Title (en)

Method and device for regulating process gases for the thermoforming of metallic materials/workpieces in industrial ovens

Title (de)

Verfahren und Einrichtung zur Regelung von Prozessgasen für Wärmebehandlungen von metallischen Werkstoffen/Werkstücken in Industrieöfen

Title (fr)

Procédé et dispositif de réglage de gaz de procédé pour des traitements à chaud de matériaux/pièces métalliques dans des fours industriels

Publication

EP 2336372 A3 20131002 (DE)

Application

EP 10015290 A 20101203

Priority

DE 102009005864 A 20091216

Abstract (en)

[origin: EP2336372A2] The method for controlling process gas for heat treatment of metallic materials/workpieces in industrial furnace (1), which comprises a treatment chamber (2), a combustion point (4) with a first valve (4.1) and a regulator (5) with pressure gauge, comprises processing the process gas in a component of a respective gas mixture in a limitable area and/or then utilizing as flushing gas in a rinse gassing. A quantity of the flushing gas of the gas mixture of the respective process gas is controllably guided to the industrial furnace and then burned in open combustion valve. The method for controlling process gas for heat treatment of metallic materials/workpieces in industrial furnace (1), which comprises a treatment chamber (2), a combustion point (4) with a first valve (4.1) and a regulator (5) with pressure gauge, comprises processing the process gas in a component of a respective gas mixture in a limitable area and/or then utilizing as flushing gas in a rinse gassing. A quantity of the flushing gas of the gas mixture of the respective process gas is controllably guided to the industrial furnace and then burned in open combustion valve. The rinsing gas of the combustion valve is closed, where the industrial furnace is controlled on a preset furnace pressure and is recorded permanently over the pressure gauges in such a way that a fresh gas valve is controlled so that a quantity of a fresh gas of the respective gas mixture of the process gas is provided necessary to a pressure reduction. The fresh gas valve is controlled in such a way that the pressure is recorded and held over the pressure gauges, where the combustion valve remains in the phase. The rinse gassing is activated and regulated. An excess pressure valve of the combustion point is opened to the pressure reduction controlled over a fixed limit value in large increase in pressure. A C-level required for the process independent from the pressure control of the furnace control is regulated by a C-potential regulator (3) and is adjusted over a gas- and air supply. The method is used for charge-wise heat treatment of the metallic materials/workpieces in the industrial furnace, which works according to break through principle. The activated rinse gassing is adjusted before a charge movement, a charge exchange or the loading of a charge. The controlled rinse gassing is activated until a rinsing time is expired or a selected carbon monoxide-level is reached. The requirement of the rinse gassing is initiated from the furnace control to liberate the furnace chamber of remnants of foreign gases. The method is used in inert gas recirculation systems for a gas carburization in which the components such as carbon dioxide, oxygen and water vapor is supplied with a hydrocarbon again to the carbon monoxide and hydrogen in an internal or an external treatment chamber of the industrial furnace in recirculating manner. A hand shifter and a shut-off valve are used for adjusting different combustion quantities in different combustion strands. An independent claim is included for a device for controlling process gases for heat treatment of metallic materials/workpieces in industrial furnace.

IPC 8 full level

C21D 1/76 (2006.01); **C21D 11/00** (2006.01); **C23C 8/06** (2006.01); **F27D 7/06** (2006.01)

CPC (source: EP)

C21D 1/763 (2013.01); **C21D 11/00** (2013.01); **C23C 8/06** (2013.01); **C23C 8/20** (2013.01)

Citation (search report)

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Cited by

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Designated extension state (EPC)

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