



NASA SBIR 2015 Phase I Solicitation

A1.06 Vertical Lift

Lead Center: ARC

Participating Center(s): GRC, LaRC

The Vertical Lift subtopic is primarily interested in the following two areas:Â

- The use of small vertical lift UAVs has increased in recent times with many civilian missions being proposed, including autonomous surveillance, mapping, etc. Much of the current research associated with these vehicles has been in the areas of electric propulsion, batteries, small sensors and autonomous control laws, while very little attention has been paid to their acoustic signature. The generation and propagation of noise associated with this small class of vertical lift UAVs are not well understood and validated prediction tools do not currently exist. The objective of a proposed effort would be to develop tools for the modeling and prediction of the high frequency acoustics for small vertical lift UAVs, such as quad-copters, coaxials, ducted fan rotors, etc.
- A transition to low-carbon propulsion has the promise of dramatically reducing the emissions from full-scale rotorcraft, as well as reducing overall fuel consumption and operating cost. All electric and hybrid propulsion systems could be beneficial to rotorcraft due to high power requirements of hover and integrated motor-drive systems designs that could be realized. The objective of a proposed effort would be to develop and demonstrate hybrid/electric technologies for full-scale rotorcraft drive and propulsions systems that show benefits in-terms of weight, efficiency, emissions and fuel consumption. Validated modeling and analysis tools for all-electric and hybrid propulsions systems are also sought in this solicitation.

Proposals on other rotorcraft technologies will also be considered but the primary emphasis of the solicitation will be on the above two identified technical areas.Â

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