

Title (en)  
DRIVE

Title (de)  
ANTRIEB

Title (fr)  
PROPELLATION

Publication  
**EP 2613999 B1 20190403 (DE)**

Application  
**EP 11758389 A 20110906**

Priority  

- DE 102010044435 A 20100906
- EP 2011004478 W 20110906

Abstract (en)

[origin: WO2012031740A1] The present invention relates to a drive (2), in particular for a watercraft (22), having at least one energy apparatus (4), in particular an internal combustion engine or electrical machine, which can be driven as a motor or generator, and having at least one thrust apparatus (6), which produces forward thrust, or at least one thrust apparatus (6) by means of which a forward thrust can be produced, which has at least one first centrifugal machine (8), by means of which swirl can be applied to an axial incident flow associated therewith and can be deflected as a first outlet flow in a first outlet-flow direction (12), and at least one second centrifugal machine (10), by means of which swirl can be applied to an axial incident flow associated therewith and can be deflected as a second outlet flow in a second outlet-flow direction (14), wherein a plurality of centrifugal machines (8, 10), in particular at least two centrifugal machines (8, 10), thereof are associated with at least one energy apparatus (4) or in each case one centrifugal machine (8, 10) is associated with a dedicated energy apparatus (4). It is distinguished in that the first and second centrifugal machines (8, 10) can be operated in opposite senses, in that, in the case of the at least one thrust apparatus (6), at least one of the at least one first centrifugal machine (8) and at least one of the at least one second centrifugal machine (10) are at a distance from one another, with respect to their rotation axes, and in that, when the first and second centrifugal machines are operated in opposite senses, additional forward thrust can be or is obtained from the swirl.

IPC 8 full level

**B63H 5/08** (2006.01); **B63H 5/14** (2006.01); **B63H 23/06** (2006.01)

CPC (source: EP)  
**B63H 5/08** (2013.01)

Citation (examination)

- EP 1892183 A1 20080227 - KAWASAKI ZOSEN KK [JP]
- DE 4206720 A1 19920917 - KAWASAKI HEAVY IND LTD [JP]
- DE 3937327 A1 19900517 - KAWASAKI HEAVY IND LTD [JP]
- DE 2407799 A1 19750828 - MARTEENS BERNDT

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

DOCDB simple family (publication)

**DE 102010044435 A1 20120308;** DK 2613999 T3 20190715; EP 2613999 A1 20130717; EP 2613999 B1 20190403; ES 2743312 T3 20200218;  
HR P20191184 T1 20191004; HU E044175 T2 20191028; LT 2613999 T 20191111; PL 2613999 T3 20190930; PL 2613999 T4 20190930;  
PT 2613999 T 20190725; SI 2613999 T1 20190830; WO 2012031740 A1 20120315

DOCDB simple family (application)

**DE 102010044435 A 20100906;** DK 11758389 T 20110906; EP 11758389 A 20110906; EP 2011004478 W 20110906; ES 11758389 T 20110906;  
HR P20191184 T 20190701; HU E11758389 A 20110906; LT 11758389 T 20110906; PL 11758389 T 20110906; PT 11758389 T 20110906;  
SI 201131751 T 20110906