

## Title (en)

Casting device for creating a turbine rotor blade of a gas turbine and turbine rotor blade

## Title (de)

Giessvorrichtung zum Herstellen einer Turbinenlaufschaufel einer Gasturbine und Turbinenlaufschaufel

## Title (fr)

Dispositif de coulée destiné à la fabrication d'une aube directrice de turbine d'une turbine à gaz et aube directrice de turbine

## Publication

**EP 2243574 A1 20101027 (DE)**

## Application

**EP 09005533 A 20090420**

## Priority

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## Abstract (en)

The casting device (10) comprises a hollow mold shell (12), whose hollow cavity (14) is limited by a surface (16) and represents a negative mold of a turbine blade to be produced, casting cores disposed in the hollow cavity, and an inlet channel (20) for a casting material, where the inlet channel has an inlet opening (22) flowing into the surface. The surface is aligned in the mold shell in such a way that a blade root of the turbine blade to be cast is contoured at inlet-side. The inlet channel has a longitudinal extension directly upstream to its inlet opening. The casting device (10) comprises a hollow mold shell (12), whose hollow cavity (14) is limited by a surface (16) and represents a negative mold of a turbine blade to be produced, casting cores disposed in the hollow cavity, and an inlet channel (20) for a casting material, where the inlet channel has an inlet opening (22) flowing into the surface. The surface is aligned in the mold shell in such a way that a blade root of the turbine blade to be cast is contoured at inlet-side. The inlet channel has a longitudinal extension directly upstream to its inlet opening, where a part of the hollow cavity, into which an imaginary extension of the inlet channel projects, is completely free from casting core at the inlet opening side. The inlet channel flows into a part of the surface that forms the negative of a plane front side of the blade root of the turbine blade. The surface has a symmetrical has a symmetrical pine tree-shaped contour or hammer-shaped contour for the blade root of the turbine blade. The inlet channel is arranged concentrically in between and one of the casting cores in the area of the inlet opening in an eccentric manner. The casting cores are arranged on both sides of the center of the symmetry in the area of the inlet opening. An independent claim is included for a turbine blade for a gas turbine.

## Abstract (de)

Die Erfindung betrifft eine Gießvorrichtung (10) zum Herstellen einer Turbinenlaufschaufel (30) einer Gasturbine und eine damit hergestellte Turbinenlaufschaufel (30). Die Gießvorrichtung umfasst zumindest eine hohle Formschale (12), deren Zulauf und darin angeordnete Gusskerne (18) so zueinander ausgerichtet sind, dass ein in einen Hohlraum (14) der Formschale (12) einströmender heißer Gusswerkstoff nicht auf die Gusskerne (18) unmittelbar auftrifft. Damit werden sog. heißere Bereiche (Hot Spots) an Gusskernen (18) vermieden, die sich bisher nachteilig auf die Erstarrung des Gusswerkstoffs ausgewirkt haben. Insbesondere im Bereich des Schaufelfußes (32) der herzustellenden Turbinenlaufschaufel (30) kann somit eine verbesserte Erstarrung des Gusswerkstoffs erreicht werden, was Störung im Gefüge des erstarrten Gusswerkstoffs reduziert. Aufgrund der Verringerung bzw. der Vermeidung der Störungen wird Rissentstehung und Risswachstum im Bereich der schaufelfußseitigen Kühlkanalabschnitte vermieden, was die Lebensdauer der Turbinenlaufschaufel (30) erhöht.

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## Citation (search report)

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- [XY] WO 2007012590 A1 20070201 - SIEMENS AG [DE], et al
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- [X] EP 1621725 A1 20060201 - GEN ELECTRIC [US]

## Cited by

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