



US 20220368135A1

(19) **United States**(12) **Patent Application Publication**
NGUYEN et al.(10) **Pub. No.: US 2022/0368135 A1**(43) **Pub. Date: Nov. 17, 2022**(54) **BATTERY CONTROL SYSTEMS AND METHODS***G01R 31/396* (2006.01)*G01R 31/3842* (2006.01)*G01R 31/374* (2006.01)(71) Applicant: **Exro Technologies Inc.**, Calgary (CA)(72) Inventors: **Tung NGUYEN**, Calgary (CA); **Eric Hustedt**, Calgary (CA)(52) **U.S. Cl.**CPC *H02J 7/007* (2013.01); *G01R 31/392* (2019.01); *G01R 31/396* (2019.01); *G01R 31/3842* (2019.01); *H02J 7/005* (2020.01); *H02J 7/0048* (2020.01); *G01R 31/374* (2019.01)(21) Appl. No.: **17/842,217**(22) Filed: **Jun. 16, 2022****Related U.S. Application Data**

(63) Continuation of application No. 17/727,143, filed on Apr. 22, 2022.

(60) Provisional application No. 63/262,017, filed on Oct. 1, 2021, provisional application No. 63/183,980, filed on May 4, 2021.

Publication Classification(51) **Int. Cl.***H02J 7/00* (2006.01)*G01R 31/392* (2006.01)

(57)

ABSTRACT

A battery control system includes a plurality of battery cells that are separately controllable as units of individual cells or groups of cells. Each controllable unit may be switchably activated or deactivated in the overall battery circuit, and one or more conditions of each controllable unit may be individually measured. Various techniques are disclosed for operating the battery control system to optimize or improve system performance and longevity.

