

Title (en)

METHOD FOR PRODUCING A THERMAL BARRIER COATING AND THERMAL BARRIER COATING FOR A COMPONENT PART

Title (de)

VERFAHREN ZUR HERSTELLUNG EINER WÄRMEDÄMMSCHICHT UND WÄRMEDÄMMSCHICHT FÜR EIN BAUTEIL

Title (fr)

PROCÉDÉ DE FABRICATION D'UNE COUCHE D'ISOLATION THERMIQUE ET COUCHE D'ISOLATION THERMIQUE POUR UN ÉLÉMENT DE CONSTRUCTION

Publication

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Application

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Priority

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Abstract (en)

[origin: DE102006010860A1] The production of a ceramic heat-insulating layer on a component for use in compressor and turbine units comprises the preparation of a ceramic vapor for deposition on the component, deposition of vapor on the component for the formation of a column- or pole-like heat-insulating layer and variation of a process parameter during the deposition of ceramic vapor. The heat-insulating layer comprises columns or poles (12), which alternately exhibit decreasing and increasing diameters (d, D). The columns or poles are aligned essentially perpendicular to a component surface (16). The production of a ceramic heat-insulating layer on a component for use in compressor and turbine units comprises the preparation of a ceramic vapor for deposition on the component, deposition of vapor on the component for the formation of a column- or pole-like heat-insulating layer and variation of a process parameter during deposition of the ceramic vapor. The heat-insulating layer comprises columns or poles (12), which alternately exhibit decreasing and increasing diameters (d, D). The columns or poles are aligned essentially perpendicular to a component surface (16). The turbine units comprise physical vapor deposition, which is electron beam vapor deposition (EB-PVD), cathode atomization or cathodic arc evaporation. The process is accomplished in a vacuum chamber. The heat-insulating layer is deposited at a thickness of 1-500 nm. During the deposition of ceramic vapor, oxygen and inert gas are supplied and the variation of a process parameter comprises the variation of the partial pressure of oxygen and/or the inert gas during the coating process or in the coating chamber. The component to be coated is moved and the variation of the process parameter comprises the variation of the kind of the component movement and/or the speed of movement of the component during the coating process. The component rotates and the variation of the process parameter comprises variation of the number of rotations per minute of the component during the coating process. The variation of the process parameter comprises variation of the deposition rate of the ceramic vapor on the component during the coating process, and variation of the pressure during the coating process or in the coating chamber. An adhesive layer (20) is partly formed between the component surface to be coated and the heat-insulating layer. An intermediate layer of aluminum oxide is formed partly between the component surface to be coated and the adhesive layer. Independent claims are also included for the following: (1) a heat-insulating layer for a component for use in compressor and turbine units; and (2) a component for use in compressor and turbine units.

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