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Access Control & Intelligent Vehicle Screening

What you need to know before
acquiring an automatic inspection system

Overview

When securing a sensitive facility against unwanted threats, there are several challenges that need to be addressed. Whether you are trying to protect an embassy, bank, power plant, data center, military base or airport, no perimeter is tightly secure until all of the people and vehicles entering are screened in the right manner.

While it's clear that old-school methods like a guard with a mirror are outdated and present many time-consuming challenges, there are technological solutions today that can help us solve this. One of them is an under-vehicle automatic scanner for any threat that is hidden under the vehicle.

These kinds of scanners usually combine both hardware and software, which are made up of high-resolution cameras. They can produce an image of the undercarriage and assist the on-site personnel (automatically or not) while providing a more accessible way to look for illicit materials, bombs, drug smuggling, data theft and more.
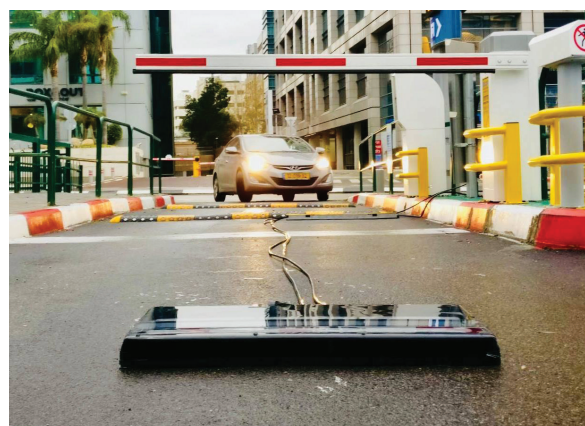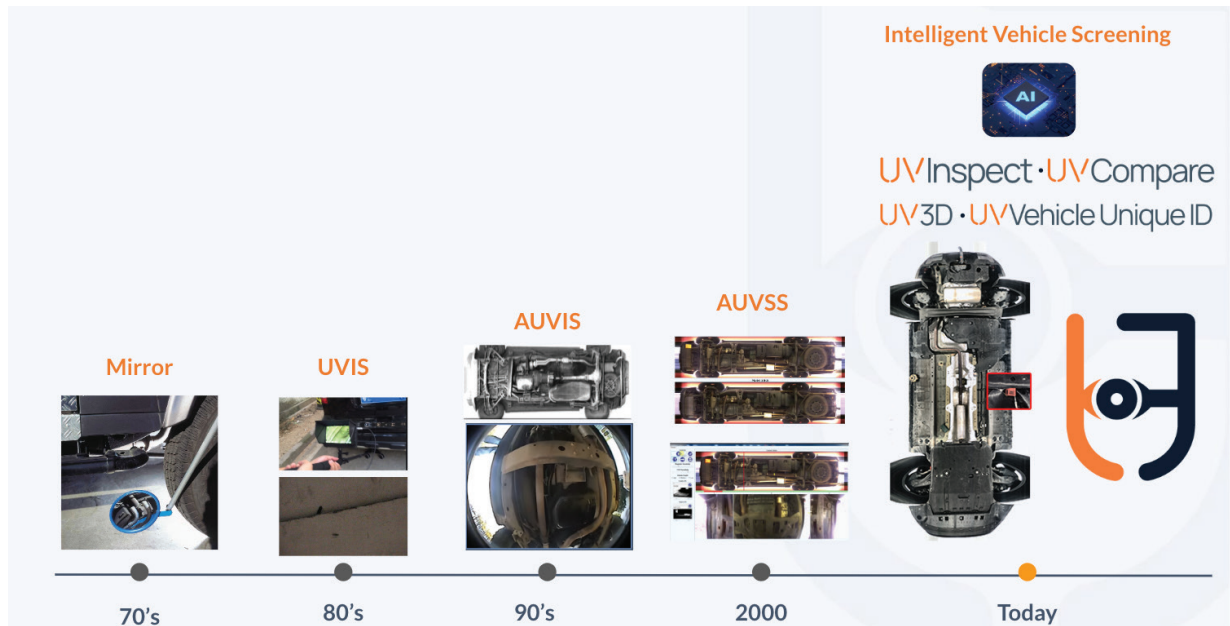

