

Title (en)

Cooled rotor blade with leading edge impingement cooling

Title (de)

Gekühlte Rotorschaukel mit Prallkühlung im Bereich der Eintrittskante

Title (fr)

Aube de rotor refroidie ayant un refroidissement par impact au niveau du bord d'attaque

Publication

**EP 1605138 A3 20071003 (EN)**

Application

**EP 05253261 A 20050527**

Priority

US 85507604 A 20040527

Abstract (en)

[origin: EP1605138A2] A rotor blade (14) is provided having a hollow airfoil (22) and a root (20). The hollow airfoil (22) has a cavity defined by a suction side wall (38), a pressure side wall (36), a leading edge (32), a trailing edge (34), a base (28), and a tip (30). An internal passage configuration (40) is disposed within the cavity. The configuration includes a first radial passage (48), a second radial passage (50), and a rib (53) disposed between and separating the first radial passage (48) and second radial passage (50). A plurality of crossover apertures (52) are disposed within the rib (53). A portion of the plurality of crossover apertures (52) are oblong having a length (70) extending through the rib (53), and a height (74) and a width (72). The height (74) of each oblong aperture (52) is greater than the width (72). In some embodiments, the oblong crossover apertures (52) are aligned heightwise along the rib (53). The root (20) includes a conduit (42) that is operable to permit airflow through the root (20) and into the first radial passage (48).

IPC 8 full level

**F01D 5/18** (2006.01); **B63H 1/14** (2006.01); **F02C 7/18** (2006.01)

CPC (source: EP US)

**F01D 5/187** (2013.01 - EP US); **F05D 2260/201** (2013.01 - EP US); **F05D 2260/202** (2013.01 - EP US)

Citation (search report)

- [X] EP 1088964 A2 20010404 - GEN ELECTRIC [US]
- [X] US 2003044277 A1 20030306 - BOURRIAUD ISABELLE [FR], et al
- [X] EP 1022434 A2 20000726 - GEN ELECTRIC [US]
- [PX] EP 1496203 A1 20050112 - ROLLS ROYCE DEUTSCHLAND [DE]
- [X] EP 1035302 A2 20000913 - GEN ELECTRIC [US]
- [A] US 5688104 A 19971118 - BEABOUT BRIAN K [US]
- [A] EP 1213442 A1 20020612 - UNITED TECHNOLOGIES CORP [US]

Cited by

JP2015511678A; CN113874600A; EP2604800A3; FR2918105A1; US9932836B2; US9151173B2; WO2020242675A1; US10895168B2; EP3976930B1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR LV MK YU

DOCDB simple family (publication)

**EP 1605138 A2 20051214; EP 1605138 A3 20071003; EP 1605138 B1 20100630**; DE 602005022018 D1 20100812; JP 2005337257 A 20051208; US 2005265840 A1 20051201

DOCDB simple family (application)

**EP 05253261 A 20050527**; DE 602005022018 T 20050527; JP 2005154978 A 20050527; US 85507604 A 20040527