

## Title (en)

Method and device for heat treating metallic materials in a protective atmosphere

## Title (de)

Verfahren und Einrichtung zur Wärmebehandlung von metallischen Werkstoffen unter Schutzgasatmosphäre

## Title (fr)

Procédé et dispositif destinés au traitement à chaud de matières métalliques sous atmosphère protectrice

## Publication

**EP 2135961 A2 20091223 (DE)**

## Application

**EP 09007348 A 20090603**

## Previously filed application

102008029001 20080620 DE

## Priority

DE 102008029001 A 20080620

## Abstract (en)

In a method for heat treating metals by carburization in an industrial furnace (1) with a heated enclosure and a quenching chamber (8) using inert gas (I), (I) is recycled after reacting the components of (I) (including carbon dioxide, oxygen and water vapor) with added hydrocarbon in a catalyst bed-containing processing region (3) of the heating chamber, to give carbon monoxide and hydrogen and provide (I) having a regulated carbon potential. An independent claim is included for apparatus for carrying out the metal heat treatment process, comprising the industrial furnace (1) having a heated enclosure, including a treatment chamber (2) and a catalyst bed-containing processing chamber (3), and a quenching chamber (8), plus (as novel features) (a) a gas analyzing carbon potential regulator (5) corresponding to the processing chamber, (b) a circulator (4) for inert gas (I) for recycling, plus regulated supplies of air and reaction gas, (c) a gas-tight valve (6.1) to a burning off site (6) with a pressure regulator (6.2) and a gassing function in the case of pressure reduction (components (a) - (c) being functionally integrated in a regulation circuit (R)) and (d) an inner door (7) for sealing the heated enclosure from the quenching chamber in sealed manner.

## Abstract (de)

Die Erfindung umfaßt ein Schutzgasrezirkulationssystem mit Verfahren und Einrichtung für die Gasaufkohlung von Werkstoffen in einem Industrieofen (1), in dem die Komponenten Kohlenstoffdioxid, Sauerstoff und Wasserdampf mit zugeführtem Reaktionsgas zu Kohlenstoffmonoxid und Wasserstoff katalytisch reagieren, um bereits "verbrauchtes" Schutzgas als in einem Aufbereitungsraum (3) "aufbereitetes" Schutzgas dann wieder an einer oder mehreren Stellen (2.2) in einen Behandlungsraum (2.1) einzuspeisen, so dass sich ein realer Kreisprozess einstellt und die Gasaufkohlung kontinuierlich unter Einsparung an Schutzgas ablaufen kann (Fig.).

## IPC 8 full level

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**C21D 1/763** (2013.01 - EP US); **C21D 1/773** (2013.01 - EP US); **C21D 11/00** (2013.01 - EP US); **C23C 8/20** (2013.01 - EP US)

## Citation (applicant)

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## Designated contracting state (EPC)

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