Aerospace & Advanced Composites GmbH

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Slip-Ring Collector Tester

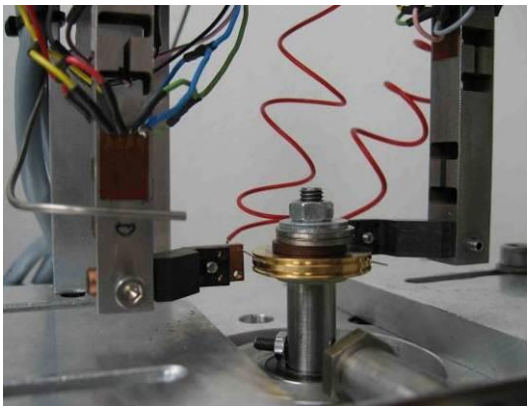
A slip ring (in electrical engineering terms) is a method of making an electrical connection through a rotating assembly. Slip rings, also called rotary electrical interfaces, rotating electrical connectors, collectors, swivels, or electrical rotary joints, are commonly found in electric motors, electrical generators for AC systems and generally in all rotary systems with electrical connections of sensors and receptors.

2 tribometer facilities for long-term tests of single slip-ring systems are available at AAC: one for electro-tribological tests at room temperature on air, the 2nd for tests from -5 to +60 °C on air. With these testing facilities performance of slip-rings with standard coatings compared with the new coatings is evaluated in order to optimize the coating type as well as the parameters for different applications of the slip-rings.

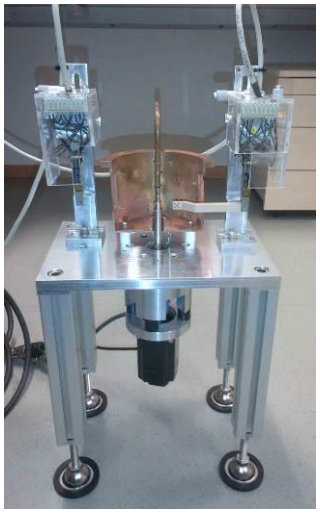
By means of the criteria wear, friction coefficient, electrical resistance and SEM/EDX post-test analysis, correlations between alloy, type of particles, coating parameters and the criteria named above can be established.

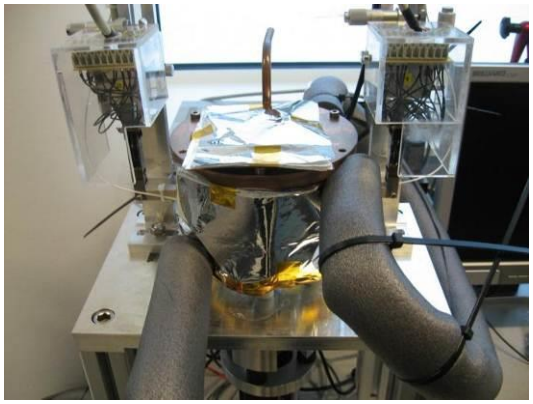
In the following pictures the SRC-testing facilities developed at AAC are shown.

SRC-testing facility #1



SRC-testing facility #2





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With these facilities, also brushes can be tested versus rings. Furthermore, the acoustic emission of different material pairings during test can be analysed in detail in order to identify the one with the lowest electrical and acoustical noise as well as to find correlations of electrical and acoustical noise, if any. In the following picture the set-up is shown.

Brushes tested vs. ring in SRC-testing facility

Characteristics:

- Ambient
- Speeds from 1 to 1000rpm
- Low loads and forces from 5mN to 200mN
- Testing under "Electrical current loads"
- Objective: Life-Time-Testing of Multi-Rig

Measurement of

- Load and Friction forces
- Contact resistance
- Angle resolved