Design topic: GoAERO aircraft design challenge

GoAERO is a series of three competitions designed to promote the development and operation of single-pilot, affordable, reliable and socially beneficial aircraft. These aircraft have indispensable capabilities in responding to natural disasters, climate change, humanitarian crises, medical emergencies, and other emergencies.GoAERO The goal is to inspire the development of aviation technology that goes beyond transportation to bring substantial benefits to humanity.GoAERO Aircraft are more than just means of transportation. They are ready to go on missions at any time, shoulder heavy responsibilities, and demonstrate tenacity and determination.GoAERO The core features of the system include:

* **Efficiency**: Deploy quickly in the field and work reliably and efficiently day after day.
* **Versatility**: Able to work in various environments and have the ability to deal with different challenges.
* **Strong ability**: Ability to complete unique tasks with precision and the agility to respond to unforeseen circumstances.

Final flight demonstration mission

GoAERO the final“flight demonstration”The event consists of three independent scoring tasks. The participating teams' aircraft will carry simulated humanoid dummies to test specific skills and abilities. These tests simulate a variety of scenarios that may be encountered in reality, such as:

* Rescue injured people from under forest canopy
* Delivering or picking up supplies to firefighters on the hillside
* Rescue a drowning person from the seaside
* Transport first responders to dense urban environments (e.g. between buildings, signs, wires, tight spaces)
* Delivering water and food to communities isolated by natural disasters
* Evacuate flood victims
* Fighting Early Wildfires
* Rescue people who fell into an icy lake
* Locate, identify or observe emergency situations
* serving as fire truck“ladder extender”
* etc.

And all these tasks must be completed under difficult conditions, such as bad weather, complex air traffic and obstacles, unknown terrain, etc.

Mission requirements and characteristics

**Efficiency**

Teams will need to demonstrate the ability to rapidly deploy systems and sustainably transport payloads. The aircraft must be able to arrive at the scene quickly, prepare for takeoff quickly, carry out multiple delivery missions, and transfer as much load as possible.

**Coping with adversity**

The aircraft needs to demonstrate the ability to take off and land in difficult conditions, including sand, slopes, wet or rainy weather, strong winds, and unexplored locations.

**flexibility**

The aircraft must have the ability to fly flexibly between obstacles, be able to bypass four obstacles and complete a precise landing, and must demonstrate both loaded and unloaded flight capabilities.

**automation**

“automation”Refers to the system's ability to play a broad positive role with low operational load and minimal skill or training requirements, allowing existing rescue personnel to focus on their mission rather than operating the aircraft. exist GoAERO In competitions, automation not only optimizes performance and reduces errors, but also earns extra points to compete for top prizes.

Competition significance

Although many existing aircraft can accomplish these tasks,GoAERODesigned to inspire new developments and demonstrate to users, industry, government and the public the potential of today's technologies (e.g. affordability, portability, ease of storage, ease of use, versatility, etc.), which may ultimately lead to deployable solutions . This competition not only promotes technological innovation, but also demonstrates how modern technology can be used to bring practical benefits to society and humanity.