



OPENWORKS



SKYWALL

CAPTURE DRONES - PROTECT ASSETS



OpenWorks Engineering develops world leading security and counter terrorism products.

We deliver dynamic engineering solutions. Our specialism is the security and counter terrorism market but we also apply our extensive experience to consultancy programmes.

OpenWorks is capable of supporting all levels of project.

Much of our experience has been gained through providing equipment for the demanding and challenging defence and security industry, where only the highest levels of quality and performance are acceptable.

SKYWALL

The Last Line of Drone Defence

The world's only physical capture system that offers a cost effective and proportionate response to the civil drone threat.

SKYWALL DEFENDS AGAINST COMMERCIAL DRONES

Public nuisance – Invasion of Privacy – Security Concern – Terrorist Threat

Drones have already been used to carry out crimes against individuals and organisations. As the technology becomes cheaper and more widely adopted, the number of incidents will inevitably increase. Authorities such as the Police Force, Prison Service and Counter Terrorism Units have already acknowledged drones as a growing threat.

Numerous incidents such as the well-publicised White House crash landing and videos of drones flying over commercial airport runways and large cities have raised awareness, resulting in the requirement for protection against potential terrorist attacks or fatal collisions.

**“WHILE MANY ENCOUNTERS
ARE NOT MALICIOUS IN
NATURE, THEY UNDERSCORE
THE POTENTIAL SECURITY
VULNERABILITIES THAT COULD
BE USED BY ADVERSARIES TO
LEVERAGE [DRONES] AS PART
OF AN ATTACK”**

U.S. DEPARTMENT OF HOMELAND SECURITY



SKYWALL CAPTURES DRONES AND PROTECTS

Recent reports show the security of high profile individuals, such as the Japanese Prime Minister Shinzo Abe and German Chancellor Angela Merkel, has been compromised.

Drones have caused serious disruption at highly populated events such as the Boston Marathon. The Serbia vs Albania international football match in Belgrade had to be abandoned after riots broke out, sparked by a provocative flag hanging from a drone.

Celebrities have been besieged by paparazzi drones and prisons across the UK and America have seen a rise in drone related incidents, both delivering contraband and photographing high profile inmates.

While the world's leading defence contractors are offering high tech, high cost military grade solutions, OpenWorks is focussed on providing a cost effective and safe response to the threat.

KEY SECTORS

- Prisons
- Private Security Firms
- Police
- Critical Infrastructure Security
- Border Agencies
- Airports and Transport Policing
- Military

SKYWALL

A NET CAPTURE THAT NEUTRALISES
ANY TYPE OF SMALL DRONE, OF ANY
CONSTRUCTION

The Last Line of Drone Defence

SkyWall offers those exposed to the drone threat with the ability to protect the public, VIPs, crowds, prisons and critical infrastructure.

It is the world's only drone defeat system that offers a cost effective and proportionate response, developed specifically for the civil drone threat. SkyWall allows an operator to capture and bring down a drone at a time and place of their choosing, using a combination of a compressed gas powered launcher and an intelligent projectile. Damage to both it and the surrounding area is minimised by controlling the descent of the captured drone.



CAPTURING A DRONE

ENSURING CONTROL OF THE SITUATION
IS MAINTAINED

ADVANTAGES OF PHYSICAL CAPTURE:

- Higher confidence of threat mitigation with a known outcome
- Reduction of potential collateral damage
- Defence against any shape of drone, typically less than 4ft in maximum dimensions
- Defence against any type of construction material
- Safe and controlled landing of the drone in cluttered ground space
- Forensic investigation of the drone - allowing the network behind the threat to be attacked
- The ability to mark the target with tamperproof paint - ensuring quick location of any individual that interacts with a seized drone
- Defence against both commercially-available and custom-made drones
- Defence against both command and autonomous operation
- Interference free operation in RF/GPS dense environments
- Individual drone targeting for use in populated airspace



SKYWALL LAUNCHERS

HANDHELD OR MOUNTED

A range of launchers to augment your existing security

Modular launcher design combined with the intelligent drone defeat projectiles ensures that the SkyWall system is future proof.

