



Contribution ID: 426 Contribution code: TUE-PO1-305-06

Type: Poster

## Cyclic Axial Pressure Limits of REBCO Double Pancake Coils with Variable Co-wind Dimensions at 77 K

*Tuesday, November 16, 2021 1:15 PM (20 minutes)*

REBCO with its high-strength substrate is the preferred superconductor for high-field applications and is the choice for the NHMFL's 40 T all-superconducting magnet. Many electromechanical characterizations of this conductor have been performed in its longitudinal direction which is its primary load path. Little has been reported on structural limits in its transverse, narrow edge, direction or axial with respect to a solenoid's coordinates. This is becoming more important as the axial pressure at the coil's mid-plane of high-field magnets can be on the order of 100 MPa. In addition, many magnet systems put into service, such as the NHMFL's 40 T, will be exposed to cyclic operations necessitating the determination of cyclic load limit data. A study has been conducted and results will be presented on small REBCO double pancakes wound with stainless steel co-wind with various geometries and with the conductor wound as a single tape or two-in-hand. The coils were loaded to pressures of 100 MPa and 150 MPa and cycled up to 50,000 times in a bath of liquid nitrogen. Periodically during the load sequence, critical current measurements were made to evaluate the level of degradation.

### Acknowledgement

This work was performed at the National High Magnetic Field Laboratory, which is supported by National Science Foundation Cooperative Agreement No. DMR-1644779 and DMR-1839796, and the State of Florida.

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**Session Classification:** TUE-PO1-305 HTS/LTS coil