

ROTOR UNITS HAVING ASYMMETRIC ROTOR BLADES

ABSTRACT

An aerial vehicle is provided including rotor units connected to the aerial vehicle, and a control system configured to operate at least one of the rotor units. The rotor unit includes rotor blades, wherein each rotor blade includes a surface area, and wherein an asymmetric parameter is defined, at least in part, by the relationship between the surface areas of the rotor blades. The value of the asymmetric parameter is selected such that the operation of the rotor unit: (i) moves the rotor blades such that each rotor blade produces a respective vortex and (ii) the respective vortices cause the rotor unit to produce a sound output having an energy distribution defined, at least in part, by a set of frequencies, wherein the set of frequencies includes a fundamental frequency, one or more harmonic frequencies, and one or more non-harmonic frequencies having a respective strength greater than a threshold strength.

Fig. 4A