

Thesis Title

by

Tim The Beaver

Submitted to the  
Department of Mechanical Engineering  
in Partial Fulfillment of the Requirements for the Degree of

Bachelor of Science in Mechanical Engineering

at the

Massachusetts Institute of Technology

June 2014

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Thesis Title Centered

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Submitted to the Department of Mechanical Engineering  
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ABSTRACT

Single-space your abstract and use block style. An experimental study on the performance of graphite brushes, both pure and composite materials containing 50% by weight silver, sliding against noble metals (silver, gold, palladium, platinum, ruthenium, rhodium, rhenium, and iridium). The current was 24.5A (a current density of 500 A/in<sup>2</sup>) an the sliding speed 12.8 ft/s. The test atmosphere was either wet or dry wintertime air. The tests were also done on copper and nickel for comparison. A pin-on disc tester was used.

The results for the silver-graphite brush test showed a positive correlation between wear and the compatibility of the noble metals against carbon, and a negative correlation between wear and friction. The passage of 24.5 A of current did not affect the wear rate in air but did affect the water rate. In wet, the wear rate increased as the current level was increased in the range of 0 to 50 A. More data was needed for the pure graphite tests.

Among the noble metals, palladium, platinum, and rhodium showed the lowest brush wear rate. The brush wear rate for these metals was only half of that for copper.

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