

Navig8 GasTM

Unmanned Aerial Vehicle



Highly Maneuverable UAV for Helicopter Impenetrable Outdoor Environments

SYSTEM DESCRIPTION:

Portable & scalable twin-shrouded-prop gas/engine VTOL UAV for helicopter impenetrable (confined) environments. This UAV is capable of performing highly stable knife-edge acrobatic maneuvers that no other gas VTOL aircraft can execute such as pitched hover, and landing & taking off from highly sloped surfaces (e.g., 40 degrees and larger depending on the terrain characteristics). This is possible due to the use of variable-pitch propellers and an active center of mass change mechanical device, which enables this UAV to execute a wide variety of missions in open as well as confined spaces (e.g., urban, canyons), and fly at low altitudes & in close proximity to objects. The Navig8TM gas UAV can be deployed from any prepared or un-prepared (e.g., roughed) terrain.

With 4Front Robotics' navigation flight control system, developed specifically for 3D confined spaces, the Navig8TM UAV is the first cost-effective and scalable UAV capable of maneuvering in complex spaces. This UAV can be manufactured in various sizes depending on your mission needs. The Navig8TM UAV fulfills the need for a portable (transportable in the back of a pick up truck) gas powered VTOL that can be used for many tasks where there is a need to perform flights at low altitudes, in close proximity to objects, or within complex spaces.

The Navig8TM UAV can be controlled manually (via a RC control joystick) or perform missions autonomously via an on board computer connected to a ground control station from where flight missions can be loaded or changed as the aircraft flies.

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TECHNICAL SPECIFICATIONS:

Dimensions:	118 x 86 x 28 in (Navig8-32 gas UAV)
L x W x H	123 x 118 x 31 in (Navig8-56 gas UAV) Fully scalable, can be enlarged/reduced
MTOW:	200 lbs (Navig8-32) 275 lbs (Navig8-56)
Payload:	44 lbs (Navig8-32), 70 lbs (Navig8-56)
Max speed:	155 km/hr (Navig8-32), 200 km/hr (Navig8-56)
Control Modes:	Manual, Thrust vectoring + Semi-Autonomous, Active CofM change Fully Autonomous
Endurance:	100+ min (Navig8-32) 150+ min (Navig8-56)
Depends on power supply and UAV size/configuration (can be increased)	
Sensors:	Dual EO/IR cameras, LiDAR, GPS, Navigation & Mission IMU, Altimeter, Gas sniffers, 3D camera, etc.



Flying Modes: Pitched Hover (up to 60° pitch),
Vertical hover is possible with mechanical changes.
Capable of landing on sloped terrains

CAPABILITIES & APPLICATIONS:

The Navig8™ UAV can be equipped with all standard UVS payloads (e.g., IR and day cameras, LIDAR, etc.) as well as mission specific sensors (e.g., gas sniffers, environment quality monitoring, etc.). Two counter-rotating variable pitched propellers, with direct drive by a dedicated single gas engine provides the lift/propulsion system. The control system consists of: roll control by differential propeller thrust; vertical motion control by collective propeller thrust; pitched hover via active change in CofM and ducted fan tilting, forward and yaw motion control via independent longitudinal tilting of ducted fans by servo actuators.

AREAS OF USAGE:

Policing, Search and rescue, Security of critical infrastructure, Pipeline and powerline inspection and monitoring (leak detection), Forest fire monitoring, Forestry, Crop farming management, etc. [Contact us for possible & custom configurations for your specific application.](#)