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民航處

Civil Aviation Department
The Government of the Hong Kong Special Administrative Region

Small Unmanned Aircraft Advisory Circular No. AC-008

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Guidelines for Small Unmanned Aircraft Operations within Enclosed Area

1. Background

- 1.1 The Small Unmanned Aircraft Order (“SUA Order”), Chapter 448G of the Laws of Hong Kong, came into operation on 1 June 2022. Under the SUA Order, small unmanned aircraft (“SUA”) operations are regulated under a risk-based approach and be classified according to the weight of the SUA and the operational risk level. Operations of different risk levels are subject to the corresponding regulatory requirements which may include registration and labelling of SUA, registration of remote pilots, training and assessment, equipment, operating requirements and insurance.
- 1.2 **For SUA operating within an enclosed area**, e.g. in an indoor location or “closed” netted structure outdoor, it is generally understood that such operations may not have direct effect on flights by other aircraft in the open air. That being said, such operations may still pose risks to spectators and properties particularly where public access to the area is allowed. Considering the need to facilitate indoor SUA operations, protect third party, the vastly different operating environments of indoor venues, as well as the fact that property owners and/or managers have the responsibility and authority to protect the public accessing these venues, special considerations have been given to SUA operating indoors. The objectives are to **protect public safety** on one hand, while on the other, **allows flexibility in SUA application and facilitate SUA operations**.
- 1.3 This Advisory Circular (“AC”) aims to provide information about the safety requirements, and also some general safety guidelines applicable to SUA operating within enclosed area for reference by both the SUA community as well as property owners and managers. It should be read in conjunction with the SUA Order, Safety Requirements Document (“SRD”) and other SUA related ACs and documents published by the CAD.

2. Definition

2.1 Pursuant to section 6 of the SUA Order, “**enclosed area**” is defined as :

“... a flight of a small unmanned aircraft is within an enclosed area if the area is surrounded on all sides by fixed or movable walls, ceiling, structures or other barriers that effectively prevent the aircraft from leaving the area during the flight”.

2.2 The applicability of the SUA Order and different requirements applicable to SUA operations in enclosed area of domestic premises (e.g. residential flats/apartments) vis-à-vis non-domestic premises (e.g. shopping malls, concert halls, community centres, etc.) are given in the ensuing paragraphs.

3. Applicability

3.1 Operations within enclosed area of any domestic premises

3.1.1 Pursuant to section 8(1) of the SUA Order, the general regulatory requirements governing SUA operations as specified in Part 2 (other than Division 3) of the SUA Order will not be applicable to SUA flights that **are wholly within an enclosed area of any domestic premises**.

3.1.2 For the purposes of the above provision, “**domestic premises**” is defined in section 8(2) of the SUA Order as :

“any premises used solely or principally for residential purposes and constituting a separate household unit”.

3.2 Operations within enclosed area of non-domestic premises

3.2.1 As for SUA operations with an enclosed area of non-domestic premises (e.g. shopping malls, concert halls, community centres, etc.), considering the different operational risk levels and the need to protect third party safety, the following general regulatory requirements governing SUA operations as specified in Part 2 of the SUA Order shall apply :

- a) Category A2 SUA and Category B SUA to be operated for a flight within an enclosed area of any non-domestic premises are required to be **registered and labelled** in accordance with section 11(1)(a) and (b) of the SUA Order;
- b) Prior permission shall be obtained from the CAD before operating a flight by Category B SUA in accordance with section 11(1)(g) of the SUA Order;

- c) Prior permission shall be obtained from the CAD before operating a flight that carry dangerous goods in accordance with section 20 of the SUA Order.

Please refer to the SRD and related ACs published by the CAD for the associated application requirements and procedures.

3.3 Against the above and for easy reference by readers, the following regulatory requirements of the SUA Order will not be applicable to Category A1 and A2 SUA operating **wholly within an enclosed area** :-

- a) Requirements relating to insurance policy specified in section 11(1)(c);
- b) Requirements relating to safety system specified in section 11(1)(d);
- c) Requirements relating to remote pilot's registration specified in section 11(1)(e);
- d) Requirements relating to remote pilots' rating specified in section 11(1)(f); and
- e) Corresponding operating requirements specified in section 15(1).

3.4 Notwithstanding the facilitation and flexibility given, it must be noted that other requirements stipulated in the SUA Order shall still apply to SUA operations in the enclosed area to protect public safety. These include, inter alia, offences relating to dangerous operation, causing or permitting SUA to endanger any person or property, interfering with SUA, etc., operating prohibited SUA for flights as specified in Part 2 Division 3 of the SUA Order, and various enforcement provisions in Part 4 of the SUA Order.

