

Title (en)

DEVICE AND METHOD FOR HEAT TREATING METAL ARTICLES UNDER A PROTECTIVE GAS/REACTIVE GAS ATMOSPHERE IN A CONTINUOUS OPERATION

Title (de)

VORRICHTUNG UND VERFAHREN ZUR WÄRMEBEHANDLUNG VON METALLISCHEM NUTZGUT UNTER SCHUTZGAS-/REAKTIONSGASATMOSPHÄRE IM DURCHLAUFBETRIEB

Title (fr)

DISPOSITIF ET PROCÉDÉ DE TRAITEMENT THERMIQUE D'UN MATÉRIAU UTILE MÉTALLIQUE SOUS ATMOSPHÈRE DE GAZ DE PROTECTION/RÉACTION EN FONCTIONNEMENT CONTINU

Publication

**EP 3004404 B1 20170222 (DE)**

Application

**EP 14726595 A 20140526**

Priority

- DE 102013105543 A 20130529
- EP 2014060859 W 20140526

Abstract (en)

[origin: WO2014191368A1] The invention relates to a device for heat treating metal articles under a protective gas/reactive gas atmosphere in a continuous operation, comprising a furnace housing (2) which surrounds a furnace chamber (1) as a heating zone (HZ), comprising a plurality of heating elements (4), which protrude into the furnace chamber (1), for heating the furnace chamber (1), and comprising a preheating zone (VZ) upstream of the heating zone (HZ), wherein the combustion exhaust gases do not contact the articles. The invention also relates to a corresponding heat treatment method. The aim of the invention is to improve the efficiency. This is achieved in that the device additionally has a collecting device (7) for capturing the exhaust gas of the heating elements and a heat transferring unit (9), which is supplied by the collecting device (7) and is arranged in the interior of the preheating zone (VZ), or the device is provided with lines (11, 13) for transporting hot air from the cooling element (3") into the preheating zone (VZ) according to claim 8 in order to recover heat; the exhaust gas exiting the heating elements is captured and supplied to an exhaust gas-heated preheating zone (VZ) upstream of the actual heating part; and in the exhaust gas-heated preheating zone, the heat of the exhaust gas is indirectly transferred to the protective gas /reactive gas contained in the preheating zone (VZ) via heat transferring surfaces.

IPC 8 full level

**C21D 1/767** (2006.01); **C21D 1/52** (2006.01); **C21D 9/00** (2006.01); **C21D 9/56** (2006.01); **F27D 7/06** (2006.01); **F27D 99/00** (2010.01)

CPC (source: EP)

**C21D 1/52** (2013.01); **C21D 1/767** (2013.01); **C21D 9/0056** (2013.01); **C21D 9/0062** (2013.01); **C21D 9/561** (2013.01); **F27B 9/045** (2013.01); **F27B 9/047** (2013.01); **F27B 9/28** (2013.01); **F27B 9/36** (2013.01); **F27D 7/06** (2013.01); **F27D 17/004** (2013.01); **F27D 99/0033** (2013.01); **F27D 99/0035** (2013.01)

Cited by

WO2023094082A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**DE 202013102749 U1 20131017**; DE 102013105543 A1 20141204; EP 3004404 A1 20160413; EP 3004404 B1 20170222; WO 2014191368 A1 20141204

DOCDB simple family (application)

**DE 202013102749 U 20130529**; DE 102013105543 A 20130529; EP 14726595 A 20140526; EP 2014060859 W 20140526