

TECH OFFER

Safety Drone System For Inspection And Audience Engagement Applications



KEY INFORMATION

TECHNOLOGY CATEGORY:

Electronics - Embedded Systems

Electronics - Display

Infocomm - Smart Cities

TECHNOLOGY READINESS LEVEL (TRL): **TRL7**

COUNTRY: **SINGAPORE**

ID NUMBER: **TO174449**

OVERVIEW

This technology offer is a safety drone system which consist of a rotorcraft-type unmanned aerial vehicle (UAV) enveloped by a helium balloon. As the safety drone takes the form factor of a floating balloon, it inherits the balloon's non-threatening nature, thus the general public will feel more at ease to have it flying overhead, compared to conventional drones. In fact, if the safety drone were to drop from height, it is unlikely to cause serious injuries or significant property damage, as the helium balloon will act as a shock absorber; it also reduces damage to the drone itself.

The safety drone can be incorporated with various cameras and LEDs, with a possibility of installing lightweight projectors, thus enabling functions such as aerial video shooting, light shows, and signage projection onto the balloon body, for advertisements or aerial displays. It has the potential to be a performance and display tool that can interact with the audience, e.g., in outdoor concerts or sports events.

In addition, as the drone is completely housed inside the helium balloon, it can also be used in applications where safety is of key importance, e.g., in building and facility inspection, where injury to workmen or passers-by must be eliminated. If this safety drone were to lose control and drop, it is unlikely to cause injury or property damage.

TECHNOLOGY FEATURES & SPECIFICATIONS

The safety drone system has an innovative structure involving a multi-rotor drone enveloped by a helium balloon. By optimally controlling the thrust force of the propellers, this drone system realises both excellent stability and mobility. The system can be equipped with a camera and LEDs. The helium balloon can have a diameter range of 1.2m to 3m, depending on the application. The following functions can be achieved:

1. Using the entire body of the helium balloon as a display canvas

The system may be creatively used for delightful displays such as for projected images, lighting performances, or signage applications. The flexible balloon body also creates a soft, friendly impression.

2. Realising both mobility and stability

Powered by 4 propellers and making use of the buoyancy of the balloon, the safety drone can fly around event venues easily and stably, in synchrony with the planned performance.

3. Shooting dynamic aerial images

Since the drone is completely encapsulated inside the helium balloon, it can fly close to and even above an audience, allowing event organisers to shoot dynamic aerial footage.

4. Inspecting buildings and facilities

By installing suitable cameras, the safety drone system can be used for inspection applications, where the safety of workmen and passers-by is of utmost importance. The helium balloon forms an inherent safety buffer to prevent injuries and damage to property if it crashes.

POTENTIAL APPLICATIONS

This technology offer can be used for audience engagement during the staging of outdoor events, e.g., by projecting onto the balloon body live aerial video footage shot by the attached video camera, or by displaying advertorial information and aerial light shows. The safety drone system is versatile enough to be used to inspect buildings and facilities.

UNIQUE VALUE PROPOSITION

1. Balloon body as a display canvas

The balloon body can be illuminated and utilised as a projection screen to create a new viewing experience for the audience.

2. Stability and mobility

The drone system has excellent stability and mobility. It is powered by 4 propellers that enable the balloon to move freely in 360 degrees direction at the event venue.

3. Safe and soft body

The balloon body is safe for the audience to touch during flight mode. The balloon serves as a built-in safety buffer that prevents

injury to users or passers-by, or damage to property, if it crashes.

The technology owner is keen to out-license this technology to drone design companies, or to construction/facility inspection companies and advertisement/audience engagement companies who already have technical capabilities to commercialise this technology. The technology owner will provide design and specification documents to facilitate the out-licensing and technology transfer.