

TR 78-1:2020+C1:2021
(ICS 49.020)

TECHNICAL REFERENCE

Building facade inspection using unmanned aircraft systems (UAS)

– Part 1 : Process

Incorporating Corrigendum No. 1

TR 78-1:2020+C1:2021
(ICS 49.020)

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**Building facade inspection using unmanned
aircraft systems (UAS)**

– Part 1 : Process

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Foreword

This Technical Reference (TR) was prepared by the Working Group on Working Group on Building Facade Inspection Using UAS (Part 1) set up by the Technical Committee on Aerospace under the purview of the Manufacturing Standards Committee.

As amended,
Dec 2021

This TR is part 1 of a series of standards intended to support the Building Facade Inspection using UAS. It consists of the following parts under the generic title “Building facade inspection using unmanned aircraft systems (UAS)”:

Part 1 – Process

Part 2 – Specification for quality management and application of artificial intelligence

This TR is suitable to be used by organisations issuing the contract work scope requirements of UAS, UAS service providers, building owners, facility managers, government agencies, professional engineers, architects, consultants, testing, inspection and certification bodies, professional institutions, institutes of higher learning and training providers.

If UAS is chosen to be used for the comprehensive visual inspection of the building facade, this TR does not relieve the competent person (CP) from his/her duties due to limitations of the UAS or its sensor technologies.

This TR is a provisional standard made available for application over a period of three years. The aim is to use the experience gained to update the TR so that it can be adopted as a Singapore Standard. Users of the TR are invited to provide feedback on its technical content, clarity and ease of use. Feedback can be submitted using the form provided in the TR. At the end of the three years, the TR will be reviewed, taking into account any feedback or other considerations, to further its development into a Singapore Standard if found suitable.

It is presupposed that in the course of their work, users will comply with all relevant regulatory and statutory requirements. Some examples of relevant regulations and acts are listed in the Bibliography. The Singapore Standards Council and Enterprise Singapore shall not be responsible for identifying all of such legal obligations.

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NOTE

- 1. Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as “mature standards”. Mature standards will not be subject to further review unless there are requests to review such standards.*
- 2. An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
- 3. Compliance with a SS or TR does not exempt users from any legal obligations.*

Building facade inspection using unmanned aircraft systems (UAS) – Part 1 : Process

0 Introduction

As a city-state like Singapore ages, the focus will be on maintenance of buildings so that they continue to be safe. Building facades – like the wall plaster, claddings and installations such as sunshades – need to be regularly inspected and maintained so that they will remain intact and do not fall off and pose a danger to people and properties below them.

Singapore is introducing a periodic facade inspection (PFI) regime to enhance safety of building facades.

With the high number of buildings requiring facade inspections, there is an urgent need for an effective inspection process. Using innovative technological solution such as Unmanned Aircraft Systems (UAS) to conduct building facade inspection is a faster, safer and more comprehensive manner as compared to conventional methods.

Currently, there are no guidelines in Singapore for building facade inspectors to use UAS as a means to carry out building facade inspection. Without such documents, it may give rise to poor quality of inspection work, pose dangers to the public and impinge on privacy of building occupants and misuse of data collected.

It is with this intent that this Technical Reference (TR) was developed to address this need.

1 Scope

This TR provides a set of non-exhaustive specifications for the use of UAS to conduct inspection of existing building facades, provided that the CP has chosen to use UAS as part of the visual inspection process. It covers the phases starting from preparation, stakeholder approvals, execution and up to post-flight data processing and report generation.

As part of the overall process, the following areas are important to ensure that the use of UAS is conducted in a safe and ethical manner:

- a) Personal data protection (privacy);
- b) Insurance and liability; and
- c) Risk assessment and mitigation.

2 Normative references

There are no normative references in this TR.