

Title (en)

Device for cleaning oxidized or corroded components in the presence of a halogenous gas mixture

Title (de)

Vorrichtung zur Reinigung oxidiert oder korrodiert Bauteile in Gegenwart eines halogenhaltigen Gasgemisches

Title (fr)

Dispositif pour le nettoyage de composants oxydés ou corrodés en présence d'un mélange gazeux d'halogènes

Publication

EP 2192209 B1 20160406 (DE)

Application

EP 09175543 A 20091110

Priority

- DE 102008043787 A 20081117
- US 35264109 A 20090113

Abstract (en)

[origin: EP2192209A2] The device for cleaning oxidized or corroded turbine blade (26) exposed to hot gases in the presents of halogen-containing gas mixture, comprises a cleaning reactor in which a feeder directly or indirectly flows that is connected over a flow control arrangement with a gas reservoir stocking the halogen-containing gas. The flow control arrangement provides a gas quantity control valve (5), a heat exchanger unit (9) and/or a gas quantity measuring unit (6) in sequence along the flow direction of the halogen-containing gases flowing through the feeder. The device for cleaning oxidized or corroded turbine blade (26) exposed to hot gases in the presents of halogen-containing gas mixture, comprises a cleaning reactor in which a feeder directly or indirectly flows that is connected over a flow control arrangement with a gas reservoir stocking the halogen-containing gas. The flow control arrangement provides a gas quantity control valve (5), a heat exchanger unit (9) and/or a gas quantity measuring unit (6) in sequence along the flow direction of the halogen-containing gases flowing through the feeder. A shut-off valve (3) is equipped downstream and upstream to the flow control arrangement in the feeder and a bypass line is equipped to the flow control arrangement along the feeder along which a control valve is arranged. The shut-off valve is formed as block valve and the control valve is formed as manual valve. The heat exchanger unit comprises an electric heater. The halogen-containing gas is hydrogen fluoride gas. The feeder flows into an inlet line guiding the cleaning reactor before entering into the cleaning reactor. In the inlet line, a second feeder flows before entering into the cleaning reactor. The second feeder is connected with a hydrogen gas reservoir. A central tube is connected directly or indirectly with the feeder. The central tube extends itself from a reactor head up to a reactor sump within the cleaning reactor and is connected in the area of the reaction sump with a first distribution structure extending itself radially to the central tube. The first distribution structure enacts over discharge opening for the halogen-containing gas mixture and projects a support plane for the component to be cleaned. A second distribution structure is arranged to the first distribution structure at the central tube and projects a support plane for the component to be cleaned extending itself radially to the central tube. The distribution structure possesses discharge openings for the halogen-containing gas. Further distribution structures are arranged distanced to each other along the central tube. The second and further distribution structure have discharge opening for the halogen-containing gas, where the discharge openings are arranged on the distribution structure directly adjoining along the central tube. The first and further distribution structures are formed in plate- or grid shaped manner. The distribution structure possesses a stub radially passing by the central tube. A closed circular pipeline circularly passing the central tube exists radially from the stub to the central tube. The discharge openings are arranged along the stub and/or the circular pipeline. The stub and circular pipeline are made from a form stable tubular material and describe a spiders web-like support plane, on which the components to be cleaned are directly laid out. The distribution structure surrounds the central tube in disc-like manner and comprises a disc edges of disc volume connected in fluid tight manner with an upper and lower disc plates and/or both disc plates at its circumference edge. The disc volume is supplyable over an opening turned to the central tube in the distribution structure with the halogen-containing gas. The upper disc plate comprises discharge opening for the halogen-containing gas. Flow deflector units influencing the gas discharge direction are equipped on the discharge opening. The upper disc plate projects recesses in which modular-like sector plates are inserted and the sector plate projects individual pattern at the discharge opening. The distribution structure is connected with interiorly lying radial cuffs that serve as carrier- and support structure. Cylindrical shaped spacer cuffs are equipped along the central tube for mutual spacing of distribution structures along the central tube.

IPC 8 full level

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