

(12) United States Patent Lemez et al.

(54) LOSSES REDUCTION FOR ELECTRICAL POWER DISTRIBUTION

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Subject to any disclaimer, the term of this patent is extended or adjusted under 35

U.S.C. 154(b) by 32 days.

(21) Appl. No.: 16/333,950

(22) PCT Filed: Sep. 13, 2017

(86) PCT No.: PCT/CA2017/051077

§ 371 (c)(1),

(*) Notice:

(2) Date: Mar. 15, 2019

(87) PCT Pub. No.: WO2018/049520

PCT Pub. Date: Mar. 22, 2018

(65)**Prior Publication Data**

> US 2019/0214178 A1 Jul. 11, 2019

Related U.S. Application Data

- (60) Provisional application No. 62/395,539, filed on Sep. 16, 2016.
- (51) Int. Cl. H01F 27/24 (2006.01)H01F 27/08 (2006.01)(Continued)

US 10,650,954 B2 (10) Patent No.:

(45) **Date of Patent:** May 12, 2020

(52) U.S. Cl.

CPC H01F 27/24 (2013.01); H01F 27/025 (2013.01); H01F 27/085 (2013.01); H01F

27/20 (2013.01);

(Continued)

Field of Classification Search

CPC H01F 27/00–36

(Continued)

(56)References Cited

U.S. PATENT DOCUMENTS

5,396,165 A 3/1995 Hwang et al. 2/1997 David 5,604,385 A

(Continued)

FOREIGN PATENT DOCUMENTS

WO 99/49481 A1 9/1999

OTHER PUBLICATIONS

International Search Report and Written Opinion, dated Dec. 5, 2017 for PCT/CA2017/051077, 8 pages.

(Continued)

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ABSTRACT (57)

A transformer apparatus that may be applied as a distribution circuit adaptor (DCA) inserted into a branch supply circuit to reduce losses in a power distribution network. More particularly, implementations of the present disclosure provide a high-efficiency 2-phase dry type transformer apparatus with a removable core, as well as integrated instrumentation and thermal self-management.

28 Claims, 10 Drawing Sheets

