(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
02 October 2025 (02.10.2025)

WIPO | PCT

(10) International Publication Number
WO 2025/203123 A1

(51) International Patent Classification:
B60L 15/00 (2006.01) *B60L 53/22* (2019.01)
B60H 1/00 (2006.01) *H05K 7/20* (2006.01)

(21) International Application Number:
PCT/IN2025/050516

(22) International Filing Date:
28 March 2025 (28.03.2025)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
202441025816 29 March 2024 (29.03.2024) IN

(71) Applicant: **EICHER MOTORS LIMITED** [IN/IN]; Royal Enfield (A Unit of Eicher Motors Ltd.), 296, Rajiv Gandhi Salai, Elcot Sez, Sholinganallur, Chennai, Tamil Nadu 600119 (IN).

(72) Inventors: **KRISHNAPPA, Umesh**; Royal Enfield, 296, Rajiv Gandhi Salai, Elcot, Sez, Sholinganallur, Chennai, Tamil Nadu 600119 (IN). **MANI, Ram Kumar**; Royal Enfield, 296, Rajiv Gandhi Salai, Elcot, Sez, Sholinganallur, Chennai, Tamil Nadu 600119 (IN). **PADMANABHAN, Ranjani**; Royal Enfield, 296, Rajiv Gandhi Salai, Elcot, Sez, Sholinganallur, Chennai, Tamil Nadu 600119 (IN). **NAGARAJAN, Ganesh**; Royal Enfield, 296, Rajiv Gandhi Salai, Elcot, Sez, Sholinganallur, Chennai, Tamil Nadu 600119 (IN). **SALEEM, Imran**; Royal Enfield, 296, Rajiv Gandhi Salai, Elcot, Sez, Sholinganallur, Chennai, Tamil Nadu 600119 (IN). **PALANI, Thamaraiselvan**; Royal Enfield, 296, Rajiv Gandhi Salai, Elcot, Sez, Sholinganallur, Chennai, Tamil Nadu 600119 (IN).

(74) Agent: **MAHUA RAY**; REMFRY & SAGAR, Attorneys-at-Law, Remfry House at the Millennium Plaza, Sector 27, Gurugram, HARYANA 122 009 (IN).

WO 2025/203123 A1

(54) Title: INTEGRATED MOTOR CONTROLLER FOR ELECTRIC TWO WHEELER

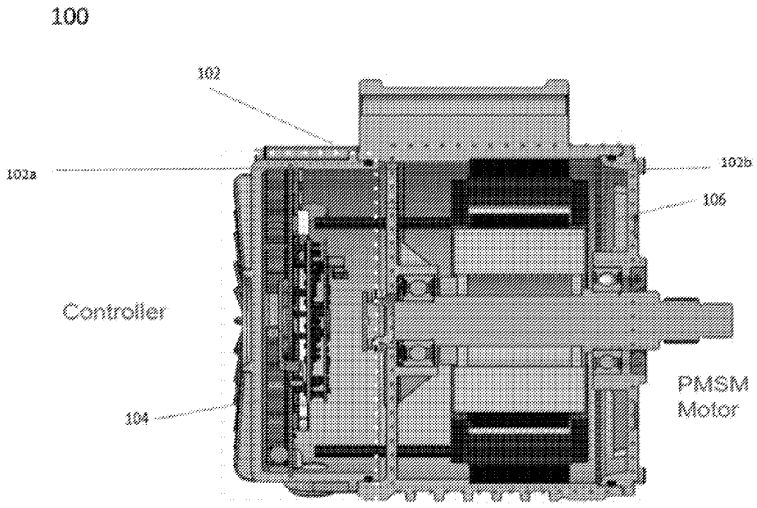


Figure. 1

(57) Abstract: The present invention relates to an integrated electric system for an electric vehicle The system comprises a physical enclosure partitioned into a first section and a second section. A motor controller is housed within the first section and includes multiple functional modules configured to control the operation of a motor housed in the second section. The motor controller comprises a power electronics module for regulating power supply to the motor, a control electronics module for executing control algorithms, and a sensing electronics module for monitoring motor parameters such as speed, position, and temperature. These modules are arranged in a vertically stacked three-dimensional configuration, enabling compact design, efficient thermal management, and precise motor control.

[Continued on next page]

(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, UY, UZ, VC, VN, WS, ZA, ZM, ZW.

(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).

Declarations under Rule 4.17:

— *as to the identity of the inventor (Rule 4.17(i))*
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*
— *in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE*