



- (51) International Patent Classification:
G01R 21/133 (2006.01)
- (21) International Application Number:
PCT/EP2024/058481
- (22) International Filing Date:
28 March 2024 (28.03.2024)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
2304832.5 31 March 2023 (31.03.2023) GB
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- (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, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, MG, MK, MN, MU, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(54) Title: MONITORING TRANSFORMERS OF POWER NETWORKS

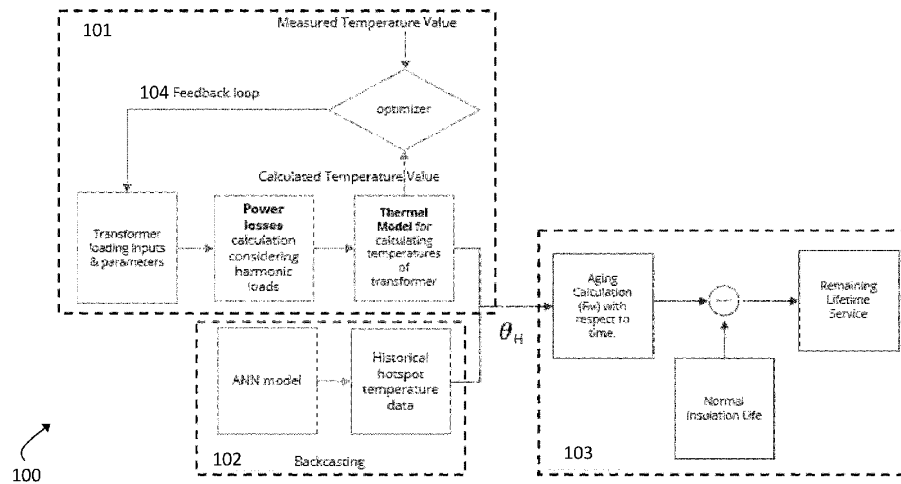


Figure 1

(57) **Abstract:** A method of estimating historical apparent power over time of at least one transformer device in a power network in a geographic region, the method comprising: providing training data comprising: apparent power data of a plurality of transformer devices over time in one or more geographic regions, energy consumption data over time of the power network in the respective geographic regions, and ambient environmental temperature data over time of the respective geographic regions; initialising weights of an untrained neural network comprising an input layer, a plurality of hidden layers, and an output layer, and using the training data to iteratively update the weights to minimise a loss function to produce a trained neural network configured to output an estimated apparent power of a transformer device over a time period in a geographic region from input energy consumption data and input ambient environmental temperature data of said geographic region over said time period; and inputting energy consumption data and ambient environmental

[Continued on next page]

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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:

- *with international search report (Art. 21(3))*
- *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*

temperature data over a first time period in a geographic region into the trained neural network to estimate an apparent power over the first time period of at least one transformer device in the geographic region.