4. General Safety Guidelines for SUA Operations in Enclosed Area

4.1 Whilst SUA operations in enclosed area may not affect flights by other aircraft in the open air, they may still pose risk to persons and properties in the area, particularly where public access is allowed. Some examples of such publicly accessible locations are shopping malls, industrial buildings, factory premises, hotels and restaurants.

4.2 **Property owners and/or managers of the foregoing locations are responsible for ensuring the safety of the persons situated in their premises.** To this end, prior to permitting SUA activity conducted within their premises, they should ensure safety of their venues by **working out additional safety measures with respect to the specific venue constraints and crowd control measures** taking in to account the vastly different operating environments for their premises. SUA responsible persons, remote pilots, property owners and managers can make reference to the general safety guidelines below when working out their own safety measures.

NOTE:

Pursuant to section 22 of the SUA Order, a person who, recklessly or negligently, causes or permits a small unmanned aircraft to endanger any person or property during a flight

commits an offence and is liable on conviction on indictment to a fine at level 6 and to imprisonment for 2 years.

Consent from the Property Owner and/or Manager

- a) SUA operations in an enclosed area should only be conducted when consent from relevant property owner / manager is obtained.

Location for Operating an SUA

- b) SUA operations should be avoided in locations which are closed to the ceiling and other structures. Sufficient space should be provided for SUA manoeuvres. If the operating area does not have sufficient space, the venue is not recommended for SUA operations.
- c) Property owners and/or managers might consider restricting SUA operations to take place in designated areas to minimise the operational risk posed to the other users of their premises.
- d) SUA operations close to wall should be avoided as the flow of air is impeded as the SUA gets closer to a wall and will affect the lift.

Segregation from Uninvolved Persons

- e) The property owner and/or manager, and the remote pilot should devise appropriate measures to ensure that the subject SUA operation remains a safe distance from uninvolved persons. For instance, crowd control measures should be considered to ensure that sufficient separation is maintained between the spectators and the SUA operating area.
- f) To further protect the safety of uninvolved persons, a netted cage can be used for SUA operations, such as flight demonstration or drone racing, such that SUA operations are confined to a fully enclosed area and are fully segregated from uninvolved persons.
- g) Spectators and other uninvolved persons should be well informed and briefed about the SUA operations.

Equipment Suggestions

- h) Rotor blade guards should be used if the SUA operation might get close contact to the uninvolved persons.
- i) Use SUA that are specifically designed to be flown indoors, and use smaller and light-weight SUA for operations within enclosed area as far as possible.

- j) If mid-sized or large SUA are unavoidably required to be used, it is recommended that the SUA be equipped with indoor positioning systems or obstacle avoiding function, especially when operating in a small area.
- k) Use indoor hulls on the SUA if they are available to the SUA type. Such indoor hulls can be placed on the spinning rotor blades to enhance the level of protection to people.

Other Safety Measures and Precautions

- l) Operations involving flights directly over uninvolved persons should be avoided as far as possible.
- m) All applicable manufacturer guidelines, recommendations and limits shall be adhered to at all times.
- n) For SUA operations with higher complexity, such as those exceeding the operating requirements of the respective SUA category, property owners and/or managers should consider if they would require those operations to be conducted by competent remote pilots (e.g. remote pilots with an advanced rating assigned by the CAD).
- o) Remote pilot should always ensure safety measures and precautions are in place prior to and during the SUA operations. The property owner and manager should monitor the SUA operations closely to ensure that the safety measures and precautions for the SUA operations have been effectively implemented.
- p) Proper insurance policy should be considered by the SUA owner, responsible person, operator, remote pilots, property owner and manager, as appropriate, to insure against any liability arising from the SUA operation.

SUA Operations involving Non-enclosed Area

- q) If an SUA is operated for a flight that is not wholly within an enclosed area, for instance, part of the SUA flight is taking place outside of a building in an outdoor area, the subject SUA and SUA operation shall comply with all regulatory requirements applicable to SUA operations outside enclosed area. Please refer to the SUA Order, the SRD and related ACs published by the CAD for details.

5. Examples of SUA Operations within Enclosed Area

Some typical examples of SUA operations within enclosed areas are given below. The applicable regulatory requirements stipulated in Part 2 of the SUA Order, except for those related to offences and the various enforcement provisions, are highlighted for reference.