The SkyWall range offers defence in handheld and temporary or permanent installations. Each subsequent system offers additional benefits such as increased levels of protection and automation, depending on the threat scenario being considered. SkyWall100 is a highly mobile handheld system that allows rapid response to an incoming threat.

SkyWall300 is a mounted system that can be installed on mobile or fixed assets. It is environmentally protected, can be fully automatic when integrated with detection systems and has the greatest operational range. Detection and target tracking is integrated, facilitating remote operation.



SKYWALL300

DRONE DEFEAT PROJECTILES

Pneumatically launched intelligent drone defeat projectiles



THE SP RANGE OF INTELLIGENT SKYWALL

- TR40 – TRAINING PROJECTILE**
- SP10 – NET DEPLOYMENT**
- SP40 – NET WITH PARACHUTE**

The core technology in the SkyWall system is a pneumatically launched intelligent drone defeat projectile, the SP range.

The SP range of intelligent projectiles delivers a range of counter measures to incapacitate a drone and bring it to a controlled landing. This allows an operator to actively protect a designated air space, in response to an intelligence alert or threat level, and ensure that should a threat arise, action can be taken.

The SP range of intelligent projectiles is designed to be refurbished to ensure that the through life cost to the operator and the environment is minimised.

SKYWALL100

Handheld Drone Capture System



KEY FEATURES:

- Physical Drone Capture - no electronic countermeasure, predictable outcome
- Proportionate Response
- Handheld – highly portable
- Very low collateral damage risk

PROVEN THROUGH OPERATIONAL DEPLOYMENT

EXAMPLE PERFORMANCE WITH A SP40 PROJECTILE

Environmental:	-5°C to +50°C Operating Temperature -20°C to +71°C Storage Temperature (see operation and support manual for storage preparation requirements) IP54 Rated
Weight:	12kg (26lb)
SmartScope:	Reflex scope with integrated range display Laser with integrated gyroscope and atmospheric sensor package Audio feedback during reload and targeting
Silent Operation:	Compressed air power minimises sound released
Re-Useable Air Tank:	Can be refilled locally around the world
Rapid Reloading:	Breach loading allows for quick reloads by a single operator
Safety:	A range of sensors ensure safety during operation, reloading and storage. Energy is only released when an SP40 projectile is recognised by the onboard computer Designed to comply with the Pressure Equipment Directive 97/23/EC

The SkyWall100 launcher is combined with the SP range of projectiles to allow a single operator to protect against drone threats.

Conventional weapons often fail to incapacitate a drone and do not offer a proportionate response to the drone threat. They can also escalate a situation when used in the vicinity of large crowds.

SkyWall100 can be used as a standalone drone defence system but can be integrated using the SkyLink module connected to a wider security system to offer a highly capable counter drone package. A single SkyWall100 system can protect an area or multiple systems can be deployed from mobile units to protect a large site.

SKYLINK

Detection / C2
Connection upgrade

The SkyLink module allows the SkyWall100 system to be integrated into detection and command systems.

Information on the status and location of SkyWall100 can be sent to an external command system. Data from a drone detection sensor can be sent to SkyWall100, allowing the launcher's built-in SmartScope to direct the operator to rapidly find a detected threat in the sky.

The SkyLink is an easy bolt on upgrade for all SkyWall100 systems. OpenWorks can configure the unit to interface with a range of communication methods and protocols.

The SkyLink offers a capability enhancement to all new and existing SkyWall100 systems.

All SkyWall100 SmartScope's have extra display features built in. They can direct an operator to find a detected target. Installing the SkyWall100 Integration Module ensures that the SkyWall operator locates the detected threat in the minimum time possible.

Status information can be sent from SkyWall100 to a mission commander. The system is GPS enabled, allowing for the position of SkyWall100 to be reported. When the system is armed, the module can report the orientation and tracking information for increased situational awareness.

