40% to 95%
Data transmission	Wifi to 100m and 4G GSM transmission, 14 LTE bands