5.1 Example 1: SUA operation in a confined culvert or chimney

For the purposes of SUA operations, a confined culvert and chimney can be regarded as an enclosed area under the SUA Order. If the SUA to be used is not above 7 kg and if no dangerous goods is carried, CAD permission will not be required for such SUA operations.

| Requirements under the SUA Order | Registration and Labelling | CAD Permission |
|---|-----------------------------------|--|
| | Yes, except for Category A1 SUA | No, except for Category B SUA or if dangerous goods would be carried |
| Reminder: <ul style="list-style-type: none"> • Prior permission from CAD is not required for operations exceeding the operating requirements if the SUA operation is wholly within the enclosed area. • Recommend to follow the CAD safety guidelines as far as possible. | | |

5.2 Example 2: Aerial photography for wedding banquet in a restaurant or hotel

Aerial photography by SUA taken place in a restaurant or banquet room of a hotel can be regarded as operations within an enclosed area if no part of the flight is conducted outside the indoor area, and barriers are set up that effectively prevent the SUA from leaving during the flight. Suggestions on this type of operation are as follows:-

- a) Attending guests should be informed and briefed about the SUA operation and the associated risks.
- b) Lighter-weight SUA operating at low speeds is recommended for use.
- c) If any part of the aerial photography is to take place in a non-enclosed area (e.g. the garden of a hotel), the regulatory requirements applicable to SUA operations outside an enclosed area will apply.

| Requirements under the SUA Order | Registration and Labelling | CAD Permission |
|--|-----------------------------------|--|
| | Yes, except for Category A1 SUA | No, except for Category B SUA or if dangerous goods would be carried |
| Reminder: <ul style="list-style-type: none"> • Lighter-weight SUA operating at low speeds is recommended if flying over people is unavoidable. • Follow the venue and safety guidelines set out by the restaurant or hotel | | |

5.3 Example 3: Aerial inspection for aircraft inside maintenance hangar

With the advancement of SUA technology, it is technically feasible and more efficient and cost effective nowadays to use SUA to carry out large aircraft inspection, thus reducing the inspection time and intensive manual efforts required. If the SUA to be used does not exceed 7 kg (i.e. not a Category B SUA) and is not carrying dangerous goods, no prior permission from CAD is required under the SUA Order for such operation.

| Requirements under the SUA Order | Registration and Labelling | CAD Permission |
|--|-----------------------------------|--|
| | Yes, except for Category A1 SUA | No, except for Category B SUA or if dangerous goods would be carried |
| Reminder: <ul style="list-style-type: none"> The maintenance hangar where the large aircraft is stored/parked should be fully enclosed during the SUA operation, or else the SUA operation will be subject to the regulatory requirements and relevant operating requirements applicable to SUA operation in non-enclosed area. | | |

NOTE:

This example only applies to SUA operations wholly within the maintenance hangar with barriers set up to prevent the SUA from flyaway during the flight. For SUA operations in the ramp or non-enclosed hangar located at the airport, prior permission will be required from the CAD for operations within a Restricted Flying Zone.

5.4 Example 4: SUA flight demonstration in a closed netted cage

SUA flight demonstration conducted in a closed netted cage situated in an outdoor area can be regarded as SUA operation in an enclosed area if the cage is surrounded on all sides by fixed or movable walls, ceiling, structures or other barriers that effectively prevent the SUA from leaving the cage during the flight. It is noted that such SUA operation is gaining popularity in Hong Kong and worldwide as part of carnival events.

| Requirements under the SUA Order | Registration and Labelling | CAD Permission |
|--|-----------------------------------|--|
| | Yes, except for Category A1 SUA | No, except for Category B SUA or if dangerous goods would be carried |
| Reminder: <ul style="list-style-type: none"> <u>All sides</u> of the netted cage should be surrounded by barriers which effectively prevent the SUA from leaving. | | |

6. Enquiries

- 6.1 This AC will be subject to review and update from time to time in the light of the advancement of technology and increasing popular use of SUA in different professional applications. It should also be noted that the safety guidelines and operating examples provided above are not meant to be exhaustive. It shall be the responsibility of the SUA responsible person and remote pilots to comply with all applicable regulatory requirements, put in place appropriate safety precautions and risk mitigating measures for the subject SUA operation, as well as to follow the requirements and guidelines set out by the property owner and/or manager to ensure the safe operations of SUA at all times.
- 6.2 This AC should be read in conjunction with the SUA Order, SRD and other SUA related documents published by the CAD.
- 6.3 For enquiries, please contact the Unmanned Aircraft Office of the CAD at sua@cad.gov.hk.

7. Notes

- 7.1 This AC supersedes the version dated 31 May 2022.

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