OpenWorks can configure the module to communicate with all kinds of detection and command-and-control technologies. Several wireless options are available to ensure the system is compatible with existing systems and operational requirements.

KEY FEATURES:

- Helps the SkyWall100 operator rapidly find a detected drone
- Provides a 2-way communication link for enhanced situational awareness
- Easy upgrade for all existing SkyWall100 systems

SKYWALL300

Automatic Drone Capture System

SkyWall300 is an automatic system that can physically capture a drone.

SPECIFICATION

Weight	175kg (example weight. Actual weight dependant on installation specifics)
Size	1.1m x 0.5m x 1.1m
Power	24V 4500psi High Pressure Air (stored in a quickly replaceable tank or integrated high pressure compressor)
Operation	Single Operator
Mounting	Vehicle or building mount options available
Fire Rate	4-10s (with optional auto-reload system)
Environmental	-5°C to +50°C Operating Temperature -20°C to +71°C Storage Temperature IP54 Rated

KEY FEATURES:

- Physical Drone Capture - no electronic countermeasure, predictable outcome
- Proportionate Response
- Long Range Net Capture
- Can be integrated for full autonomy
- Very low collateral damage risk

SkyWall300 can be used as a standalone drone capture system but can be integrated with a drone detection and security system to offer a highly capable and easy to operate counter drone solution.

A single SkyWall300 system can protect a small area and multiple systems can be networked and deployed to protect a site.

SP40

The SP40 is an intelligent projectile that contains a large specifically designed net and is programmed by the SkyWall launcher prior to being released.

The use of a large net, accurately deployed, gives a very high confidence level that a drone will be captured.

The SP40 also carries a parachute, which controls the descent of the now captured drone. This minimises the risk of collateral damage and ensures the drone does not breach the defended perimeter. When collected, the drone can be examined for forensic evidence. Other options to suit a specific scenario are also available, such as audible and visual alarms and tamper proof marking systems.

If the drone eludes capture, the parachute deploys regardless and controls the safe descent of the tethered projectile components.

SP40 NET



PERFORMANCE

Weight:	780g (1.7lbs)
Composite drone capture net:	8 sq.m (85 sq.ft) coverage at point of capture
Environmental:	-5°C to +50°C Operating Temperature -20°C to +71°C Storage Temperature (see operation and support manual for storage preparation requirements) IP54 Rated
Parachute descent control:	Example: DJI Phantom 3 drop speed of 3.3m/s (7.4mph)
Safety:	The energy used to deploy the net and parachute is only received when the projectile is loaded into a SkyWall100 launcher. It dissipates quickly if removed from the launcher to ensure safe handling and transport All components remain tethered together during deployment of the net and parachute.
Cost:	The projectile is designed to be Re-useable to ensure a low 'cost per capture'

