

Title (en)
COOLING PROCESS AND DEVICE FOR A STEEL SHEET

Title (de)
KÜHLPROZESS UND -VORRICHTUNG FÜR EINE STAHLPLATTE

Title (fr)
PROCEDE ET DISPOSITIF DE REFROIDISSEMENT D'UNE BANDE D'ACIER

Publication
EP 1687455 B1 20070314 (FR)

Application
EP 04797129 A 20041125

Priority

- BE 2004000167 W 20041125
- EP 03447278 A 20031201
- EP 04797129 A 20041125

Abstract (en)
[origin: EP1538228A1] A cooling device for tempering during continuous annealing of a flat product or metal band, preferably a steel band where the device consists of a number of symmetrically arranged horizontal tubes (1) along the band (2) along which a coolant fluid is projected across a slot or a number of holes (cavities, sic). An independent claim is included for a method of tempering during continuous annealing of a flat product or metal band.

IPC 8 full level
C21D 9/573 (2006.01); **C21D 9/00** (2006.01); **C21D 9/56** (2006.01); **C21D 1/63** (2006.01); **C21D 1/667** (2006.01)

CPC (source: EP KR US)
C21D 9/00 (2013.01 - KR); **C21D 9/56** (2013.01 - KR); **C21D 9/573** (2013.01 - EP KR US); **C21D 9/5735** (2013.01 - EP US); **C21D 1/63** (2013.01 - EP US); **C21D 1/667** (2013.01 - EP US)

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

Designated extension state (EPC)
AL HR LT LV MK YU

DOCDB simple family (publication)
EP 1538228 A1 20050608; AT E356891 T1 20070415; AU 2004294469 A1 20050616; AU 2004294469 B2 20090716; BR PI0416333 A 20070109; BR PI0416333 B1 20170516; CA 2544269 A1 20050616; CA 2544269 C 20120313; CN 100465303 C 20090304; CN 1886524 A 20061227; DE 602004005362 D1 20070426; DE 602004005362 T2 20071129; DK 1687455 T3 20070529; EP 1687455 A1 20060809; EP 1687455 B1 20070314; ES 2282918 T3 20071016; JP 2007512431 A 20070517; KR 101089082 B1 20111207; KR 20060128880 A 20061214; PL 1687455 T3 20070831; PT 1687455 E 20070531; RU 2006124519 A 20080127; RU 2356949 C2 20090527; US 2006243357 A1 20061102; US 7645417 B2 20100112; WO 2005054524 A1 20050616

DOCDB simple family (application)
EP 03447278 A 20031201; AT 04797129 T 20041125; AU 2004294469 A 20041125; BE 2004000167 W 20041125; BR PI0416333 A 20041125; CA 2544269 A 20041125; CN 200480035485 A 20041125; DE 602004005362 T 20041125; DK 04797129 T 20041125; EP 04797129 A 20041125; ES 04797129 T 20041125; JP 2006540104 A 20041125; KR 20067010764 A 20041125; PL 04797129 T 20041125; PT 04797129 T 20041125; RU 2006124519 A 20041125; US 44293406 A 20060530