being configured to promote oscillatory motion of fluid within that rotor heat pipe in response to a temperature difference between that rotor magnet and ambient air.

[0033] In some embodiments, wherein the cylindrical fan shroud has an axial shroud length, the plurality of fan blades has an axial blade length, and wherein the axial shroud length no more than 105% of the axial blade length.

[0034] In some embodiments, the rotor and fan assembly further comprises a nose cone coupled to the first end of the fan hub.

[0035] In some embodiments, the system further comprises a hub fairing positioned downstream of the rotor and fan assembly.

[0036] In some embodiments, the system further comprises a linear actuator coupled to the hub fairing, wherein the hub fairing may be selectively moved between an extended position in which at least a portion of the hub fairing is positioned in an exit nozzle of the nacelle, and a retracted position in which the hub fairing is proximate the fan hub.

[0037] In accordance with another broad aspect of this disclosure, there is provided an aircraft including a nacelle defining a primary air flow path from an inlet end of the nacelle to an outlet end of the nacelle; and an electric machine including: a stator positioned in the nacelle and including one or more stator windings; and a rotor and fan assembly positioned in the primary flow path, the rotor and fan assembly including: a cylindrical fan shroud having a first end, a second end, an inner surface, and an outer surface; a plurality of rotor magnets directly positioned on the outer surface of the fan shroud and concentric with the one or more stator windings; a fan hub positioned concentrically interior of the fan shroud, the fan hub having a first end, a second end, an inner surface, an outer surface, and a fan axis of rotation, the fan hub being mounted on a central support shaft via one or more bearings; and a plurality of fan blades extending between the fan shroud and the fan hub, wherein the plurality of fan blades are pre-stressed in a radial direction when the rotor and fan assembly is at rest.

[0038] It will be appreciated by a person skilled in the art that a method or apparatus disclosed herein may embody any one or more of the features contained herein and that the features may be used in any particular combination or sub-combination.