

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
25 June 2009 (25.06.2009)

PCT

(10) International Publication Number
WO 2009/076697 A1

(51) International Patent Classification:
G01R 31/02 (2006.01) **H02H 3/32** (2006.01)

(74) Agent: **PHILLIPS ORMONDE & FITZPATRICK**;
Level 21, 22 & 23, 367 Collins Street, Melbourne, VIC
3000 (AU).

(21) International Application Number:
PCT/AU2008/001372

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(22) International Filing Date:
17 September 2008 (17.09.2008)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2007906977 19 December 2007 (19.12.2007) AU

(71) Applicant (*for all designated States except US*): **AU-RORA ENERGY PTY LTD** [AU/AU]; 21 Kirksway Place, Hobart, Tasmania 7001 (AU).

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **MYERS, Erickson, Bruce** [AU/AU]; 27 MacRobertson Terrace, Clairemont, Tasmania 7011 (AU). **HOLTER, Bryan, Douglas** [AU/AU]; 48 Oakleigh Avenue, Taroona, Tasmania 7053 (AU).

Published:
— with international search report

(54) Title: METHOD AND APPARATUS FOR DETECTING A FAULT IN A NEUTRAL RETURN LINE OF AN ELECTRICAL NETWORK

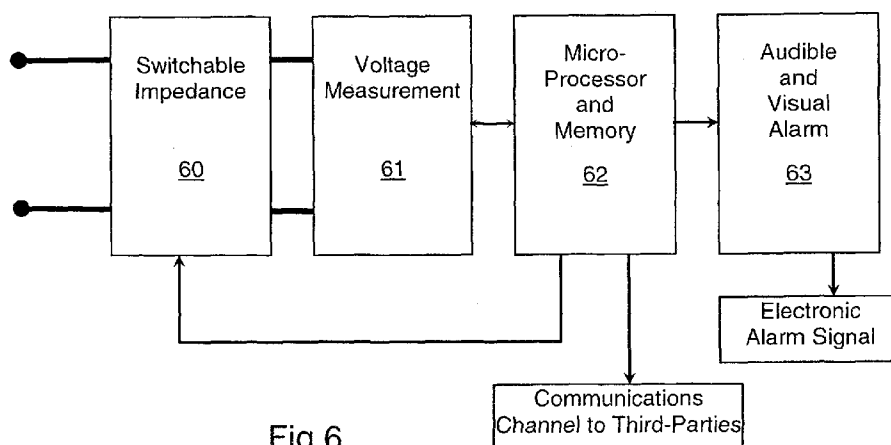


Fig 6

(57) Abstract: Apparatus is disclosed for detecting a discontinuity or irregularity in a neutral return line of an electrical power distribution network including the neutral return line, an active line and an earth return. The apparatus includes means for measuring a voltage change associated with a deliberate switching of a known impedance in the electrical network wherein the voltage change is due to a discontinuity or impedance irregularity in the neutral return line and means for implementing an algorithm for identifying the discontinuity or impedance irregularity in presence of allowable variations in nominal supply voltage to the electrical network including voltage changes resulting from network operations that mimic or hide a discontinuity or impedance irregularity in the neutral return line. The apparatus also includes means for comparing a result of the measuring with a reference to provide an indication of the discontinuity or impedance irregularity. A method for detecting a discontinuity or irregularity in a neutral return line of an electrical power distribution network is also disclosed.

WO 2009/076697 A1