Title (en)

THREE-PHASE ELECTRICAL REACTOR WITH MAGNETIC BIASING

Title (de)

DREIPHASENSTROMREAKTOR MIT MAGNETISCHER VORSPANNUNG

Title (fr)

RÉACTEUR ÉLECTRIQUE TRIPHASÉ À AIMANTATION

Publication

EP 2560174 A4 20180124 (EN)

Application

EP 10849930 A 20101231

Priority

- RU 2010114824 A 20100414
- RU 2010000820 W 20101231

Abstract (en)

[origin: EP2560174A1] The invention is related to the electrical engineering field and may be used for controllable magnetizing reactors installed for example in the electrical network to compensate for reactive power, stabilize the voltage, parallel operation with capacitor banks, to increase the capacity, etc. The electrical three-phase magnetizing reactor contains the magnetic system, which is assembled of restored electric steel sheets, magnet core with coaxially arranged three upper and three lower vertical rods. The rods mount two-section windings. The magnet core has the upper, lower and middle horizontal and two side vertical yokes, the horizontal yokes have two middle and two extreme sections, four magnetic shunts as rectangular frames with horizontal and vertical sections, the horizontal sections of shunts are arranged on the winding butt ends along the upper, middle and lower yokes. Their closing vertical sections are arranged along the side yokes. The reactor contains also controllable semiconductive converters made of diodes an resistors and the control system. The reactor windings are connected to the three-phase network and converters. The difference from known devices is in that the reactor contains the three-winding insulating transformers installed between converters and control system, and nonmagnetic gaps are made in the sections of the middle horizontal yoke of the magnet core. Each magnetic shunt has two additional vertical sections located between windings. The ratio of nonmagnetic gap values of the magnet core in extreme sections of middle yoke # extreme and nonmagnetic gap values in middle sections of middle yoke # middle makes up 1.5 < (# middle /(# extreme <3, the ratio between the steel cross section of middle sections of middle yokes S middle yoke and rod cross section S is within: 0. < (S middle yoke /S) < 1.3, the ratio between steel cross section of all other sections of yokes S yoke and rod cross section S is within 0.7 < (S yoke /S) <0.9, the ratio between the steel cross section of all parts of magnetic shunts S shunt and rod cross section S is within 0.07 < (S yoke /S) < 0.3. Due to introduction of new components, new couplings between elements to the design and electric circuitry, optimization of ratios of parameters, obtained are reduction of the steel consumption and losses, the reliability is increased, functional potentialities of the reactor - expansion of the power adjustment range is increased.

IPC 8 full level

H01F 3/14 (2006.01); **H01F 21/08** (2006.01); **H01F 27/34** (2006.01); **H01F 29/14** (2006.01); **H01F 37/00** (2006.01)

CPC (source: EP)

H01F 3/14 (2013.01); **H01F 27/346** (2013.01); **H01F 37/00** (2013.01); H01F 3/12 (2013.01)

Citation (search report)

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- See references of WO 2011129717A1

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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)

EP 2560174 A1 20130220; **EP 2560174 A4 20180124**; RU 2418332 C1 20110510; UA 102354 C2 20130625; WO 2011129717 A1 20111020

DOCDB simple family (application)

EP 10849930 A 20101231; RU 2010000820 W 20101231; RU 2010114824 A 20100414; UA A201210464 A 20101231