

Title (en)  
AUTONOMOUS GARMENT WITH ACTIVE THERMAL CONTROL AND POWERED BY SOLAR CELLS

Title (de)  
AUTONOMES KLEIDUNGSSTÜCK MIT AKTIVER THERMOSTEUERUNG UND ENERGIEVERSORGUNG DURCH SOLARZELLEN

Title (fr)  
VETEMENT AUTONOME A COMMANDE THERMIQUE ACTIVE ET ALIMENTE PAR DES CELLULES SOLAIRES

Publication  
**EP 1679984 B1 20080521 (EN)**

Application  
**EP 04775190 A 20041013**

Priority  
• PT 2004000024 W 20041013  
• PT 10303003 A 20031017

Abstract (en)  
[origin: WO2005034662A1] The invention refers to an autonomous system and to a method that allows the active thermal control of garments using solar cells as the power source. In the simplest configuration, the system includes a piece of clothing with solar cells (1), a thermal module able to generate heat and cold (3, 4, and 5), and a unit for controlling and monitoring the internal environment (6). In order to increase versatility and to optimize operation conditions, the system includes batteries (2) that can be charged by the solar cells or externally, increasing energy autonomy and improving performance in low radiation conditions. Proper distribution of electric resistors (3) and refrigeration pipes (7) allow a fine-tuning regulation of temperature inside the garment. The garment is developed not only for standard conditions but also for extreme heat and cold environments, being optimised wither for standard solar radiation or other relevant spectral source.

IPC 8 full level  
**A41D 13/005** (2006.01); **A41D 1/00** (2006.01)

CPC (source: EP KR US)  
**A41D 1/002** (2013.01 - EP US); **A41D 13/005** (2013.01 - KR); **A41D 13/0051** (2013.01 - EP US)

Cited by  
US8397518B1; US10182937B2; US11701250B2; US11759350B2

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)  
**WO 2005034662 A1 20050421**; AT E395840 T1 20080615; AU 2004279277 A1 20050421; AU 2004279277 B2 20100812; CA 2543468 A1 20050421; CA 2543468 C 20120724; DE 602004014009 D1 20080703; DK 1679984 T3 20080929; EP 1679984 A1 20060719; EP 1679984 B1 20080521; EP 1679984 B8 20080813; ES 2308243 T3 20081201; JP 2007509244 A 20070412; JP 4708355 B2 20110622; KR 101126392 B1 20120328; KR 20060123738 A 20061204; NO 20062219 L 20060711; NO 328018 B1 20091109; PT 103030 A 20050429; US 2007199137 A1 20070830

DOCDB simple family (application)  
**PT 2004000024 W 20041013**; AT 04775190 T 20041013; AU 2004279277 A 20041013; CA 2543468 A 20041013; DE 602004014009 T 20041013; DK 04775190 T 20041013; EP 04775190 A 20041013; ES 04775190 T 20041013; JP 2006535295 A 20041013; KR 20067009085 A 20041013; NO 20062219 A 20060516; PT 10303003 A 20031017; US 57619804 A 20041013