

Title (en)
MANUFACTURING METHOD AND MANUFACTURING EQUIPMENT FOR SEAMLESS STEEL PIPE OR TUBE WITH EXCELLENT TOUGHNESS

Title (de)
FERTIGUNGSVERFAHREN UND FERTIGUNGSVORRICHTUNG FÜR NAHTLOSE STAHLROHRE MIT AUSGEZEICHNETER ZÄHIGKEIT

Title (fr)
PROCÉDÉ ET ÉQUIPEMENT DE FABRICATION POUR CONDUITE OU TUBE EN ACIER SANS SOUDURE AVEC UNE EXCELLENTE DURETÉ

Publication
EP 2952592 A4 20160427 (EN)

Application
EP 14746700 A 20140122

Priority
• JP 2013016459 A 20130131
• JP 2014000297 W 20140122

Abstract (en)
[origin: EP2952592A1] It is difficult in the related art to realize not only a decrease in material variability due to non-uniform microstructure distribution in the wall thickness direction of a pipe body but also the maintenance of satisfactory productivity of the whole heat treatment line at the same time. A method includes determining in advance whether or not the pipe body is made of a steel grade having an Ms point lower than 200 °C; leaving the pipe body of a steel grade having an Ms point lower than 200 °C additionally at room temperature (it is preferable to be transported to a holding bed 6 and left) until the temperature difference between the portion having the highest temperature and the portion having the lowest temperature in a cross section in a direction at a right angle to the pipe axis becomes less than 2.0 °C after the quenching treatment has been performed, and then performing the tempering treatment; and, on the other hand, performing a tempering treatment on the pipe body of a steel grade not having an Ms point lower than 200 °C without leaving the pipe body at room temperature after a quenching treatment has been performed.

IPC 8 full level
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CPC (source: EP US)
C21D 1/18 (2013.01 - EP US); **C21D 9/08** (2013.01 - EP US); **C21D 11/005** (2013.01 - EP US); **C22C 38/00** (2013.01 - EP US); **C22C 38/001** (2013.01 - US); **C22C 38/002** (2013.01 - US); **C22C 38/02** (2013.01 - US); **C22C 38/04** (2013.01 - US); **C22C 38/06** (2013.01 - US); **C22C 38/42** (2013.01 - US); **C22C 38/44** (2013.01 - US); **C22C 38/46** (2013.01 - US); **C22C 38/58** (2013.01 - EP US)

Citation (search report)
• [X] EP 2322679 A1 20110518 - JFE STEEL CORP [JP]
• [X] JP 2010242163 A 20101028 - JFE STEEL CORP
• [X] JP 2002038219 A 20020206 - SUMITOMO METAL IND
• [A] EP 1813687 A1 20070801 - SUMITOMO METAL IND [JP]
• [A] WO 2012127811 A1 20120927 - SUMITOMO METAL IND [JP], et al
• See references of WO 2014119251A1

Cited by
CN111304429A; US11193179B2

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
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DOCDB simple family (publication)
EP 2952592 A1 20151209; EP 2952592 A4 20160427; EP 2952592 B1 20190612; CN 104968808 A 20151007; CN 104968808 B 20171117; JP 2014148699 A 20140821; JP 5907083 B2 20160420; US 2015368734 A1 20151224; WO 2014119251 A1 20140807

DOCDB simple family (application)
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