

Title (en)
METHOD FOR COATING A SUBSTRATE WITH A HOLLOW STRUCTURE

Title (de)
VERFAHREN ZUR BESCHICHTUNG EINES SUBSTRATES MIT EINER HOHLRAUMSTRUKTUR

Title (fr)
PROCÉDÉ DE REVÊTEMENT D'UN SUBSTRAT À L'AIDE D'UNE STRUCTURE CREUSE

Publication
EP 3572551 A1 20191127 (DE)

Application
EP 19174701 A 20190515

Priority
DE 102018112353 A 20180523

Abstract (en)
[origin: US2019360107A1] A method for coating a substrate having a cavity structure, in particular a cooling structure, inside the substrate, wherein the cavity structure includes openings in the surface of the substrate. At least one bonding layer, in particular a diffusion layer, or at least one metallic layer is applied onto the substrate, in particular onto the surface of the substrate, and subsequently at least one thermal protection layer is applied onto the at least one diffusion layer by using a plasma spray physical vapour deposition (PS-PVD) method, a hollow cathode sputtering method or a suspension plasma spray (SPS) method.

Abstract (de)
Die Erfindung betrifft ein Verfahren zur Beschichtung eines Substrates (40) mit einer Hohlraumstruktur (41), insbesondere einer Kühlstruktur, im Inneren des Substrats (40), wobei die Hohlraumstruktur (41) Öffnungen (42) in der Oberfläche (O) des Substrats (40) aufweist, dadurch gekennzeichnet, dassa) mindestens eine haftvermittelnde Schicht, insbesondere eine Diffusionsschicht (31) oder mindestens eine metallische Schicht auf das Substrat (40), insbesondere auf die Oberfläche (O) des Substrates (40), aufgebracht wird und anschließendb) mindestens eine thermische Schutzschicht (32) unter Verwendung eines Plasma-Spray PVD (PS-PVD) Verfahrens, eines Hohlkathoden-Sputter Verfahrens oder eines Suspension Plasma Spray (SPS) Verfahrens auf die mindestens eine Diffusionsschicht (31) aufgebracht wird.

IPC 8 full level
C23C 4/00 (2016.01); **C23C 4/04** (2006.01); **C23C 4/073** (2016.01); **C23C 4/134** (2016.01); **C23C 16/02** (2006.01); **C23C 16/06** (2006.01); **C23C 28/00** (2006.01); **C23C 28/02** (2006.01); **F01D 5/00** (2006.01); **F01D 5/12** (2006.01); **F01D 5/14** (2006.01); **F01D 5/28** (2006.01); **F01D 25/00** (2006.01)

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Citation (applicant)
• EP 3150741 A1 20170405 - ROLLS ROYCE PLC [GB]
• GORAL ET AL.: "The technology of Plasma Spray Physical Vapour Deposition", JOURNAL OF ACHIEVEMENTS IN MATERIALS AND MANUFACTURING ENGINEERING, vol. 55, no. 2, pages 689 ff
• GORAL ET AL.: "The PS-PVD method - formation of columnar TBCs on CMSX-4 superalloy", JOURNAL OF ACHIEVEMENTS IN MATERIALS AND MANUFACTURING ENGINEERING, vol. 55, no. 2, pages 907 ff
• MAUER ET AL.: "Novel opportunities for thermal spray by PS-PVD", SURFACE & COATING TECHNOLOGY, vol. 269, 2015, pages 53 ff
• MAUER ET AL.: "Process diagnostic in suspension plasma spraying", SURFACE & COATING TECHNOLOGY, vol. 205, 2010, pages 961 ff

Citation (search report)
• [XDI] EP 3150741 A1 20170405 - ROLLS ROYCE PLC [GB]
• [XAI] DE 102005060243 A1 20070621 - MAN TURBO AG [DE]
• [XAI] US 2011159260 A1 20110630 - CASU ALESSANDRO [DE], et al

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