

Title (en)

IMPROVED THERMOELECTRIC UNIT WITH ELECTRIC INPUT/OUTPUT PROVISION

Title (de)

VERBESSERTE THERMOELEKTRISCHE EINHEIT MIT ELEKTRISCHE INPUT/OUTPUT ANORDNUNG

Title (fr)

UNITE THERMOELECTRIQUE AMELIOREEE A DISPOSITIF D'ENTREE/SORTIE ELECTRIQUE

Publication

EP 0907972 A4 20010228 (EN)

Application

EP 97929678 A 19970509

Priority

- US 9707922 W 19970509
- US 1752196 P 19960510

Abstract (en)

[origin: WO9743790A1] A series of closely packed thermocouples formed into a torus (60) are held in compression against the Lorentz Force by a dielectrically insulated tie strap (61). High current circulates through the torus (60) due to reduced electrical path length effected by low-thermal-conductivity elements (64) and grooves (38) formed in hot and cold fins (66 and 65). Reduced heat transfer between hot and cold fins (66 and 65) generates higher circulating current. Thermoelectric junctions formed between the hot and cold fins (66 and 65) and the low-thermal-conductivity elements (64) are preferably established by coated layer(s) (67) of dissimilar materials including bismuth, constantan, nickel, selenium, tellurium, silicon, germanium, antimony, nichrome, iron, cadmium, tungsten, gold, copper, zinc, and silver. Operating as a thermoelectric generator (40), electrical power may be drawn from the circulating electric current using either a vibrating mechanical switch (70), a Hall effect generator (140) or a Colpits oscillator (159).

IPC 1-7

H01L 35/04; **H01L 35/06**; **H01L 35/10**; **H01L 35/18**; **H01L 35/20**; **H01L 35/00**; **H01L 35/32**; **H01L 35/30**

IPC 8 full level

H01L 35/00 (2006.01); **H01L 35/04** (2006.01); **H01L 35/06** (2006.01); **H01L 35/16** (2006.01); **H01L 35/30** (2006.01); **H01L 35/32** (2006.01)

CPC (source: EP KR)

H10N 10/00 (2023.02 - EP); **H10N 10/13** (2023.02 - EP); **H10N 10/17** (2023.02 - EP); **H10N 10/81** (2023.02 - KR)

Citation (search report)

- [XY] US 3879229 A 19750422 - GILBERT WILLIAM W
- [X] DE 4134685 A1 19930422 - UNIV DRESDEN TECH [DE]
- [X] FR 2646021 A1 19901019 - DELMAS JEAN [FR]
- [Y] WO 9612920 A1 19960502 - ACOSTA MALIA LUIS SALVADOR [ES], et al
- See references of WO 9743790A1

Designated contracting state (EPC)

DE DK FR GB SE

DOCDB simple family (publication)

WO 9743790 A1 19971120; CA 2253940 A1 19971120; EP 0907972 A1 19990414; EP 0907972 A4 20010228; IL 126939 A0 19990922; JP 2001501775 A 20010206; KR 20000010903 A 20000225; NO 985217 D0 19981109; NO 985217 L 19990111

DOCDB simple family (application)

US 9707922 W 19970509; CA 2253940 A 19970509; EP 97929678 A 19970509; IL 12693997 A 19970509; JP 54098197 A 19970509; KR 19980709050 A 19981110; NO 985217 A 19981109