



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B64D	A2	(11) International Publication Number: WO 00/38985 (43) International Publication Date: 6 July 2000 (06.07.00)
(21) International Application Number: PCT/US99/29671 (22) International Filing Date: 14 December 1999 (14.12.99) (30) Priority Data: 60/112,141 14 December 1998 (14.12.98) US (71)(72) Applicants and Inventors: GHETZLER, Richard [US/US]; 103 Old Barn Court, Buffalo Grove, IL 60089 (US). WOJTALIK, Jerome [US/US]; Hoffman Estates, IL (US). KRUSE, Neils [US/US]; 7415 Cove Drive, Cary, IL 60013 (US). STEPHENS, Kendal, R. [US/US]; 400 Crestwood Road, Fox River Grove, IL 60021 (US). SCHMULENSON, Harold [US/US]; Buffalo Grove, IL 60089 (US). (74) Agent: CHALFIE, Edward, J.; Chalfie & Associates, 311 South Wacker Drive, Chicago, IL 60602 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>Without international search report and to be republished upon receipt of that report.</i>
(54) Title: LOW DRAG DUCTED RAM AIR TURBINE GENERATOR AND COOLING SYSTEM		
(57) Abstract A low drag ducted ram air turbine generator and cooling system is provided. The ducted ram air turbine generator and cooling system has reduced drag with respect to prior ram air turbine generator systems while extracting dynamic energy from the air stream during the complete range of intended flight operating regimes. A centerbody/valve tube having an aerodynamically shaped nose is slidably received in a fairing and primary structure to provide a variable inlet area. An internal nozzle control mechanism attached to the valve tube positions nozzle control doors to provide variable area nozzles directing air flow to the turbine stator and rotor blades to maintain optimum generator efficiency. An alternate embodiment includes an annular internal nozzle having interleaved panels to modulate the air flow to the turbine.		