Title (en)

AN UNINTERRUPTIBLE POWER SUPPLY SYSTEM USING A SLIP-RING, WOUND-ROTOR-TYPE INDUCTION MACHINE AND A METHOD FOR FLYWHEEL ENERGY STORAGE

Title (de)

NICHT UNTERBRECHBARES STROMVERSORGUNGSSYSTEM MIT EINER INDUKTIONSMASCHINE MIT SCHLEIFRING UND GEWICKELTEM ROTOR UND VERFAHREN ZUR SCHWUNGRAD-ENERGIESPEICHERUNG

Title (fr)

SYSTEME D'ALIMENTATION SANS COUPURE UTILISANT UNE MACHINE D'INDUCTION DE TYPE ROTOR A ENROULEMENTS, A BAGUE COLLECTRICE, ET PROCEDE DE STOCKAGE D'ENERGIE A VOLANT D'INERTIE

Publication

EP 1364439 A4 20050525 (EN)

Application

EP 02720900 A 20020131

Priority

- US 0203155 W 20020131
- US 25621601 P 20010131

Abstract (en)

[origin: WO02061910A2] Several embodiments of an uninterruptible power supply (UPS) system, which system provides highly reliable output power to a load using a slip-ring induction machine and a flywheel combination, are disclosed as well as methods relating thereto. In a preferred embodiment, the UPS system comprises a back-up power source, e.g., an engine and generator, and a slip-ring, or wound-rotor, induction motor and flywheel combination, which are in parallel to a primary power source, e.g., a utility grid. During normal operation of the UPS, the primary power source supplies alternating current and voltage to the load and the UPS compensates for voltage drop across the isolating inductor. Moreover, the primary poser source keeps the slip-ring induction machine and flywheel in an excited state, i.e., the rotor of the slip-ring induction machine, the shaft of which is shared by the flywheel, is excited above normal synchronous speed. When the primary power source fails, the flywheel, which is rotating at super-synchronous speed and storing kinetic energy, drives the rotor of the slip-ring induction machine and generates, i.e., induces current in the stator. Accordingly, the flywheel and slip-ring induction machine combination provides instantaneous, short term power to the load until the back-up power source has powered up and been brought on line.

[origin: WO02061910A2] Uninterruptible power supply system (200) uses a slip-ring induction machine (10) and a flywheel combination. The UPS system (200) comprises a back-up power source connected in parallel to a primary power source such as utility grid. During normal operation of the UPS system (200), the primary power source (130) supplies power to the load and the UPS compensates for voltage drop. Moreover, the primary power source keeps the slip-ring induction machine and the flywheel in an excited state above normal synchronous speed. When the primary power source fails, the flywheel, which is rotating at super-synchronous speed and storing kinetic energy, drives the rotor of the slip-ring induction machine to generate power. Accordingly, the slip-ring induction machine and flywheel combination provides instantaneous, short term power to the load until the back-up power source has powered up and been brought online.

IPC 1-7

H02J 9/06; H01J 9/08

IPC 8 full level

H02J 9/06 (2006.01); **H02K 17/22** (2006.01); **H02P 9/42** (2006.01); **H02P 9/48** (2006.01)

CPC (source: EP KR)

H02J 9/061 (2013.01 - EP); **H02J 9/08** (2013.01 - KR)

Citation (search report)

- [XY] US 6020657 A 20000201 - LIRAN ABRAHAM [US]
- [Y] US 5994794 A 19991130 - WEHRLEN DAVID J [US]
- [Y] US 4266442 A 19810512 - ZORZI EDWARD S
- [Y] EP 0917270 A2 19990519 - GEN ELECTRIC [US]
- See references of WO 02061910A2

Cited by

CN114865779A

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

DOCDB simple family (publication)

WO 02061910 A2 20020808; **WO 02061910 A3 20021010**; AU 2002251867 A1 20020812; CA 2437204 A1 20020808; EP 1364439 A2 20031126; EP 1364439 A4 20050525; KR 20030083705 A 20031030

DOCDB simple family (application)

US 0203155 W 20020131; AU 2002251867 A 20020131; CA 2437204 A 20020131; EP 02720900 A 20020131; KR 20037010156 A 20030731