



innovative physics

Hot Spot Locator Products

For rapid visualisation of radioactive sources



MAKING RADIATION VISIBLE

Nuclear Emergency Homeland Security Customs Medical



innovative physics

Faster and More Accurate Location of Radiation Hotspots

Already proven in surveys and decontamination activities in Japan, China, and Europe, Innovative Physics' (IPL) Hot Spot Locator (HSL) Gamma Imaging technology provides much more rapid and accurate visualisation of radiation contamination.

Applications

The HSL products are extremely versatile, and can be used for a number of different applications, including:-

- Radiation decontamination and clean up activities
- Ground remediation assessments
- Radioactive waste and transportation management
- Radiation training and education
- Nuclear power plant decommissioning
- Emergency response situations
- Environmental monitoring and assessments



Background

The first product to deploy IPL's Imaging Mask design was the Hot Spot Locator500 (HSL500™), which was developed following the Fukushima Dai'ichi Incident to assist with clean-up operations. Now deployed by decontamination, emergency response, and nuclear management teams across the world, the technology has proven to be quick and accurate in comparison with conventional gamma imaging techniques.

The detection speed and ability to locate hot spots of very low radioactivity levels is due to its enhanced sensitivity, while the class leading accuracy of visualising the location of the hot spot is due to advanced image processing techniques developed by Innovative Physics.

IPL has received excellent feedback on the performance of the HSL500™ and its SmartSpot™ application software as being an intuitive and easy to learn solution.

Hot Spot Locator

HSL-Lite™ and HSL-Lite Plus™

Following end-user feedback and extensive field work conducted by IPL globally, IPL began development work on the next generation gamma imaging tools, HSL-Lite™ and HSL-Lite Plus™ which were launched at the start of 2016.

Utilising IPL's new Dynamic Imaging Mask (DIM) design, these products maintain the superior speed and sensitivity of the HSL500™, but at less than half the weight of their predecessor. The HSL-Lite™ is 6.5kg and the HSL-Lite Plus™ is 10kg, making them both easily and quickly deployable by a single person.

Furthermore, the DIM system improves the quality of the gamma image by reducing the background interference not emitted from the gamma source located in the field of view.

IPL strive to ensure the equipment is:-

Quick
Clear
Accurate
Easy to Use



Photo courtesy of SCK-CEN

Easy Set up and Operation

Just one Start/Stop button controls the capture operation of the HSL-Lite™ products. The SmartSpot™ software runs on a standard Windows PC or tablet, supplied as part of the kit for out-of-the box readiness.

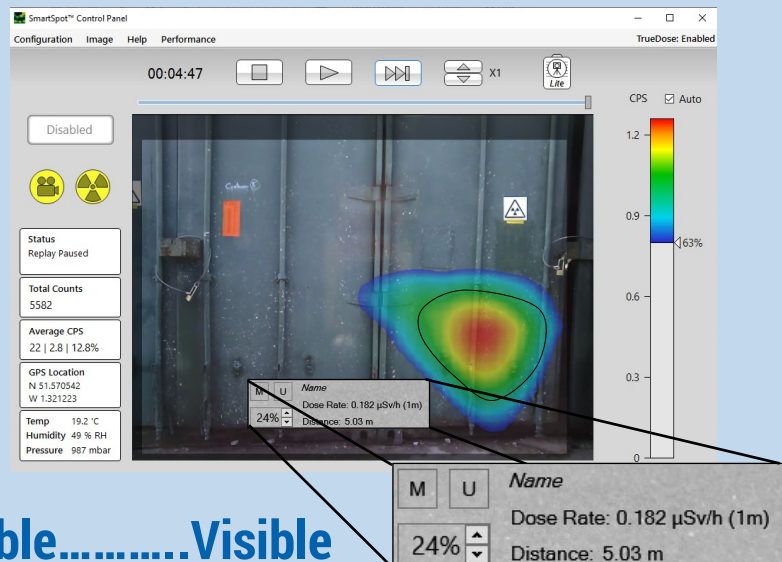
Image data can be easily viewed, analysed, replayed and archived with the SmartSpot™ software. The inbuilt GPS receiver records the location of each video capture automatically, thus enabling end-users to easily monitor radiation levels of an exact location over time.

The HSL-Lite™ kits include a standard tripod with an inbuilt pan and tilt head for easy manoeuvring. Bespoke mounts and remotely operated solutions are available to address specific applications and requirements.

The supplied batteries will provide up to 12 hours of use from a full charge.

TrueDose2D™

TrueDose2D™ enables the user to measure the dose rate of the identified hot spot(s), by simply pointing a laser range finder at the target point. The distance measurement is then used to calculate the indicative dose rate of the hot spot in $\mu\text{Sv/hr}$, at 1 metre, as shown in the images below.



