



US 20240178726A1

(19) **United States**

(12) **Patent Application Publication**

Seth et al.

(10) **Pub. No.: US 2024/0178726 A1**

(43) **Pub. Date: May 30, 2024**

(54) **MAGNET-LESS AND BRUSH-LESS
ROTATING TRANSFORMER EXCITED
SYNCHRONOUS MACHINE AND METHOD
OF ITS CONTROL**

(52) **U.S. Cl.**
CPC **H02K 11/049** (2016.01); **H02K 7/083**
(2013.01); **H02K 19/12** (2013.01)

(71) Applicant: **Volektra Inc.**, Utica, MI (US)

(57) **ABSTRACT**

(72) Inventors: **Manish Kumar Seth**, Munich (DE);
Luis Pont Lezica, Buenos Aires (AR)

(73) Assignee: **Volektra Inc.**, Utica, MI (US)

(21) Appl. No.: **18/520,824**

(22) Filed: **Nov. 28, 2023**

Related U.S. Application Data

(60) Provisional application No. 63/428,420, filed on Nov. 29, 2022.

Publication Classification

(51) **Int. Cl.**
H02K 11/049 (2006.01)
H02K 7/08 (2006.01)
H02K 19/12 (2006.01)

A synchronous machine (100) includes a housing, a shaft (106) to mount a three-phase rectifier (124), main motor (116) and a rotating transformer (RT) (108). The main rotor (110) is concentrically and co-axially mounted on shaft (106), and main stator (112) is concentrically and co-axially assembled over main rotor (110). Main rotor (110) includes Direct Current field windings and main stator (112) includes Alternating Current poly-phased distributed windings. Further, the RT (108) includes an RT rotor (120) and RT stator (122). RT rotor (120) and RT stator (122) may include AC poly-phase distributed windings and second predefined number of poles. Further, RT rotor (120) may be configured to be rotatably coupled on first end (106A) of shaft (106). The RT stator (122) may be configured to concentrically and co-axially assembled over RT rotor (120).

