

Title (en)

STEAM TURBINE ROTOR MATERIALS FOR HIGH-TEMPERATURE USE

Title (de)

DAMPFTURBINEROTORMATERIALEN FÜR HOCHTEMPERATUR BENUTZUNG

Title (fr)

MATERIAUX POUR ROUE DE TURBINE A VAPEUR, DESTINES A ETRE UTILISES A DES TEMPERATURES ELEVEES

Publication

EP 0896071 A1 19990210 (EN)

Application

EP 97947913 A 19971212

Priority

- JP 9704580 W 19971212
- JP 136097 A 19970108
- JP 22324397 A 19970820

Abstract (en)

(1) A steam turbine rotor material for high-temperature applications consisting essentially of, on a weight percentage basis, 0.05 to 0.13% carbon, 0.01 to 0.1% silicon, 0.01 to 1% manganese, 9.5 to 11% chromium, 0.1 to 0.8% nickel, 0.1 to 0.3% vanadium, a total of 0.01 to 0.2% niobium and/or tantalum, 0.01 to 0.1% nitrogen, 0.01 to 0.5% molybdenum, 0.9 to 3.5% tungsten, 0.1 to 4% cobalt, 0.01 to 0.2% hafnium, and the balance being iron and incidental impurities; (2) a steam turbine rotor material for high-temperature applications as described in (1) above wherein nickel is eliminated therefrom; (3) a steam turbine rotor material for high-temperature applications as described in (1) or (2) above which further contains 0.001 to 0.01% boron; and (4) a steam turbine rotor material for high-temperature applications as described in (1), (2) or (3) above wherein part or all of the hafnium and/or part of the iron are replaced with 0.005 to 0.5% neodymium.

IPC 1-7

C22C 38/00; **C22C 38/52**; **F01D 25/00**

IPC 8 full level

F01D 5/02 (2006.01); **C22C 38/00** (2006.01); **C22C 38/30** (2006.01); **C22C 38/32** (2006.01); **C22C 38/46** (2006.01); **C22C 38/52** (2006.01); **C22C 38/54** (2006.01); **F01D 5/28** (2006.01); **F01D 25/00** (2006.01)

CPC (source: EP)

C22C 38/46 (2013.01); **C22C 38/52** (2013.01); **C22C 38/54** (2013.01)

Cited by

EP1002885A3; EP1405931A3; EP2157202A4; US7445069B2; EP1001045B1

Designated contracting state (EPC)

AT BE CH DE ES FR GB IT LI NL SE

DOCDB simple family (publication)

WO 9830727 A1 19980716; CZ 284998 A3 19991117; EP 0896071 A1 19990210; EP 0896071 A4 20010620; JP 3245097 B2 20020107; JP H10251811 A 19980922

DOCDB simple family (application)

JP 9704580 W 19971212; CZ 284998 A 19971212; EP 97947913 A 19971212; JP 22324397 A 19970820