

Title (en)

COOLING METHOD OF THIN-WALLED STEEL PIPE

Title (de)

VERFAHREN ZUR ABKÜHLUNG EINES DÜNNWANDIGEN STAHLROHRS

Title (fr)

PROCÉDÉ DE REFROIDISSEMENT DE TUYAU D'ACIER À PAROI MINCE

Publication

**EP 2039786 A1 20090325 (EN)**

Application

**EP 07744417 A 20070530**

Priority

- JP 2007061004 W 20070530
- JP 2006150248 A 20060530

Abstract (en)

A method of cooling a steel pipe which can effectively suppress quenching-induced bending which occurs when quenching a thin-walled steel pipe with a wall thickness/outer diameter ratio of at most 0.07 without decreasing the manufacturing efficiency of the steel pipe comprises cooling the inner surface of the steel pipe by spraying cooling water into the interior of a horizontally-disposed steel pipe 2 while rotating the pipe in its circumferential direction, and the outer surface is cooled by producing a downward flow of cooling water streams 5a and 5b in a planar shape from above onto the outer surface along the axial direction of the steel pipe 2. Cooling of the inner surface is started at least 7 seconds before cooling of the outer surface. Cooling of the outer surface is carried out by producing downward flow in a planar shape of cooling water 5a and 5b at two locations 4a and 4b at approximately equal distances from the uppermost portion of the steel pipe 2, and the flow rate of cooling water 5a which flows down at a location on the upstream side in the rotational direction of the steel pipe 2 is made larger than the flow rate of cooling water 5b which flows down at a location on the downstream side in the rotational direction.

IPC 8 full level

**B22D 11/12** (2006.01); **B21B 1/46** (2006.01); **C21D 1/18** (2006.01); **C21D 1/667** (2006.01); **C21D 9/08** (2006.01); **C22C 38/02** (2006.01); **C22C 38/04** (2006.01); **C22C 38/24** (2006.01); **C22C 38/42** (2006.01); **C22C 38/44** (2006.01); **C22C 38/46** (2006.01); **C22C 38/58** (2006.01)

CPC (source: EP US)

**C21D 1/18** (2013.01 - EP US); **C21D 1/667** (2013.01 - EP US); **C21D 9/08** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/24** (2013.01 - EP US); **C22C 38/42** (2013.01 - EP US); **C22C 38/44** (2013.01 - EP US); **C22C 38/46** (2013.01 - EP US); **C22C 38/58** (2013.01 - EP US); **B21B 2045/0227** (2013.01 - EP US)

Designated contracting state (EPC)

DE FR IT

Designated extension state (EPC)

AL BA HR MK RS

DOCDB simple family (publication)

**EP 2039786 A1 20090325**; **EP 2039786 A4 20100407**; **EP 2039786 B1 20170621**; CN 101490286 A 20090722; JP 2007321178 A 20071213; MX 2008015180 A 20090211; US 2009183805 A1 20090723; WO 2007139158 A1 20071206

DOCDB simple family (application)

**EP 07744417 A 20070530**; CN 200780027472 A 20070530; JP 2006150248 A 20060530; JP 2007061004 W 20070530; MX 2008015180 A 20070530; US 29292208 A 20081201