Making the Invisible.....Visible

Hot Spot Locator HSL-Lite Plus™

Specification for Model HSL-Lite Plus™

Gamma View Angle	60 degrees (diag.)
Gamma Sensitivity	0.01 μ Sv/hr*
Angular Resolution	<= 10 degrees
Video Resolution	1024 x 768
Max Frame Rate	6 fps
Operating System	SmartSpot™ Software runs on standard Windows® PC platforms (Toughpad supplied)
Dimensions (H, W, L)	261 x 204 x 337 mm
Weight	~10kg
Power Source	Lithium battery pack (2 supplied with the HSL-Lite Plus™ Kit)
Operation Time	>12 hours operation time
Operating Temperature	0 °C to +40 °C
Humidity	10% to 90% RH non condensing
IP Rating	Designed to IP67 (when connected)
Operational Advantages	<ul style="list-style-type: none">• HSL-Lite Plus™ is designed for optimum performance in background environments up to 20μSv/hr• The Dynamic Imaging Mask and Advanced Correction Software enables the HSL-Lite Plus™ to remove the presence of artefacts caused by off-axis hot spots outside the field of view in complex scenarios (e.g. decommissioning)• Portable instrument; deployable by 1 person• Multiple hot spots of radiation contamination are accurately displayed• Automatic calibration process means unit needs calibration only once every 2 years• 2.4Ghz Wireless /UGV/Robotics capabilities for remote operations• Data can be viewed, replayed, analysed and archived with SmartSpot™ Software

*Achieved sensitivity in normally occurring background radiation environments and in contaminated environments in Fukushima Prefecture. In low background environments, the HSL-Lite Plus™ sensor has detected dose rates of 0.004 μ Sv/hr.

These specifications are correct at the time of printing, however are subject to engineering change to improve reliability, function, or design.

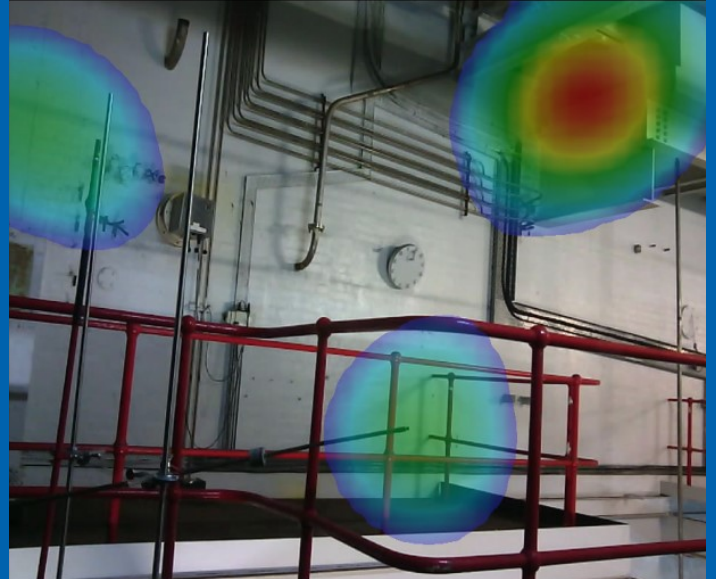
Hot Spot Locator HSL-Lite™

Specification for Model HSL-Lite™

Gamma View Angle	60 degrees (diag.)
Gamma Sensitivity	0.01 $\mu\text{Sv/hr}^*$
Angular Resolution	≤ 10 degrees
Video Resolution	1024 x 768
Max Frame Rate	6 fps
Operating System	SmartSpot™ Software runs on standard Windows® PC platforms (Toughpad supplied)
Dimensions (H, W, L)	205 x 180 x 260 mm
Weight	~ 6.5kg
Power Source	Lithium battery pack (2 supplied with the HSL-Lite™ Kit)
Operation Time	>12 hours operation time
Operating Temperature	0 °C to +40 °C
Humidity	10% to 90% RH non condensing
IP Rating	Designed to IP67 (when connected)
Operational Advantages	<ul style="list-style-type: none">• HSL-Lite™ is designed for optimum performance in background environments up to 10$\mu\text{Sv/hr}$• The Dynamic Imaging Mask and Advanced Correction Software enables the HSL-Lite™ to remove the presence of artefacts caused by off-axis hot spots outside the field of view in complex scenarios (e.g. decommissioning)• Portable, light weight instrument; deployable by 1 person• Multiple hot spots of radiation contamination are accurately displayed• Automatic calibration process means unit needs calibration only once every 2 years• 2.4Ghz Wireless /UGV/Robotics capabilities for remote operations• Data can be viewed, replayed, analysed and archived with SmartSpot™ Software

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Find out more

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