

ADVISER

UNMANNED AERIAL SYSTEM USE IN THE POWER AND ENERGY SECTORS

The commercial use of unmanned aerial systems (UASs), more commonly known as drones, may be in its infancy but analysts agree that their deployment potential is significant. As the technology evolves, its potential application to the power and energy sectors expands, along with the advantages it may deliver.

APPLICATION AND ADVANTAGES

There is huge potential for the use of UASs for aerial surveying in the power and energy sectors. At present, manned aircraft (helicopter or fixed-wing) are traditionally used to assess new sites, network infrastructure, and fixed assets, and can be deployed on- or offshore. However, UASs can enable operators to:

- Survey at lower heights.
- Inspect difficult-to-access areas.
- Reduce the number of physical site visits as well as the time required on site.
- Improve/automate data capture and observation points.
- Cover a greater expanse of pipeline or transmission network in a shorter time period.
- Deploy earlier or more safely in the event of a major breakdown or incident.
- Inspect live assets which may otherwise require shutdown.

From a basic resourcing perspective UAS inspections also require less manpower. Moreover, there are notable health and safety benefits: a minimal need for personnel to work at height, safer inspection of potentially dangerous situations such as leaks, live circuits, and unstable structures, or site assessment when inclement weather restricts physical access or poses a significant safety risk.

Such systems could therefore deliver improved performance and reliability with earlier, more frequent or more thorough fault and issue detection. This could minimise shutdowns and turnarounds and help ensure that any planned outages are delivered on schedule. UAS technology will therefore play an increasing role within the risk and crisis management frameworks of both large and small power and energy companies – if regulations allow.

UAS DEPLOYMENT ACROSS THE POWER AND ENERGY SECTORS

- Pre-maintenance surveys for improved resource allocation.
- Pipeline inspections.
- Power line/cable inspections, including overloading.
- Cooling tower inspections.
- Vegetation overgrowth (above/below sea level).
- Adequate ground clearance.
- Insect/animal damage or infestation.
- Heat signature anomalies (solar panels).
- Wind turbine inspections (on- or offshore).
- Radiation measurement and monitoring.
- Emission detection and monitoring, for example, methane.

THE NEED FOR REGULATION

Undoubtedly the greatest barrier to widespread UAS use is regulation, or lack thereof. Without clear and harmonised regulation early commercial adopters cannot plan or invest with any certainty, a major source of frustration given the downward margin pressures that the power and energy sectors currently face.

As regulators begin to weigh up potential benefits against the broader backdrop of privacy and national security, so insurers begin to assess the risk implications of commercialisation. There is an inevitable element of circularity to this; most countries require manned aircraft operators to hold appropriate liability insurance, yet the situation for UAS operators is far less clear.

DAWNING OF THE DRONES: THE EVOLVING RISK OF UNMANNED AERIAL SYSTEMS

The latest thought leadership from Marsh's Aviation and Aerospace Practice examines in more detail how insurers are using their manned aircraft experience to assess key UAS risks, deliver underwriting capacity, and develop coverage.

WEIGHT AND SEE?

UAS weight will most likely be subject to regulation since safety implications can increase exponentially with size. Organisations naturally want to see a return on any investment, be that directly or, as is more often the case within the power and energy sectors, via a third party. Yet the equipment that an UAS may need to carry in order to deliver the sweet-trolley of benefits carries complex weight considerations. Technology such as high-definition (HD) digital cameras and videos, imaging equipment and sensors, and lasers/spatial mapping equipment could be limited according to regulation and permissions based on UAS weight. As size and weight are also key insurance considerations, particularly for liability cover, an absence of commercial UAS regulation and guidance could result in a disparity between the levels of cover offered and price.

SECURITY

With the number of UASs in our skies dramatically increasing, mandatory registration schemes – nationally or at supranational level – may well be introduced, while strict airspace management will be needed to minimise collision risk with other UASs or, indeed, manned aircraft. Geo-fencing, where UAS flight may/ may not be allowed based upon GPS coordinates, could also be introduced to ensure adherence with no-fly zones, including over nuclear, security, and military facilities.

Secure facilities and critical infrastructure must also review their own security to reflect the potential risk that UASs pose, the confirmed sighting of UASs over a number of French nuclear facilities in 2014 being a good illustration¹. Radar commonly used across such facilities were reportedly unable to detect the UASs, in this instance said to be less than 50 centimetres wide and flying just a few metres above ground. Even once spotted, the issue as to how to capture or destroy encroaching UASs over such facilities is complex.

THIRD-PARTY LIABILITY CONSIDERATIONS

The use of UASs within the power and energy sectors has, to date, been mostly via third-party organisations. Insurance coverage has also been piecemeal, ranging from negotiating the removal/modification of aviation exclusions from professional liability covers, scripted endorsements attaching to manned aircraft policies, or, as more recently, new standalone UAS policies.

Power and energy companies should be mindful of any third-party liabilities arising from the use of UASs and should seek professional help in:

- Identifying key third-party liability issues.
- Quantifying the impact of potential scenarios.
- Appraising risk retention strategies or balance-sheet protection from external sources, such as the insurance markets.
- Identifying key areas for improvement and against available resources.



FACILITATING CLAIMS

As highlighted, the use of UASs could greatly assist in surveying damage in the event of a serious incident, and may also serve to pinpoint the epicentre while the event is ongoing to aid the use of specialist equipment and root cause analysis work.

One potential application would be in identifying damage in conflict zones. At present, if an insured suffers damage to their assets in a conflict zone, insurance covering political violence still requires the insured to demonstrate their loss. This can be difficult, as asset owners or managers will most likely have moved to a safe environment while a few photographs or remote video will not help the insured or the insurers assess the full extent of damage.

Political violence insurance typically provides that, unless repairs or reinstatement is carried out, insurers are only liable for the actual cash value, rather than new for old. Therefore, establishing what is damaged and the potential extent of that damage can be, at best, problematic, making it difficult to calculate cash value settlement. UASs could therefore assist with:

- Establishing whether extensive damage has occurred to the insured assets to better and more quickly establish if a claim notification is required.
- Providing much more extensive photographic footage of the damage.
- Surveying the extent of damage at a given date to reduce or avoid issues such as the number of events.
- Assisting the insured to better demonstrate that they are in compliance with any due diligence requirements under political violence insurance.

In the final analysis, UASs will play an ever-increasing role within the power and energy sector, both operationally and as a risk management tool. As regulatory frameworks develop and insurance markets open up, organisations should be mindful of a growing reliance on the technology. Appropriate insurance for day-to-day deployment should be sought, while its role in business continuity and crisis management plans, and within an organisation's broader business resiliency framework, should be given due consideration.

¹ *Drones are an Increasing Security Issue for the Nuclear Industry. Chatham House. 18 December 2014.*

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