DIMENSIONS



SKYWALL CONCEPT OF OPERATION

SkyWall systems can provide a safe perimeter to ensure drones do not disrupt

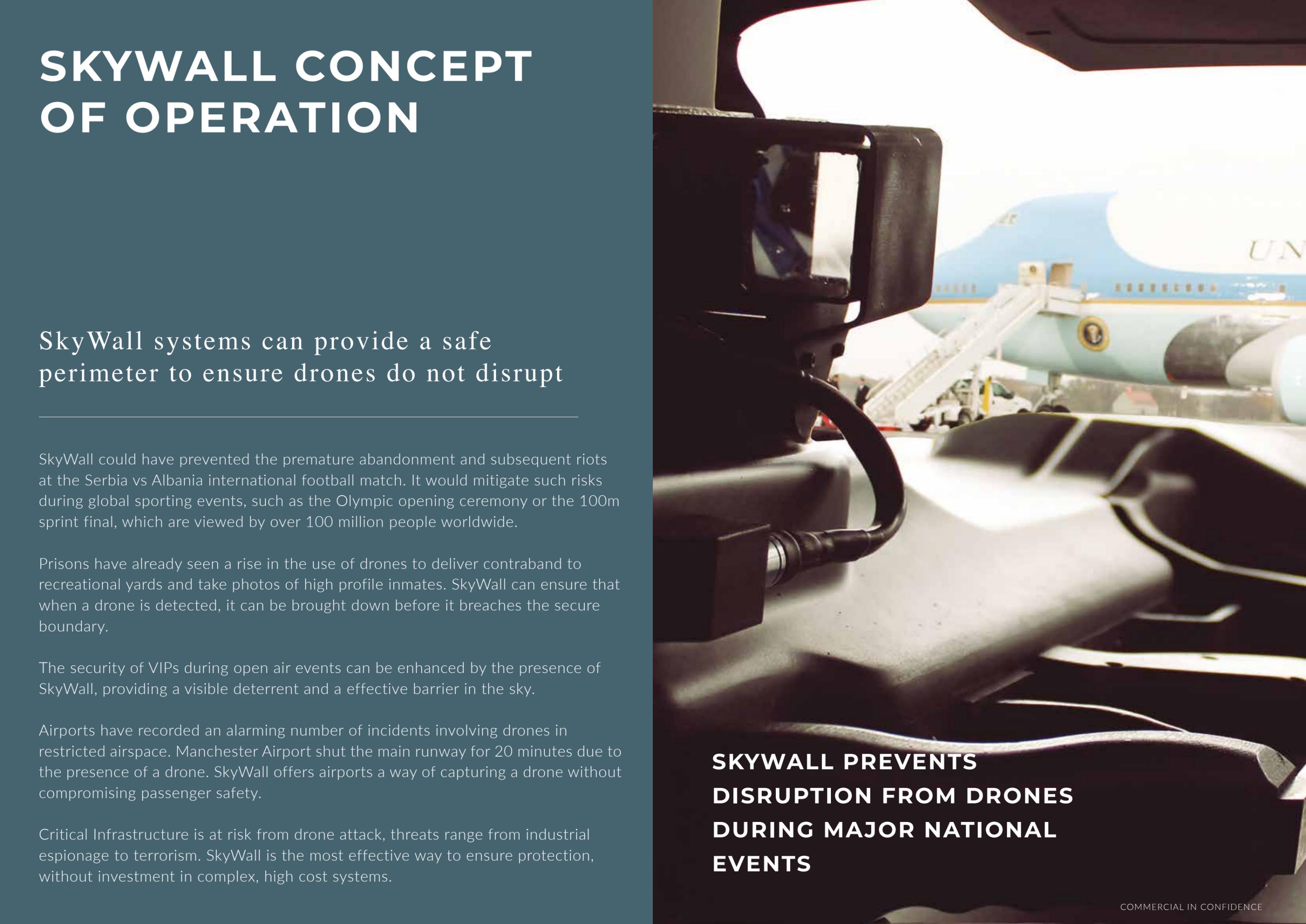
SkyWall could have prevented the premature abandonment and subsequent riots at the Serbia vs Albania international football match. It would mitigate such risks during global sporting events, such as the Olympic opening ceremony or the 100m sprint final, which are viewed by over 100 million people worldwide.

Prisons have already seen a rise in the use of drones to deliver contraband to recreational yards and take photos of high profile inmates. SkyWall can ensure that when a drone is detected, it can be brought down before it breaches the secure boundary.

The security of VIPs during open air events can be enhanced by the presence of SkyWall, providing a visible deterrent and an effective barrier in the sky.

Airports have recorded an alarming number of incidents involving drones in restricted airspace. Manchester Airport shut the main runway for 20 minutes due to the presence of a drone. SkyWall offers airports a way of capturing a drone without compromising passenger safety.

Critical Infrastructure is at risk from drone attack, threats range from industrial espionage to terrorism. SkyWall is the most effective way to ensure protection, without investment in complex, high cost systems.

