

Title (en)

CLOSED TRANSPORT FLUID SYSTEM FOR FURNACE-INTERNAL HEAT EXCHANGE BETWEEN ANNEALING GASES

Title (de)

GESCHLOSSENES TRANSPORTFLUIDSYSTEM ZUM OFENINTERNEN WÄRMEAUSTAUSCH ZWISCHEN GLÜHGASEN

Title (fr)

SYSTÈME DE FLUIDE DE TRANSPORT FERMÉ POUR L'ÉCHANGE THERMIQUE ENTRE DES GAZ DE RECUIT À L'INTÉRIEUR D'UN FOUR

Publication

**EP 2791606 B2 20221228 (DE)**

Application

**EP 12806412 A 20121211**

Priority

- DE 102011088634 A 20111214
- EP 2012075128 W 20121211

Abstract (en)

[origin: WO2013087648A1] Furnace (100) for heat-treating annealing material (102), wherein the furnace (100) comprises a sealable first furnace chamber (104) designed to receive and heat-treat annealing material (102) by thermal interaction of the annealing material (102) with a heatable or coolable first annealing gas (112) in the first furnace chamber (104), a first heat exchanger (108) which is arranged in the first furnace chamber (104) and is designed to exchange heat between the first annealing gas (112) and a transport fluid (116), wherein the first heat exchanger (108) is arranged within a housing section (120) of the first furnace chamber (104), which housing section (120) encloses the first annealing gas (112) inside the first furnace chamber (104), a sealable second furnace chamber (106) designed to receive and heat-treat annealing material (102) by thermal interaction of the annealing material (102) with a heatable or coolable second annealing gas (114) in the second furnace chamber (106), a second heat exchanger (110) which is arranged in the second furnace chamber (106) and is designed to exchange heat between the second annealing gas (114) and the transport fluid (116), wherein the second heat exchanger (110) is arranged within a housing section (122) of the second furnace chamber (106), which housing section (122) encloses the second annealing gas (114) inside the second furnace chamber (106), and a closed transport fluid path (118) which is operatively connected to the first heat exchanger (108) and to the second heat exchanger (110) in such a manner that thermal energy can be transferred between the first annealing gas (112) and the second annealing gas (114) via the transport fluid (116).

IPC 8 full level

**F27B 11/00** (2006.01); **F27D 17/00** (2006.01)

CPC (source: EP US)

**C21D 1/34** (2013.01 - EP US); **C21D 9/0006** (2013.01 - EP US); **C21D 9/677** (2013.01 - EP US); **F27B 11/00** (2013.01 - EP US); **F27D 17/004** (2013.01 - EP US); **C21D 1/26** (2013.01 - EP US); **F27D 2099/0065** (2013.01 - EP US)

Citation (opposition)

Opponent :

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- US 4247284 A 19810127 - MAYERS RICHARD R, et al
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- "Industrielle Thermoprozessanlagen - Teil 3: Sicherheitsanforderungen für die Erzeugung und Anwendung von Schutz- und Reaktionsgasen", NORM DIN EN 746-3: 1997 D, March 1997 (1997-03-01), pages 1 und 12
- "Sicherheitstechnische Empfehlungen für den Betrieb von Industrieöfen mit Schutzgasatmosphäre", ATW, April 1999 (1999-04-01), pages 1 und 2
- Axel von Starck et al., Praxisbuch - Thermoprozess-Technik", Band II, „Prozesse -Komponenten - Sicherheit", Vulkan-Verlag GmbH, Essen, ISBN 3-8027-2923-4, 2003, Seiten 258 bis 263
- Peter Wendt und Udo Dengel, Wasserstoffrecycling - Eine Maßnahme zur Steigerung der Effizienz von HPH®-Haubenglühanlagen". Sonderdruck aus der Zeitschrift GASWÄRME International, Nr. 3/2009, 8 Seiten
- „Taschenbuch für Wärmeprozess Technik", 5. Auflage, Vulkan-Verlag, Essen, ISBN 3-8027-2901-3, 1999, Seiten 24, 25 und 30 bis 33

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