Solutions Timeline

The evolution of under-vehicle threat detection started with manual inspection, which is still a common method used by many sensitive facilities today. The first technological solutions brought to the world in the 80s were called UVIS (under-vehicle inspection systems), which were handheld devices helping the guard or operator to get a proper image of the undercarriage. While this was of great help at the time, it is understood that the human eye has its constraints in being able to see very small objects or modifications.
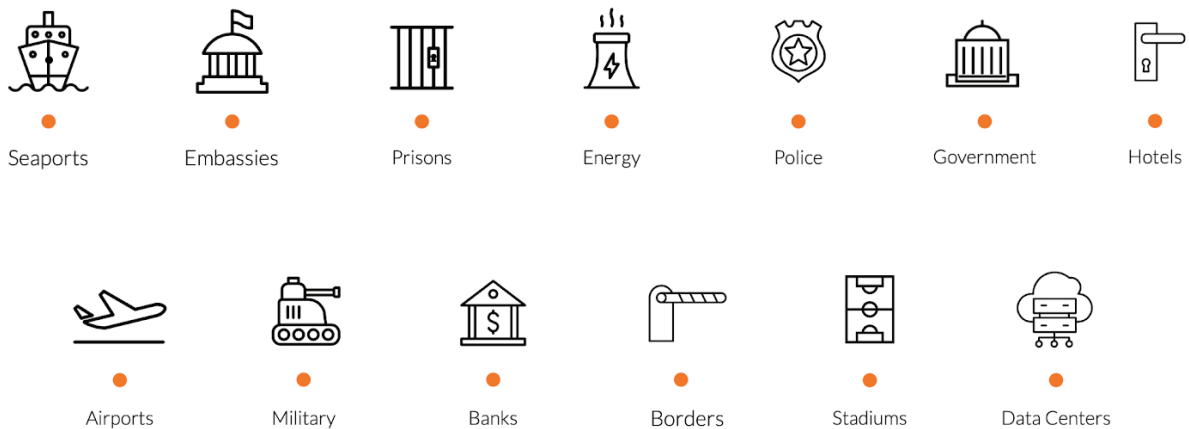
The next stage consisted of automated under-vehicle inspection systems (AUVIS), which usually provided a black and white, low-resolution image below after a vehicle stops above a device. This evolved into automatic recording of these images and comparison abilities (but only if a vehicle has been scanned before), also called automated under-vehicle surveillance systems (AUVSS).

The most recent developments include providing the ability of intelligent vehicle screening to automatically detect any threat or anomaly on the first pass, within seconds and with no need for image comparison with the vehicle before. Whether a bus, truck or private vehicle, artificial intelligence deep learning algorithms know how to divide a vehicle into its different parts and understand if there is a difference, addition or anomaly versus the original, non-modified vehicle.

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Under vehicle inspection evolution

Intelligent Vehicle Screening

UVInspect · UVCompare
UV3D · UVVehicle Unique ID

Mirror	UVIS	AUVIS	AUVSS	Today
70's	80's	90's	2000	Today

Use cases for automatic inspection systems

Seaports | Embassies | Prisons | Energy | Police | Government | Hotels

Airports | Military | Banks | Borders | Stadiums | Data Centers

Purchasing the right product

It is very important that once you make a purchasing decision for your organisation, or if you are a security integrator company, that you buy a scanner that has the right hardware specs and durability while also possessing actual automatic technological ability to detect these kinds of threats on the first pass.

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The main things to look out for are:

- Durable hardware that has an IP54 or IP68 rating and can work in the toughest weather conditions like snow or extreme humidity

- High-resolution cameras that can provide a crisp and colorful image which the software can zoom in to

- An option to compare vehicles if they have driven over the system more than once to check for any differences. This can be done using a license plate detector, or from a "Vehicle Unique ID," which is created by the system

- An ability to detect any threats or illicit materials automatically and on the first pass, even without having seen the vehicle ever before

Comparison Table

High-Resolution Image	Ability to zoom in on smallest details of the under vehicle with resolution of ~ 50 Pixels Per inch (PPI)
	The color of the scan image should reflect the true color of the under vehicle
Bi-Directional Scan	System should have the ability to scan vehicles from opposite directions if needed
Depth Image Processing	Multiple cameras with capability of center and side views
Full View of Undercarriage	Full coverage of the under vehicle

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Speed	Supporting different speeds up to 30 KPH
Auto Threat Detection of Anomalies	System should automatically identify anomalies under the vehicle and alert the operator if detected
Marked Threats Over the Scan for Efficient Operator Analysis	Operator should be able to view the scan image with the identified threats detected by the system over the under vehicle image for easy analysis
First Pass Solution	Ability to identify potential threats with no previous record of vehicle on site
Comparison Solution (Reference based)	Ability to identify potential threats of recurring vehicles with display of previous scans as visual reference
Threat Detection Rate	Tested and proven detection in various scenarios
Comparison Solution (Reference based)	Ability to support up to 10K vehicles per site
Vehicles Throughput	Ability to support up to 4 vehicles per minute, per lane
Scan Type	Area scan color
LP Recognition	System should be able to identify and display vehicle overview with license plate number
Alerts for Unauthorised Vehicles	System should alert you when a listed unauthorised vehicle approaches the premises and is captured by the LP camera
Supported Vehicles	Private cars, buses, trucks
Vehicle Overview Image	Vehicle overview image with LP number
Reference of Previous Scans for Comparison with Clear Scan	Reference display
Reports	System should keep record of previous scans with vehicle's LP for analysis and update
Threat Notifications and Display	Auto alert with marks on identified anomalies of the under vehicle
3D Display of Identified Threats	System can display Threats in both 2D and 3D to enhance user decision
Environmental Conditions	Supports temperatures from -20 to 60 degrees Celsius
Condition Compliance (Water, Dirt, Dust)	System complies with at least IP54
Pressure Resistance	Mobile scanning unit resist weight of up to 20 tons per axle (fully loaded truck)
Integration with Arm Barriers and Traffic Lights	System can be integrated to barriers or traffic lights and other third-party systems via API

When planning the access points to your facility, make sure you take into account technological solutions which can save lives, reduce costs and waiting times, and ensure the safety of everyone involved. Whether mobile or stationary, UVeye offers systems that can be installed anywhere, anytime, rain or shine, and provide a layer of data security, screening any vehicle entering or leaving the facility. Get in touch today for more details.

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