



# NAVAL RESEARCH LABORATORY

## TECHNOLOGY LICENSING OPPORTUNITY

### STOP-ROTOR ROTARY WING AIRCRAFT

#### Advantages/Features

Can operate efficient high speed and long range unmanned aircraft without runway or other large launch and recovery systems such as catapults and nets.

Reduced wear and tear compared to a helicopter since rotary wing flight time will typically be minimized.

Gas turbine propulsion could enable efficient high subsonic cruise at altitudes not practical with pure rotary wing aircraft.

#### Applications

Unmanned aircraft missions that require the flexibility of VTOL combined with high speed and long range.

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#### Identification Number:

ELE11



Rotary Wing Mode



Fixed Wing Mode



The Naval Research Laboratory (NRL) has developed a patented system and method of transitioning an aircraft between helicopter and fixed wing flight modes. The stop rotor aircraft is capable of both a helicopter mode vertical takeoff and landing (VTOL) and efficient high speed fixed wing flight by flipping the left wing/rotor blade 180 degrees between flight modes. Conversion between flight modes will take about 1-2 seconds and simulations indicate altitude deviations of less than 50 feet. Under sponsorship of the Office of Naval Research (ONR), a prototype battery electric aircraft is being developed that is capable of over 30 minutes flight duration and a cruise speed of 100 knots. Hybrid power systems could provide much greater duration and range. The 38 inch long removable payload bay can carry up to 25 lbs. Helicopter flight mode testing was conducted in Fall 2011. Flight mode conversions are planned for Spring 2012.

**Available for License: US Patent No. 8,070,090**



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