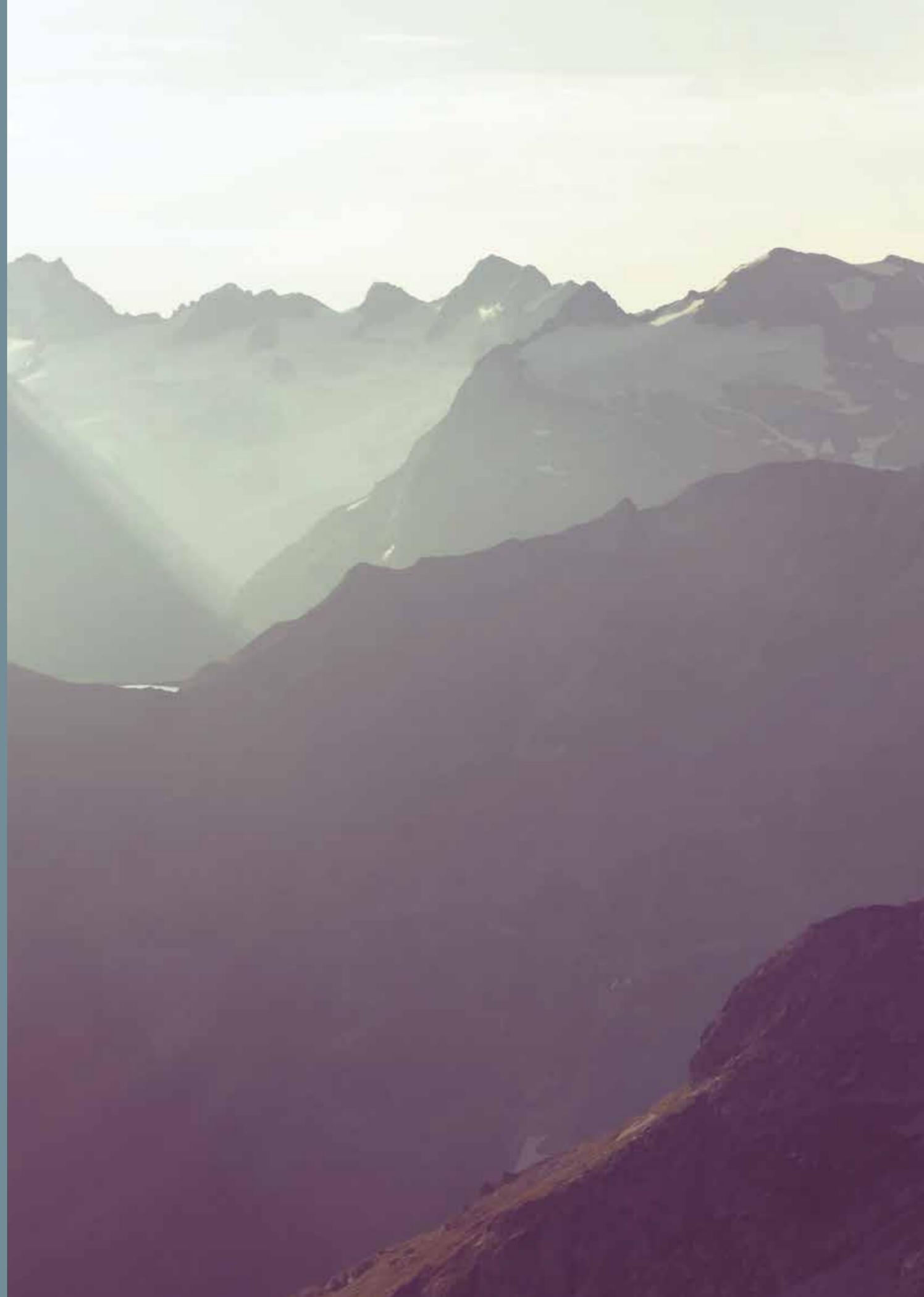


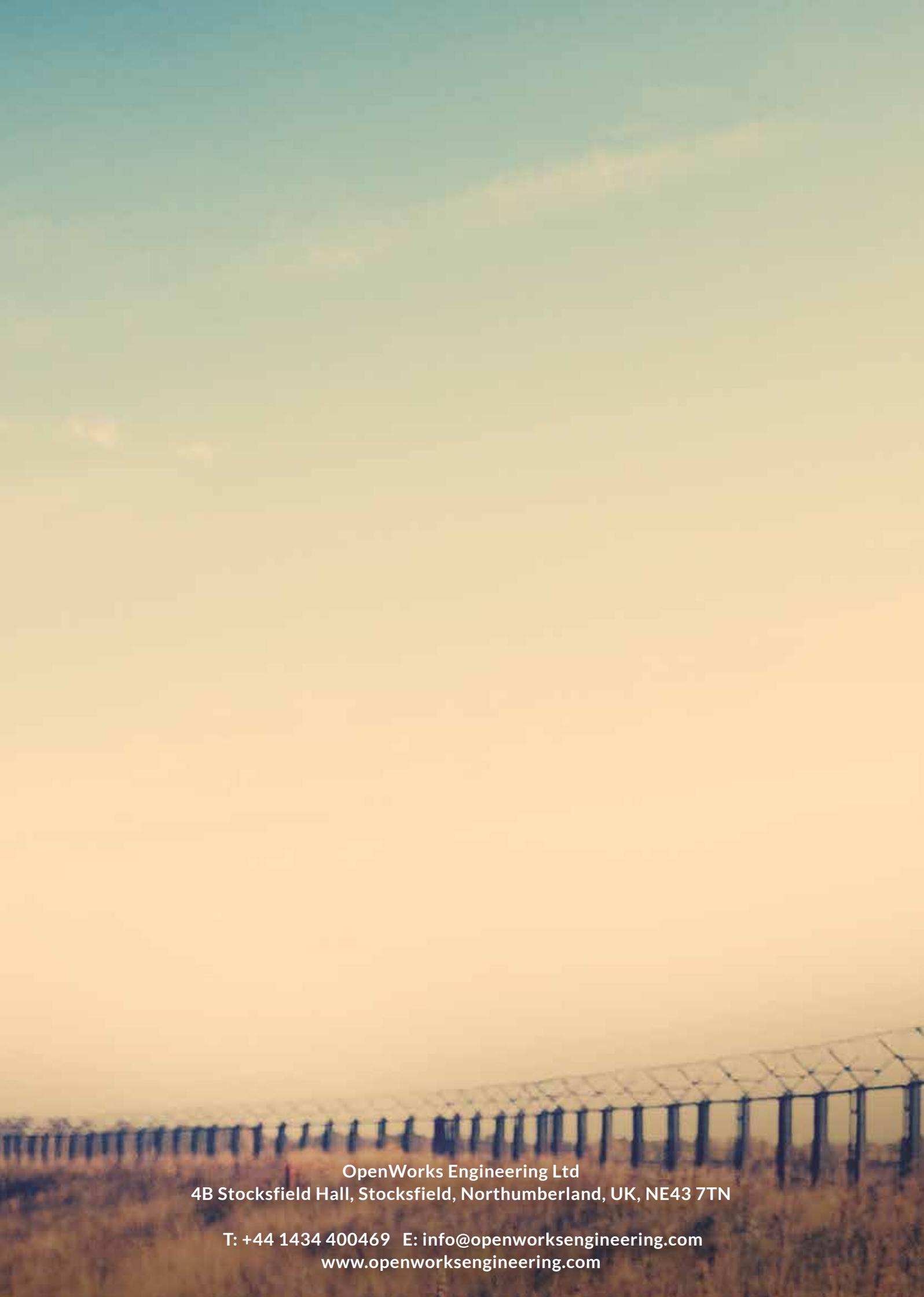
**SKYWALL PREVENTS
DISRUPTION FROM DRONES
DURING MAJOR NATIONAL
EVENTS**

Technology demonstrations are available by appointment only.
For more information or to arrange a meeting, please contact our sales team.

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