

Title (en)  
BIO OIL BURNER WITH OIL NOZZLE

Title (de)  
BIOÖLBRENNER MIT ÖLDÜSE

Title (fr)  
BRÛLEUR D'HUILE BIOLOGIQUE AVEC GICLEUR D'HUILE

Publication  
**EP 3034942 A1 20160622 (EN)**

Application  
**EP 15200053 A 20151215**

Priority  
FI 20146099 A 20141215

Abstract (en)  
A bio oil burner comprises an oil lance, at the end of which there is an oil nozzle with spray holes for feeding atomized oil to a furnace of a boiler. The bio oil burner further comprises a first cylinder which together with the oil lance delimits an annular primary air flow channel; a second cylinder which together with the first cylinder delimits an annular secondary air flow channel, and a third cylinder which together with the second cylinder delimits an annular tertiary air flow channel. In addition, the bio oil burner comprises a primary air swirler annularly surrounding the oil nozzle and blocking at least part of an outlet of the primary air flow channel. The oil nozzle has 6 - 50 spray holes which are distributed on a slanting circumferential surface of the oil nozzle in such a way that said spray holes form at least two groups of spray holes in which the spray holes are located at a regular spacing from each other, and that between said groups of spray holes there are intermediate spaces in which no spray holes are present. A free end of the first cylinder is provided with a flame stabilizing ring which surrounds the outlet of the primary air flow channel and blocks part of an outlet of the secondary air flow channel. The outer diameter  $D_i$  of the primary air swirler is calculated by the formula  $D_i = a \cdot D_{1ry}$ , wherein  $a$  is 0.45 - 0.6 and  $D_{1ry}$  is the inner diameter of the first cylinder.

IPC 8 full level  
**F23D 11/10** (2006.01); **F23D 11/12** (2006.01); **F23D 11/24** (2006.01); **F23D 11/38** (2006.01); **F23D 17/00** (2006.01)

CPC (source: EP FI)  
**B05B 7/0433** (2013.01 - FI); **F23D 11/10** (2013.01 - EP); **F23D 11/105** (2013.01 - FI); **F23D 11/107** (2013.01 - EP); **F23D 11/12** (2013.01 - EP); **F23D 11/24** (2013.01 - EP); **F23D 11/383** (2013.01 - EP FI); **F23D 17/002** (2013.01 - EP FI); **F23D 2204/10** (2013.01 - EP)

Citation (search report)

- [X] JP H0233506 A 19900202 - BABCOCK HITACHI KK
- [X] JP S5627814 A 19810318 - MITSUBISHI HEAVY IND LTD
- [X] US 6622944 B1 20030923 - HURLEY JOHN F [US], et al
- [A] CN 102230623 A 20111102 - CISDI IND FURNACE CO LTD
- [A] US 2005173566 A1 20050811 - VECCHIET FABIO [IT], et al
- [A] US 5145359 A 19920908 - ANCONA GIUSEPPE [IT], et al
- [A] US 4602571 A 19860729 - CHADSHAY ROMAN [US]

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)  
BA ME

DOCDB simple family (publication)  
**EP 3034942 A1 20160622**; **EP 3034942 B1 20180725**; DK 3034942 T3 20181112; FI 127741 B 20190131; FI 20146099 A 20160616; LT 3034942 T 20181112; PL 3034942 T3 20190228

DOCDB simple family (application)  
**EP 15200053 A 20151215**; DK 15200053 T 20151215; FI 20146099 A 20141215; LT 15200053 T 20151215; PL 15200053 T 20151215