

(51) International Patent Classification:
H02M 1/42 (2007.01)

(21) International Application Number:

PCT/US2016/015996

(22) International Filing Date:

1 February 2016 (01.02.2016)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/117,615	18 February 2015 (18.02.2015)	US
14/723,108	27 May 2015 (27.05.2015)	US

(71) Applicant: **ADAPTIVE FREQUENCY HOLDINGS, LLC** [US/US]; 2337 East Del Amo Blvd., Compton, California 90220 (US).(72) Inventors: **BANAYAN, Aziz**; Adaptive Frequency Holdings, LLC, 2337 East Del Amo Blvd., Compton, California 90220 (US). **LIU, Cheng-pin**; Adaptive Frequency Holdings, LLC, 2337 East Del Amo Blvd., Compton, California 90220 (US). **WHITE, Robert**; Adaptive Frequency Holdings, LLC, 2337 East Del Amo Blvd., Compton, California 90220 (US). **FLAVIN, John**; Adaptive Frequency Holdings, LLC, 2337 East Del Amo Blvd., Compton, California 90220 (US).(74) Agents: **HARRIS, Michael D.** et al.; SoCal IP Law Group LLP, 310 N Westlake Blvd., Suite 120, Westlake Village, California 91362 (US).

(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, BN, BR, BW, BY, BZ, CA, CH, CL, 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, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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

Published:

— without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) Title: ADAPTIVE AC POWER EXCHANGER

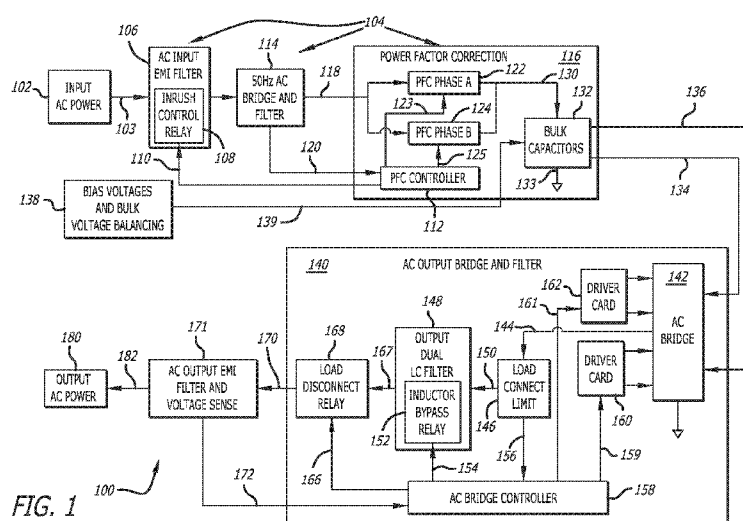


FIG. 1

(57) Abstract: An adaptive AC power exchanger generates stable 120 VAC 60 Hz power from variable grid input power nominally at 220 VAC and 50 Hz. The exchanger includes an AC-DC circuit stage coupled to receive the input AC current and generate a VDC output, and a DC-AC circuit stage to generate power for a load. The AC-DC stage includes an EMI filter and surge protection circuit, a 50 Hz rectifier and a power factor correction (PFC) circuit controlled by a PFC controller to yield a 400 VDC output coupled through a bulk capacitor stack to a common connection to generate a 200 VDC voltage node. The 200 VDC and 400 VDC voltages are coupled to the DC-AC circuit including a pulse width modulator; current load limiter; an LC filter having a capacitor, dual inductors and an inductor by-pass relay; and a load disconnect relay all controlled by an AC bridge controller.