

Title (en)

METHODS AND APPARATUS FOR TRANSFER OF HEAT ENERGY BETWEEN A BODY SURFACE AND HEAT TRANSFER FLUID

Title (de)

VERFAHREN UND VORRICHTUNG ZUR ÜBERTRAGUNG VON WÄRMEENERGIE ZWISCHEN EINER KÖRPEROBERFLÄCHE UND WÄRMEÜBERTRAGUNGSMITTEL

Title (fr)

PROCEDES ET APPAREILS D'ECHANGE D'ENERGIE THERMIQUE ENTRE LA SURFACE D'UN CORPS ET UN FLUIDE D'ECHANGE THERMIQUE

Publication

EP 1446222 A2 20040818 (EN)

Application

EP 02773363 A 20020913

Priority

- US 0229093 W 20020913
- US 31898501 P 20010913
- US 24338402 A 20020913

Abstract (en)

[origin: WO03022415A2] In methods and apparatus for heat exchange to and from a body surface using a heat transfer fluid the fluid is impinged on the surface from a plurality of delivery inlets in the form of a corresponding plurality of spaced delivery streams and is immediately removed from the plenum upon rebounding from the surface through a plurality of spaced removal outlets distributed among the delivery streams, thus establishing corresponding very short uninterrupted flow paths between each inlet and its removal outlet/s. Preferably, the fluid stream velocity is sufficient for it to penetrate and disrupt a fluid boundary layer on the body surface. Each delivery inlet may have its outlet to the surface spaced from 0.001cm to 0.2cm (0.0004in to 0.08in) from that surface. Each delivery inlet may produce a jet impinging the surface of from 0.3cm to 1.5cm (0.12in to 0.6in) diameter. The delivery streams may impinge a flat body surface from a right angle to an acute angle, while when the body surface is curved the delivery streams may impinge from a right angle to one that is tangential thereto. A particular apparatus with which the heat exchanger may be used has a cylindrical rotor rotating within a cylindrical stator so that the body surface is cylindrical; the rotor diameter may be from 0.1cm to 500cm (0.04in to 200ins).

IPC 1-7

B01J 19/18

IPC 8 full level

F28D 7/10 (2006.01); **F28F 13/02** (2006.01); **F28F 13/12** (2006.01); **B29C 48/03** (2019.01)

CPC (source: EP US)

B29C 48/83 (2019.01 - EP US); **F28D 7/106** (2013.01 - EP US); **F28F 13/02** (2013.01 - EP US); **F28F 13/125** (2013.01 - EP US); **B29C 48/03** (2019.01 - EP US); **F28D 2021/0077** (2013.01 - EP US)

Citation (search report)

See references of WO 03022415A2

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LI LU MC NL PT SE SK TR

DOCDB simple family (publication)

WO 03022415 A2 20030320; **WO 03022415 A3 20030925**; AU 2002336510 A1 20030324; EP 1446222 A2 20040818; US 2003066624 A1 20030410

DOCDB simple family (application)

US 0229093 W 20020913; AU 2002336510 A 20020913; EP 02773363 A 20020913; US 24338402 A 20020913