Title (en)

Method of manufacturing foundry ceramic cores for turbomachine vanes

Title (de)

Verfahren zur Herstellung von keramischen Kernen zum Gießen von Laufradschaufeln für Turbomaschinen

Title (fr)

Procédé de fabrication de noyaux céramiques de fonderie pour aubes de turbomachine

Publication

EP 1854569 A1 20071114 (FR)

Application

EP 07290555 A 20070502

Priority

FR 0651682 A 20060510

Abstract (en)

The process for manufacturing a foundry core (100), comprises arranging a mixture having a load of ceramic particles and organic binder in a mold, extracting the core from the mold, and unbinding and thermally treating the core consolidation. The foundry core comprises several fine zones having a thickness of 0.1-0.5 mm in a trailing edge of turbomachine blade. The core zone is thickened in connection to an overlayer. The overlayer is machined after extracting the core from the mold in order to create an opening channel sufficient for the flow of the mixture. The process for manufacturing a foundry core (100), comprises arranging a mixture having a load of ceramic particles and organic binder in a mold, extracting the core from the mold, and unbinding and thermally treating the core consolidation. The foundry core comprises several fine zones having a thickness of 0.1-0.5 mm in a trailing edge of turbomachine blade. The core zone is thickened in connection to an overlayer. The overlayer is machined after extracting the core from the mold in order to create an opening channel sufficient for the flow of the mixture during its injection into the mold. The machining is mechanically carried out by milling with chip removal, abrasion and drilling of matter on a drilling machine to 4-5 axes, before and after the thermal treatment operation. The layer zone is situated proximate to the trailing edge and constitutes a tenon (100GH) as an evacuation channel for internal cooling of the turbomachine blade. A paste is supplied for the filling of mold in the tenon. The machining comprises a step of shelving of the tenon surface. The overlayer is applied to the several fine zone layers.

Abstract (fr)

L'invention porte sur un procédé de fabrication d'un noyau céramique de fonderie, comportant au moins une zone fine d'épaisseur « e », en particulier dans un bord de fuite d'aube de turbomachine notamment, comprenant la mise en forme dans un moule d'un mélange comprenant une charge de particules céramiques et un liant organique, l'extraction du noyau du moule, le déliantage et un traitement thermique de consolidation du noyau. Le procédé est caractérisé par le fait que l'on forme dans ledit moule un noyau dont ladite zone est épaissie par rapport à l'épaisseur « e » d'une surépaisseur E et que l'on usine ladite surépaisseur après avoir extrait le noyau du moule, et ce avant ou après l'opération de traitement thermique. En particulier l'usinage est effectué mécaniquement par fraisage avec soit avec enlèvement de copeaux sur les noyaux avant cuisson, soit par abrasion sur les noyaux cuits.

IPC 8 full level

B22C 9/10 (2006.01)

CPC (source: EP US)

B22C 9/103 (2013.01 - EP US)

Citation (search report)

[PXDPX] FR 2878458 A1 20060602 - SNECMA MOTEURS SA [FR]

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